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DELTA REPORT

10-Q

ORIGIN MATERIALS, INC.

10-Q - SEPTEMBER 30, 2023 COMPARED TO 10-Q - JUNE 30, 2023

The following comparison report has been automatically generated

TOTAL DELTAS	1642
CHANGES	269
DELETIONS	1038
ADDITIONS	335

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

x **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 30, 2023 September 30, 2023

OR

o **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission file number 001-39378

ORIGIN MATERIALS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**87-1388928**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
930 Riverside Parkway, Suite 10 **West Sacramento, CA**	**95605**
(Address of principal executive offices)	(Zip Code)

(916) 231-9329
(Registrant's telephone number, including area code)

N/A
(Former name or former address, if changed since last report)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class:	Trading Symbol(s)	Name of each exchange on which registered:
Common Stock, $0.0001 par value per share	ORGN	The NASDAQ Capital Market
Warrants	ORGNW	The NASDAQ Capital Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes x No o

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes x No o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	o
Non-accelerated filer	☐ o	Smaller reporting company	☐ ☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No x

The number of shares of the registrant's Common Stock, par value $0.0001 per share outstanding was 143,515,614, 144,279,207, as of August 4, 2023 November 6, 2023.

ORIGIN MATERIALS, INC.

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WHERE YOU CAN FIND MORE INFORMATION

Investors and others should note that we announce material financial information to our investors using our investor relations website, which can be found at https://investors.originmaterials.com/, as well as press releases, SEC filings, and public conference calls and webcasts. We also use the following social media channels as a means of disclosing information about the company, our products, our planned financial and other announcements and attendance at upcoming investor and industry conferences, and other matters and for complying with our disclosure obligations under Regulation FD:

Origin X (f/k/a Twitter) Account (https://twitter.com/OriginMaterials)

Origin LinkedIn Page (https://www.linkedin.com/company/origin-materials)

Origin Facebook Page (https://www.facebook.com/people/Origin-Materials/100057468488825)

These channels may be updated from time to time on Origin's investor relations website. The information we post through these channels may be deemed material. Accordingly, investors should monitor them in addition to following our investor relations website, press releases, SEC filings, and public conference calls and webcasts. This list may be updated from time to time. The information we post through these channels is not a part of this Quarterly Report on Form 10-Q.

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PART I. — FINANCIAL INFORMATION

Item 1. Financial Statements

ORIGIN MATERIALS, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS

(In thousands, except share and per share data)	(In thousands, except share and per share data)	June 30, 2023 (Unaudited)	December 31, 2022	(In thousands, except share and per share data)	September 30, 2023 (Unaudited)	December 31, 2022
ASSETS	**ASSETS**			**ASSETS**		
Current assets	Current assets			Current assets		
Cash and cash equivalents	Cash and cash equivalents	$ 65,523	$ 107,858	Cash and cash equivalents	$ 66,106	$ 107,858
Restricted cash	Restricted cash	490	490	Restricted cash	—	490
Marketable securities	Marketable securities	152,170	215,464	Marketable securities	123,430	215,464
Accounts receivable	Accounts receivable	7,280	—	Accounts receivable	10,625	—
Other receivables	Other receivables	6,815	4,346	Other receivables	1,852	4,346
Inventory	Inventory	346	—	Inventory	821	—
Derivative asset	Derivative asset	160	—	Derivative asset	277	—
Prepaid expenses and other current assets	Prepaid expenses and other current assets	3,268	3,341	Prepaid expenses and other current assets	6,041	3,341
Total current assets	Total current assets	236,052	331,499	Total current assets	209,152	331,499
Property, plant, and equipment, net	Property, plant, and equipment, net	220,807	154,183	Property, plant, and equipment, net	234,117	154,183
Operating lease right-of-use asset	Operating lease right-of-use asset	2,479	2,779	Operating lease right-of-use asset	4,610	2,779
Intangible assets, net	Intangible assets, net	142	160	Intangible assets, net	129	160
Other long-term assets	Other long-term assets	17,224	5,079	Other long-term assets	23,033	5,079
Total assets	**Total assets**	**$ 476,704**	**$ 493,700**	**Total assets**	**$ 471,041**	**$ 493,700**
LIABILITIES AND STOCKHOLDERS' EQUITY	**LIABILITIES AND STOCKHOLDERS' EQUITY**			**LIABILITIES AND STOCKHOLDERS' EQUITY**		
Current liabilities	Current liabilities			Current liabilities		
Accounts payable	Accounts payable	$ 6,755	$ 10,384	Accounts payable	$ 4,991	$ 10,384
Accrued expenses	Accrued expenses	4,355	8,414	Accrued expenses	7,071	8,414
Operating lease liability, current	Operating lease liability, current	611	619	Operating lease liability, current	404	619
Deferred income				Deferred income	1,374	—
Other liabilities, current	Other liabilities, current	397	51	Other liabilities, current	2,896	51
Derivative liability	Derivative liability	9	344	Derivative liability	—	344
Total current liabilities	Total current liabilities	12,127	19,812	Total current liabilities	16,736	19,812
Earnout liability	Earnout liability	22,386	42,533	Earnout liability	3,629	42,533
Canadian Government Research and Development Program liability	Canadian Government Research and Development Program liability	7,345	7,185	Canadian Government Research and Development Program liability	7,169	7,185
Assumed common stock warrants liability	Assumed common stock warrants liability	26,249	30,872	Assumed common stock warrants liability	3,434	30,872
Notes payable	Notes payable	5,189	5,847	Notes payable	3,459	5,847

Operating lease liability	Operating lease liability	1,962	2,249	Operating lease liability	4,270	2,249
Other liabilities, long-term	Other liabilities, long-term	8,943	8,297	Other liabilities, long-term	8,257	8,297
Total liabilities	Total liabilities	84,201	116,795	Total liabilities	46,954	116,795
Commitments and contingencies (See Note 19)	Commitments and contingencies (See Note 19)			Commitments and contingencies (See Note 19)		
STOCKHOLDERS' EQUITY	**STOCKHOLDERS' EQUITY**			**STOCKHOLDERS' EQUITY**		
Preferred stock, $0.0001 par value, 10,000,000 shares authorized; no shares issued and outstanding as of June 30, 2023 and December 31, 2022		—	—			
Common stock, $0.0001 par value, 1,000,000,000 shares authorized; 143,498,724 and 143,034,225, issued and outstanding as of June 30, 2023 and December 31, 2022, respectively (including 4,500,000 Sponsor Vesting Shares)		14	14			
Preferred stock, $0.0001 par value, 10,000,000 shares authorized; no shares issued and outstanding as of September 30, 2023 and December 31, 2022				Preferred stock, $0.0001 par value, 10,000,000 shares authorized; no shares issued and outstanding as of September 30, 2023 and December 31, 2022	—	—
Common stock, $0.0001 par value, 1,000,000,000 shares authorized; 144,198,529 and 143,034,225, issued and outstanding as of September 30, 2023 and December 31, 2022, respectively (including 4,500,000 Sponsor Vesting Shares)				Common stock, $0.0001 par value, 1,000,000,000 shares authorized; 144,198,529 and 143,034,225, issued and outstanding as of September 30, 2023 and December 31, 2022, respectively (including 4,500,000 Sponsor Vesting Shares)	14	14
Additional paid-in capital	Additional paid-in capital	377,059	371,072	Additional paid-in capital	380,295	371,072
Retained earnings	Retained earnings	25,077	21,772	Retained earnings	56,008	21,772
Accumulated other comprehensive loss	Accumulated other comprehensive loss	(9,647)	(15,953)	Accumulated other comprehensive loss	(12,230)	(15,953)
Total stockholders' equity	Total stockholders' equity	392,503	376,905	Total stockholders' equity	424,087	376,905
Total liabilities and stockholders' equity	**Total liabilities and stockholders' equity**	**$ 476,704**	**$ 493,700**	**Total liabilities and stockholders' equity**	**$ 471,041**	**$ 493,700**

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

ORIGIN MATERIALS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME (LOSS)
(Unaudited)

	Three Months Ended June 30,	Six Months Ended June 30,	Three Months Ended September 30,	Nine Months Ended September 30,

(In thousands, except share and per share data)	(In thousands, except share and per share data)	2023	2022	2023	2022	(In thousands, except share and per share data)	2023	2022	2023	2022
Revenues	Revenues	$ 6,898	$ —	$ 8,602	$ —	Revenues	$ 7,140	$ —	$ 15,742	$ —
Cost of revenues (exclusive of depreciation and amortization shown separately below)	Cost of revenues (exclusive of depreciation and amortization shown separately below)	6,814	—	7,774	—	Cost of revenues (exclusive of depreciation and amortization shown separately below)	6,340	—	14,114	—
Operating expenses	Operating expenses					Operating expenses				
Research and development	Research and development	5,396	2,649	10,471	4,985	Research and development	4,927	3,732	15,398	8,717
General and administrative	General and administrative	8,619	5,864	16,275	10,935	General and administrative	7,633	5,834	23,908	16,769
Depreciation and amortization	Depreciation and amortization	347	160	635	308	Depreciation and amortization	386	180	1,021	488
Total operating expenses	Total operating expenses	14,362	8,673	27,381	16,228	Total operating expenses	12,946	9,746	40,327	25,974
Loss from operations	Loss from operations	(14,278)	(8,673)	(26,553)	(16,228)	Loss from operations	(12,146)	(9,746)	(38,699)	(25,974)
Other income (expenses)	Other income (expenses)					Other income (expenses)				
Interest income		2,426	1,936	5,440	3,768					
Interest expenses		(2)	—	(2)	—					
Gain (loss) in fair value of derivatives		(266)	1,430	494	596					
Interest income (expenses)						Interest income (expenses)	(1,130)	2,309	4,308	6,077
Gain in fair value of derivatives						Gain in fair value of derivatives	126	1,129	620	1,725
Gain (loss) in fair value of warrants liability	Gain (loss) in fair value of warrants liability	(2,143)	18,803	4,623	17,029	Gain (loss) in fair value of warrants liability	22,815	(1,419)	27,438	15,610
Gain in fair value of earnout liability	Gain in fair value of earnout liability	7,508	33,188	20,380	48,414	Gain in fair value of earnout liability	18,757	15,147	39,137	63,561
Other income (expenses), net		420	247	(948)	698					
Other income, net						Other income, net	2,603	879	1,655	1,577
Total other income, net	Total other income, net	7,943	55,604	29,987	70,505	Total other income, net	43,171	18,045	73,158	88,550
Net income (loss) before income tax expenses		(6,335)	46,931	3,434	54,277					
Net income before income tax expenses						Net income before income tax expenses	31,025	8,299	34,459	62,576
Income tax expenses	Income tax expenses	(129)	—	(129)	—	Income tax expenses	(94)	—	(223)	—
Net income (loss)		$ (6,464)	$ 46,931	$ 3,305	$ 54,277					
Net income						Net income	$ 30,931	$ 8,299	$ 34,236	$ 62,576
Other comprehensive income (loss)	Other comprehensive income (loss)					Other comprehensive income (loss)				

Unrealized gain (loss) on marketable securities, net of tax	Unrealized gain (loss) on marketable securities, net of tax	$ 1,504	$ (4,805)	$ 2,914	$ (9,380)	Unrealized gain (loss) on marketable securities, net of tax	$ 1,593	$ (1,403)	$ 4,507	$ (10,783)
Foreign currency translation adjustment, net of tax	Foreign currency translation adjustment, net of tax	3,272	(1,693)	3,392	(808)	Foreign currency translation adjustment, net of tax	(4,176)	(7,253)	(784)	(8,061)
Total comprehensive income (loss)	Total comprehensive income (loss)	$ (1,688)	$ 40,433	$ 9,611	$ 44,089	Total comprehensive income (loss)	$ 28,348	$ (357)	$ 37,959	$ 43,732
Net income (loss) per share, basic		$ (0.05)	$ 0.34	$ 0.02	$ 0.40					
Net income (loss) per share, diluted		$ (0.05)	$ 0.33	$ 0.02	$ 0.38					
Net income per share, basic						Net income per share, basic	$ 0.22	$ 0.06	$ 0.25	$ 0.46
Net income per share, diluted						Net income per share, diluted	$ 0.22	$ 0.06	$ 0.24	$ 0.44
Weighted-average common shares outstanding, basic	Weighted-average common shares outstanding, basic	139,265,248	137,141,655	139,154,557	136,985,440	Weighted-average common shares outstanding, basic	139,806,045	138,061,829	139,374,106	137,348,180
Weighted-average common shares outstanding, diluted	Weighted-average common shares outstanding, diluted	139,265,248	142,195,637	143,039,435	142,078,752	Weighted-average common shares outstanding, diluted	142,703,550	142,197,014	142,872,174	142,134,560

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

ORIGIN MATERIALS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY AND ACCUMULATED OTHER COMPREHENSIVE LOSS

(Unaudited)

(In Thousands, Except Share Amounts)

Three Months Ended June 30, 2022		Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive loss	Total Stockholders' Equity
Balance at March 31, 2022		141,418,989	$ 16	$362,770	$ (49,451)	$(4,941)	$ 308,394
Common stock issued upon exercise of stock options	Common stock issued upon exercise of stock options	827,296	(2)	236	—	—	234
Vested common stock awards		132,649	—	—	—	—	—
Stock-based compensation	Stock-based compensation	—	—	1,847	—	—	1,847
Net income	Net income	—	—	—	46,931	—	46,931

Three Months Ended September 30, 2022	Accumulated Other Comprehensive loss	Three Months Ended September 30, 2022	Common Stock Shares	Amount	Additional Paid-in Capital	Retained Earnings (Accumulated Deficit)
Balance at June 30, 2022		**Balance at June 30, 2022**	142,378,934	$ 14		
		Common stock issued upon exercise of stock options	325,001	—	103	-
		Stock-based compensation	—	—	1,376	-
		Net income	—	—	—	8,29

	Shares	Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive loss	Total Stockholders' Equity
Other comprehensive loss	—	—	—	—	(6,498)	(6,498)
Balance at June 30, 2022	142,378,934	$ 14	$364,853	$ (2,520)	$ (11,439)	$ 350,908

	Shares	Amount	Additional Paid-in Capital	Retained Earnings (Accumulated Deficit)
Other comprehensive loss	—	—	—	
Balance at September 30, 2022	142,703,935	$ 14	$ 366,332	$5,77

Six Months Ended June 30, 2022	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive loss	Total Stockholders' Equity
Balance at December 31, 2021	141,301,569	$ 16	$361,542	$ (56,797)	$(1,251)	$ 303,510
Common stock issued upon exercise of stock options	944,716	(2)	270	—	—	268
Vested common stock awards	132,649	—	—	—	—	—
Stock-based compensation	—	—	3,041	—	—	3,041
Net income	—	—	—	54,277	—	54,277
Other comprehensive loss	—	—	—	—	(10,188)	(10,188)
Balance at June 30, 2022	142,378,934	$ 14	$364,853	$ (2,520)	$ (11,439)	$ 350,908

Nine Months Ended September 30, 2022	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Retained Earnings (Accumulated Deficit)	Accumulated Other Comprehensive loss
Balance at December 31, 2021	141,301,569	$ 16			
Common stock issued upon exercise of stock options	1,269,717	(2)	374		
Vested common stock awards	132,649	—	—		
Stock-based compensation	—	—	4,416		
Net income	—	—	—	62,57	
Other comprehensive loss	—	—	—		
Balance at September 30, 2022	142,703,935	$ 14	$ 366,332	$5,77	

Three Months Ended June 30, 2023	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive loss	Total Stockholders' Equity
Balance at March 31, 2023	143,267,991	$ 14	$374,010	$31,541	$(14,423)	$ 391,142
Common stock issued upon exercise of stock options	208,807	—	31	—	—	31
Vested common stock awards	21,926	—	—	—	—	—
Stock-based compensation	—	—	3,018	—	—	3,018
Net loss	—	—	—	(6,464)	—	(6,464)
Other comprehensive income	—	—	—	—	4,776	4,776
Balance at June 30, 2023	143,498,724	$ 14	$377,059	$25,077	$ (9,647)	$ 392,503

Three Months Ended September 30, 2023	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive loss
Balance at June 30, 2023	143,498,724	$ 14			$(9,6
Common stock issued upon exercise of stock options	582,240	—	90	—	
Vested common stock awards	117,565	—	—	—	
Stock-based compensation	—	—	3,146	—	
Net income	—	—	—	30,931	

	Shares	Amount	Additional Paid-in Capital	Retained Earnings
Other comprehensive loss	—	—	—	—
Balance at September 30, 2023	144,198,529	$ 14	$380,295	$56,008

Six Months Ended June 30, 2023	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive loss	Total Stockholders' Equity
Balance at December 31, 2022	143,034,225	$ 14	$371,072	$21,772	$(15,953)	$ 376,905
Common stock issued upon exercise of stock options	371,903	—	54	—	—	54
Vested common stock awards	92,596	—	—	—	—	—
Stock-based compensation	—	—	5,933	—	—	5,933
Net income	—	—	—	3,305	—	3,305
Other comprehensive income	—	—	—	—	6,306	6,306
Balance at June 30, 2023	143,498,724	$ 14	$377,059	$25,077	$ (9,647)	$ 392,503

Nine Months Ended September 30, 2023	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive loss
Balance at December 31, 2022	143,034,225	$ 14			$(1
Common stock issued upon exercise of stock options	954,143	—	144	—	
Vested common stock awards	210,161	—	—	—	
Stock-based compensation	—	—	9,079	—	
Net income	—	—	—	34,236	
Other comprehensive income	—	—	—	—	
Balance at September 30, 2023	144,198,529	$ 14	$380,295	$56,008	

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

ORIGIN MATERIALS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022
Cash flows from operating activities		
Net income	$ 3,305	$ 54,277
Adjustments to reconcile net income to net cash from operating activities:		
Depreciation and amortization	635	308
Amortization on right-of-use asset	301	281

(in thousands)	Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022
Cash flows from operating activities		
Net income	$ 34,236	$ 62,576
Adjustments to reconcile net income to net cash from operating activities:		
Depreciation and amortization	1,055	488
Amortization on right-of-use asset	458	423

Stock-based compensation	Stock-based compensation	4,651	2,573	Stock-based compensation	7,031	3,719
Realized loss of marketable securities		706	—			
Amortization premium of marketable securities		285	—			
Realized gain of marketable securities				Realized gain of marketable securities	(1,706)	—
Amortization premium and discount of marketable securities, net				Amortization premium and discount of marketable securities, net	3,701	—
Change in fair value of derivatives	Change in fair value of derivatives	(494)	(596)	Change in fair value of derivatives	(620)	(1,725)
Change in fair value of common stock warrants liability	Change in fair value of common stock warrants liability	(4,623)	(17,029)	Change in fair value of common stock warrants liability	(27,438)	(15,610)
Change in fair value of earnout liability	Change in fair value of earnout liability	(20,380)	(48,414)	Change in fair value of earnout liability	(39,137)	(63,561)
Change in fair value of incremental acquisition fee accrual	Change in fair value of incremental acquisition fee accrual	—	(150)	Change in fair value of incremental acquisition fee accrual	—	(35)
Changes in operating assets and liabilities:	Changes in operating assets and liabilities:			Changes in operating assets and liabilities:		
Receivables	Receivables	(9,748)	(377)	Receivables	(8,130)	(926)
Inventory	Inventory	(346)	—	Inventory	(821)	—
Prepaid expenses and other current assets	Prepaid expenses and other current assets	72	1,038	Prepaid expenses and other current assets	(2,703)	(1,464)
Other long-term assets	Other long-term assets	(12,144)	—	Other long-term assets	(17,954)	(5,019)
Accounts payable	Accounts payable	2,111	2,157	Accounts payable	2,819	5,195
Accrued expenses	Accrued expenses	49	2,476	Accrued expenses	1,707	4,380
Operating lease liability	Operating lease liability	(354)	(193)	Operating lease liability	(529)	(338)
Deferred income				Deferred income	1,374	—
Other liabilities, current	Other liabilities, current	347	489	Other liabilities, current	2,846	2,214
Other liabilities, long-term	Other liabilities, long-term	(7)	128	Other liabilities, long-term	(2,636)	221
Net cash used in operating activities	**Net cash used in operating activities**	(35,634)	(3,032)	**Net cash used in operating activities**	(46,447)	(9,462)
Cash flows from investing activities	**Cash flows from investing activities**			**Cash flows from investing activities**		
Purchases of property, plant, and equipment, net of grants	Purchases of property, plant, and equipment, net of grants	(72,284)	(25,045)	Purchases of property, plant, and equipment, net of grants	(90,113)	(57,825)
Purchases of marketable securities	Purchases of marketable securities	(2,499,506)	(1,655,200)	Purchases of marketable securities	(3,092,218)	(2,584,027)
Sales of marketable securities	Sales of marketable securities	2,462,950	1,647,787	Sales of marketable securities	3,057,700	2,587,649

Maturities of marketable securities	Maturities of marketable securities	101,792	71,168	Maturities of marketable securities	129,081	124,319
Capitalized interest on plant construction	Capitalized interest on plant construction	—	(47)	Capitalized interest on plant construction	—	(133)
Net cash (used in) provided by investing activities		(7,048)	38,663			
Net cash provided by investing activities				**Net cash provided by investing activities**	4,450	69,983
Cash flows from financing activities	**Cash flows from financing activities**			**Cash flows from financing activities**		
Proceeds from exercise of stock options	Proceeds from exercise of stock options	55	268	Proceeds from exercise of stock options	145	371
Net cash provided by financing activities	**Net cash provided by financing activities**	55	268	**Net cash provided by financing activities**	145	371
Effects of foreign exchange rate changes on the balance of cash and cash equivalents, and restricted cash held in foreign currencies	Effects of foreign exchange rate changes on the balance of cash and cash equivalents, and restricted cash held in foreign currencies	292	(3,480)	Effects of foreign exchange rate changes on the balance of cash and cash equivalents, and restricted cash held in foreign currencies	(390)	(4,549)
Net (decrease) increase in cash and cash equivalents, and restricted cash	**Net (decrease) increase in cash and cash equivalents, and restricted cash**	(42,335)	32,419	**Net (decrease) increase in cash and cash equivalents, and restricted cash**	(42,242)	56,343
Cash and cash equivalents, and restricted cash, beginning of the period	**Cash and cash equivalents, and restricted cash, beginning of the period**	108,348	47,127	**Cash and cash equivalents, and restricted cash, beginning of the period**	108,348	47,127
Cash and cash equivalents, and restricted cash, end of the period	**Cash and cash equivalents, and restricted cash, end of the period**	$ 66,013	$ 79,546	**Cash and cash equivalents, and restricted cash, end of the period**	$ 66,106	$ 103,470
Supplemental disclosure for non-cash transactions	**Supplemental disclosure for non-cash transactions**			**Supplemental disclosure for non-cash transactions**		
Operating lease right-of-use asset obtained in exchange for lease obligations	Operating lease right-of-use asset obtained in exchange for lease obligations	$ —	$ 1,710	Operating lease right-of-use asset obtained in exchange for lease obligations	$ 2,302	$ 1,710
Stock-based compensation capitalized into property, plant, and equipment	Stock-based compensation capitalized into property, plant, and equipment	$ 1,282	$ 467	Stock-based compensation capitalized into property, plant, and equipment	$ 2,048	$ 697
Purchases of property, plant, and equipment included in accounts payable and accrued expenses and capitalized interest	Purchases of property, plant, and equipment included in accounts payable and accrued expenses and capitalized interest	$ 7,474	$ —	Purchases of property, plant, and equipment included in accounts payable and accrued expenses and capitalized interest	$ 6,182	$ —
Cash paid during the period:	**Cash paid during the period:**			**Cash paid during the period:**		
Income taxes payment	Income taxes payment	$ 20	$ —	Income taxes payment	$ 129	$ —

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The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

ORIGIN MATERIALS, INC.
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

1. Organization and Business

Unless the context otherwise requires, references in these notes to “Origin”, “the Company”, “we”, “us” and “our” and any related terms are intended to mean the post-Business Combination Origin Materials, Inc. and its consolidated subsidiaries.

The Company’s mission is to help enable the world’s transition to sustainable materials by replacing petroleum-based materials with decarbonized materials in a wide range of end products, such as food and beverage packaging, clothing, textiles, plastics, car parts, carpeting, tires, adhesives, soil amendments, fuels, and more. The Company’s technology can convert sustainable feedstocks, such as sustainably harvested wood, agricultural waste, wood waste and corrugated cardboard, into materials and products that are currently made from fossil feedstocks, such as petroleum and natural gas. The Company’s products are intended to compete directly with petroleum-derived products on both performance and price, as well as provide a significant unit cost advantage over products made from other low-carbon feedstocks.

On June 27, 2023, the Company began startup of its “Origin 1” facility, the world’s first commercial chloromethylfurfural (“CMF”) plant, located in Sarnia, Ontario. The Company is also currently in the planning phase for the construction of “Origin 2,” its significantly larger manufacturing plant. plant located in Geismar, Louisiana.

On June 25, 2021 (the “Closing Date”), Artius Acquisition Inc. (“Artius”), a special purpose acquisition company, consummated the Merger Agreement and other Related Agreements (the “Merger Agreement”) dated February 16, 2021, by and among Artius, Zero Carbon Merger Sub Inc., a Delaware corporation and a wholly owned subsidiary of Artius (“Merger Sub”), and Micromidas, Inc. a Delaware corporation (now known as Origin Materials Operating Inc., (“Legacy Origin”)).

Pursuant to the terms of the Merger Agreement, a business combination between Artius and Legacy Origin was effected through the merger of Merger Sub with and into Legacy Origin, with Legacy Origin surviving as the surviving company and as a wholly-owned subsidiary of Artius (the “Merger” and, collectively with the other transactions described in the Merger Agreement, the “Business Combination”). On the Closing Date, Artius changed its name to Origin Materials, Inc. (collectively with its subsidiaries, the “Company”).

2. Risks and Liquidity

The Company believes that its $217.7 $189.5 million of cash and cash equivalents, and marketable securities as of June 30, 2023 September 30, 2023 will enable it to fund its planned operations for at least twelve months from the issuance date of these unaudited condensed consolidated financial statements.

Over The Company’s future results of operations and liquidity could be materially adversely affected by macroeconomic and geopolitical factors in the last several years, our operations have been impacted by United States and globally, including the COVID-19 pandemic, supply chain environment, inflationary pressures pressure, higher interest rates, instability in the global financial markets, significant disruptions in the global markets as a result of the conflict between Russia and ongoing geopolitical conflicts. We continue to monitor Ukraine and or the recent state of war between Israel and Hamas and the related risk of a larger regional conflict, labor shortages, the introduction of or changes in tariffs, trade barriers, or regulatory requirements, and uncertain or reduced demand, as well as the impact of any lingering effects of initiatives or programs that the COVID-19 pandemic on our business, operations Company may undertake to address financial and access to supply and raw materials. In February 2022, Russia began a military intervention in Ukraine. In response, global sanctions were imposed against Russia. These sanctions and the related global ramifications could increase the cost of transportation or limit the availability of certain materials of construction, such as metals used in alloys, that are sourced from Russia or Ukraine and used in our manufacturing facilities.

Inflation rates continue to have an effect on worldwide economies. Inflationary pressures and any shortages in the labor market could increase labor costs, which could in turn materially impact our financial condition. operational challenges faced by its customers.

3. Summary of Significant Accounting Policies

Basis of Presentation

The Company’s unaudited condensed consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP”) as determined by the Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) and pursuant to the regulations of the U.S. Securities and Exchange Commission (“SEC”).

Use of Estimates

The preparation of the condensed consolidated financial statements in accordance with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of commitments and contingencies at the date of the financial statements as well as reported amounts of revenues, costs and expenses during the reporting periods. Estimates made by the Company include, but are not limited to, valuation of the earnout liability, valuation of assumed common stock warrants liability, carrying amount and useful lives of property and equipment and intangible assets, impairment assessments, marketable securities, stock-based compensation expenses, probabilities of achievement of performance conditions on performance stock awards, among others. The Company bases these estimates on historical experience and on various other assumptions that it believes are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying amounts of assets and liabilities that are not readily apparent from other sources. Actual results could differ materially from those estimates.

Unaudited Interim Condensed Consolidated Financial Statements

The accompanying interim Condensed Consolidated Balance Sheets as of June 30, 2023 September 30, 2023 and December 31, 2022, the interim Condensed Consolidated Statements of Operations and Comprehensive Income (Loss), and the interim Condensed Consolidated Statements of Stockholders' Equity and Accumulated Other Comprehensive Loss for the three and six nine months ended June 30, 2023 September 30, 2023 and 2022, and the interim Condensed Consolidated Statements of Cash Flows for the six nine months ended June 30, 2023 September 30, 2023 and 2022, and the notes to such interim condensed consolidated financial statements are unaudited.

These unaudited interim condensed consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP") U.S. GAAP and the applicable rules and regulations of the U.S. Securities and Exchange Commission ("SEC") SEC for interim financial information. As permitted under those rules, we condensed or omitted certain footnotes or other financial information that are normally required by GAAP for annual financial statements.

The unaudited interim condensed consolidated financial statements have been prepared on the same basis as the audited annual consolidated financial statements and, in management's opinion, include all adjustments consisting of only normal recurring adjustments necessary for the fair statement of the Company's financial position as of June 30, 2023 September 30, 2023 and its results of operations for the three and six nine months ended June 30, 2023 September 30, 2023 and 2022 and cash flows for the six nine months ended June 30, 2023 September 30, 2023 and 2022. The results of operations for the three and six nine months ended June 30, 2023 September 30, 2023 are not necessarily indicative of the results to be expected for the full fiscal year or any other period.

These unaudited interim condensed consolidated financial statements should be read in conjunction with the Company's audited annual financial statements and notes thereto for the year ended December 31, 2022 included the Company's Form 10-K as filed with the SEC on February 23, 2023.

Principles of Consolidation

The unaudited interim condensed consolidated financial statements have been prepared in accordance with U.S. GAAP and applicable rules and regulations of the SEC and include the accounts of the Company and its wholly-owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk are primarily cash, cash equivalents, and marketable securities. The Company maintains its cash, cash equivalents, and marketable securities accounts with financial institutions where, at times, deposits exceed federal insurance limits. Management believes that the Company is not currently exposed to significant credit risk as the Company's deposits are held at financial institutions that management believes to be of high credit quality. While the Company has not experienced losses of these deposits to date, future disruptions of financial institutions where we bank or have credit arrangements, or disruptions of the financial services industry in general, could adversely affect our ability to access our cash and cash equivalents. If we are unable to access our cash and cash equivalents as needed, our financial position and ability to operate our business could be adversely affected.

Cash and Cash Equivalents and Restricted Cash

The Company considers all highly liquid investments with an initial maturity of three months or less at the date of purchase to be cash equivalents. The Company maintains such funds in cash deposits and money market accounts.

Restricted cash consists of cash held in a control account as collateral for the Company's credit card services, escrow services, and standby letter of credit. These restricted cash balances have been excluded from cash and cash equivalents balance in the Unaudited Condensed Consolidated Balance Sheets based on the contractual term.

The Company entered into an escrow agreement on September 27, 2019 for $1.3 million, whereby the funds would be used for construction and transportation services in connection with Origin 1. At June 30, 2023 September 30, 2023 and December 31, 2022, the escrow account had a balance of $0.3 million. $0.0 million and $0.3 million, respectively. On June 25, 2023, the Company began startup of the Origin 1 facility. Therefore, those funds are no longer restricted and have been released.

The Company has had a standby letter of credit, whereby the funds may be were used for the completion of work, services, and improvements in connection with Origin 1. The standby letter of credit matures matured and automatically renews renewed in October of each year. At June 30, 2023 September 30, 2023 and December 31, 2022, the standby letter of credit was $0.2 million. $0.0 million and $0.2 million, respectively. On June 25, 2023, the Company began startup of the Origin 1 facility. Therefore, those funds are no longer restricted and have been released.

Cash, cash equivalents, and restricted cash consisted of the following (in thousands):

	June 30, 2023	December 31, 2022	September 30, 2023	December 31, 2022

Cash and cash equivalents	Cash and cash equivalents	$	65,523	$	107,858	Cash and cash equivalents	$	66,106	$	107,858
Restricted cash	Restricted cash		490		490	Restricted cash		—		490
Total cash, cash equivalents, and restricted cash	Total cash, cash equivalents, and restricted cash	$	66,013	$	108,348	Total cash, cash equivalents, and restricted cash	$	66,106	$	108,348

Marketable Securities

The Company's investment policy requires the Company to purchase investments that are consistent with the classification of available-for-sale securities. The Company does not buy and hold securities principally for the purpose of selling them in the near future. The Company's policy is focused on the preservation of capital, liquidity, and return. The Company considers all of its marketable debt securities as available for use in current operations, including those with maturity dates beyond one year, and therefore classifies these securities within current assets on the condensed consolidated balance sheets. Securities are classified as available for sale and are carried at fair value, with the change in unrealized gains and losses, net of tax, reported as a separate component on the condensed consolidated statements of operations and comprehensive income (loss) until realized. Fair value is determined based on quoted market rates when observable or utilizing data points that are observable, such as quoted prices, interest rates and yield curves. Securities with an amortized cost basis in excess of estimated fair value are assessed to determine what amount of the excess, if any, is caused by expected credit losses. Expected credit losses on securities are recognized in other income, (expenses), net on the condensed consolidated statements of operations and comprehensive income (loss), and any remaining unrealized gains and losses, net of taxes, are included in accumulated other comprehensive loss in the condensed consolidated statements of stockholders' equity and accumulated other comprehensive loss. For the purposes of computing realized and unrealized gains and losses, the cost of securities sold is based on the specific-identification method. Amortization of discounts and premiums, net, and interest on securities classified as available for sale are included as a component of interest income (expenses) within other income (expenses).

The nature of these financial instruments include includes instruments for which quoted prices are available but traded less frequently, instruments whose fair value has been derived using a model where inputs to the model are directly observable in the market, or can be derived principally from or corroborated by observable market data, and instruments that are fair valued using other financial instruments, the parameters of which can be directly observed. Level 2 financial instruments include agency mortgage-backed securities, corporate fixed income securities infrequently traded, and other securities, which primarily consist of sovereign debt, U.S. government agency securities, loans, and state and municipal securities.

Derivative Financial Instruments

The Company enters into foreign currency derivative contracts with financial institutions to reduce foreign exchange risk related to marketable securities. The Company uses forward currency derivative contracts to minimize the Company's exposure to balances primarily denominated in the British Pound Sterling and Australian Dollar. The Company's foreign currency derivative contracts, which are not designated as hedging instruments, are used to reduce the exchange rate risk associated primarily with marketable securities. The Company's derivative financial instruments program is not designated for trading or speculative purposes. Outstanding foreign currency derivative contracts are recorded at fair value on the condensed consolidated balance sheets.

Foreign currency derivative contracts are marked-to-market at the end of each reporting period with gains and losses recognized in the change in fair value of derivatives within other income (expenses). While the contract or notional amount is often used to express the volume of foreign currency derivative contracts, the amounts potentially subject to credit risk are generally limited to the amounts, if any, by which the counterparties' obligations under the agreements exceed the obligations of the Company to the counterparties. The notional amount of foreign currency derivative contracts as of June 30, 2023 September 30, 2023 and December 31, 2022 was $16.6 13.0 million and $21.2 million, respectively.

Fair Value of Financial Instruments

The Company applies the fair value measurement accounting standard whenever other accounting pronouncements require or permit fair value measurements. Fair value is defined in the accounting standard as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value hierarchy under current accounting guidance prioritizes the inputs to valuation techniques used to measure fair value into three broad levels (Level 1, Level 2, and Level 3).

Level 1 inputs are unadjusted quoted prices in active markets for identical assets or liabilities that the Company has the ability to access at the measurement date. Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 3 inputs are unobservable inputs for the asset or liability and reflect the Company's own assumptions about the assumptions that market participants would use in pricing the asset or liability (including assumptions about risk) in a principal market.

The carrying amounts of working capital balances approximate their fair values due to the short maturity of these items. Unless otherwise noted, it is management's opinion that the Company is not exposed to significant interest rate, currency, or credit risks arising from its financial instruments. We have determined the fair value of debt approximates the carrying value due to the standard terms of the arrangement including but not limited to the amount borrowed, the term, and the interest rate.

The fair values of cash equivalents and the Assumed Common Stock Warrants which are publicly traded are Level 1 inputs. The fair value of the Assumed Common Stock Warrants which are not publicly traded, marketable securities, and foreign currency derivative contracts are Level 2 inputs as the Company uses quoted market prices or alternative pricing sources and models utilizing observable market inputs. The earnout liability was estimated using Level 3 inputs.

Accounts Receivable

We record accounts receivable at the stated amount of the transactions with our customers, and we do not charge interest. The allowance for credit losses, known as the Current Expected Credit Losses ("CECL") model, is our best estimate of the amount of probable credit losses associated with our accounts receivable. We determine the allowance based on current conditions, and reasonable and supportable forecasts. Past-due balances are reviewed individually for collectability. We charge off account balances against the allowance after we have exhausted all means of collection and we consider the potential for recovery to be remote. Our accounts receivable generally have net 30 to net 90-day payment terms, and we usually receive consideration in accordance with the payment terms of the contract. As of June September 30, 2023, we do not have any allowance for credit losses.

Other Receivables

Other receivables consist of amounts due from foreign governmental entities related to the Canadian harmonized sales tax ("HST") and goods and services tax ("GST") for goods and services transacted in Canada, and amounts due from cash collateral held by others for foreign currency derivative contracts.

AgriScience Grant

In January 2019, the Company entered into an agreement in which it will participate in the AgriScience Program Cluster Component grant through the Canadian Agricultural Partnership, whereby the Company will receive reimbursements for eligible expenditures up to approximately $1.8 million (in Canadian dollars) incurred through March 2023. Grants are received through reimbursements from the Canadian government and recognized, upon completion of scope of services on a quarterly basis. Grants are recognized as a reduction of property, plant, and equipment or expenses based on the nature of the cost the grant is reimbursing. The Company received zero and $0.1 million during the three and six nine months ended June 30, 2023 September 30, 2023, respectively, and zero $0.4 million during the three and six nine months ended June 30, 2022 September 30, 2022 in grants, recorded in other income, (expenses). net. The Company is not entitled to any further grants under this AgriScience Program.

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Inventory

Inventories are stated at the lower of cost or net realizable value. Cost is determined using a weighted-average cost approach, assuming full absorption of direct and indirect manufacturing costs, or based on cost of purchasing from our vendors. If inventory costs exceed expected net realizable value due to obsolescence or lack of demand, valuation adjustments are recorded for the difference between the cost and the expected net realizable value.

Property, Plant, and Equipment

Property, plant, and equipment are recorded at cost and depreciated or amortized using the straight-line method over the estimated useful lives of the respective assets. Depreciation normally begin begins when assets are ready for its intended use. Leasehold improvements are amortized using the straight-line method over the shorter of their estimated useful lives or the lease term. Major additions and improvements are capitalized, while replacements, repairs, and maintenance that do not extend the life of an asset are charged to operations. We depreciate plants over a maximum life of 40 years and plant improvements over the shorter of the asset life or remaining useful life of the plants structure using the straight-line method. Upon retirement or sale, the cost of assets disposed of and the related accumulated depreciation or amortization are removed from the accounts. Costs incurred to acquire, construct or install property, plant, and equipment during the construction stage of a capital project and costs capitalized in conjunction with major improvements that have not yet been placed in service are recorded as construction in progress, and accordingly are not currently being depreciated. The Company capitalizes interest cost incurred on funds used to construct property, plant and equipment. The estimated useful lives of assets are as follows:

Computer and other equipment	3 years
Pilot plant	5 years
Machinery and equipment	5 years
Leasehold improvements	1-5 years
Plants and improvements	20-40 years

Intangible Assets

Intangible assets are recorded at cost and are amortized using the straight-line method over the estimated useful lives of the respective assets, ranging from 7 to 15 years. The cost of servicing the Company's patents is expensed as incurred. Upon retirement or sale, the cost of intangible assets is disposed of and the related accumulated amortization is removed from the accounts. The Company reviews its long-lived assets, including property, equipment, software and intangibles, for impairment whenever events or changes in circumstances indicate that the carrying amounts of the assets may not be fully recoverable. If indicators of impairment exist, management identifies the asset group which includes the potentially impaired long-lived asset, at the lowest level at which there are separate, identifiable cash flows. If the total of the expected undiscounted future net cash flows for the asset group is less than the carrying amount of the asset, a loss is recognized for the difference between the fair value and carrying amount of the asset. As of June 30, 2023 September 30, 2023, no impairment was identified.

Assumed Common Stock Warrants Liability

The Company assumed 24,149,960 public warrants (the "Public Warrants") and 11,326,667 private placement warrants (the "Private Placement Warrants", and the Public Warrants together with the Private Placement Warrants, the "Assumed Common Stock Warrants" or "Warrants") upon the Business Combination, all of which were issued in connection with Artius' initial public offering and entitle each holder to purchase one share of Class A common stock at an exercise price of at $11.50 per share. As of June 30, 2023 September 30, 2023, 24,149,960 Public Warrants and 11,326,667 Private Placement Warrants are outstanding. The Public Warrants are publicly traded and are exercisable for cash unless certain conditions occur, such as the failure to have an effective registration statement related to the shares issuable upon exercise or redemption by the Company under certain conditions, at which time the warrants may be cashless exercised. The Private Placement Warrants are transferable, assignable or salable in certain limited exceptions. The Private Placement Warrants are exercisable for cash or on a cashless basis, at the holder's option, and are non-redeemable so long as they are held by the initial purchasers or their permitted transferees. If the Private Placement Warrants are held by someone other than the initial purchasers or their permitted transferees, the Private Placement Warrants will cease to be Private Placement Warrants, and become Public Warrants and be redeemable by the Company and exercisable by such holders on the same basis as the other Public Warrants.

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The Company evaluated the Assumed Common Stock Warrants under ASC 815-40, *Derivatives and Hedging-Contracts in Entity's Own Equity ("ASC 815-40")*, and concluded they do not meet the criteria to be classified in stockholders' equity. Specifically, the exercise of the Assumed Common Stock Warrants may be settled in cash upon the occurrence of a tender offer or exchange that involves 50% or more of our Class A stockholders. Because not all of the voting stockholders need to participate in such tender offer or exchange to trigger the potential cash settlement and the Company does not control the occurrence of such an event, the Company concluded that the Assumed Common Stock Warrants do not meet the conditions to be classified in equity. Since the Assumed Common Stock Warrants meet the definition of a derivative under ASC 815, the Company recorded these warrants as liabilities on the Condensed Consolidated Balance Sheets at fair value, with subsequent changes in their respective fair values recognized in the change in fair value of Assumed Common Stock Warrant liabilities within the Condensed Consolidated Statements of Operations and Comprehensive Income (Loss) at each reporting date. The Public Warrants were publicly traded and thus had an observable market price to estimate fair value, and the Private Placement Warrants were effectively valued similar to the Public Warrants, as described in Note 6.

Earnout Liability

The Company has recorded an earnout liability related to future contingent equity shares related to the Business Combination (Note 13). The Company recorded these instruments as liabilities on the Condensed Consolidated Balance Sheets at fair value, with subsequent changes in their respective fair values recognized in earnings at each reporting date.

Leases

The Company has leases for office space and equipment, some of which have escalating rentals during the initial lease term and during subsequent optional renewal periods. The Company accounts for its leases under ASC 842, *Leases*. The Company recognizes a right-of-use asset and lease liability for leases based on the net present value of future minimum lease payments. Lease expense is recognized on a straight-line basis over the non-cancelable lease term and renewal periods that are considered reasonably certain to be exercised.

Revenue Recognition

The Company began to recognize revenue in 2023. Our revenues are from product sales and service agreements. The majority of our contracts with customers typically contain multiple products and services. We account for individual products and services separately if they are distinct-that distinct—that is, if a product or service is separately identifiable from other items in the contract and if a customer can benefit from it on its own or with other resources that are readily available to the customer.

The Company recognizes revenue in accordance with ASC 606, *Revenue from Contracts with Customers ("ASC 606")*. The core principle of ASC 606 requires that an entity recognize revenue to depict the transfer of promised goods or service to customers in an amount that reflects the consideration to which the Company expects to be entitled in exchange for those goods or services. In determining the appropriate amount of revenue to be recognized as we fulfill our obligations under our product revenue and collaborative research and development agreements, we perform the following steps:

1. Identifying the contract with a customer;
2. Identifying the performance obligations in the contract;
3. Determining the transaction price;
4. Allocating the transaction price to the performance obligations; and
5. Recognizing revenue when, or as, the performance obligations are satisfied.

We account for a contract with a customer when there is approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of consideration is probable. Non-cancellable purchase orders received from customers to deliver a specific quantity of product, when combined with our order confirmation, in exchange for future consideration, create enforceable rights and obligations on both parties and constitute a contract with a customer.

Our service agreements are specified in each respective customer agreement. We identify each performance obligation at contact inception and allocate the consideration to each distinct performance obligation based on the stand-alone selling

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prices of each performance obligation. We recognize revenue from the service agreements over time depicting the pattern of service delivery and recognizes the costs associated with these contracts as incurred.

We In general, we recognize revenue when, or as, our performance obligations under the terms of a contract with our customer are satisfied. This For product sales, this happens when we transfer control of our products and risk of loss to the customer or when title passes upon shipment. Revenue is measured as the amount of consideration we expect to receive in exchange for transferring our products. Taxes collected from customers and remitted to governmental authorities are excluded from revenues. The Company recognizes its revenue from direct product sales which is recognized at a point in time when the performance obligation is satisfied upon delivery of the product.

For service agreements, sometimes the timing of revenue recognition may differ between the timing of satisfying performance obligations and payment by customers. The Company records a receivable prior to payment if there is an unconditional right to payment. Alternatively, when payment precedes the provision of the related services, the Company records contract liability (deferred income) until the performance obligations are satisfied.

Revenue is recorded in an amount that reflects that consideration we expect to be entitled to in exchange for those goods or services. We have elected to treat shipping and handling activities as fulfillment costs.

Cost of revenue

Cost of revenue for product sales consists primarily of cost associated with the purchase of finished goods. Also, Cost of revenue for service agreements is based on the Company elected to expense actual cost incurred which mainly consists of the direct cost from vendors and overhead costs such as payroll and benefit related to our employees who provide the service agreements as incurred under ASC Topic 606 as the period of benefit is less than one year. services to customers.

Research and Development Cost

Costs related to research and development are expensed as incurred.

Stock-Based Compensation

The Company has issued common stock awards under three equity incentive plans. Origin measures stock options and other stock-based awards granted to employees, directors and other service providers based on their fair value on the date of grant and recognizes compensation expenses of those awards over the requisite service period, which is generally the vesting period of the respective award. In addition, the Company capitalized stock-based compensation related to employees whose costs are necessary incurred to bring the asset to its intended use. For awards with performance conditions, compensation is recorded once there is sufficient objective evidence the performance conditions are considered probable of being met. Origin applies the straight-line method of expense recognition to all awards with only service-based vesting conditions. Origin estimates the fair value of each stock option grant on the date of grant using the Black-Scholes option-pricing model and the grant date closing stock price for RSU awards and performance awards. The Black-Scholes option-pricing model requires the use of highly subjective assumptions including:

- *Expected term* – The expected term of the options is based on the simplified method, which takes into consideration the grant's contractual life and vesting period and assumes that all options will be exercised

  between the vesting date and the contractual term of the option which averages an award's vesting term and its contractual term.
- *Expected volatility* – The Company uses the trading history of various companies in its industry sector in determining an estimated volatility factor.
- *Expected dividend* – The Company has not declared common stock dividends and does not anticipate declaring any common stock dividends in the foreseeable future.
- *Forfeiture* – The Company estimates forfeitures based on historical activity and considers voluntary and involuntary termination behavior as well as analysis of actual historical option forfeitures, netting the estimated expense by the derived forfeiture rate.
- *Risk-free interest rate* – The Company bases the risk-free interest rate on the implied yield currently available on U.S. Treasury zero-coupon issues with the same or substantially equivalent remaining term.

Income Taxes

Deferred income taxes are determined using the asset and liability method. Under this method, deferred income tax assets and liabilities are determined based on differences between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. A valuation allowance is recorded when the expected recognition of a deferred income tax asset is considered to be unlikely.

The Company recognizes the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the tax authorities, based on the technical merits of the position. The tax benefit is measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement. The Company recognizes interest and penalties related to income tax matters as a component of income tax expenses.

Functional Currency Translation

The functional currency of the Company's wholly-owned Canadian subsidiaries is the Canadian dollar, whereby their assets and liabilities are translated at period-end exchange rates except for non-monetary capital transactions and balances, which are translated at historical rates. All income and expense amounts of the Company are translated at average exchange rates for the respective period. Translation gains and losses are not included in determining net income (loss) but are accumulated in a separate component of stockholders' equity. Foreign currency transaction gains and losses are included in the determination of net income (loss) in the period in which they occur. These amounts are included in other income, (expenses), net, of the unaudited Condensed Consolidated Statements of Operations and Comprehensive Income (Loss).

Comprehensive Income (Loss)

The Company's comprehensive income or loss consists of net income or loss and other comprehensive income or loss. Foreign currency translation gains or losses and unrealized gains or losses on available-for-sale marketable debt securities are included in the Company's other comprehensive income (loss).

Basic and Diluted Net Income (Loss) income Per Share

Basic net income (loss) per common share is calculated by dividing the net income (loss) attributable to common stockholders by the weighted-average number of common shares outstanding during the period, without consideration of potentially dilutive securities. Diluted net income (loss) per share is computed by dividing the net income (loss) attributable to common stockholders by the weighted-average number of common stock and potentially dilutive securities outstanding for the period. For the purposes of the diluted net income (loss) per share calculation, the convertible preferred stock, common stock options, RSU awards, performance stock awards, convertible preferred stock warrants, common stock warrants, convertible notes, earnout shares, and Sponsor Vesting Shares (as defined below) are considered to be potentially dilutive securities. Basic and diluted net income (loss) per share attributable to common stockholders is presented in conformity with the two-class method required for participating securities. The two-class method determines net income (loss) per share for each class of common and participating securities according to dividends declared or accumulated and participation rights in undistributed earnings. All series of the Company's convertible preferred stock are considered to be participating securities because, in addition to cumulative dividends, all holders are entitled to receive a non-cumulative dividend on a *pari passu* basis in the event that a dividend is paid on the common stock. The two-class method requires income or loss available to common stockholders for the period to be allocated between common and participating securities based upon their respective rights to share in undistributed earnings as if all income or loss for the period had been distributed. The holders of the convertible preferred stock do not have a contractual obligation to share in the Company's losses. Accordingly, the Company's net income (loss) is attributed entirely to common stockholders.

Reclassifications

Certain amounts on the balance sheet in prior periods have been condensed to conform with the current presentation for the six nine months ended June 30, 2023 September 30, 2023.

Segment Reporting

The Company operates in a single segment. Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision maker ("CODM") in making decisions regarding resource allocation and assessing performance. The Company has determined that its Co-Chief

Executive Officers are the CODM. To date, the Company's CODM has made such decisions and assessed performance at the Company level.

As of June 30, 2023 September 30, 2023 and December 31, 2022, the Company had $179.9 million $189.4 million and $157.2 million, respectively, of assets located outside of the United States.

4. Revenue

The Company began to recognize revenue in 2023. We recognize revenue when, or as, our performance obligations under the terms of a contract with our customer are satisfied. We generally procure, will produce, and sell product to be utilized in the manufacturing of finished products, for which we recognize revenue upon shipment. Our service contracts generally pay us at the commencement of the agreement and then at additional intervals as outlined in each contract. We recognize contract liabilities for such payments and then recognize revenue as we satisfy the related performance obligations. To the extent collectible revenue recognized under this method exceeds the consideration received, we recognize contract assets for such unbilled consideration.

The Company received payment precedes the provision of the related services. Therefore, the Company records deferred income of $1.4 million and zero as of September 30, 2023 and December 31, 2022, respectively, and then recognize revenue when the performance obligations are satisfied.

The Company recognized $6.9 million $7.1 million and $8.6 million $15.7 million revenue during the three and six nine months ended June 30, 2023 September 30, 2023 with no revenues recognized in the prior periods in 2022.

5. Recent Accounting Pronouncements

Recently Adopted Accounting Pronouncements

In October 2021, the FASB issued ASU 2021-08, *Business Combinations ("Topic 805"), Accounting for Contract Assets and Contract Liabilities from Contracts with Customers*. This update improves the accounting for acquired revenue contracts with customers in a business combination by addressing diversity in practice and inconsistency related to (1) recognition of an acquired contract liability; and (2) payment terms and their effect on subsequent revenue recognized by the acquirer. Specifically, the update requires that an entity (acquirer) recognize and measure contract assets and contract liabilities acquired in a business combination in accordance with ASC Topic 606, *Revenue from Contracts with Customers*. The amendments in this update are effective for the Company in the fiscal year beginning after December 15, 2022, including interim periods within those fiscal years. The Company adopted the new standard as of January 1, 2023. The adoption of the standard had no material impact on the Company's financial results.

In March 2022, the FASB issued ASU 2022-01, *Derivatives and Hedging ("Topic 815") ("ASU 2022-01")*. This update clarifies the guidance in Topic 815 on fair value hedge accounting of interest rate risk for portfolios and financial assets. Among other things, the amended guidance established the "last-of-layer" method for making the fair value hedge accounting for these portfolios more accessible and renamed that method the "portfolio layer" method. ASU 2022-01 is effective January 1, 2023. The Company adopted the new standard as of January 1, 2023. The adoption of the standard had no material impact on the Company's financial results.

In September 2022, the FASB issued ASU 2022-04, *Liabilities – Supplier Finance Programs (Subtopic 405-50)*. These amendments in this update improves financial reporting by requiring new disclosures about programs thereby allowing financial statement users to better consider the effect of the programs on the Company's working capital, liquidity and cash flows over time. The amendments in this update are effective for the Company in the fiscal year beginning after December 15, 2022, including interim periods within that fiscal year. The Company adopted the new standard as of January 1, 2023. The adoption of the standard had no material impact on the Company's financial results.

Recently Issued Accounting Pronouncements Not Yet Adopted

In June 2022, the FASB issued ASU 2022-03, *Fair Value Measurement (Topic 820): Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions*, which clarifies that a contractual restriction on the sale of an equity security is not considered part of the unit of account of the equity security and, therefore, is not considered in measuring fair value. The amendments also clarify that an entity cannot, as a separate unit of account, recognize and measure a contractual sale restriction. This guidance also requires certain disclosures for equity securities subject to contractual sale restrictions. The new guidance is required to be applied prospectively with any adjustments from the adoption of the amendments recognized in earnings and disclosed on the date of adoption. This guidance is effective for the Company for fiscal years beginning after December 15, 2023, and interim periods within those fiscal years. Early adoption is permitted. The Company does not expect that the adoption of this guidance will have a material impact on its consolidated financial statements.

The Company has determined that all other recently issued accounting pronouncements will not have a material impact on the Company's consolidated financial statements or do not apply to its operations.

6. Fair Value Measurement

The Company's financial assets and liabilities subject to fair value measurements on a recurring basis and the level of inputs used for such measurements were as follows:

	Fair Value as of June 30, 2023					Fair Value as of September 30, 2023				
(in thousands)	(in thousands)	Level 1	Level 2	Level 3	Total	(in thousands)	Level 1	Level 2	Level 3	Total
Assets:	**Assets:**					**Assets:**				
Cash, cash equivalents and restricted cash	Cash, cash equivalents and restricted cash	$ 66,013	$ —	$ —	$ 66,013	Cash, cash equivalents and restricted cash	$ 66,106	$ —	$ —	$ 66,106
Marketable securities	Marketable securities	—	152,170	—	152,170	Marketable securities	—	123,430	—	123,430
Derivative asset	Derivative asset	—	160	—	160	Derivative asset	—	277	—	277
Total fair value	Total fair value	$ 66,013	$ 152,330	$ —	$ 218,343	Total fair value	$ 66,106	$ 123,707	$ —	$ 189,813
Liabilities:	**Liabilities:**					**Liabilities:**				

Assumed common stock warrants (Public)	Assumed common stock warrants (Public)	$ 17,869	$ —	$ —	$ 17,869	Assumed common stock warrants (Public)	$ 2,338	$ —	$ —	$ 2,338
Assumed common stock warrants (Private Placement)	Assumed common stock warrants (Private Placement)	—	8,380	—	8,380	Assumed common stock warrants (Private Placement)	—	1,096	—	1,096
Earnout liability	Earnout liability	—	—	22,386	22,386	Earnout liability	—	—	3,629	3,629
Derivative liability		—	9	—	9					
Total fair value	Total fair value	$ 17,869	$ 8,389	$ 22,386	$ 48,644	Total fair value	$ 2,338	$ 1,096	$ 3,629	$ 7,063

	Fair Value as of December 31, 2022			
(in thousands)	Level 1	Level 2	Level 3	Total
Assets:				
Cash, cash equivalents and restricted cash	$ 108,348	$ —	$ —	$ 108,348
Marketable securities	—	215,464	—	215,464
Total fair value	$ 108,348	$ 215,464	$ —	$ 323,812
Liabilities:				
Assumed common stock warrants (Public)	$ 21,015	$ —	$ —	$ 21,015
Assumed common stock warrants (Private Placement)	—	9,856	—	9,856
Earnout liability	—	—	42,533	42,533
Derivative liability	—	344	—	344
Total fair value	$ 21,015	$ 10,200	$ 42,533	$ 73,748

The Company performs routine procedures such as comparing prices obtained from independent sources to ensure that appropriate fair values are recorded. The marketable securities are categorized as Level 2 instruments as the estimated fair value was determined based on the estimated or actual bids and offers of the marketable securities in an over-the-counter market on the last business day of the period. All of the Company's cash, cash equivalents, restricted cash, marketable securities and foreign currency derivative contracts are classified within Level 1 or Level 2 because the Company's cash, cash equivalents, restricted cash, marketable securities and foreign currency derivative contracts are valued using quoted market prices or alternative pricing sources and models utilizing observable market inputs. Because the transfer of Private Placement Warrants to anyone outside of certain permitted transferees of Artius Acquisition Partners LLC (the "Sponsor") would result in the Private Placement Warrants having substantially the same terms as the Public Warrants, the Company determined that the fair value of each Private Placement Warrant is consistent with that of a Public Warrant. Accordingly, the Private Placement Warrants are classified as Level 2 financial instruments.

The value of the Earnout liability (Note 13) is classified as Level 3 measurements under the fair value hierarchy, as these liabilities have been valued based on significant inputs not observable in the market. A gain of $7.5 $18.8 million and $20.4 $39.1 million during the three and six nine months ended June 30, 2023 September 30, 2023, respectively, and a gain of $33.2 $15.1 million and $48.4 $63.6 million during the three and six nine months ended June 30, 2022 September 30, 2022, respectively, was recorded on the unaudited Condensed Consolidated Statement of Operations and Comprehensive Income (Loss) in the change in fair value of earnout liability.

As of June 30, 2023 September 30, 2023 and December 31, 2022, the carrying values of cash and cash equivalents, accounts receivable, accounts payable, and accrued liabilities and deferred income approximate their respective fair values due to their short-term nature.

Marketable Securities

The Company's marketable securities that are measured at fair value on a recurring basis and are categorized using the fair value hierarchy. Amortized cost net of unrealized gain (loss) is equal to fair value. The following table summarized the marketable securities by major security type as follows:

	As of June 30, 2023					As of September 30, 2023				
(in thousands)	(in thousands)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value	(in thousands)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value

Corporate bonds	Corporate bonds	$ 74,647	$ 54	$ (2,989)	$ 71,712	Corporate bonds	$ 49,865	$ 78	$ (1,876)	$ 48,067
Asset-backed securities	Asset-backed securities	65,077	12	(3,169)	61,920	Asset-backed securities	59,709	37	(2,919)	56,827
U.S. government and agency securities	U.S. government and agency securities	18,884	—	(677)	18,207	U.S. government and agency securities	18,705	—	(492)	18,213
Foreign government and agency securities	Foreign government and agency securities	375	—	(44)	331	Foreign government and agency securities	373	—	(50)	323
Total marketable securities	Total marketable securities	$ 158,983	$ 66	$ (6,879)	$ 152,170	Total marketable securities	$ 128,652	$ 115	$ (5,337)	$ 123,430

	As of December 31, 2022			
(in thousands)	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Commercial paper	$ 17,568	$ 38	$ —	$ 17,606
Corporate bonds	115,134	—	(4,923)	110,211
Asset-backed securities	70,825	8	(3,885)	66,948
U.S. government and agency securities	19,308	—	(917)	18,391
Foreign government and agency securities	375	—	(37)	338
Municipal/provincial bonds and other	2,000	—	(30)	1,970
Total marketable securities	$ 225,210	$ 46	$ (9,792)	$ 215,464

The realized gains and losses are included in other income, (expenses) net on the unaudited Condensed Consolidated Statements of Operations and Comprehensive Income (Loss).

We sold marketable securities for proceeds of $2,462.9 $3,057.7 million and $1,647.8 $2,587.6 million during the six nine months ended June 30, 2023 September 30, 2023 and 2022, respectively. As a result of those sales, we realized losses a gain of $0.7 $1.7 million and $0.5 $1.3 million during the six nine months ended June 30, 2023 September 30, 2023 and 2022, respectively, and a gain of $0.1 $2.4 million and zero $1.8 million during the three months ended June 30, 2023 September 30, 2023 and 2022, respectively. We regularly review our available-for-sale

marketable securities in an unrealized loss position and evaluate the current expected credit loss by considering factors such as historical experience, market data, issuer-specific factors, and current economic conditions. The aggregate fair value of the marketable securities in unrealized loss position was $137.8 $111.1 million and $193.5 million as of June 30, 2023 September 30, 2023 and December 31, 2022, respectively. The unrealized losses were attributable to changes in interest rates that impacted the value of the investments, and not related to increased credit risk. Accordingly, we have not recorded an allowance for credit losses associated with these investments.

The contractual maturities of the investments classified as marketable securities are as follows:

	As of June 30, 2023					As of September 30, 2023				
(in thousands)	(in thousands)	Mature within one year	Mature after one year through two years	Mature over two years	Fair Value	(in thousands)	Mature within one year	Mature after one year through two years	Mature over two years	Fair Value
Corporate bonds	Corporate bonds	$ 55,613	$ 16,099	$ —	$ 71,712	Corporate bonds	$ 39,120	$ 8,947	$ —	$ 48,067
Asset-backed securities	Asset-backed securities	—	910	61,010	61,920	Asset-backed securities	556	1,525	54,746	56,827
U.S. government and agency securities	U.S. government and agency securities	7,851	7,538	2,818	18,207	U.S. government and agency securities	7,945	7,610	2,658	18,213

Foreign government and agency securities	Foreign government and agency securities	—	331	—	331	Foreign government and agency securities	—	323	—	323
Total marketable securities	Total marketable securities	$ 63,464	$ 24,878	$ 63,828	$ 152,170	Total marketable securities	$ 47,621	$ 18,405	$ 57,404	$ 123,430

	As of December 31, 2022			
(in thousands)	Mature within one year	Mature after one year through two years	Mature over two years	Fair Value
Commercial paper	$ 17,606	$ —	$ —	$ 17,606
Corporate bonds	74,797	35,414	—	110,211
Asset-backed securities	1,907	4,833	60,207	66,947
U.S. government and agency securities	7,719	7,480	3,192	18,391
Foreign government and agency securities	—	338	—	338
Municipal/provincial bonds and other	1,971	—	—	1,971
Total marketable securities	$ 104,000	$ 48,065	$ 63,399	$ 215,464

Derivative Asset and Liabilities

The Company entered into foreign currency derivative contracts with financial institutions to reduce foreign exchange risk related to certain marketable securities denominated in foreign currency. Foreign currency derivative contracts are marked-to-market at the end of each reporting period with gains and losses recognized as other income (expenses). The Company recognized a net loss of $0.3 million and a net gain of $0.5 million during the three and six months ended June 30, 2023, respectively, and a net gain of $1.4 $0.1 million and $0.6 million during the three and six nine months ended June 30, 2022 September 30, 2023, respectively, and a net gain of $1.1 million and $1.7 million during the three and nine months ended September 30, 2022, respectively, on the fair value adjustment of the foreign currency derivative contracts.

7. Property, Plant and Equipment

Property, plant, and equipment consisted of the following:

(in thousands)	(in thousands)	June 30, 2023	December 31, 2022	(in thousands)	September 30, 2023	December 31, 2022
Land	Land	$ 11,331	$ 11,358	Land	$ 11,335	$ 11,358
Pilot plant	Pilot plant	4,767	4,599	Pilot plant	4,766	4,599
Lab equipment	Lab equipment	2,820	2,526	Lab equipment	3,291	2,526
Machinery and equipment	Machinery and equipment	1,005	948	Machinery and equipment	1,079	948
Computer and other equipment	Computer and other equipment	1,180	598	Computer and other equipment	1,478	598
Construction in process	Construction in process	205,061	138,847	Construction in process	217,876	138,847
Total	Total	226,164	158,876	Total	239,825	158,876
Less accumulated depreciation and amortization	Less accumulated depreciation and amortization	(5,357)	(4,693)	Less accumulated depreciation and amortization	(5,708)	(4,693)
Total property, plant, and equipment, net	Total property, plant, and equipment, net	$ 220,807	$ 154,183	Total property, plant, and equipment, net	$ 234,117	$ 154,183

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The depreciation expense totaled $0.3 million $0.4 million and $0.6 million $1.0 million during the three and six nine months ended June 30, 2023 September 30, 2023, respectively, and $0.1 million $0.2 million and $0.3 million $0.5 million during the three and six nine months ended June 30, 2022 September 30, 2022, respectively.

At June 30, 2023 September 30, 2023 and December 31, 2022, the Company capitalized $1.4 million $1.5 million and $1.1 million, respectively, of interest cost into Origin 1. At June 30, 2023 September 30, 2023 and December 31, 2022, the Company capitalized $3.2 $3.9 million and $1.9 million, respectively, of stock-based compensation related to employees whose costs are necessarily incurred to bring the asset to its intended use. At June 30, 2023 September 30, 2023 and December 31, 2022, a cumulative translation adjustment of $(3.3) million $0.3 million and $3.0 million, respectively, is included in total property, plant, and equipment as a result of foreign currency transaction gains and losses.

8. Intangible Assets

Intangible assets consisted of the following:

(in thousands)	(in thousands)	June 30, 2023	December 31, 2022	(in thousands)	September 30, 2023	December 31, 2022
Patents	Patents	$ 413	$ 404	Patents	$ 403	$ 404
Less accumulated amortization	Less accumulated amortization	(271)	(244)	Less accumulated amortization	(274)	(244)
Total intangible assets	Total intangible assets	$ 142	$ 160	Total intangible assets	$ 129	$ 160

The weighted average remaining useful life of the patents was 3.9 3.7 years. For the three and six nine months ended June 30, 2023 September 30, 2023 and 2022, amortization expense was immaterial.

9. Consortium Agreement

In December 2016, the Company entered into a consortium agreement with two Legacy Origin Series B preferred stock investors to collaborate on development of a process to commercialize bio-based, decarbonizing materials for application on an industrial scale at a competitive price. Under the consortium agreement, the Company received $0.5 million. The agreement expires once performance of the research and development program has been completed.

In August 2018, the agreement was amended, whereby a Legacy Origin Series C preferred stock investor (the "Legacy Origin Series C Investor", and collectively with the two Legacy Origin Series B investors, the "Legacy Origin Investors") was added to the agreement and committed to invest $1.5 million of research and development in the consortium. As of June 30, 2023 September 30, 2023, the Legacy Origin Series C Investor had not invested any funds in the consortium.

In 2020, an additional counterparty was added to the consortium agreement. The funds received under the consortium agreement was were recorded in prior periods as other income, net in the unaudited Condensed Consolidated Statements of Operations and Comprehensive Income (Loss). During the three and six nine months ended June 30, 2023 September 30, 2023 and 2022, the Company did not receive any funds under the consortium agreement.

10. Inventory

Inventory balances consist of the following:

(in thousands)	June September 30, 2023	December 31, 2022
Finished goods	$ 331 152	$ —
Raw materials	15 669	—
Total	$ 346 821	$ —

11. Notes Payable

The Company maintains eight separate offtake supply agreements (the "Offtake Agreements"). Two of the eight Offtake Agreements are with the same customer and pertain to supply of product from Origin 1 and Origin 2, respectively. Pursuant to the Offtake Agreements, the Company will construct manufacturing plants with specific capacity and product quality requirements within certain timeframes for the manufacture of product for sale to the counterparties to the agreements, and the counterparties will make purchases at a set price, subject to adjustments, all as defined in the agreements.

Legacy Origin received a $5.0 million prepayment from a customer for product from Origin 1 pursuant to one of these Offtake Agreements, which Legacy Origin entered into in November 2016. The prepayment was to be credited against the purchase of products over the term of the Offtake Agreement. The prepayment was secured by a promissory note (the "Promissory Note") to be repaid in cash in the event that the prepayment could not be credited against the purchase of product, for example, if Origin 1 was never constructed. The Promissory Note was collateralized substantially by Origin 1 and other assets of Origin Materials Canada Pioneer Limited. In May 2019, Legacy Origin and the customer amended the Offtake Agreement and Promissory Note. The amendment added accrued interest of $0.2 million to the principal balance of the prepayment and provided for the prepayment amount to be repaid in three annual installments rather than being applied against the purchase of product from Origin 1. On August 1, 2022, the Company and the customer further amended and restated the Promissory Note with an aggregate principal amount of $5.2 million, which is the sum of the original principal with accrued interest prior to the amendment. As a result of the amendment, the repayment dates were revised and to allow the customer to offset amounts owed for the purchase of product from the Company's Origin 1 facility against amounts due under the Promissory Note. The repayment in the amount of $2.7 million is due on September 1, 2024, $1.9 million is due on September 1, 2025, and $1.8 million is due on September 1, 2026 (inclusive of accrued but unpaid interest of 3.5% per annum). At June 30, 2023 and December 31, 2022, September 30, 2023 the total note principal outstanding was $5.2 million of which $3.5 million was included in notes payable and $1.7 million note principal with outstanding accrued interest of $0.8 million was included in other liabilities, current. At December 31, 2022, the note principal balance was $5.2 million with outstanding was $0.7 million and accrued interest of $0.6 million, respectively.. In addition, the amendment reflected the customer's exercise of its option to enter into a new Offtake Agreement to buy a specified annual amount of product from Origin 2 for an initial term of up to 10 years.

12. Other Liabilities, Long-term

In September 2019, Legacy Origin entered into a $5.0 million prepayment agreement with a counterparty for the purchase of products from Origin 1. The prepayment is to be made in two equal installments: the first $2.5 million was in October 2019 and the remaining $2.5 million is due within 30 days of the customer confirming that a sample from Origin 1 meets the customer's specifications. The Company and customer agreed to work in good faith to execute an Offtake Agreement, the agreed terms of which are set forth in the prepayment agreement, whereby 100% of the prepayment will be applied against future purchases. The prepayment agreement provides the customer a capacity reservation of up to a specified annual volume of product from Origin 1 for a term of ten years, pursuant to the terms of an Offtake Agreement. At June 30, 2023 September 30, 2023 and December 31, 2022, the total amount outstanding on this agreement was $2.5 million.

Legacy Origin received a $5.0 million prepayment from a customer for product from Origin 1 pursuant to an Offtake Agreement entered into in November 2016. The prepayment is to be credited against the purchase of products from Origin 1 over the term of the Offtake Agreement. Specifically, repayment is effected by applying a credit to product purchases each month over the first five years of operation of Origin 1 up to $7.5 million, which is equal to 150% of the prepayment amount. If product purchases are not sufficient to recover the advances, the application of the credit to purchases as payment of the advances will continue until fully repaid. The prepayment is secured by a note to be repaid in cash in the event the prepayment cannot be credited against the purchase of product, for example, if Origin 1 is never constructed. The note is collateralized substantially by Origin 1 and other assets of Origin Material Canada Pioneer Limited. If repaid in cash, the note bears an annual interest rate of the three-month London Interbank Offered Secured Overnight Financing Rate ("LIBOR" SOFR") plus 0.25% (5.31% (5.52% at June 30, 2023 September 30, 2023) and matures five years from the commercial operation date of Origin 1, which is defined by the plant's actual production of a certain volume of product as well as its capacity to produce a certain annual volume of product. At June 30, 2023 September 30, 2023 and December 31, 2022, the total principal outstanding was $5.1 million and accrued interest outstanding was $0.4 $0.5 million and $0.3 million, respectively.

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13. Earnout Liability

As additional consideration for the Merger, within 10 business days after the occurrence of a "Triggering Event," as defined below, the Company shall issue or cause to be issued to each Legacy Origin stockholder a certain number of shares of the Company Class A Common Stock. The number of such shares is equal to the product of (i) the number of shares of Company Common Stock, Company Series A Preferred Stock, Company Series B Preferred Stock, Company Series C Preferred Stock, and the net number of shares of Company Capital Stock that would be issuable in respect of "Vested Company Options" in the event such options were exercised (on a net exercise basis with respect to only the applicable exercise price, immediately prior to the "Closing" and settled in the applicable number of shares of Company Common Stock, rounded down to the nearest whole share) held by such Legacy Origin stockholder as of immediately prior to the "Effective Time"; and (ii) the "Earnout Exchange Ratio" (such issued shares of Artius Class A Common Stock, collectively, the "Earnout Shares"), where "Vested Company Options," "Closing," "Effective Time," and "Earnout Exchange Ratio" have the meanings set forth in the Merger Agreement. The Company cannot be required to issue more than 25,000,000 Earnout Shares in the aggregate. A Triggering Event is defined as the following:

(a) the volume weighted average price of Common Stock ("VWAP") equaling on exceeding $15.00 for ten (10) consecutive trading days during the three (3) year period following the Closing Date;

(b) the VWAP equaling or exceeding $20.00 for ten (10) consecutive trading days during the four (4) year period following the Closing Date; or

(c) the VWAP equaling or exceeding $25.00 for ten (10) consecutive trading days during the five (5) year period following the Closing Date.

A Sponsor Letter Agreement was delivered in connection with the Merger such that 4.5 million of the shares held by Sponsor ("Sponsor Vesting Shares") shall be subject forfeiture based on the same vesting requirements as the Earnout Shares. These shares shall not be transferred prior to the date in which they vest. Dividends and other distributions with respect to Sponsor Vesting Shares shall be set aside by the Company and shall be paid to the Sponsor upon the vesting of such Sponsor Vesting Shares.

The Company evaluated the Earnout Liability under ASC 815-40, *Derivatives and Hedging-Contracts in Entity's Own Equity ("ASC 815-40")*, and concluded they do not meet the criteria to be classified in stockholders' equity. Specifically, there are contingent exercise provisions and settlement provisions that exist. Holders may receive differing amounts of shares depending on the company's stock price or the price paid in a change of control. All remaining shares would be issuable (or the forfeiture provisions would lapse) upon any change of control involving the Company and all remaining shares would be issuable (or the forfeiture provisions would lapse) upon a bankruptcy or insolvency of the company. This means that settlement is not solely impacted by the share price of the Company (that is, the share price observed in or implied by a qualifying change-in-control event), but also by the occurrence of a qualifying change-in-control event. This causes the arrangement to not be indexed to the Company's own shares and liability classification is appropriate. The Company recorded these instruments as liabilities on the condensed consolidated balance sheets at fair value, with subsequent changes in their respective fair values recognized in earnings at each reporting date. The earnout liability was fair valued using a Monte Carlo open-ended model. The inputs used for the model were a dividend yield of 0%, volatility of 68% 97%, and interest rate of 4.40% 4.75%. The balance of the earnout liability was $22.4 million $3.6 million and $42.5 million at June 30, 2023 September 30, 2023 and December 31, 2022, respectively. A gain of $7.5 million $18.8 million and $20.4 million $39.1 million during the three and six nine months ended June 30, 2023 September 30, 2023, respectively, and a gain of $33.2 million $15.1 million and $48.4 million $63.6 million during the three and six nine months ended June 30, 2022 September 30, 2022, respectively, was recorded on the unaudited Condensed Consolidated Statement of Operations and Comprehensive Income (Loss) in the change in fair value of earnout liability.

14. Canadian Government Research and Development Program Liability

In April 2019, the Company entered into a contribution agreement related to the research and development and construction associated with the operation of Origin 1 in which the Company will participate in a Canadian government research and development program (the "R&D Agreement"). Pursuant to the R&D Agreement, the Company will receive funding for eligible expenditures through March 31, 2023 up to the lesser of approximately 18.48% of eligible costs and $23.0 million (in Canadian dollars).

The funding will be repaid over 15 years after completion of Origin 1, commencing no sooner than the third fiscal year of consecutive revenues from a commercial plant, but no later than March 2028. The maximum amount to be repaid by the Company under the R&D Agreement is 1.25 times the actual funding received, subject to the following repayment ceiling formula. Repayment of the funding will be reduced by 50% if the Company begins construction before December 31, 2024 of one or more commercial plants that operate in Canada, with costs exceeding $500.0 million (in Canadian dollars), and the plants being constructed and operational within 30 months of the final investment decision, as defined in the R&D Agreement. Once begun, repayments will be paid annually by April of each year through March 31, 2037. Payments will be determined by a formula of the funded amount based on the fiscal year gross business revenue, as defined in the R&D Agreement. The Company recorded a liability for the amount received of $7.3 million and $7.2 million at June 30, 2023 September 30, 2023 and December 31, 2022, respectively, on the Condensed Consolidated Balance Sheets in Canadian government research and development program liability.

15. Assumed Common Stock Warrants

As of June 30, 2023 September 30, 2023 and December 31, 2022 there are 35,476,627 warrants outstanding.

As part of Artius's initial public offering, 24,149,960 Public Warrants were sold. The Public Warrants entitle the holder thereof to purchase one share of Common Stock at a price of $11.50 per share, subject to adjustments. The Public Warrants may be exercised only for a whole number of shares of Common Stock. No fractional shares will be issued upon exercise of the warrants. The Public Warrants will expire on June 25, 2026 at 5:00p.m., New York City time, or earlier upon redemption or liquidation. The Public Warrants are listed on the Nasdaq under the symbol "ORGNW."

The Company may redeem the Public Warrants when exercisable, in whole and not in part, at a price of $0.01 per warrant, so long as the Company provides not less than 30 days' prior written notice of redemption to each warrant holder, and if, and only if, the reported last sale price of the Common Stock equals or exceeds $18.00 per share for any 20 trading days within a 30-trading day period ending on the third trading day prior to the date the Company sends the notice of redemption to the warrant holders.

Simultaneously with Artius's initial public offering, Artius consummated a private placement of 11,326,667 Private Placement Warrants with the Sponsor. The Private Placement Warrant is exercisable for one share of Class A Common Stock at a price of $11.50 per share, subject to adjustment. The Private Placement Warrants are identical to the Public Warrants, except that: (1) the Private Placement Warrants and the shares of Class A Common Stock issuable upon exercise of the Private Placement Warrants are not transferable, assignable or salable until the earliest to occur of: (i) 365 days after the date of the Closing; (ii) the first day after the date on which the closing price of the Public Shares (or any successor securities thereto) equals or exceeds $12.00 per share (as adjusted for stock splits, stock dividends, reorganizations, recapitalizations and the like) for any 20 trading days within any 30-trading day period commencing at least 150 days after the date of the Closing; or (iii) the date on which Artius completes a liquidation, merger, capital stock exchange, reorganization or other similar transaction that results in all of Artius's Public Shareholders having the right to exchange their Public Shares (or any successor securities thereto) for cash, securities or other property, subject to certain limited exceptions, (2) the Private Placement Warrants will be exercisable on a cashless basis and be non-redeemable, except if the reference value equals or exceeds $10.00 and is less than $18.00 (as described above), so long as they are held by the initial purchasers or their permitted transferees, and (3) the Private Placement Warrants and the Class A ordinary shares issuable upon exercise of the Private Placement Warrants will be entitled to registration rights. If the Private Placement Warrants are held by someone other than the initial purchasers or their permitted transferees, the Private Placement Warrants will be redeemable under all redemption scenarios by the Company and exercisable by such holders on the same basis as the Public Warrants.

The Company concluded the Public Warrants and Private Placement Warrants, or Assumed Common Stock Warrants, meet the definition of a derivative under ASC 815 and are recorded as liabilities. Upon consummation of the Business Combination, the fair value of the Assumed Common Stock Warrants was recorded on the Condensed Consolidated Balance Sheets. The fair value of the Assumed Common Stock Warrants was remeasured on the June 30, 2023 September 30, 2023 and December 31, 2022 Condensed Consolidated Balance Sheets at $26.2 million $3.4 million and $30.9 million, respectively. A gain of $22.8 million and $27.4 million during the three and nine months ended September 30, 2023, respectively, and a loss of $2.1 million $1.4 million and a gain of $4.6 million $15.6 million during the three and six nine months ended June 30, 2023, respectively, and a gain of $18.8 million and $17.0 million during the three and six months ended June 30, 2022 September 30, 2022, respectively, was recorded on the unaudited Condensed Consolidated Statement of Operations and Comprehensive Income (Loss).

16. Stockholders' Equity

As of June 30, 2023 September 30, 2023 and December 31, 2022, 1,010,000,000 shares, $0.0001 par value per share are authorized, of which, 1,000,000,000 shares are designated as Common Stock and 10,000,000 shares are designated as Preferred Stock.

Common Stock

Holders of the Common Stock are entitled to dividends when, as, and if, declared by the Board, subject to the rights of the holders of all classes of stock outstanding having priority rights to dividends. As of June 30, 2023 September 30, 2023, the Company had not declared any dividends. The holder of each share of Common Stock is entitled to one vote. There were 143,498,724 144,198,529 and 143,034,225 shares of Common Stock (including 4,500,000 Sponsor Vesting Shares not indexed to equity) outstanding as of June 30, 2023 September 30, 2023 and December 31, 2022, respectively.

Employee Stock Purchase Plan

The Company maintains an Employee Stock Purchase Plan ("ESPP"). The ESPP permits participants to purchase shares of our Common Stock with the purchase price of the shares at a price determined by our board, which shall not be less than 85% of the lower of the fair market value of our Common Stock on the first day of an offering or on the date of purchase.

Initially, following adoption of the ESPP, the maximum number of shares of our Common Stock that may be issued under the ESPP was 1,846,710. The ESPP contains an "evergreen" share reserve feature that automatically increases the number of shares of Common Stock reserved for issuance under the plan on January 1 of each year for a period of ten years commencing on January 1, 2022 and ending on (and including) January 1, 2031 in an amount equal to the lesser of (1) one percent (1%) of the fully-diluted shares of our Common Stock on December 31st of the preceding calendar year, (2) 3,693,420 of Common Stock, or (3) such lesser number of shares as determined by our board. As of December 31, 2022, the number of shares available for issuance under the ESPP was 3,722,490. On January 1, 2023, the number of shares of Common Stock reserved for issuance under the ESPP was automatically increased by 1,917,454. As a result, as of June 30, 2023 September 30, 2023, the number of shares available for issuance under the ESPP was 5,639,944. Shares subject to purchase rights granted under the ESPP that terminate without having been exercised in full will not reduce the number of shares available for issuance under the ESPP.

To date no stock has been offered or issued to employees under the ESPP.

Equity Incentive Plans

The Company maintains the following equity incentive plans: the 2010 Stock Incentive Plan, the 2020 Equity Incentive Plan, and the 2021 Equity Incentive Plan, each as amended (together, the "Stock Plans"). Upon closing of the Business Combination, awards under the 2010 Stock Incentive Plan and 2020 Equity Incentive Plan were converted at the Exchange Ratio and the 2021 Equity Incentive Plan was adopted and approved.

Origin may grant a wide variety of equity securities under the Stock Plans, including incentive stock options, nonstatutory stock options, stock appreciation rights, restricted stock awards, RSU awards, performance-based stock awards, and other awards. The Company has granted incentive stock options, RSU awards, and performance awards under the Stock Plans. Under the Stock Plans, options must be issued at exercise prices no less than the estimated fair value of the stock on the date of grant and are exercisable for a period not exceeding 10 years from the date of grant. Options granted to employees under the Stock Plan generally vest 25% one year from the vesting commencement date and 1/36th per month thereafter, although certain arrangements call for vesting over other periods. Options granted to non-employees under the Stock Plan vest over periods determined by the Board (generally immediate to four years). RSU awards granted to employees under the 2021 Equity Incentive Plan require a service period of three years and generally vest 33.3% annually over the three-year service period. Under the Stock Plans, the fair value of RSU awards and performance-based stock awards are determined to be the grant date closing stock price. For awards with performance-based conditions, compensation is recorded once there is sufficient objective evidence the performance conditions are considered probable of being met. The performance-based stock awards are subject to vesting based on a performance-based condition and a service-based condition. The performance-based stock awards will vest in a percentage of the target number of shares between 0% and 300%, depending on the extent the performance conditions are achieved.

Initially, following adoption of the 2021 Equity Incentive Plan, there were 18,467,109 shares of Common Stock reserved for issuance under the Stock Plans. The 2021 Equity Incentive Plan contains an "evergreen" share reserve feature that automatically increases the number of shares of Common Stock reserved for issuance under the plan on January 1 of each year for a period of ten years commencing on January 1, 2022 and ending on (and including) January 1, 2031 in an amount equal to five percent (5%) of the fully-diluted Common Stock on December 31 of the preceding year unless our board acts prior to January 1 to increase the share reserve by a lesser amount. The number of shares added to the share reserve on January 1 of a given year is reduced automatically to the extent necessary to avoid causing the share reserve to exceed fifteen percent (15%) of the fully-diluted Common Stock on December 31 of the preceding year. As of December 31, 2022, there were 27,846,011 shares of common stock reserved under the Stock Plans. On January 1, 2023, the number of shares of Common Stock reserved for issuance under the 2021 Equity Incentive Plan was automatically increased by 915,805 shares pursuant to the 2021 Plan's "evergreen" provision. As a result, as of June 30, 2023 September 30, 2023, there were 28,761,816 shares of Common Stock reserved available under the Stock Plans.

The following tables summarize stock option activity under the Stock Plans:

		Outstanding Options		Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in years)		Outstanding Options		Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in years)
Balance as of December 31, 2022	Balance as of December 31, 2022	6,471,062	$	0.17	7.29	Balance as of December 31, 2022	6,471,062	$	0.17	7.29
Granted	Granted	—		—		Granted	—		—	
Exercised	Exercised	(163,096)		0.14		Exercised	(163,096)		0.14	
Forfeited / canceled	Forfeited / canceled	—		—		Forfeited / canceled	—		—	
Balance as of March 31, 2023	Balance as of March 31, 2023	6,307,966	$	0.17	7.03	Balance as of March 31, 2023	6,307,966	$	0.17	7.03

Granted	Granted	—		—		Granted	—		—	
Exercised	Exercised	(208,807)		0.15		Exercised	(208,807)		0.15	
Forfeited / canceled	Forfeited / canceled	(794)		0.14		Forfeited / canceled	(794)		0.14	
Balance as of June 30, 2023	Balance as of June 30, 2023	6,098,365	$	0.17	6.77	Balance as of June 30, 2023	6,098,365	$	0.17	6.77
Vested and expected to vest at June 30, 2023		6,098,365								
Granted						Granted	—		—	
Exercised						Exercised	(582,240)		0.15	
Forfeited / canceled						Forfeited / canceled	—		—	
Balance as of September 30, 2023						Balance as of September 30, 2023	5,516,125	$	0.17	6.49
Vested and expected to vest at September 30, 2023						Vested and expected to vest at September 30, 2023	5,516,125			

During the three and six nine months ended June 30, 2023 September 30, 2023, the Company did not grant any stock options. As of June 30, 2023 September 30, 2023 and December 31, 2022, there were 15,694,899 16,062,995 and 15,728,837 awards, respectively, available for grant under the Stock Plans. As of June 30, 2023 September 30, 2023 and December 31, 2022 there were 3,651,658 3,286,737 and 3,588,523 exercisable options, respectively. The total intrinsic value of the options exercised was $0.9 $0.7 million and $1.8 $2.5 million during the three and six nine months ended June 30, 2023 September 30, 2023, respectively, and $5.0 $2.1 million and $5.7 $7.8 million during the three and six nine months ended June 30, 2022 September 30, 2022, respectively. The intrinsic value of options exercised during each fiscal year is calculated as the difference between the market value of the stock at the time of exercise and the exercise price of the stock option. The aggregate intrinsic value of options vested and expected to vest at June 30, 2023 September 30, 2023 and December 31, 2022 were $24.9 $6.1 million and $28.7 million. As of June 30, 2023 September 30, 2023 and December 31, 2022, the Company had stock-based compensation of $3.2 $2.5 million and $4.7 million, respectively, related to unvested stock options not yet recognized that are expected to be recognized over an estimated weighted average period of 1.2 years 1.0 year and 1.7 years, respectively.

The Company issued 2,920,732 of performance and market-based stock options during 2020. During the quarter ended March 31, 2021, the Company modified the vesting schedule of 529,119 of these performance and market based market-based stock options such that vesting at 1/48th per month would commence upon signing of the Business Combination. The Company entered into the Merger Agreement on February 16, 2021 resulting in the commencement of expense recognition related to these 529,119 options during the quarter ended March 31, 2021. For the remaining 2,391,613 performance and market-based stock options, expense commenced on the close date of the Merger, June 25, 2021, as that is the date when the performance condition was achieved.

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The following table summarizes the RSU award and performance-based stock award activity:

		Outstanding		Weighted-average grant date fair value		Outstanding		Weighted-average grant date fair value
Unvested balance at December 31, 2022	Unvested balance at December 31, 2022	6,371,950	$	6.24	Unvested balance at December 31, 2022	6,371,950	$	6.24
Granted - RSU awards	Granted - RSU awards	163,544		5.15	Granted - RSU awards	163,544		5.15
RSU awards vested and converted to shares	RSU awards vested and converted to shares	(70,670)		5.39	RSU awards vested and converted to shares	(70,670)		5.39
Forfeited - RSU awards	Forfeited - RSU awards	(50,212)		5.53	Forfeited - RSU awards	(50,212)		5.53
Forfeited - performance-based stock awards	Forfeited - performance-based stock awards	(35,625)		5.46	Forfeited - performance-based stock awards	(35,625)		5.46

Unvested balance March 31, 2023	Unvested balance March 31, 2023	6,378,987	$	6.22	Unvested balance March 31, 2023	6,378,987	$	6.22
Granted - RSU awards	Granted - RSU awards	387,841		4.14	Granted - RSU awards	387,841		4.14
RSU awards vested and converted to shares	RSU awards vested and converted to shares	(50,693)		7.01	RSU awards vested and converted to shares	(50,693)		7.01
Forfeited - RSU awards	Forfeited - RSU awards	(118,008)		6.01	Forfeited - RSU awards	(118,008)		6.01
Forfeited - performance-based stock awards	Forfeited - performance-based stock awards	(21,150)		5.56	Forfeited - performance-based stock awards	(21,150)		5.56
Unvested balance June 30, 2023	Unvested balance June 30, 2023	6,576,977	$	6.10	Unvested balance June 30, 2023	6,576,977	$	6.10
Granted - RSU awards					Granted - RSU awards	659,258		2.85
RSU awards vested and converted to shares					RSU awards vested and converted to shares	(193,466)		5.26
Forfeited - RSU awards					Forfeited - RSU awards	(148,766)		5.52
Forfeited - performance-based stock awards					Forfeited - performance-based stock awards	(73,800)	$	5.53
Unvested balance September 30, 2023					Unvested balance September 30, 2023	6,820,203	$	6.19
Expected to vest	Expected to vest	4,414,827			Expected to vest	4,702,771		

The RSU awards, which upon vesting entitle the holder to be issued on a future date the number of shares of Common Stock that is equal to the number of restricted stock units subject to the RSU awards. The total fair value of shares vested was $0.2 million $0.7 million and $0.6 million $1.3 million during the three and six nine months ended June 30, 2023 September 30, 2023, respectively, and $0.7 million zero and $0.7 million during the three and six nine months ended June 30, 2022 September 30, 2022, respectively. As of June 30, 2023 During the nine months ended September 30, 2023, the performance conditions for the granted performance-based stock awards were not probable of being met, therefore no performance award stock compensation has been recorded. There were no performance-based stock awards vested during the three and six nine months ended June 30, 2023 September 30, 2023 and 2022. As of June 30, 2023 September 30, 2023, there were 1,976,725 1,829,125 unvested performance-based awards subject to certain performance criteria for vesting. The vesting period for RSU awards is generally three years. Total remaining compensation expense for RSU awards to be recognized under the 2021 Equity Incentive Plan is $19.4 $18.0 million as of June 30, 2023 September 30, 2023, and will be amortized on a straight-line basis over the remaining vesting periods. Total remaining compensation expense for performance-based stock awards to be recognized will be recognized over the requisite service periods once the performance-based conditions are deemed to be probable.

During the three and six nine months ended June 30, 2023 September 30, 2023, stock compensation expense of $1.5 million $1.7 million and $3.0 million $4.7 million, respectively, was recognized in general and administrative expenses, and $0.7 million and $1.5 million $2.2 million, respectively, was recognized in research and development expenses on the unaudited Condensed Consolidated Statements of Operations and Comprehensive Income (Loss). During the three and six nine months ended June 30, 2022 September 30, 2022, stock compensation expense of $1.3 million $0.8 million and $2.0 million $2.9 million, respectively, was recognized in general and administrative expenses, and $0.3 million and $0.5 million $1.5 million, respectively, was recognized in research and development expenses on the unaudited Condensed Consolidated Statements of Operations and Comprehensive Income (loss) (Loss). Total remaining compensation expense to be recognized under the Stock Plans was $22.7 $20.5 million as of June 30, 2023 September 30, 2023, and will be amortized on a straight-line basis over the remaining vesting periods of approximately 1.2 years 1.0 year for stock options, 2.3 2.1 years for RSU awards and over the remaining requisite service period once considered probable for performance-based stock awards.

17. Income Taxes

The provision for income taxes is recorded at the end of each interim period based on the Company's best estimate of its effective income tax rate expected to be applicable for the full fiscal year, adjusted for any discrete items during the quarter. The Company has recorded an income tax provision during the three and nine months ended June 30, 2023 September 30, 2023 of $0.1 million and $0.2 million, respectively, related to foreign withholding taxes on some of its revenue. Other than withholding taxes, there is no provision for income taxes because the Company has incurred operating losses since inception. The Company's effective income tax rate was (1.68)% 0.30% and 3.29% 0.65% for the three and six nine months ended June 30, 2023 September 30, 2023, respectively, and zero for three and six nine months ended June 30, 2022 September 30, 2022. The Company continues to maintain a full valuation allowance on its net deferred tax assets.

18. Leases

The Company leases office space and research and development space in Sacramento, California and Sarnia, Ontario under non-cancelable lease agreements and leases various office equipment, warehouse space, and temporary fencing. The operating leases have remaining lease terms of one to eight years. Certain operating leases contain options to extend the lease. The Company included the periods covered by these options as we are reasonably certain to exercise the options for all leases. For leases with the option to extend on a month-to-month basis after the defined extension periods, the Company is reasonably certain to extend for the same term as related leases. As such, lease terms for all leased assets located at the same locations have the same end dates. Rent deposits relating to leases are included within other long-term assets on the Condensed Consolidated Balance Sheets. Certain leases were extended during the period ended September 30, 2023. The lease modifications were not accounted for as a separate contract and we remeasured our lease liability and right-of-use asset on the modification date. The operating leases have remaining lease terms of one to ten years.

19. Commitments and Contingencies

Commitments

In May 2018, the Company executed the agreements for certain services, to facilitate the development and thus bring Origin 1 to the condition necessary for its intended use, commencing in different periods between July 2018 and September 2019, and all generally for five-year periods. The agreements are generally automatically extended for one-year periods thereafter. The agreements include annual fixed payments subject to escalation clauses at the beginning of each calendar year, as defined in the agreement. The minimum fixed payments are $0.4 million per year over the fixed term. Certain of the agreements include quantities that are based on volumes, as defined in the applicable agreements. The Company is also responsible for applicable taxes under these agreements. The total amount capitalized into Property, Plant and Equipment, Net under the agreement was $0.0 million and $0.2 million during the three and six months ended June 30, 2023, respectively, and $0.4 million $0.3 million and $0.5 million during the three and six nine months ended June 30, 2022 September 30, 2023, respectively, and $0.9 million and $1.4 million during the three and nine months ended September 30, 2022, respectively.

In April 2023, the Company entered into an agreement for conversion of materials produced by Origin 1 into certain derivatives. Pursuant to the agreement, the Company agreed to purchase conversion services for a certain minimum quantity of product on a take-or-pay basis for a term of 5 years beginning in 2025 for an aggregate total cost of $35 million. The Company made an advance payment payments totaling $10.0 million to the counterparty as of September 30, 2023, which is included in the foregoing aggregate total, and the agreement provides for the Company to be fully reimbursed for the advance payment in the form of a discount on conversion services over the term. The agreement gives the Company the right, but not the obligation, to purchase conversion services for an additional quantity of product in 2024 and stipulates a reduction in the take-or-pay commitment under certain circumstances including the counterparty's inability to meet the required product specification. The agreement automatically renews for an additional year unless either party gives advance notice of an intention not to renew. In addition, either party may terminate the agreement in the event of the other party's insolvency or breach of a material term.

In February 2023, the Company entered into a nonexclusive patent license agreement for use in connection with production at a specific licensed facility. The license expires upon cessation of production at that facility. The Company made a nonrefundable €5 €5.0 million deposit in 2022 toward securing the license and, as a result of signing the license agreement, made an additional payment of €7.5 million during first quarter 2023 and may make additional payments depending on the achievement of certain milestones. The total payment is included in other long-term assets. In connection with this license, the Company entered into a conditional offtake agreement under which the licensor will supply the Company with a certain amount of the same type of products to be produced at the licensed facility in order to accelerate market development for these products and related applications.

In July 2017, the Company entered into a nonexclusive patent license agreement for $0.1 million, which expires upon expiration of the last to expire of the licensed patents. Under this agreement, the Company will pay less than $0.1 million minimum royalty payments per year and, if the Company develops and sells certain products based on the licensed patents. Certain products that Origin is currently developing and anticipates selling are expected to utilize these patents.

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In December 2016, the Company entered into a patent license agreement for $0.5 million, which expires upon expiration of the last to expire of the licensed patents. Under this agreement, if the Company develops and sells specific products based on the patents, the Company would pay a royalty up to a cumulative $0.5 million from Origin 1, whereby no further payments will be due for any production at Origin 1. If production of those products occurs at subsequent facilities, the Company will pay an upfront license fee royalty and a variable royalty based on production at that subsequent facility, capped at an aggregate $10.0 million per facility. Certain products that the Company is currently developing and anticipates selling are expected to utilize these patents. No payments were made during the three and six nine months ended June 30, 2023 September 30, 2023 or 2022.

In November 2016, the Company entered into a nonexclusive patent license agreement, which expires upon expiration of the patent. Under this agreement, if the Company produces products based on the patent, the Company will pay an annual royalty upon commencement of operations on Origin 1 which will not exceed $1.0 million cumulatively. The pipeline of Company products and sales are not currently expected to be subject to this patent. The annual royalty payments is are less than $0.1 million.

In September 2011, the Company entered into a nonexclusive patent license agreement, which expires upon expiration of the patent. Under this agreement, if the Company develops and sells specific products based on the patent, the Company would pay a royalty up to $2.0 million per year and $10.0 million in the aggregate. Certain products that the

Company is currently developing and anticipates selling are expected to utilize these patents. No payments were made during the three and six nine months ended June 30, 2023 September 30, 2023 or 2022.

In June 2011, the Company entered into a nonexclusive patent license agreement, which expires upon expiration of the licensed patent. Under this agreement, the Company pays less than $0.1 million royalty fee annually and if the Company develops and sells specific products based on the patent, 0.4% of net sales. The pipeline of Company products and sales are not currently expected to be subject to this patent.

We enter into supply and service arrangements in the normal course of business. Supply arrangements are primarily for fixed-price manufacture and supply. Service agreements are primarily for the development of manufacturing processes and certain studies. Commitments under service agreements are subject to cancellation at our discretion which may require payment of certain cancellation fees. The timing of completion of service arrangements is subject to variability in estimates of the time required to complete the work.

Contingencies

At times there may be claims and legal proceedings generally incidental to the normal course of business that are pending or threatened against the Company. Although For instance, in August 2023, a shareholder filed a putative securities class action complaint in the Eastern District of California against the Company and certain of its officers, alleging violations of the federal securities laws. An additional complaint, alleging the same claims against the same defendants, was filed in October 2023. Both cases allege a class period of February 23, 2023 to August 9, 2023, and seek as relief, among other things, unspecified damages and fees and costs. The two cases have since been consolidated into *In re Origin Materials, Inc. Sec. Litig.*, No. 2:23-cv-01816-WBS-JDP (E.D. Cal.). No lead plaintiff has been appointed for the consolidated case. At this preliminary stage in the litigation, the Company cannot predict the any particular outcome, of these matters when they arise, in the opinion of management, nor any liability arising from them will not have a material adverse effect on the consolidated financial position, results of operations, or liquidity of the Company. At June 30, 2023 and December 31, 2022, there were no material claims or legal proceedings pending or threatened against the Company. impact thereof, if any.

20. Basic and Diluted Net Income Per Share

The following table sets forth the computation of basic and diluted net income (loss) per share attributable to common stockholders, which excludes Sponsor Vesting Shares which are legally outstanding, but subject to return to the Company. Basic net income (loss) per share is computed by dividing net income (loss) for the period by the weighted-average number of common shares outstanding during the period. Diluted net income (loss) per share is computed by dividing net income (loss) for the period by the weighted-average common shares outstanding during the period, plus the dilutive effect of the stock options and RSU awards, as applicable pursuant to the treasury stock method. The following table sets forth the computation of basic and diluted net income (loss) per share:

(In thousands, except for share and per share amounts)	*(In thousands, except for share and per share amounts)*	**Three Months Ended June 30,**		**Six Months Ended June 30,**		*(In thousands, except for share and per share amounts)*	**Three Months Ended September 30,**		**Nine Months Ended September 30,**	
		2023	**2022**	**2023**	**2022**		**2023**	**2022**	**2023**	**2022**
Numerator:	Numerator:					Numerator:				
Net income (loss) attributable to common stockholders—Basic		$ (6,464)	$ 46,931	$ 3,305	$ 54,277					
Net income attributable to common stockholders—Basic						Net income attributable to common stockholders—Basic	$ 30,931	$ 8,299	$ 34,236	$ 62,576
Net income (loss) attributable to common stockholders—Diluted		$ (6,464)	$ 46,931	$ 3,305	$ 54,277					
Net income attributable to common stockholders—Diluted						Net income attributable to common stockholders—Diluted	$ 30,931	$ 8,299	$ 34,236	$ 62,576
Denominator:	Denominator:					Denominator:				
Weighted-average common shares outstanding—Basic (1)	Weighted-average common shares outstanding—Basic (1)	139,265,248	137,141,655	139,154,557	136,985,440	Weighted-average common shares outstanding—Basic (1)	139,806,045	138,061,829	139,374,106	137,348,180

Stock options	Stock options	—	4,889,299	3,730,144	5,010,955	Stock options	2,893,384	4,126,256	3,451,224	4,748,417
RSU awards	RSU awards	—	164,683	154,734	82,357	RSU awards	4,121	8,929	46,844	37,963
Weighted-average common shares outstanding—Diluted (1)	Weighted-average common shares outstanding—Diluted (1)	139,265,248	142,195,637	143,039,435	142,078,752	Weighted-average common shares outstanding—Diluted (1)	142,703,550	142,197,014	142,872,174	142,134,560
Net income (loss) per share—Basic		$ (0.05)	$ 0.34	$ 0.02	$ 0.40					
Net income (loss) per share—Diluted		$ (0.05)	$ 0.33	$ 0.02	$ 0.38					
Net income per share—Basic						Net income per share—Basic	$ 0.22	$ 0.06	$ 0.25	$ 0.46
Net income per share—Diluted						Net income per share—Diluted	$ 0.22	$ 0.06	$ 0.24	$ 0.44

(1) Excludes weighted-average Sponsor Vesting Shares subject to return of 4,500,000 shares as of June 30, 2023 September 30, 2023 and 2022.

Diluted earnings per share reflect the potential dilution of securities that could share in the earnings of an entity. The following potentially dilutive securities for common stock were outstanding and excluded from diluted earnings per share as they are subject to performance or market conditions that were not achieved as follows:

		Three Months Ended June 30,		Six Months Ended June 30,			Three Months Ended September 30,		Nine Months Ended September 30,	
		2023	2022	2023	2022		2023	2022	2023	2022
Options to purchase common stock	Options to purchase common stock	1,481,531	1,481,531	1,481,531	1,481,531	Options to purchase common stock	1,481,531	1,481,531	1,481,531	1,481,531
Performance-based stock awards	Performance-based stock awards	2,162,150	2,610,500	2,162,150	2,610,500	Performance-based stock awards	2,220,750	2,610,500	2,220,750	2,610,500
Earnout shares	Earnout shares	25,000,000	25,000,000	25,000,000	25,000,000	Earnout shares	25,000,000	25,000,000	25,000,000	25,000,000
Sponsor vesting shares	Sponsor vesting shares	4,500,000	4,500,000	4,500,000	4,500,000	Sponsor vesting shares	4,500,000	4,500,000	4,500,000	4,500,000

The following outstanding shares of potentially dilutive securities were excluded from the computation of diluted net income (loss) per share attributable to common stockholders for the periods presented because including them would have been antidilutive:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Options to purchase common stock	4,616,840	—	—	—
Warrants to purchase common stock	35,476,627	35,476,627	35,476,627	35,476,627
RSU awards	4,416,828	—	—	—

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2023	2022	2023	2022
Warrants to purchase common stock	35,476,627	35,476,627	35,476,627	35,476,627

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Origin Materials, Inc. (“the Company”, “Origin”, “we”, “us” and “our”) makes forward-looking statements in this Quarterly Report on Form 10-Q (this “Report”) and in documents incorporated herein by reference. All statements, other than statements of present or historical fact included in or incorporated by reference in this Report, regarding the Company’s future financial performance, as well as the Company’s strategy, future operations, financial position, estimated revenues, and losses, projected costs, prospects, plans and objectives of management are forward-looking statements. When used in this Report, the words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “intends,” “may,” “might,” “plan,” “possible,” “potential,” “predict,” “project,” “should,” “will,” “would,” the negative of such terms and other similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain such identifying words. These forward-looking statements are based on management’s current expectations, assumptions, hopes, beliefs, intentions and strategies regarding future events and are based on currently available information as to the outcome and timing of future events. The Company cautions you that these forward-looking statements are subject to all of the risks and uncertainties, most of which are difficult to predict and many of which are beyond the control of the Company, incident to its business.

These forward-looking statements are based on information available as of the date of this Report, and current expectations, forecasts and assumptions, and involve a number of risks and uncertainties. Accordingly, forward-looking statements in this Report and in any document incorporated herein by reference should not be relied upon as representing the Company’s views as of any subsequent date, and the Company does not undertake any obligation to update forward-looking statements to reflect events or circumstances after the date they were made, whether as a result of new information, future events or otherwise, except as may be required under applicable securities laws.

As a result of a number of known and unknown risks and uncertainties, the Company’s actual results or performance may be materially different from those expressed or implied by these forward-looking statements. Some factors that could cause actual results to differ include:

- the effectiveness of the Company’s disclosure controls and procedures and internal control over financial reporting;
- the Company’s future financial and business performance, including financial projections and business metrics;
- changes in the Company’s strategy, future operations, financial position, estimated revenues and losses, projected costs, prospects and plans;
- the Company’s ability to scale in a cost-effective manner;
- the Company’s ability to raise capital, secure additional project financing and secure government incentives;
- the Company’s ability to complete construction of its plants in the expected timeframe and in a cost-effective manner;
- the Company’s ability to procure necessary capital equipment and to produce its products in commercial quantities;
- the impact of laws and regulations and liabilities thereunder, including any decline in the value of carbon credits;
- the Company’s ability to procure and store necessary raw materials, works in process, and finished goods;
- any increases or fluctuations in raw material costs;
- the Company’s ability to avoid, mitigate, and recover from business and supply chain disruptions;
- the ability to maintain the listing of the Company’s common stock on the Nasdaq; and
- the impact of worldwide economic, political, industry, and market conditions, including the continued effects of the global pandemics like COVID-19, pandemic, sanctions imposed against Russia following its military intervention in Ukraine, instability resulting from the emerging military conflict in Israel and Gaza, global supply chain disruptions, increased inflationary pressure, labor market constraints, bank failures, and other macroeconomic factors.

Other risks and uncertainties set forth in this Report, including risk factors discussed in Item 1A under the heading, “Risk Factors”.

Overview

Origin is a carbon negative materials company with a mission to enable the world’s transition to sustainable materials by replacing petroleum-based materials with decarbonized materials in a wide range of end products, such as food and beverage packaging, clothing, textiles, plastics, car parts, carpeting, tires, adhesives, soil amendments, fuels, and more. We believe that our platform technology can help make the world’s transition to “net zero” possible and support the fulfillment of greenhouse gas reduction pledges made by countries as part of the United Nations Paris Agreement as well as corporations that are committed to reducing emissions in their supply chains.

Our technology can convert sustainable feedstocks such as sustainably harvested wood residues, agricultural waste, wood waste and even corrugated cardboard into materials and products that are currently made from fossil feedstocks such as petroleum and natural gas. The ability of our technology to use sustainable feedstocks that are not used in food production differentiates our technology from other sustainable materials companies that are limited to feedstocks used in food production such as vegetable oils or high fructose corn syrup and other sugars.

We believe that products made using Origin’s platform technology at commercial scales can compete directly with petroleum-derived products on both performance and price while being sustainable. Due to abundant and renewable wood supplies that have historically stable pricing, our cost of production when using these feedstocks is expected to be more stable than potential competing platforms that use other types of feedstocks. We believe that end products made at commercial scale using our platform technology and wood feedstocks will have a significant unit cost advantage over products made from other low carbon feedstocks.

We have developed a proprietary platform technology to convert biomass, or plant-based carbon, into the versatile “building block” chemicals CMF and hydrothermal carbon (“HTC”), which we collectively refer to as Furanic Intermediates, as well as oils and extractives and other co-products. At commercial scale, our platform technology with wood feedstocks is expected to be able to produce CMF and HTC with a negative carbon footprint. We believe these chemicals can replace petroleum-based inputs, lowering the carbon footprint of a wide range of materials without increasing cost or sacrificing performance.

The following discussion and analysis should be read in conjunction with our unaudited condensed consolidated financial statement and the related notes appearing elsewhere in this Report. This discussion may contain forward-looking statements based upon current expectations that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth in the sections titled “Cautionary Note Regarding Forward-Looking Statements” and “Risk Factors” as set forth elsewhere in this Report. Unless the context otherwise requires, references in this section to “Legacy Origin”, “the Company”, “we”, “us” and “our” refer to the business and operations of Legacy Origin and its consolidated subsidiaries prior to the Business Combination and to Origin Materials, Inc. and its consolidated subsidiaries, following the Closing.

Business Environment and Trends

Our business and financial performance depend on worldwide economic conditions. We face global macroeconomic challenges, particularly in light of increases and volatility in interest rates, uncertainty in markets, inflationary trends, navigating complex and evolving regulatory frameworks, and the dynamics of the global trade environment. In addition to any lingering economic impacts of the COVID-19 pandemic, we have observed market uncertainty, civil unrest, global sanctions resulting from geopolitical conflicts, bank failures, increasing inflationary pressures, supply constraints and labor shortage shortages in the past few quarters. These market dynamics, which we expect will continue into the foreseeable future, have and may continue to impact our business and financial results, including costs and revenues.

Customer We believe demand for our products, remains which our signed offtake agreements and capacity reservations have shown to be strong and broad based, with offtake and capacity reservations in excess of $10.0 billion, when our is likely to continue to exceed supply for the foreseeable future. Our commercial strategy has, accordingly, evolved from demand generation to revenue generation and the development of higher margin products. We believe demand for our products is likely to exceed supply for the foreseeable future.

We continue to see favorable tailwinds for our technology and business model. We are actively exploring several federal programs funded by the Inflation Reduction Act, including the Department of Energy's Advanced Industrial Facilities Deployment Program, or AIFD, and the Section 48C Advanced Manufacturing Tax Credit. These and other programs, many of which include climate and supply chain related directives, could provide positive momentum for us in securing additional funding for building plants and deploying our platform.

Product development progress remains strong. We continue to expand our IP position and engage in developmental activities with technical, strategic, and supply chain partners. We have demonstrated a significant performance milestone in our carbon black program, validating the suitability of our HTC-derived carbon black for automotive tires and mechanical rubber goods. Our carbon black blends were shown to meet or exceed fossil-based N660 performance for these applications and the results suggest they may be used more broadly, as well. With our first commercial plant, Origin 1, which initiated startup commenced commercial-scale production in June October 2023, we expect our ability to make production samples to increase, further bolstering our ability to advance product development objectives, including through funded joint development programs.

Key Factors and Trends Affecting Origin’s Operating Results

We are in the early stages of generating revenue. We believe that our performance and future success depend on several factors that present significant opportunities for us but also pose risks and challenges, including those discussed below and under “Risk Factors” appearing elsewhere in this Report.

Basis of Presentation

We currently conduct our business through one operating segment and our historical results are reported under U.S. GAAP and in U.S. Dollars. Upon commencement of commercial operations, we expect to expand our operations substantially, including in the United States and Canada, and as a result, we expect Origin’s future results to be sensitive to foreign currency transaction and translation risks and other financial risks that are not reflected in Origin’s historical financial statements. As a result, we expect that the financial results we report for periods after we begin commercial operations will not be comparable to the financial results included in this Report.

Components of Results of Operations

We are in the early stages of recognizing revenue and our historical results may not be indicative of our future results for reasons that may be difficult to anticipate. Accordingly, the drivers of our future financial results, as well as the components of such results, may not be comparable to our historical or projected results of operations.

Revenue

We evaluate financial performance and make resource allocation decisions based upon the results of our single operating and reportable segment. We generally procure, will produce, and sell product to be utilized in the manufacturing of finished products, for which we recognize revenue upon shipment. Our service contracts generally pay us at the commencement of the agreement and then at additional intervals as outlined in each contract. We recognize revenue as we satisfy the related performance obligations.

Cost of revenue revenues

Cost of revenue for product sales consists primarily of cost associated with the purchase of raw materials and finished goods. Also, Cost of revenue for service agreements is based on the Company elected to expense actual cost incurred which mainly consists of the direct cost from vendors and overhead costs such as payroll and benefit related to our employees who provide the service agreements as incurred under ASC topic 606 as the period of benefit is less than one year. services to customers.

Research and Development Expenses

To date, our research and development expenses have consisted primarily of development of CMF, HTC, levulinic acid, furfural, and oils and extractives, and the conversion of those chemical building blocks into products familiar to and desired by our customers, such as carbon black, furandicarboxylic acid ("FDCA"), polyethylene furanoate ("PEF"), paraxylene ("PX"), polyethylene terephthalate ("PET"), and PETF, which is a PET co-polyester incorporating FDCA and offering performance advantages over traditional PET plastic. Our research and development expenses also include personnel-related costs like stock-based compensation and professional fees, investments associated with the expansion of the Origin 1 plant and planning and construction of the Origin 2 plant, including the material and supplies to support product development and process engineering efforts.

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General and Administrative Expenses

General and administrative expenses consist primarily of personnel-related costs, including stock-based compensation and professional fees, including, the costs of accounting, audit, legal, regulatory and tax compliance.

Change in Fair Value of Assumed Common Stock Warrants Liability

The change in fair value of assumed common stock warrants liability consists of the change in fair value of the Public Warrants and Private Placement Warrants assumed in connection with the Business Combination. We expect to incur incremental income (expenses) for the fair value adjustments for the outstanding assumed common stock warrants liability at the end of each reporting period or through the exercise of the warrants.

Change in Fair Value of Earnout Liability

The change in fair value of earnout liability consists of the change in fair value of the future contingent equity shares related to the Business Combination. We expect to recognize an incremental income (expense) for the fair value adjustments of the outstanding liability at the end of each reporting period.

Other Income (Expenses)

Our other income (expenses) consists of income from governmental grant programs, interest expenses for stockholder convertible notes payable, interest income on marketable securities, and income or expenses related to changes in the fair value of assumed common stock warrants liability, redeemable convertible preferred stock warrants, earnout liability, and derivative assets and liabilities. We expect to incur incremental income (expenses) for the fair value adjustments of these assets and liabilities at the end of each reporting period.

Income Tax Expenses (Benefit)

Our income tax provision consists of an estimate for U.S. federal, state, and foreign income taxes based on enacted rates, as adjusted for allowable credits, deductions, uncertain tax positions, changes in deferred tax assets and liabilities, and changes in the tax law. We maintain a valuation allowance against the full value of our U.S. federal, state, and foreign net deferred tax assets because we believe the recoverability of the tax assets is not more likely than not.

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Results of Operations

Comparison of the Six Nine Months Ended June 30, 2023 September 30, 2023 and 2022

The following table summarizes the Company's results of operations with respect to the items set forth in such table for the six nine months ended June 30, 2023 September 30, 2023 and 2022 together with the change in such items in dollars and as a percentage.

(in thousands)	(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Variance $	Variance %	(in thousands)	Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022	Variance $	Variance %
Revenues	Revenues	$ 8,602	$ —	$ 8,602	N/A	Revenues	$ 15,742	$ —	$ 15,742	N/A

Cost of revenues (exclusive of depreciation and amortization shown separately below)	Cost of revenues (exclusive of depreciation and amortization shown separately below)	7,774	—	7,774	N/A	Cost of revenues (exclusive of depreciation and amortization shown separately below)	14,114	—	14,114	N/A
Operating expenses	Operating expenses					Operating expenses				
Research and development	Research and development	10,471	4,985	5,486	110 %	Research and development	15,398	8,717	6,681	77 %
General and administrative	General and administrative	16,275	10,935	5,340	49 %	General and administrative	23,908	16,769	7,139	43 %
Depreciation and amortization	Depreciation and amortization	635	308	327	106 %	Depreciation and amortization	1,021	488	533	109 %
Total operating expenses	Total operating expenses	27,381	16,228	11,153	69 %	Total operating expenses	40,327	25,974	14,353	55 %
Loss from operations	Loss from operations	(26,553)	(16,228)	(10,325)	64 %	Loss from operations	(38,699)	(25,974)	(12,725)	49 %
Other income (expenses)	Other income (expenses)					Other income (expenses)				
Interest income		5,440	3,768	1,672	44 %					
Interest expenses		(2)	—	(2)	N/A					
Interest income (expenses)						Interest income (expenses)	4,308	6,077	(1,769)	(29) %
Gain in fair value of derivative	Gain in fair value of derivative	494	596	(102)	(17) %	Gain in fair value of derivative	620	1,725	(1,105)	(64) %
Gain in fair value of warrant liability	Gain in fair value of warrant liability	4,623	17,029	(12,406)	(73) %	Gain in fair value of warrant liability	27,438	15,610	11,828	76 %
Gain in fair value of earnout liability	Gain in fair value of earnout liability	20,380	48,414	(28,034)	(58) %	Gain in fair value of earnout liability	39,137	63,561	(24,424)	(38) %
Other income (expenses), net		(948)	698	(1,646)	(236) %					
Other income, net						Other income, net	1,655	1,577	78	5 %
Total other income, net	Total other income, net	29,987	70,505	(40,518)	(57) %	Total other income, net	73,158	88,550	(15,392)	(17) %
Net income		$ 3,434	$ 54,277	$ (50,843)	(94) %					
Net income before income tax expenses						Net income before income tax expenses	$ 34,459	$ 62,576	$ (28,117)	(45) %

Revenue

Revenue increased $8.6 million $15.7 million during the six nine months ended June 30, 2023 September 30, 2023 compared to the same period in 2022. Our The increase in revenue is primarily attributed from attributable to our product sales. supply chain activation program. The Company did not recognize any revenue prior to December 31, 2022.

Cost of Revenue Revenues

Cost of revenue revenues increased $7.8 million $14.1 million during the six nine months ended June 30, 2023 September 30, 2023 compared to the same period in 2022. The increase is primarily attributed attributable to the purchase of finished goods for purchases associated with the Company's supply chain activation program. The Company had no cost of revenues prior to December 31, 2022.

Research and Development Expenses

Research and development expenses increased $5.5 million $6.7 million, or 110% 77%, during the six nine months ended June 30, 2023 September 30, 2023 compared to the same period in 2022. The increase is attributed attributable to additional efforts in technical business development, patent advancement, product development and general research,

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mainly generated from additional headcount and related payroll costs.

General and Administrative Expenses

General and administrative expenses increased $5.3 million $7.1 million, or 49% 43%, during the six nine months ended June 30, 2023 September 30, 2023 compared to the same period in 2022. The increase is primarily driven by additional headcount, as well as facilities costs and external professional services related to legal, audit and regulatory compliance.

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Interest income

Interest income increased $1.7 million (expenses)

Interest income decreased $1.8 million, or 44% (29)%, during the six nine months ended June 30, 2023 September 30, 2023 compared to the same period in 2022. This increase was related to The decrease is mainly driven by the overall increase in interest rates amortization of premiums and resulting higher yields earned discounts on marketable securities and bank demand deposits. securities.

Change in fair value of derivative, warrant liability, and earnout liability

The Company recognized an aggregate gain related to the fair values of the derivative, the warrant liability, and the earnout liability of $25.5 million $67.2 million during six nine months ended June 30, 2023 September 30, 2023 compared to $66.0 million an aggregate gain of $80.9 million during the same period in 2022. The change in the aggregate gain in fair values decreased $40.5 $13.7 million during six nine months ended June 30, 2023 September 30, 2023. The decrease in the gain in fair value of earnout liability of $28.0 $24.4 million is the result of revaluation, with changes in the fair value recorded in the unaudited Condensed Consolidated Statements of Operations and Comprehensive Income (Loss). The $12.4 $11.8 million decrease increase in the gain in fair value of warrant liability is the result of a decrease in the fair value of warrants due to a decrease in value of the underlying warrants. The movement in these instruments' fair values are driven by the value of the Company's stock price. The changes change in gain in fair value of derivative liabilities were due to was a $0.1 $1.1 million decrease in fair value associated with our foreign exchange sales.

Other income (expenses), net

Other income (expenses), net change $1.6 million, or 236%, during the six months ended June 30, 2023 compared to the same period in 2022. The change in other income (expenses), net was mainly related to the realized loss from the sale of marketable securities.

Comparison of the Three months ended June September 30, and 2022

The following table summarizes the Company's results of operations with respect to the items set forth in such table for the three months ended June 30, 2023 September 30, 2023 and 2022 together with the change in such items in dollars and as a percentage.

		Three Months Ended June 30,					Three Months Ended September 30,			
(in thousands)	(in thousands)	2023	2022	Variance $	Variance %	(in thousands)	2023	2022	Variance $	Variance %
Revenues	Revenues	$ 6,898	$ —	$ 6,898	N/A	Revenues	$ 7,140	$ —	$ 7,140	N/A
Cost of revenues (exclusive of depreciation and amortization shown separately below)	Cost of revenues (exclusive of depreciation and amortization shown separately below)	6,814	—	6,814	N/A	Cost of revenues (exclusive of depreciation and amortization shown separately below)	6,340	—	6,340	N/A
Operating expenses	Operating expenses					Operating expenses				
Research and development	Research and development	5,396	2,649	2,747	104 %	Research and development	4,927	3,732	1,195	32 %
General and administrative	General and administrative	8,619	5,864	2,755	47 %	General and administrative	7,633	5,834	1,799	31 %
Depreciation and amortization	Depreciation and amortization	347	160	187	117 %	Depreciation and amortization	386	180	206	114 %
Total operating expenses	Total operating expenses	14,362	8,673	5,689	66 %	Total operating expenses	12,946	9,746	3,200	33 %
Loss from operations	Loss from operations	(14,278)	(8,673)	(5,605)	65 %	Loss from operations	(12,146)	(9,746)	(2,400)	25 %

Other income (expenses)	Other income (expenses)					Other income (expenses)				
Interest income		2,426	1,936	490	25 %					
Interest expense		(2)	—	(2)	N/A					
(Loss) gain in fair value of derivative		(266)	1,430	(1,696)	(119) %					
(Loss) gain in fair value of warrant liability		(2,143)	18,803	(20,946)	(111) %					
Interest income (expenses)						Interest income (expenses)	(1,130)	2,309	(3,439)	(149) %
Gain in fair value of derivative						Gain in fair value of derivative	126	1,129	(1,003)	(89) %
Gain (loss) in fair value of warrant liability						Gain (loss) in fair value of warrant liability	22,815	(1,419)	24,234	(1708) %
Gain in fair value of earnout liability	Gain in fair value of earnout liability	7,508	33,188	(25,680)	(77) %	Gain in fair value of earnout liability	18,757	15,147	3,610	24 %
Other income, net	Other income, net	420	247	173	70 %	Other income, net	2,603	879	1,724	196 %
Total other income, net	Total other income, net	7,943	55,604	(47,661)	(86) %	Total other income, net	43,171	18,045	25,126	139 %
Net (loss) income		$ (6,335)	$ 46,931	$ (53,266)	(113) %					
Net income before income tax expenses						Net income before income tax expenses	$ 31,025	$ 8,299	$ 22,726	274 %

Revenue

Revenue increased $6.9 million $7.1 million during the three months ended June 30, 2023 September 30, 2023 compared to the same period in 2022. Our The increase in revenue is primarily attributed from attributable to our product sales. supply chain activation program. The Company did not recognize any revenue prior to December 31, 2022.

Cost of Revenue

Cost of revenue increased $6.8 million $6.3 million during the three months ended June 30, 2023 September 30, 2023 compared to the same period in 2022. The increase is primarily attributed attributable to the purchase of finished goods for associated with the Company's supply chain activation program. The Company had no cost of revenues prior to December 31, 2022.

Research and Development Expenses

Research and development expenses increased $2.7 million $1.2 million, or 104% 32%, during the three months ended June 30, 2023 September 30, 2023 compared to the same period in 2022. The increase is attributed attributable to additional efforts in technical business development, patent advancement, product development and general research, mainly generated from additional headcount and related payroll costs.

General and Administrative Expenses

General and administrative expenses increased $2.8 million $1.8 million, or 47% 31%, during the three months ended June 30, 2023 September 30, 2023 compared to the same period in 2022. The increase is primarily driven by additional headcount, as well as facilities costs and external professional services related to legal, audit and regulatory compliance.

Interest income (expenses)

Interest income decreased by approximately $3.4 million, during the three months ended September 30, 2023. The decrease is mainly driven by the amortization of discounts and premiums on marketable securities in excess of interest income earned during the quarter.

Change in fair value of derivative, warrant liability, and earnout liability

The Company recognized an aggregate gain related to the fair values of the derivative, the warrant liability, and the earnout liability of $5.1 million $41.7 million during the three months ended June 30, 2023 September 30, 2023 compared to $53.4 million $14.9 million during the same period in 2022. The change in the aggregate fair values decreased $48.3 was a gain of $26.8 million during the three months ended June 30, 2023 September 30, 2023. The decreased gain in fair value of earnout liability of $25.7 $3.6 million is the result of revaluation, with changes in the fair value recorded in the unaudited Condensed Consolidated Statements of Operations and Comprehensive Income (Loss). The $20.9 $24.2 million decreased gain in fair value of warrant liability is the result of a decrease in the fair value of warrant liability due to a decreased value in the underlying warrants. The movement in these instruments' fair values are is mainly driven by the value of the Company's stock price. The changes decrease in the gain in fair value of derivative liabilities were due to a $1.7 of $1.0 million decreased in fair value was associated with our foreign exchange sales.

Other income, net

Other income, net increased $1.7 million, or 196%, during the three months ended September 30, 2023 compared to the same period in 2022. The change in other income, net was mainly related to realized gains from the sale of marketable securities.

Non-GAAP Measures

To provide investors with additional information in connection with our results as determined in accordance with U.S. GAAP, we disclose Adjusted Earnings before Interest, Taxes, Depreciation, and Amortization ("Adjusted EBITDA") as a non-GAAP measure. Adjusted EBITDA is a key metric used by management and our board of directors (the "Board") to assess our financial performance. Adjusted EBITDA is also frequently used by analysts, investors, and other interested parties to evaluate companies in our industry, when considered alongside other U.S. GAAP measures. We use Adjusted EBITDA to supplement U.S. GAAP measures of performance to evaluate the effectiveness of our business strategies, make budgeting decisions and compare our performance against that of other companies using similar measures. This measure is not a financial measure calculated in accordance with U.S. GAAP, and it should not be considered as a substitute for net income, operating income, or any other measure calculated in accordance with U.S. GAAP, and may not be comparable to similarly titled measures reported by other companies.

Adjusted EBITDA

We believe that the presentation of Adjusted EBITDA is appropriate to provide additional information to investors about our operating profitability adjusted for certain non-cash items, non-routine items that we do not expect to continue at the same level in the future, as well as other items that are not core to our operations. Further, we believe Adjusted EBITDA provides a meaningful measure of operating profitability because we use it for evaluating our business performance, making budgeting decisions, and comparing our performance against that of other peer companies using similar measures.

We define Adjusted EBITDA as net income or loss adjusted for certain non-cash and non-recurring items, including (i) stock-based compensation expense, (ii) depreciation and amortization, (iii) interest income, (income) expenses, (iv) interest expense, (v) change in fair value of derivative, (vi) (v) change in fair value of warrants liability, (vii) (vi) change in fair value of earnout liability, and (viii) (vii) other (income) expenses, income, net.

		Three months ended June 30,		Six Months Ended June 30,			Three months ended September 30,		Nine months ended September 30,	
(in thousands)	(in thousands)	2023	2022	2023	2022	(in thousands)	2023	2022	2023	2022
Net income (loss)		$ (6,464)	$ 46,931	$ 3,305	$ 54,277					
Net income						Net income	$ 30,931	$ 8,299	$ 34,236	$ 62,576
Stock based compensation	Stock based compensation	2,405	1,656	4,651	2,573	Stock based compensation	2,380	1,146	7,031	3,719
Depreciation and amortization	Depreciation and amortization	347	160	635	308	Depreciation and amortization	386	180	1,021	488
Interest income		(2,426)	(1,936)	(5,440)	(3,768)					
Interest expense		2	—	2	—					
(Gain) loss in fair value of derivatives		266	(1,430)	(494)	(596)					
Interest (income) expenses						Interest (income) expenses	1,130	(2,309)	(4,308)	(6,077)
Gain in fair value of derivatives						Gain in fair value of derivatives	(126)	(1,129)	(620)	(1,725)

(Gain) loss in fair value of warrants liability	(Gain) loss in fair value of warrants liability	2,143	(18,803)	(4,623)	(17,029)	(Gain) loss in fair value of warrants liability	(22,815)	1,419	(27,438)	(15,610)
Gain in fair value of earnout liability	Gain in fair value of earnout liability	(7,508)	(33,188)	(20,380)	(48,414)	Gain in fair value of earnout liability	(18,757)	(15,147)	(39,137)	(63,561)
Other (income) expenses, net		(420)	(247)	948	(698)					
Other income, net						Other income, net	(2,603)	(879)	(1,655)	(1,577)
Adjusted EBITDA	Adjusted EBITDA	$ (11,655)	$ (6,857)	$ (21,396)	$ (13,347)	Adjusted EBITDA	$ (9,474)	$ (8,420)	$ (30,870)	$ (21,767)

Liquidity and Capital Resources

Sources of Liquidity

Since inception, we have financed our operations principally from the sales and issuances of redeemable preferred stock, common stock, and convertible notes, and governmental grant programs. Origin had $218.2 $189.5 million in cash, cash equivalents, restricted cash, and marketable securities as of June 30, 2023 September 30, 2023. Our cash equivalents are invested primarily in U.S. Treasury money market funds and our marketable securities are primarily U.S. Treasury notes and bonds, corporate bonds, asset-backed securities, foreign government and agency securities, and municipal bonds.

We just recently began generating revenue from our business operations. Our ability to successfully develop the products, commence commercial operations and expand the business will depend on many factors, including our ability to meet the working capital needs, the availability of equity or debt financing and, over time, our ability to generate cash flows from operations.

We will require a significant amount of cash for capital expenditures as we invest in the construction operation of Origin 1 and development of the Origin 2 plants, plant, and additional research and development. In addition to our cash on hand following the Business Combination, we anticipate that we will need substantial additional project financing and government incentives to meet our financial projections, execute our growth strategy and expand our manufacturing capability, including to finance the construction of the Origin 1 and Origin 2 plants. plant. Our ability to obtain financing for the construction of future plants may depend in part on our ability to first enter into customer agreements sufficient to demonstrate sufficient demand to justify the construction of such plants. We may also raise additional capital through equity offerings or debt financings, as well as through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties. Our future capital requirements will depend on many factors, including actual construction costs of Origin 2 plant and the operation cost of Origin 1, and Origin 2 plants, changes in the costs in our supply chain, expanded operating activities and our ability to secure customers. If our financial projections are inaccurate, we may need to seek additional equity or debt financing from outside sources, which may not be available on acceptable terms, if at all. If we are unable to raise additional capital when required, our business, financial condition and results of operations would be harmed.

We expect to continue to incur operating losses in the near term as our operating and capital expenses will increase to support the growth of the business. We expect that our general and administrative expenses and research and development expenses will continue to increase as we increase our sales and marketing activities, develop our distribution infrastructure, support our growing operations and operate as a public company.

Indebtedness

As of June 30, 2023 September 30, 2023 and December 31, 2022, we had $7.3 million and $7.2 million, respectively, of indebtedness under a Canadian government program, of which zero was received during the three and six nine months ended June 30, 2023 September 30, 2023, and 2022. Additionally,

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as of June 30, 2023 September 30, 2023, we had liability balances consisting of $5.9 million of which $5.2 million $3.5 million is notes payable, with unpaid accrued interest of $0.7 million recorded in other liabilities, long-term, $5.5 million $5.6 million other liabilities, long-term with unpaid accrued interest and a $2.5 million customer prepayment recorded in other liabilities, long-term. As of December 31, 2022, we had liability balances consisting of $5.8 million notes payable with unpaid accrued interest, $5.4 million other liabilities, long-term with unpaid accrued interest and a $2.5 million customer prepayment recorded in other liabilities, long-term.

In November 2016, Legacy Origin received a $5.0 million $5.0 million prepayment from a legacy stockholder for product from Origin 1 pursuant to an Offtake Agreement. The prepayment was to be credited against the purchase of products over the term of the agreement. The prepayment was secured by a promissory note to be repaid in cash in the event that the prepayment could not be credited against the purchase of product, for example, if Origin 1 were never constructed. The promissory note was collateralized substantially by Origin 1 and other assets of Origin Materials Canada Pioneer Limited. In May 2019, Legacy Origin and the legacy stockholder amended the Offtake Agreement and promissory note. The amendment added accrued interest of $0.2 million to the principal balance of the prepayment and provided for the prepayment amount to be repaid in three annual installments rather than being applied against the purchase of product from Origin 1. On August 1, 2022, Legacy Origin and the legacy stockholder amended the note to provide for repayment in three installments consisting of $2.7 million on September 1, 2024, $1.9 million on September 1, 2025, and $1.8 million on September 1, 2026 and to allow the legacy stockholder to offset amounts owed for the purchase of product from Legacy Origin's Origin 1 facility against amounts due under the note. At June 30, 2023 September

30, 2023 the outstanding note principal balance was $5.2 million of which $3.5 million was included in notes payable and $1.7 million of principal plus outstanding accrued interest of $0.8 million was included in other liabilities, current. At December 31, 2022, the total aggregate note principal amount of debt balance was $5.2 million with outstanding was $5.2 million and accrued interest totaled $0.7 million and $0.6 million, respectively. of $0.6 million.

Prepayments

In November 2016, Legacy Origin received a $5.0 million $5.0 million prepayment from a legacy stockholder for product from Origin 1 pursuant to an Offtake Agreement. The prepayment is to be credited against the purchase of products from Origin 1 over the term of the Offtake Agreement. Specifically, repayment is effected by applying a credit to product purchases each month over the first five years of operation of Origin 1 up to $7.5 million, which is equal to 150% of the prepayment amount. If product purchases are not sufficient to recover the advances, the application of the credit to purchases as payment of the advances will continue until fully repaid. The prepayment is secured by a note to be repaid in cash in the event the prepayment cannot be credited against the purchase of product, for example, if Origin 1 is were never constructed. The note is collateralized substantially by Origin 1 and other assets of Origin Materials Canada Pioneer Limited. If repaid in cash, the note bears an annual interest rate of the three-month London Interbank Offered Secured Overnight Financing Rate ("LIBOR" SOFR") plus 0.25% (5.31% (5.52% at June 30, 2023 September 30, 2023) and matures five years from the commercial operation date of Origin 1. At June 30, 2023 September 30, 2023 and December 31, 2022, the total principal outstanding was $5.1 million plus accrued interest of $0.4 $0.5 million and $0.3 million, respectively.

In September 2019, Legacy Origin entered into a $5.0 million $5.0 million prepayment agreement with a counterparty for the purchase of products from Origin 2. The prepayment is to be made in two equal installments: the first $2.5 million was in October 2019 and the remaining $2.5 million is due within 30 days of the customer confirming that a sample from Origin 1 meets the customer's specifications. Origin and the customer agreed to work in good faith to execute an Offtake Agreement, the agreed terms of which are set forth in the prepayment agreement, whereby 100% of the prepayment will be applied against future purchases. The prepayment agreement provides the customer a capacity reservation of up to a specified annual volume of product from Origin 1 for a term of ten years, pursuant to the terms of an Offtake Agreement. At June 30, 2023 September 30, 2023 and December 31, 2022, the total amount outstanding on this agreement was $2.5 million.

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Cash Flows for the Six Nine Months Ended June 30, 2023 September 30, 2023 Compared to the Six Nine Months Ended June 30, 2022 September 30, 2022

The following table shows a summary of cash flows for the six nine months ended June 30, 2023 September 30, 2023 and 2022:

		Six Months Ended June 30,			Nine Months Ended September 30,	
		2023	2022			
(in thousands)				(in thousands)	2023	2022
Net cash used in operating activities	Net cash used in operating activities	$ (35,634)	$ (3,032)	Net cash used in operating activities	$ (46,447)	$ (9,462)
Net cash (used in) provided by investing activities		(7,048)	38,663			
Net cash provided by investing activities				Net cash provided by investing activities	4,450	69,983
Net cash provided by financing activities	Net cash provided by financing activities	55	268	Net cash provided by financing activities	145	371
Effects of foreign exchange rate changes on the balance of cash and cash equivalents, and restricted cash held in foreign currencies	Effects of foreign exchange rate changes on the balance of cash and cash equivalents, and restricted cash held in foreign currencies	292	(3,480)	Effects of foreign exchange rate changes on the balance of cash and cash equivalents, and restricted cash held in foreign currencies	(390)	(4,549)
Net (decrease) increase in cash and cash equivalents, and restricted cash	Net (decrease) increase in cash and cash equivalents, and restricted cash	$ (42,335)	$ 32,419	Net (decrease) increase in cash and cash equivalents, and restricted cash	$ (42,242)	$ 56,343

Cash Used in Operating Activities

Net cash used in operating activities was $35.6 $46.4 million for the six nine months ended June 30, 2023 September 30, 2023, compared to net cash used in operating activities of $3.0 $9.5 million over the same period in 2022. The increase in cash used in operating activities was primarily attributable to an additional deposit advance payments in 2023 totaling of $7.9 $10.0 million included in other long-term assets during first quarter 2023 towards securing a license to technologies that can be used to produce high margin downstream products using our intermediate products as feedstock. In addition, there was an increase of $9.4 million in accounts receivable that was primarily associated with our revenue and other receivables. Furthermore, there was an advance payment of $4.2 million related to a tolling agreement with a manufacturing company to chemically convert the materials from Origin 1, and the total payment which will be fully reimbursed through a discount of the conversion fee from the manufacturing company. We also made deposits of $7.9 million included in other long-term assets to secure a license to technologies that can be used to produce high margin downstream products. In addition, there was an increase of $7.2 million in accounts receivable associated with our revenue and other receivables and net loss after reconciling adjustments was $22.4 million for the nine months ended September 30, 2023 compared to $13.7 million for the same period in 2022.

Cash (Used in) Provided by Investing Activities

Net cash used in provided by investing activities was $7.0 $4.5 million for the six nine months ended June 30, 2023 September 30, 2023, compared to net cash provided by investing activities of $38.7 $70.0 million over the same period in 2022. Our cash flows from investing activities, to date, have been comprised of purchases of property and equipment, purchase of intangible asset and purchases and maturities of our marketable securities. We expect the costs to acquire property, plant and equipment to decrease substantially in the near future as we complete following completion of construction of Origin 1, though will and to increase again well as we acquire the with acquisition of property, plant and equipment for Origin 2. The change was primarily related to the increased purchase in property, plant and equipment of $47.2 $32.3 million and increased net purchase in marketable securities of $29.1 million $38.1 million which was offset by the increase in maturities of marketable securities of $30.6 million $4.8 million.

The Company continues has continued to increase activity related to the construction development of Origin 1 and Origin 2, which is the main driver of the variation in cash used in investing activities between the two periods.

Material Cash Requirements from Known Contractual Obligations

Our material cash requirements from known contractual obligations as of June 30, 2023 September 30, 2023, consisted of:

- The total cost of Origin 1, our initial plant, in the start-up process in Sarnia, Ontario, Canada and Origin 2, which is currently in the front end front-end engineering and design phase. These costs, plus the ongoing operating loss of the Company, is are expected to be funded through a combination of Company cash and marketable securities in addition to substantial project financing and government incentives. We also expect to secure funding for plant construction under potential collaborations, strategic alliances or marketing, distribution or licensing arrangements which have not yet been secured, until such time as Origin 2 is operational.
- Operating lease liabilities that are included in our consolidated balance sheets consists of future non-cancelable minimum rental payments under operating leases for our office space, research and development space, and leases of various office equipment, warehouse space, and temporary fencing. The lease liabilities of $0.6 $0.4 million is short term and the remaining $2.0 million $4.3 million is related to long-term.

- In the near-term, the Company also expects to make payments related to the repayment agreement associated with the legacy stockholder note. The repayment in the amount of $2.7 million is due on September 1, 2024, $1.9 million is due on September 1, 2025, and $1.8 million is due on September 1, 2026 (inclusive of accrued but unpaid interest). However, the prepayment could be used to credit against the purchase of products over the term of the Offtake Agreement. For additional information regarding this repayment, see Note 11- Notes Payable to the unaudited condensed consolidated financial statements in this Report.
- In addition, the Company has a prepayment agreement with a counterparty with $2.5 million due within 30 days of the customer confirming that a sample from Origin 1 meets the customer's specifications. The amount due could be used to apply against future purchases. For additional information regarding this repayment, see Note 12-Other Liabilities, Long-term to the unaudited condensed consolidated financial statements in this Report.

Critical Accounting Policies and Estimates

Our financial statements have been prepared in accordance with U.S. GAAP. In the preparation of these condensed consolidated financial statements, we are required to use judgment in making estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities as of the date of the financial statements, as well as the reported expenses incurred during the reporting periods. On an ongoing basis, we evaluate our estimates and assumptions. Our actual results may differ from these estimates under different assumptions or conditions.

We consider an accounting judgment, estimate or assumption to be critical when (1) the estimate or assumption is complex in nature or requires a high degree of judgment and (2) the use of different judgments, estimates and assumptions could have a material impact on the consolidated financial statements. Our significant accounting policies are described in Note 3 to our unaudited condensed consolidated financial statements included elsewhere in this Report. Our critical accounting policies and estimates were described in Part II, Item 7, Critical Accounting Policies and Estimates in our Annual Report on Form 10-K for the year ended December 31, 2022, which was filed with the SEC on February 23. 2023 (the "Annual Report"). The critical accounting policies and estimates have been updated to include revenue recognition since our Annual Report. Accordingly, these are the policies and estimates we believe are the most critical to aid in fully understanding and evaluating our consolidated financial condition and results of operations:

- The recognition, measurement and valuation of stock-based equity awards
- The estimates used in the determination of the fair value of the assumed common stock warrant liability
- The estimates used in the determination of the fair value of the earnout liability
- The recognition, measurement and valuation of marketable securities

- The revenue recognition from contracts with customers

Recent Accounting Pronouncements

See Note 5 to the unaudited condensed consolidated financial statements in this Report for more information about recent accounting pronouncements, the timing of their adoption, and our, to the extent it has made one, of their potential impact on our financial condition and its results of operations and cash flows.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to a variety of market and other risks, including the effects of changes in interest rates, inflation and foreign currency translation and transaction risks, as well as risks to the availability of funding sources, hazard events and specific asset risks.

Interest Rate Risk

The market interest risk in our financial instruments and our financial positions represents the potential loss arising from adverse changes in interest rates. As of June 30, 2023 September 30, 2023 and December 31, 2022, we had cash and cash equivalents and marketable securities of $217.7 million $189.5 million and $323.3 million, respectively, consisting of interest-bearing money market accounts and marketable securities, for which the fair market value would be affected by changes in the general level of U.S. interest rates. However, due to the short-term maturities and the low-risk profile of our investments, an immediate 10% change in the interest rate would not have a material effect on the fair market value of our cash and cash equivalents and marketable securities.

Foreign Currency Risk

Our functional currency is the U.S. dollar, while our Canadian subsidiaries' functional currency is the Canadian dollar. This can expose us to both currency transaction and translation risk. To date, we have not had material exposure to foreign currency fluctuations and have not hedged such exposure, although we may do so in the future.

Certain marketable debt securities may be denominated in foreign currencies. At June 30, 2023 September 30, 2023, we had marketable debt securities denominated in U.S. dollar, Australian dollar, and British pound sterling. We pursue our objective of limiting foreign currency exposure by utilizing foreign currency forward contracts to offset foreign exchange risk. Our foreign currency forward contracts are generally short-term in duration. We neither use these foreign currency forward contracts for trading purposes nor do we currently designate these forward contracts as hedging instruments pursuant to Accounting Standards Codification Topic 815, *Derivatives and Hedging*. Accordingly, we record the fair values of these contracts as of the end of our reporting period to our condensed consolidated balance sheets with changes in fair values recorded to our condensed consolidated statements of operations. Given the short duration of the forward contracts, the amount recorded is not significant. Our ultimate realized gain or loss with respect to foreign currency exposures will generally depend on the size and type of cross-currency transactions that we enter into, the currency exchange rates associated with these exposures and changes in those rates, the net realized gain or loss on our foreign currency forward contracts and other factors.

Inflation Risk

Inflation rates continue to have an effect on worldwide economies. Inflation generally affects us by increasing our cost of labor and may also increase transportation and construction costs due, for example, to higher fuel prices. We believe that inflation has not had a material effect on our condensed consolidated financial statements included in Part I, Item 1 of this Report.

Item 4. Controls and Procedures

Limitations on Effectiveness of Controls and Procedures

In designing and evaluating our "disclosure controls and procedures," as such term is defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and "internal controls over financial reporting," as such term is defined in Rule 13a-15(f) under the Exchange Act, our management, including our Co-Chief Executive Officers and Chief Financial Officer, believe that our disclosure controls and procedures and our internal control over financial reporting are designed to provide reasonable assurance of achieving their objectives and are effective at the reasonable assurance level. Our management does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all instances of fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control deficiencies and instances of fraud, if any, have been detected. The design of any system of controls also is based partly on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Evaluation of Disclosure Controls and Procedures

Our management, under the direction of our Co-Chief Executive Officers and Chief Financial Officer, has evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of the period end of the quarter covered by this Annual Quarterly Report on Form 10-K. 10-Q. Based on this evaluation, our management, including our Co-Chief Executive Officers and Chief Financial Officer, has concluded that, as of June 30, 2023 September 30, 2023, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control Over Financial Reporting

There has been no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act), during the six nine months ended June 30, 2023 September 30, 2023 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. — OTHER INFORMATION

Item 1. Legal Proceedings

Not applicable.

Item 1A. Risk Factors

The following risk factors summary and other information included in this Report should be carefully considered. The summary risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not currently known to us or that we currently deem less significant may also affect our business operations or financial results. If any of the following risks actually occur, our stock price, business, operating results and financial condition could be materially adversely affected. For more information, see below for more detailed descriptions of each risk factor.

- We are an early stage company with a history of losses and uncertain future profitability, and our financial projections may differ materially from actual results.
- Our business plan assumes we can secure substantial additional project financing and government incentives, which may be unavailable on favorable terms, if at all.
- Construction of our plants may not be completed in the expected timeframe or in a cost-effective manner. Any delays in the construction of our plants could severely impact our business, financial condition, results of operations and prospects.
- We plan to rely initially on a limited number of plants to meet customer demand in the near-term.
- We have not produced our products in large commercial quantities and may not manage growth effectively.
- Our offtake agreements with certain customers include liquidated damages, advance repayment and/or termination provisions that may be triggered if we fail to timely complete plant construction or commence our commercial operations.
- We plan to rely on a limited number of customers for a significant portion of our near-term revenue.
- Our industry is highly competitive, and we may lose market share to producers of products that can be substituted for our products, which may have an adverse effect on our results of operations and financial condition.
- Increases or fluctuations in the costs of our raw materials or other operating costs may affect our cost structure.
- We are dependent on third-party suppliers and service providers, some of which are sole source suppliers, who may fail to deliver raw materials or equipment or fail to supply needed services at all or according to schedules, prices, quality and volumes that are acceptable to us, or we may be unable to manage these supplies effectively.
- We have entered and may enter in the future into collaborations, strategic alliances, and licensing arrangements that involve significant risks and may not produce the benefits we anticipate.
- Compliance with extensive environmental, health and safety laws could require material expenditures, changes in our operations or site remediation, and we may be unable to timely obtain permits and regulatory approvals necessary for our operations and products, which could prevent us from operating when, how, and where we intend and harming our business.
- Our business relies on proprietary information and other intellectual property, and our failure to protect our intellectual property rights could harm our competitive advantages with respect to the use, manufacturing, sale or other commercialization of our processes, technologies and products, which may have an adverse effect on our results of operations and financial condition.
- We may face patent infringement and other intellectual property claims that could be costly to defend, result in injunctions and significant damage awards or other costs (including indemnification of third parties or costly licensing arrangements, if licenses are available at all) and limit our ability to use certain key technologies in the future or require development of non-infringing products or technologies, which may cause us to incur significant unexpected costs, prevent us from commercializing our products and otherwise harm our business.
- We rely on trade secrets to protect our technology, and our failure to maintain trade secret protection could limit our ability to compete.

- We previously identified a material weakness in our internal control over financial reporting that we have concluded has been remediated, though we may identify additional material weaknesses in the future or fail to maintain effective internal control over financial reporting, which may result in material misstatements of our consolidated financial statements or result in failure to meet our periodic reporting obligations.
- Our management has limited experience in operating a public company.

The following risk factors apply to our business and operations. These risk factors are not exhaustive, and investors are encouraged to perform their own investigation with respect to our business, financial condition and prospects. We may face additional risks and uncertainties that are not presently known to us, or that we currently deem immaterial, which may also impair our business. The following discussion should be read in conjunction with the unaudited consolidated financial statements and notes to such consolidated financial statements included elsewhere in this Report and the "Management's Discussion and Analysis of Financial Condition and Results of Operations" section of this Report.

Risks Related to Our Business

We are an early stage company with a history of losses and our future profitability is uncertain.

We have had a history of net losses due to our primary focus on research and development, plant construction, capital expenditures and early-stage commercial activities. Substantially all of our net losses since inception have resulted from our plant construction, research and development, and general and administrative costs associated with our operations. We have only recently begun generating revenue, and we expect that our net losses from operations will continue for the foreseeable future. Based on our estimates and projections, which are subject to significant risks and uncertainties, we do not expect to reach our commercial scale production to be limited for several years and challenges with the design, construction, funding, and labor and equipment supply for our plants may further delay this timeline. Even if as we are able commercialize and begin to commercialize our products and generate revenue from product sales of our products, we may not become profitable for many years, if at all.

Our potential profitability is dependent upon many factors, including our ability to effectively operate our current plants, complete construction development of current and future plants, maintain an adequate supply chain, anticipate and react to demand for our products, manufacture our products on a commercial scale, secure additional customer commitments, and otherwise execute our growth plan. We expect the rate at which we will incur losses to be significantly higher in future periods as we:

- expand our commercial production capabilities and incur construction costs associated with building developing our plants;
- increase our expenditures associated with our supply chain, including sourcing primary feedstock for our products;
- increase our spending on research and development for new products;
- begin full scale full-scale commercial production of our products;
- increase our sales and marketing activities and develop our distribution infrastructure; and
- increase our general and administrative functions to support our growing operations and to operate as a public company.

Because we will incur the costs and expenses from these efforts before receiving meaningful revenue, our losses in future periods could be significant. We may find that these efforts are more expensive than we currently estimate or that these efforts may not result in revenues, which would further increase our losses.

We may not manage growth effectively.

Our failure to manage growth effectively could harm our business, results of operations and financial condition. We anticipate that a period of significant expansion will be required to address potential growth. This expansion will place a significant strain on our management, operational and financial resources. To manage the growth of our operations and personnel, we must establish appropriate and scalable operational and financial systems, procedures and controls and establish and maintain a qualified finance, administrative and operations staff. We may be unable to hire, train, retain and manage the necessary personnel or to identify, manage and exploit potential strategic relationships and market opportunities.

Our business plan assumes we can secure substantial additional project financing and government incentives, which may be unavailable on favorable terms, if at all.

We expect to need substantial additional project financing and government incentives in order to execute our growth strategy and expand our manufacturing capability. We have not yet secured such project financing and government incentives, and they may not be available on commercially reasonable terms, if at all. In particular, our ability to obtain financing for the construction of future plants may depend in part on our ability to first enter into customer agreements sufficient to demonstrate sufficient demand to justify the construction of such plants. If we are unable to obtain such financing and government incentives, or secure sufficient customer agreements, on commercially reasonable terms, or at all, we will not be able to execute our growth strategy.

To the extent that we raise additional capital in through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms of those securities may include liquidation or other preferences that adversely affect your rights as a common stockholder. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making acquisitions or capital expenditures or declaring dividends. Debt financing could also have significant negative consequences for our business, results of operations and financial condition, including, among others, increasing our vulnerability to adverse economic and industry conditions, limiting our ability to obtain additional financing, requiring the dedication of a substantial portion of our cash flow from operations to service our indebtedness, thereby reducing the amount of our cash flow available for other purposes, limiting our flexibility in planning for, or reacting to, changes in our business, and placing us at a possible competitive disadvantage compared to less leveraged competitors or competitors that may have better access to capital resources.

If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or products, or grant licenses on terms that may not be favorable to us. us, or make other concessions. If we are unable to raise additional funds through equity or debt financings or other arrangements when needed, we may be required to delay, limit, reduce or terminate our commercialization, research and development efforts or grant rights to third parties to market and/or develop products that we would otherwise prefer to market and develop ourselves.

If we seek government grants, incentives or subsidies, their terms may be limiting or restrict certain of our planned operations, thereby requiring us to alter our operating plans and materially impacting our financial projections and projected results of operations. Government grants may also be terminated, modified or recovered under certain conditions without our consent.

Our outstanding secured and unsecured indebtedness, ability to incur additional debt and the provisions in the agreements governing our current debt, and certain other agreements, could harm our business, financial condition, results of operations and prospects.

Our debt service and similar obligations could have important consequences to us for the foreseeable future, including that our ability to obtain additional financing for capital expenditures, working capital or other general corporate purposes may be impaired and we may be or become substantially more leveraged than some of our competitors, which could place us at a relative competitive disadvantage and make us more vulnerable to changes in market conditions and governmental regulations.

We are required to maintain compliance with non-financial and other covenants under our debt and similar agreements. There are and will be operating or financial restrictions and covenants in certain of our debt and similar agreements, including the promissory notes and prepayment agreements we are party to, as well as certain other agreements to which we are or may become a party. These limit, among other things, our ability to incur certain additional debt, create certain liens or other encumbrances and sell assets. These covenants could limit our ability to engage in activities that may be in our best long-term interests. Our failure to comply with certain covenants in these agreements could result in an event of default under the various debt and similar agreements, allowing lenders to accelerate the maturity for the debt under these agreements and to foreclose upon any collateral securing the debt. Under such circumstances, we might not have sufficient funds or other resources to satisfy all of our obligations.

We are exposed to credit risk in our activities related to potential nonperformance by customers.

In the normal course of our business, we provide payment terms to certain of our customers. As a result, our business could be adversely affected if our customers' financial condition deteriorates and they are unable to repay us. This risk may

increase if there is a general economic downturn affecting a large number of our customers or if our customers fail to manage their business effectively or adequately disclose their financial condition to us. The Company manages the risk of customer default through a combination of due diligence, contractual terms, and a diversified customer base. The number of customers, as well as our ability to discontinue service, contributes to reduce credit risk with respect to accounts receivable. Despite such mitigation efforts, customer defaults may occur.

Risks Related to Our Operations and Industry

Construction of our plants may not be completed in the expected timeframe or in a cost-effective manner. Any delays in the construction of our plants could severely impact our business, financial condition, results of operations and prospects.

Our projected financial performance and results of operations, including our ability to achieve commercial scale production, depend on our ability to construct several commercial scale plants. In particular, except for Origin 2, subject to finalization of economic incentives, we have not selected a site for any of our future planned plants, and may have difficulty finding a site with appropriate infrastructure and access to raw materials. With respect to these future plants, we also do not have agreements with engineering, procurement or construction firms. Consequently, we cannot predict on what terms such firms may agree to design and construct our future plants. If we are unable to construct these plants within the planned timeframes, in a cost-effective manner or at all due to a variety of factors, including, but not limited to, a failure to acquire or lease land on which to build our plants, a stoppage of construction as a result of health epidemics, disruptions caused by the recent global sanctions imposed against Russia following its military intervention in Ukraine, which is a major supplier of certain metals such as nickel used in materials of construction, unexpected construction problems, permitting and other regulatory issues, severe weather, inflationary pressures, labor disputes, and issues with subcontractors or vendors, including payment disputes, which we have previously experienced, our business, financial condition, results of operations and prospects could be severely impacted.

The construction and commissioning of any new project is dependent on a number of contingencies some of which are beyond our control. There is a risk that significant unanticipated costs or delays could arise due to, among other things, errors or omissions, unanticipated or concealed project site conditions, including subsurface conditions and changes to such conditions, unforeseen technical issues or increases in plant and equipment costs, insufficiency of water supply and other utility infrastructure, inadequate contractual arrangements, or design changes and associated or additional technical development work related, for example, to new or different process steps or product streams, or changes in the scale of equipment or operations. Should these or other significant unanticipated costs or delays arise, this could have a material adverse impact on our business, financial performance and operations. No assurance can be given that construction will be completed on time or at all, or as to whether we will have sufficient funds available to complete construction.

We plan to rely on a limited number of plants as our primary sources of revenue and to meet customer demand.

Our operating plan assumes that we will rely on a limited number of plants to meet customer demand and that these plants will supply most of our products until additional plants come online. Adverse changes or developments affecting these facilities could impair our ability to produce our products. Any shutdown or period of reduced production at these facilities, which may be caused by regulatory noncompliance or other issues, as well as other factors beyond our control, such as severe weather conditions, natural disaster, fire, power interruption, work stoppage, disease outbreaks or pandemics (such as COVID-19), equipment failure or delay in supply delivery, would, among other things, significantly disrupt our ability to recognize revenue, execute our expansion plans, and meet our contractual obligations and customer demand. In addition, our plant equipment may be costly to replace or repair, and our equipment supply chains may be disrupted in connection with pandemics, trade wars and sanctions (such as those imposed against Russia following its military intervention in Ukraine), or other factors. If any material amount of our equipment is damaged, we could be unable to predict when, if at all, we could replace or repair such equipment or find suitable alternative equipment, which could adversely affect our business, financial condition, results of operations and prospects. Performance guarantees may not be sufficient to cover damages or losses, or the guarantors under such guarantees may not have the ability to pay. Any We may be unable to obtain appropriate types or amounts of insurance, and any insurance coverage we have may not be sufficient insufficient to cover all of our potential losses and may not or continue to be available to us on acceptable terms, or at all.

We may be delayed in procuring, or be unable to procure, necessary capital equipment.

While much of the equipment we use to produce our products is currently widely available, we rely on outside companies to continue to manufacture the equipment necessary to produce our products. In addition, some equipment we use to produce our products requires significant lead time to manufacture. If our suppliers of capital equipment are unable or

unwilling to provide us with necessary capital equipment to manufacture our products or if we experience significant delays in obtaining the necessary manufacturing equipment, or parts necessary to repair and maintain that equipment, our business, results of operations and financial condition could be adversely affected. The construction of our plants may also require a substantial portion of certain materials and supplies relative to the overall global supply of such materials and supplies. If we are unable to secure an adequate supply of such materials and supplies on commercially reasonable terms, or at all, the construction of our plants may be delayed or terminated.

We have not yet produced our products in large commercial quantities.

We have no experience in producing large quantities of our products. While we have succeeded in producing small amounts of our products in our pilot plants for customer trials and testing purposes, we have not yet only recently commenced large-scale commercial-scale production. There are significant technological and logistical challenges associated with producing, marketing, selling and distributing products in the specialty chemicals industry, including our products, and we may not be able to resolve all of the difficulties that may arise in a timely or cost-effective manner, or at all. While we believe that we understand the engineering and process characteristics necessary to successfully build and operate our additional planned facilities and to scale up to larger facilities, we may not be able to cost-effectively manage such construction and operation at a scale or quality consistent with customer demand in a timely or economical manner.

Any decline in the value of carbon credits associated with our products could harm our results of operations, cash flow and financial condition.

The value of our products may be dependent on the value of carbon credits, programs relating to low-carbon materials and products standards and other similar regulatory regimes or the implicit value of decarbonized materials. The value of these credits fluctuates based on market and regulatory forces outside of our control. There is a risk that the supply of low-carbon alternative materials and products outstrips demand, resulting in the value of carbon credits declining. Any such declines could mean that the economic benefits from our customers' efforts to decarbonize their operations might not be realized. Any decline in the value of carbon credits associated with our products could harm our results of operations, cash flow and financial condition.

We expect to rely on a limited number of customers for a significant portion of our near-term revenue.

We currently have offtake and capacity reservation agreements with a limited number of customers, from which we expect to generate most of our revenues in the near future. The loss of one or more of our significant customers, a substantial reduction in their orders, their failure to exercise customer options to enter into new offtake agreements or purchase product, their unwillingness to extend contractual deadlines if we fail to meet production, product, or specification requirements, their inability to perform under their contracts or a significant deterioration in their financial condition could harm our business, results of operations and financial condition. If we fail to perform under the terms of these agreements, the customers could seek to terminate these agreements and/or pursue damages against us, including liquidated damages in certain instances, which could harm our business.

Our offtake agreements with certain customers include termination, liquidated damages and/or advance repayment provisions that may be triggered if we fail to timely complete plant construction or commence our commercial operations.

Our offtake agreements with certain customers allow those customers to terminate the agreements if specified construction and product delivery requirements are not satisfied. For example, under one of these agreements, if Origin 1 had not commenced commercial operation by December 31, 2021 or we had not delivered specified product volume from Origin 1 by September 30, 2022, then we could be required to pay liquidated damages up to an aggregate of $0.2 million. The customer may also terminate the agreement and any outstanding secured promissory note resulting from an advance payment made to us by that customer will become due immediately. These milestones were deferred to 2023 in order to facilitate the negotiation of an amendment to the agreement, including the milestone achievement dates. As of the date hereof, the negotiation is ongoing. The outstanding obligations under that promissory note, together with accrued interest, totaled an aggregate of $5.5 $5.6 million and $5.4 million as of June 30, 2023 September 30, 2023 and December 31, 2022, respectively.

Our products may not achieve market success.

We currently have a relatively small number of binding customer commitments for commercial quantities of our products. Some prospective customers are currently evaluating and testing our products prior to making large-scale purchase decisions. Other products we expect to develop have not yet started customer evaluation and testing. The successful commercialization of our products is dependent on our customers' ability to commercialize the end-products that utilize our products, which may gain market acceptance slowly, if at all. Furthermore, the technology for our products is new, and the economic performance and ultimate carbon footprint of these products is uncertain. The market for carbon-negative products is nascent and subject to significant risks and uncertainties.

Market acceptance of our products will depend on numerous factors, many of which are outside of our control, including, among others:

- public acceptance of such products;
- our ability to produce products of consistent quality that offer functionality comparable or superior to existing or new products;
- our ability to produce products fit for their intended purpose;
- our ability to produce new products or customizations of existing products to match changes in public demand;
- our ability to timely obtain necessary regulatory approvals for our products;
- the speed at which potential customers qualify our products for use in their products;
- the pricing of our products compared to competitive and alternative products, including petroleum- based plastics;
- the strategic reaction of companies that market competitive products;
- our reliance on third parties who support or control distribution channels; and
- general market conditions, including fluctuating demand for our products.

Our industry is highly competitive, and we may lose market share to producers of products that can be substituted for our products, which may have an adverse effect on our results of operations and financial condition.

The specialty chemicals industry is highly competitive, and we face significant competition from both large established producers of fossil-based materials, recycled fossil-based materials and a variety of current and future producers of low-carbon, biodegradable, or renewable resource-based materials. Many of our current competitors have longer operating histories, greater name recognition, larger customer bases and significantly greater financial, sales and marketing, manufacturing, distribution, technical and other resources than us. Our competitors may be able to adapt more quickly to new or emerging technologies, changes in customer requirements and changes in laws and regulations. In addition, current and potential competitors have established or may establish financial or strategic relationships among themselves or with existing or potential customers or other third parties. Accordingly, new competitors or alliances among competitors could emerge and rapidly acquire significant market share.

Our competitors may also improve their relative competitive position by successfully introducing new products or products that can be substituted for our products, improving their manufacturing processes, or expanding their capacity or manufacturing capabilities. Further, if our competitors are able to compete at advantageous cost positions, this could make it increasingly difficult for us to compete in markets for less-differentiated applications. If we are unable to keep pace with our competitors' product and manufacturing process innovations or cost position, it could harm our results of operations, financial condition and cash flows.

Our commercial success may be influenced by the price of petroleum relative to the price of non-fossil feedstocks.

Our commercial success may be influenced by the cost of our products relative to petroleum-based products. The cost of petroleum-based products is in part based on the price of petroleum, which is subject to historically fluctuating prices. Our production plans assume use of biomass feedstocks such as timber and forest residues, which historically have experienced low volatility relative to petroleum. If the price of bio-based feedstocks increases and/or the price of petroleum decreases, our products may be less competitive relative to petroleum-based products. A material decrease in the cost of conventional petroleum-based products may require a reduction in the prices of our products for them to remain attractive in the marketplace and may negatively impact our revenues.

Increases or fluctuations in the costs of our raw materials may affect our cost structure.

The price of raw materials may be impacted by external factors, including uncertainties associated with war, terrorist attacks, weather and natural disasters, health epidemics or pandemics (such as COVID-19), civil unrest, the effects of climate change or political instability, plant or production disruptions, strikes or other labor unrest, inflationary pressures, breakdown or degradation of transportation infrastructure used in the delivery of raw materials or changes in laws or regulations in any of the countries in which we have has significant suppliers.

Our technology is designed to use biomass such as local timber and forest residues as raw materials. The cost of these raw materials is generally influenced by supply and demand factors, and our operating plans include assumptions that the timber and forest residues we intend to use as feedstock will be available at prices similar to historic levels with low volatility. As we continue to expand our production, we will increase our demand for timber and forest residues which may alter the anticipated stability in the costs of our raw materials and potentially drive an increase in the cost of such raw materials.

Our results of operations will be directly affected by the cost of raw materials. The cost of raw materials comprises a significant amount of our total cost of goods sold and, as a result, movements in the cost of raw materials, and in the cost of other inputs, will impact our profitability. Because a significant portion of our cost of goods sold is represented by these raw materials, our gross profit margins could be adversely affected by changes in the cost of these raw materials if we are unable to pass the increases on to our customers.

If our raw material prices experience volatility, there can be no assurance that we can continue to recover raw material costs or retain customers in the future. As a result of our pricing actions, customers may become more likely to consider competitors' products, some of which may be available at a lower cost. Significant loss of customers could adversely impact our results of operations, financial condition and cash flows.

We are dependent on third-party suppliers and service providers, some of which are sole source suppliers, who may fail to deliver raw materials or equipment or fail to supply needed services at all or according to schedules, prices, quality and volumes that are acceptable to us, or we may be unable to manage these supplies effectively.

Parts of our supply chain currently are dependent on a limited number, and in some cases a single, third-party supplier or service provider for key inputs, equipment, and services including for conversion of our chemical intermediates produced by our Origin 1 plant into downstream derivatives and applications. We have not yet secured agreements with our preferred (or the only) supplier of some of these inputs, equipment, and services, and we may be unable to do so on a time frame or terms we find acceptable, or at all. Our reliance on few or single suppliers in a limited number of locations risks multiple supply chain vulnerabilities. The military conflict in Ukraine can exacerbate the risks to our supply chain to the extent our suppliers depend on raw materials, components, or parts from Russia or Ukraine.

Finding substitute suppliers and service providers, to the extent they exist, may be expensive, time-consuming, or impossible and could interrupt or delay the supply of our products causing us to lose revenue and potentially harm our customer relationships or reputation and expose us to contractual remedies under our supply agreements. To the extent we do not have firm commitments from our third-party suppliers or service providers for a specific time period or capacity, quantity, and/or pricing, our suppliers may allocate capacity to their other customers, which could make that capacity unavailable to us when needed or at reasonable prices and prevent us from delivering our products on time or at all. For instance, if we are unable to timely obtain conversion services for some of our intermediates, those intermediates may need to be stored for extended periods and could degrade or become unusable, forcing us to dispose of the intermediates and/or replace them at additional cost. Any of these occurrences could adversely affect our supply chain and cause serious harm to our business.

Our manufacturing processes are designed to use biomass such as local timber and forest residues as our preferred raw materials. However, we may be unable to secure agreements with local suppliers for the necessary amount of raw materials in certain circumstances. Additionally, if our suppliers do not accurately forecast and effectively allocate sufficient materials to us or if they are not willing to allocate sufficient supplies to us, it may reduce our access to raw materials needed for our manufacturing and require us to search for new suppliers. The unavailability of any raw materials could result in production delays, idle manufacturing facilities, product design changes and loss of access to important residues supporting our production, as well as impact our capacity to fulfill our obligations under our offtake agreements. In addition, unexpected changes in business conditions, materials pricing, labor issues, wars, trade policies, natural disasters, epidemics or pandemics, trade and shipping disruptions, and other factors beyond our or our suppliers' control could also affect these suppliers' ability to deliver components to us or to remain solvent and operational.

Additionally, we may be unsuccessful in our continuous efforts to negotiate with existing suppliers to obtain cost reductions and avoid unfavorable changes to terms, or source less expensive suppliers for certain materials, especially in light of the overall increases in supply and shipment pricing. Any of these occurrences may harm our business, prospects, financial condition and operating results.

If we are required to obtain alternate sources for raw materials because a supplier is unwilling or unable to execute or perform under raw material supply agreements, if a supplier terminates its agreements with us, if a supplier is unable to meet increased demand as our commercial scale production expands, if we are unable to renew its contracts or if we are unable to obtain new long-term supply agreements to meet changing demand, we may not be able to obtain these raw materials in sufficient quantities, on economic terms, or in a timely manner, and we may not be able to enter into long-term supply agreements on terms as favorable to us, if at all. A lack of availability of raw materials could limit our production capabilities and prevent us from fulfilling customer orders, and therefore harm our results of operations and financial condition.

As the scale of our manufacturing increases, we will also need to accurately forecast, purchase, warehouse and transport raw materials at high volumes to our manufacturing facilities internationally. If we are unable to accurately match the timing and quantities of raw material purchases to our actual needs or successfully implement inventory management and warehousing systems, we may incur unexpected production disruption, storage, transportation and write-off costs, which may harm our business and operating results.

Maintenance, expansion and refurbishment of our facilities, the construction of new facilities and the development and implementation of new manufacturing processes involve significant risks.

Our facilities may require regular or periodic maintenance, upgrading, expansion, refurbishment or improvement. Any unexpected operational or mechanical failure, including failure associated with breakdowns and forced outages, could reduce our facilities' production capacity below expected levels, which would reduce our production capabilities and

ultimately our revenues. Unanticipated capital expenditures associated with maintaining, upgrading, expanding, repairing, refurbishing, or improving our facilities may also reduce our profitability. Our facilities may also be subject to unanticipated damage as a result of natural disasters, terrorist attacks or other events.

If we make any major modifications to our facilities, such modifications likely would result in substantial additional capital expenditures and could prolong the time necessary to bring the facility online. We may also choose to refurbish or upgrade our facilities based on our assessment that such activity will provide adequate financial returns. However, such activities require time for development and capital expenditures before commencement of commercial operations, and key assumptions underpinning a decision to make such an investment may prove incorrect, including assumptions regarding construction costs and timing, which could harm our business, financial condition, results of operations and cash flows.

The construction of new manufacturing facilities entails a number of risks and assumptions, including the ability to begin production within the cost and timeframe estimated and to attract a sufficient number of skilled workers to meet the needs of the new facility. Additionally, our assessment of the projected benefits associated with the construction of new manufacturing facilities is subject to a number of estimates and assumptions, which in turn are subject to significant economic, competitive and other uncertainties that are beyond our control. If we experience delays or increased costs, our estimates and assumptions are incorrect, or other unforeseen events occur, our business, ability to supply customers, financial condition, results of operations and cash flows could be adversely impacted.

Finally, we may not be successful or efficient in developing or implementing new production processes. Innovation in production processes involves significant expense and carries inherent risks. Such risks may include difficulties in designing, developing, implementing, and scaling up new process technologies, development and production timing delays, lower than anticipated manufacturing yields, product defects, and inability to consistently meet customers' product specifications, performance and carbon intensity, or cost requirements, among others. Errors, defects in materials, operating permit and license delays, customer product returns, interruption in our supply of materials or resources, and disruptions at our facilities due to accidents, maintenance issues, or unsafe working conditions, all could affect the timing, efficiency, or success of our production processes. Such production issues can lead to increased costs and may affect our ability to meet product demand, which could adversely impact our business and results from operations.

We may not be successful in finding future strategic partners for continuing development of additional offtake and feedstock opportunities or tolling and downstream conversion of our products.

We may seek to develop additional strategic partnerships to increase feedstock supply and offtake amounts due to manufacturing constraints or capital costs required to develop our products. We may not be successful in our efforts to establish such strategic partnerships or other alternative arrangements for our products or technology because our research and development pipeline may be insufficient, our products may be deemed to be at too early of a stage of development for collaborative effort or third parties may not view our products as having the requisite potential to demonstrate commercial success.

If we are unable to reach agreements with suitable collaborators on a timely basis, on acceptable terms, or at all, we may have to curtail the development of our products, delay commercialization, reduce the scope of any sales or marketing activities or increase expenditures and undertake development or commercialization activities at our own expense. If we elect to fund development or commercialization activities on our own, we may need to obtain additional expertise and additional capital, which may not be available to us on acceptable terms or at all. If we fail to enter into collaborations and do not have sufficient funds or expertise to undertake the necessary development and commercialization activities, we may not be able to develop additional products and our business, financial condition, results of operations and prospects may be materially and adversely affected.

We may rely heavily on future collaborative and supply chain partners.

We have entered into, and may enter into, strategic partnerships to develop and commercialize our current and future research and development programs with other companies to accomplish one or more of the following:

- obtain capital, equipment and facilities;
- obtain funding for research and development programs, product development programs and commercialization activities;
- obtain expertise in relevant markets;

- obtain access to raw materials;
- obtain sales and marketing services or support;
- obtain conversion services and other supply chain support; and/or
- obtain access to intellectual property and ensure freedom to operate.

We may not be successful in establishing or maintaining suitable partnerships, and we may not be able to negotiate collaboration agreements having terms satisfactory to us, or at all. Failure to make or maintain these arrangements or a delay or failure in a collaborative partner's performance under any such arrangements could harm our business and financial condition.

In addition, global supply chain disruptions have caused, and may continue to cause, delays in the shipment of goods, particularly those made in Asian countries. We have incurred, and may continue to incur, additional costs to expedite deliveries of such goods or to obtain substitute goods that are available to us sooner. Continued supply chain disruptions and our efforts to mitigate them may adversely impact our financial condition, results of operations, and cash flows.

We have entered into and may in future enter into collaborations, strategic alliances, or licensing arrangements, which expose us and our intellectual property to competitive risks and limitations associated with third-party collaborations and that may not produce the benefits we anticipate.

We have entered, and may in the future enter, into license and collaboration arrangements for the development and production of some of our materials and products. In the future, we may enter into additional license and collaboration arrangements. Any collaboration we enter into is subject to numerous risks. Such risks may include, among others, collaborators' significant discretion to determine the effort and resources they will apply to the collaboration, to delay or elect not to continue development of a product or process under the collaboration, or to develop, independently or with third parties, products or processes that compete directly or indirectly with our products or manufacturing processes. A collaborator's development, sales, or marketing activities or other operations may not comply with applicable laws resulting in civil or criminal proceedings.

In addition, we could grant exclusive rights to our collaborators that would prevent us from collaborating with others. Collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability. Our collaborators may own or co-own intellectual property covering products that result from our collaboration with them, depriving us of the exclusive right to develop or commercialize such intellectual property. Disputes may arise with respect to the ownership of any intellectual property developed pursuant to our collaborations.

Disputes between us and a collaborator may delay or terminate the development or commercialization of our products or result in costly litigation or arbitration that diverts management attention and resources. Termination of a collaboration may also result in a need for additional capital to pursue further development of the applicable current or future products.

We may seek to enter into additional collaborations, joint ventures, licenses and other similar arrangements for the development of our products, due to capital costs required to develop the product or potential manufacturing constraints. We may not be successful in our efforts to establish such collaborations for our products because our products may be deemed to be at too early of a stage of development for collaborative effort or third parties may not view our products as having the requisite potential to demonstrate a significant commercial opportunity. In addition, we face significant competition in seeking appropriate strategic partners, and the negotiation process can be time consuming and complex. Further, any future collaboration agreements may restrict us from entering into additional agreements with potential collaborators. We cannot be certain that, following a strategic transaction or license, we will achieve an economic benefit that justifies such transaction. Even if we are successful in our efforts to establish such collaborations, the terms that we agree upon may not be favorable to us, and we may not be able to maintain such collaborations.

In addition, any potential future collaborations may be terminable by our strategic partners, and we may not be able to adequately protect our rights under these agreements. Furthermore, strategic partners may negotiate for certain rights to control decisions regarding the development of our products, and may not conduct those activities in the same manner as we do. Any termination of collaborations we enter into in the future, or any delay in the development of products under such collaborations, could delay the manufacturing and sales of our products, which could have a material adverse effect on our business, financial condition and results of operations.

We may become subject to product liability claims that may not be covered by insurance and could require us to pay substantial sums.

We are subject to an inherent risk of, and adverse publicity associated with, product liability and other liability claims, whether or not such claims are valid. In addition, our customers are subject to product liability claims, and could seek contribution from us. A successful product liability claim or series of claims against us could adversely impact the specialty chemicals industry, our reputation or our financial condition or results of operations. Product liability insurance may not be available to us on commercially acceptable terms, or at all. Even if such insurance is available, product liability or other claims may exceed our insurance coverage limits. A successful product liability claim that exceeds our insurance coverage limits, for which we are not otherwise indemnified, could require us to pay substantial sums and could harm our business, financial condition or results of operations.

Climate change may impact the availability of our facilities and, in addition, we may incur substantial costs to comply with climate change legislation and related regulatory initiatives.

Changing weather patterns and the increase in frequency of severe storms such as hurricanes and tornadoes could cause disruptions or the complete loss of our facilities or delay the construction of future facilities. In addition, climate change concerns, and changes in the regulation of such concerns, including greenhouse gas emissions, could also subject us to additional costs and restrictions, including increased energy and raw materials costs which could negatively impact our financial condition and results of operations. Climate change may also negatively impact our labor force by, for example, reducing the hours during which construction or other outdoor work can be performed safely in extreme hit or under conditions of poor air quality. In addition, climate change may negatively impact the availability of our feedstock, for example, by increasing the prevalence of certain pests harmful to the growth or quality of the biomass we use in our processes. The effects of climate change can not only adversely impact our operations, but also that of our suppliers and customers, and can lead to increased regulations and changes in consumer preferences, which could adversely affect our business, results of operations and financial condition.

Unfavorable global economic conditions could adversely affect our business, financial condition and results of operations.

Our results of operations could be adversely affected by general conditions in the global economy and in the global financial markets, including inflation and supply disruption. A domestic or global financial crisis can cause extreme volatility and disruptions in the capital and credit markets. A severe or prolonged economic downturn, which could result from an event like the COVID-19 pandemic or the global sanctions imposed against Russia following its military intervention in Ukraine, or inflation in fuel costs resulting from regional instability due to the military conflict in Israel and Gaza, could result in a variety of risks to our business, including our inability to purchase necessary supplies on acceptable terms, if at all, and our inability to raise additional capital when needed on acceptable terms, if at all. A weak or declining economy could strain our suppliers, possibly resulting in supply disruption, or cause delays in payments for our services by third-party payers or our collaborators. Any of the foregoing could harm our business and we cannot anticipate all of the ways in which the current economic climate and financial market conditions could adversely impact our business.

Our operating results may fluctuate significantly as a result of a variety of factors, many of which are outside of our control.

We are subject to, among other things, the following factors that may negatively affect our operating results:

- the announcement or introduction of new products by our competitors;

- our ability to upgrade and develop our systems and infrastructure to accommodate growth;
- our ability to attract and retain key personnel in a timely and cost-effective manner;
- our ability to attract new customer and retain existing customers;
- technical difficulties;
- the amount and timing of operating costs and capital expenditures relating to the expansion of our business, operations and infrastructure;
- our ability to identify and enter into relationships with appropriate and qualified third-party providers of necessary testing and manufacturing services;
- regulation by federal, state or local governments; and

- general economic conditions, as well as economic conditions specific to the plastics and fuels industries, and other industries related to compostable or biodegradable substitutes for non-biodegradable plastics, as well as changes to commodity prices to which prices in some of our contracts are indexed.

As a result of our limited operating history and the nature of the markets in which we compete, it is difficult for us to forecast our revenues or earnings accurately. We have based our anticipated future expense levels largely on our investment plans and estimates of future events, although certain of our expense levels will, to a large extent, become fixed. As a strategic response to changes in the competitive environment, we may from time to time make certain decisions concerning expenditures, pricing, service or marketing that could harm our business, results of operations and financial condition. Due to the foregoing factors, our revenues and operating results are difficult to forecast.

Changes in tax laws or tax rulings could materially affect our financial position, results of operations, and cash flows.

The tax regimes we are subject to or operate under, including income and non-income taxes, are unsettled and may be subject to significant change. Changes in tax laws, regulations, or rulings, or changes in interpretations of existing laws and regulations, could materially affect our financial position and results of operations. For example, the 2017 Tax Cuts and Jobs Act (the "Tax Act") made broad and complex changes to the U.S. tax code. Future guidance from the IRS with respect to the Tax Act may affect us, and certain aspects of the Tax Act could be repealed or modified in future legislation. The Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") has already modified certain provisions of the Tax Act. More recently, the Inflation Reduction Act of 2022 (the "IRA") includes provisions that will impact the U.S. federal income taxation of corporations, including imposing a minimum tax on the book income of certain large corporations and an excise tax on certain corporate stock repurchases that would be imposed on the corporation repurchasing such stock. In addition, it is uncertain if and to what extent various states will conform to the Tax Act, the CARES Act, the IRA, or any newly enacted federal tax legislation. The issuance of additional regulatory or accounting guidance related to the Tax Act could materially affect our tax obligations and effective tax rate in the period issued. In addition, many countries in Europe and a number of other countries and organizations, have recently proposed or recommended changes to existing tax laws or have enacted new laws that could significantly increase our tax obligations in the countries where we do business or require it to change the manner in which we operate our business.

The Organization for Economic Cooperation and Development has been working on a Base Erosion and Profit Shifting Project, and issued a report in 2015, an interim report in 2018, and is expected to continue to issue guidelines and proposals that may change various aspects of the existing framework under which our tax obligations are determined in many of the countries in which we do business. Similarly, the European Commission and several countries have issued proposals that would change various aspects of the current tax framework under which we are taxed. These proposals include changes to the existing framework to calculate income tax, as well as proposals to change or impose new types of non-income taxes, including taxes based on a percentage of revenue.

As we expand the scale of our international business activities, these types of changes to the taxation of our activities could increase our worldwide effective tax rate, increase the amount of taxes imposed on our business, and harm our financial position. Such changes may also apply retroactively to our historical operations and result in taxes greater than the amounts estimated and recorded in our financial statements.

Unanticipated changes in effective tax rates or adverse outcomes resulting from examination of our income or other tax returns could adversely affect our operating results and financial condition.

We are subject to taxation in Canada and the United States with increasingly complex tax laws, the application of which can be uncertain. The amount of taxes we pay in these jurisdictions could increase substantially as a result of changes in the applicable tax principles, including increased tax rates, new tax laws or revised interpretations of existing tax laws and precedents, which could have an adverse impact on our liquidity and results of operations. In addition, the authorities in several jurisdictions could review our tax returns and impose additional tax, interest and penalties, which could have an impact on us and on our results of operations. We have previously participated in government programs with the Canadian federal government and Canadian provincial governments that provide investment tax credits based upon qualifying research and development expenditures. If Canadian taxation authorities successfully challenge such expenses or the correctness of such income tax credits claimed, our historical operating results could be adversely affected. As a public company, we will no longer be eligible for refundable tax credits under the Canadian federal Scientific Research and Experimental Development Program ("SR&ED") credits. However, we are still eligible for non-refundable SR&ED credits under this program, which are eligible to reduce future income taxes payable.

Our future effective tax rates could be subject to volatility or adversely affected by a number of factors.

Our future effective tax rates could be subject to volatility or adversely affected by a number of factors, including:

- changes in the valuation of our deferred tax assets and liabilities;
- expected timing and amount of the release of any tax valuation allowances;
- tax effects of stock-based compensation;
- costs related to intercompany restructurings;
- changes in tax laws, regulations or interpretations thereof; or
- future earnings being lower than anticipated in countries where we have has lower statutory tax rates and higher than anticipated earnings in countries where we have has higher statutory tax rates.

We may conduct activities in other jurisdictions through our subsidiaries pursuant to transfer pricing arrangements and may in the future conduct operations in other jurisdictions pursuant to similar arrangements. If two or more affiliated companies are located in different countries, the tax laws or regulations of each country generally will require that transfer prices be the same as those between unrelated companies dealing at arms' length. While we intend to operate in compliance with applicable transfer pricing laws, our transfer pricing procedures are not binding on applicable tax authorities. If tax authorities in any of these countries were to successfully challenge our transfer prices as not reflecting arm's length transactions, they could require us to adjust our transfer prices and thereby reallocate our income to reflect these revised transfer prices, which could result in a higher tax liability to us.

Our ability to use net operating loss carryforwards and other tax attributes may be limited in connection with the Business Combination or other ownership changes.

We have incurred losses during our history. To the extent that we continue to generate taxable losses, unused losses will carry forward to offset future taxable income, if any, until such unused losses expire, if at all.

Under the Tax Act, as modified by the CARES Act, U.S. federal NOL carryforwards generated in taxable periods beginning after December 31, 2017, may be carried forward indefinitely, but the deductibility of such net operating loss carryforwards in taxable years beginning after December 31, 2020, is limited to 80% of taxable income. In addition, our NOL carryforwards are subject to review and possible adjustment by the IRS, and state tax authorities. Under Sections 382 and 383 of the Code, our federal net operating loss carryforwards and other tax attributes may become subject to an annual limitation in the event of certain cumulative changes in the ownership of our stock. An "ownership change" pursuant to Section 382 of the Code generally occurs if one or more stockholders or groups of stockholders who own at least 5% of a company's stock increase their ownership (as measured by value) by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. Our ability to utilize our NOL carryforwards and other tax attributes to offset future taxable income or tax liabilities may be limited as a result of ownership changes, including potential changes in connection with the Business Combination or other transactions. Similar rules may apply under state tax laws. We have recorded a valuation allowance related to our NOL carryforwards and other deferred tax assets due to the uncertainty of the ultimate realization of the future benefits of those assets.

Risks Related to Government Regulation

Compliance with extensive environmental, health and safety laws could require material expenditures, changes in our operations or site remediation.

We use hazardous materials in our production process, and our operations also produce hazardous waste. The manufacture, transportation and sale of our products can present potentially significant health and safety concerns and are also under increased public and governmental scrutiny. Our products are also used in a variety of applications that have specific regulatory requirements such as those relating to products that have contact with food or are used for medical applications.

Accordingly, our operations are subject to environmental, health and safety laws and regulations at the international, national, state and local level in multiple jurisdictions. These laws and regulations govern, among other things, air emissions, wastewater discharges, solid and hazardous waste management and disposal, occupational health and safety, including dust and noise control, site remediation programs and chemical use and management. Many of these laws and regulations have become more stringent over time and the costs of compliance with these requirements may increase, including costs associated with any necessary capital investments. In addition, our plants will require operating permits that are subject to renewal and, in some circumstances, revocation. The necessary permits may not be issued or continue in effect, and renewals of any issued permits may contain significant new requirements or restrictions. The nature of the specialty chemicals industry exposes us to risks of liability due to the use, production, management, storage, transportation and sale of materials that are heavily regulated or hazardous and can cause contamination or personal injury or damage if released into the environment.

Compliance with environmental laws and regulations generally increases the costs of transportation and storage of raw materials and finished products, as well as the costs of storage and disposal of wastes. We may incur substantial costs, including fines, damages, criminal or civil sanctions and remediation costs, or experience interruptions in our operations for violations arising under environmental laws, regulations or permit requirements. In addition, the market for bioplastics is heavily influenced by applicable federal, state and local government laws, regulations and policies as well as public perception. Changes in these laws, regulations and policies or how these laws, regulations and policies are implemented and enforced could cause the demand for bioplastics to decline and deter investment in the research and development of bioplastics. Concerns associated with bioplastics, including land usage, national security interests, deforestation, food crop usage and other environmental concerns, continue to receive legislative, industry and public attention. This attention could result in future legislation, regulation and/or administrative action that could adversely affect our business.

Furthermore, various petrochemical products, including plastics, have faced increased public scrutiny due to negative coverage of plastic waste in the environment, which has resulted in local, state, federal and foreign governments proposing and in some cases approving, restrictions or bans on the manufacture, consumption and disposal of certain petrochemical products. Although our products are intended to replace petrochemical products, increased regulation on the use of such products or other products in the specialty chemicals industry, whatever their scope or form, could increase our costs of production, impact overall consumption of our products or result in misdirected negative publicity. Any inability to address these requirements and any regulatory or policy changes could harm our business, financial condition and results of operations.

We are subject to U.S. and foreign anti-corruption and anti-money laundering laws and regulations. We could face criminal liability and other serious consequences for violations, which would harm our business.

We are subject to the U.S. Foreign Corrupt Practices Act of 1977, as amended, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, the USA PATRIOT Act and possibly other anti-bribery and anti-money laundering laws in countries in which we conduct activities. Anti-corruption laws are interpreted broadly and prohibit companies and their employees, agents, contractors and other collaborators from authorizing, promising, offering or providing, directly or indirectly, improper payments or anything else of value to recipients in the public or private sector. We can also be held liable for the corrupt or other illegal activities of our employees, agents, contractors and other collaborators, even if we do not explicitly authorize or have actual knowledge of such activities. Any violations of the laws and regulations described above may result in substantial civil and criminal fines and penalties, imprisonment, the loss of export or import privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm and other consequences.

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Our operating plan may require us to source feedstock and supplies internationally, and foreign currency exchange rate fluctuations and changes to international trade agreements, tariffs, import and excise duties, taxes or other governmental rules and regulations could adversely affect our business, financial condition, results of operations and prospects.

Our expansion model is global and we will need to source feedstock and supplies from suppliers around the world. In particular, our manufacturing process uses is designed to use local timber and forest residues as our primary raw materials, which must be sourced locally. For the Origin 1 plant, this means we will need to source feedstock, as well as other supplies, from Canadian suppliers or arrange for transport of such feedstock and supplies into Canada. The U.S. federal government or other governmental bodies may propose changes to international trade agreements, tariffs, taxes and other government rules and regulations, and may impose sanctions limiting trade with other countries. If foreign currency exchange rates fluctuate or any restrictions or significant increases in costs or tariffs or sanctions are imposed related to feedstock and supplies sourced to our plants as a result of amendments to existing trade agreements or otherwise, this may increase our supply and shipping costs, resulting in potential decreased margins. We may expand our operations to countries with unstable governments that are subject to instability, corruption, changes in rules and regulations and other potential uncertainties that could harm our business, financial condition, results of operations and prospects. The extent to which our margins could decrease in response to any future tariffs is uncertain. We continue to evaluate the impact of trade agreements, as well as foreign currency exchange rate fluctuations and other recent changes in foreign trade policy on our supply chain, costs, sales and profitability. In addition, pandemics such as COVID-19 may result in increased travel restrictions and the extended shutdown of certain businesses throughout the world, and prolonged closures in Canada, Europe, Asia and elsewhere may disrupt the operations of certain suppliers of feedstock and other supplies, which could, in turn, negatively impact our business, financial condition, results of operations and prospects.

Risks Related to Our Intellectual Property

Our business relies on proprietary information and other intellectual property, and our failure to protect our intellectual property rights could harm our competitive advantages with respect to the use, manufacturing, sale or other commercialization of our processes, technologies and products, which may have an adverse effect on our results of operations and financial condition.

We intend to make significant capital investments into the research and development of proprietary information and other intellectual property as we develop, improve and scale our processes, technologies and products, and failure to fund and make these investments, or underperformance of the technology funded by these investments, could severely impact our business, financial condition, results of operations and prospects.

If we fail to adequately protect our intellectual property rights, such failure could result in the reduction or loss of our competitive advantage. We may be unable to prevent third parties from using our proprietary information and other intellectual property without our authorization or from independently developing proprietary information and other intellectual property that is similar to ours, particularly in those countries where the laws do not protect our proprietary rights to the same degree as in the U.S or those countries where we do not have intellectual property rights protection. The use of our proprietary information and other intellectual property by others could reduce or eliminate competitive advantages that we have developed, potentially causing us to lose sales or actual or potential customers, or otherwise harm our business. We are, and may continue to be, involved in litigation and administrative actions to protect these rights, and such proceedings could be burdensome and costly, could result in counterclaims challenging our intellectual property (including validity or enforceability) or accusing us of infringement, and we may not prevail.

Our patent applications and issued patents may be practiced by third parties without our knowledge. Our competitors may also attempt to design around our patents or copy or otherwise obtain and use our proprietary information and other intellectual property. Moreover, our competitors may already hold or have applied for patents in the U.S. or abroad that, if enforced, could possibly prevail over our patent rights or otherwise limit our ability to manufacture, sell or otherwise commercialize one or more of our products in the U.S. or abroad. With respect to our pending patent applications, we may not be successful in securing issued patents, or the claims of such patents may be narrowed, any of which may limit our ability to protect inventions that these applications were intended to cover, which could harm our ability to prevent others from exploiting our technologies and commercializing products similar to our products. In addition, the expiration of a patent can result in increased competition with consequent erosion of profit margins.

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The applicable governmental authorities may not approve our pending service mark and trademark applications. A failure to obtain trademark registrations in the U.S. and in other countries could limit our ability to obtain and retain our trademarks in those jurisdictions. Moreover, third parties may seek to oppose our applications or otherwise challenge the resulting registrations. In the event that our trademarks are not approved or are successfully challenged by third parties, we could be forced to rebrand our products, which could result in loss of brand recognition and could require us to devote significant resources to rebranding and advertising and marketing new brands. The failure of our patents, trademarks, trade secrets, or confidentiality agreements to protect our proprietary information and other intellectual property, including our processes, apparatuses, technology, trade secrets, trade names and proprietary manufacturing expertise, methods and compounds, could have a material adverse effect on our business and results of operations.

Some of our intellectual property has been or will be discovered, conceived or developed through research funded by the Canadian government and thus may be subject to federal regulations providing for certain rights for the Canadian government or imposing certain obligations on us, such as limitations on exploiting such intellectual property outside of Canada. Compliance with such regulations may limit our exclusive rights and ability to commercialize our products and technology outside of Canada.

We may face patent infringement and other intellectual property claims that could be costly to defend, result in injunctions and significant damage awards or other costs (including indemnification of third parties or costly licensing arrangements, if licenses are available at all) and limit our ability to use certain key technologies in the future or require development of non-infringing products or technologies, which may cause us to incur significant unexpected costs, prevent us from commercializing our products and otherwise harm our business.

The various bioindustrial markets in which we plan to operate are subject to frequent and extensive litigation regarding patents, trade secrets and other intellectual property rights. Many of our competitors have a substantial amount of intellectual property. We cannot guarantee that our processes and products do not and will not infringe issued patents (whether present or future) or other intellectual property rights belonging to others.

From time to time, we may oppose third-party patents that we consider overbroad or otherwise invalid in order to maintain the necessary freedom to operate fully in our various business lines without the risk of being sued for patent infringement. If, however, the oppositions are unsuccessful, we could be liable for infringement or have to take other remedial or curative actions to continue our manufacturing and sales activities with respect to one or more products.

We may also be subject to legal proceedings and claims in the ordinary course of our business, including claims of alleged infringement or misappropriation of the patents, trademarks, trade secrets and other intellectual property rights of third parties by us or our licensees in connection with their use of our products. Intellectual property litigation is expensive and time-consuming, regardless of the merits of any claim, and could divert our management’s attention from operating our business.

If we were to discover that our processes, technologies or products infringe or misappropriate the valid intellectual property rights of others, we might need to obtain licenses from these parties or substantially re-engineer our processes, technologies or products in order to avoid infringement. We may not be able to obtain the necessary licenses on acceptable terms, or at all, or be able to re-engineer our processes, technologies or products successfully. Moreover, if we or our licensees are sued for infringement or misappropriation and lose, we could be required to pay substantial damages, indemnify our licensees and/or be enjoined from using or selling the infringing processes, technologies or products. If we incur significant costs to litigate infringement or misappropriation claims or to obtain licenses, or if our inability to obtain required licenses prevents us from using or selling our processes, technologies or products, it could have a material adverse effect on our business and results of operations.

We rely on trade secrets to protect our technology, and our failure to maintain trade secret protection could limit our ability to compete.

We rely on trade secrets to protect some of our technology and proprietary information, especially where we believe patent protection is not appropriate or obtainable. We have security measures in place to safeguard our trade secrets database and limit the access to a need-to-know basis. However, trade secrets can be difficult to protect. The misappropriation or other compromise of our trade secrets may lead to a reduction or loss of our competitive advantages resulting from such trade secrets. Further, litigating a claim that a third party had misappropriated our trade secrets would be expensive and time consuming, and the outcome would be unpredictable. Moreover, if our competitors independently develop similar knowledge, methods and know-how, it will be difficult for us to enforce our rights and our business could be harmed.

Our confidentiality agreements could be breached or may not provide meaningful protection for our trade secrets or proprietary manufacturing expertise. Adequate remedies may not be available in the event of an unauthorized use or disclosure of our trade secrets and manufacturing expertise. Violations by others of our confidentiality agreements and the loss of employees who have specialized knowledge and expertise could harm our competitive position resulting from the exclusive nature of such knowledge and expertise and cause our sales and operating results to decline as a result of increased competition. In addition, others may obtain knowledge of our trade secrets through independent development or other access by legal means.

Other Risks Related to Our Business

Our management has limited experience in operating a public company.

Our executive officers have limited experience in the management of a publicly traded company subject to significant regulatory oversight and reporting obligations under federal securities laws. We may not have adequate personnel with the appropriate level of knowledge, experience and training in the accounting policies, practices or internal controls over financial reporting required of public companies in the United States. It is possible that we will be required to expand our employee base and hire additional employees to support our operations as a public company, which will increase our operating costs in future periods.

We are dependent on management and key personnel, and our business would suffer if we fail to retain our key personnel and attract additional highly skilled employees.

Our success depends on the specialized skills of our management team and key operating personnel. This may present particular challenges as we operate in a highly specialized industry sector, which may make replacement of our management team and key operating personnel difficult. A loss of our managers or key employees, or their failure to satisfactorily perform their responsibilities, could have an adverse effect on our business, financial condition, results of operations and prospects.

Our future success will depend on our ability to identify, hire, develop, motivate and retain highly qualified personnel for all areas of our organization, particularly research and development, recycling technology, operations and sales. Trained and experienced personnel are in high demand and may be in short supply. Many of the companies that we compete with for experienced employees have greater resources than us and may be able to offer more attractive terms of employment. In addition, we invest significant time and expense in training employees, which increases their value to competitors that may seek to recruit them. We may not be able to attract, develop and maintain the skilled workforce necessary to operate our business, and labor expenses may increase as a result of a shortage in the supply of qualified personnel, which will negatively impact our business, financial condition, results of operations and prospects.

We previously identified a material weakness in our internal control over financial reporting that we have concluded has been remediated, though we may identify additional material weaknesses in the future or fail to maintain effective internal control over financial reporting, which may result in material misstatements of our consolidated financial statements or cause us to fail to meet our periodic reporting obligations.

In connection with the audit of our consolidated financial statements for the fiscal years ended December 31, 2019 and December 31, 2020, during the course of preparing for the Business Combination, and during the second quarter 2021 and third quarter 2021 interim reviews, we identified a material weakness in our internal controls over financial reporting. We implemented and continue to employ measures designed to improve our internal control over financial reporting, which remediated this material weakness in the fourth quarter of 2021. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of its annual or interim financial statements will not be prevented or detected on a timely basis.

If we are unable to successfully remediate any future material weaknesses in our internal control over financial reporting, or if we identify any additional material weaknesses, the accuracy and timing of our financial reporting may be adversely affected, we may be unable to maintain compliance with securities law requirements regarding timely filing of periodic reports in addition to applicable Nasdaq listing requirements, investors may lose confidence in our financial reporting and our stock price may decline as a result. We also could become subject to investigations by Nasdaq, the SEC or other regulatory authorities.

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As a public company, we are also required, pursuant to Section 404 of the Sarbanes-Oxley Act, to furnish a report by management on, among other things, the effectiveness of its internal control over financial reporting for our annual reports on Form 10-K to be filed with the SEC. This assessment needs to include disclosure of any material weaknesses identified by management in our internal control over financial reporting. Our independent registered public accounting firm is also required to audit the effectiveness of our internal control over financial reporting for our annual reports on Form 10-K to be filed with the SEC. We are required to disclose changes made in our internal control over financial reporting on a quarterly basis. Failure to comply with the Sarbanes-Oxley Act could potentially subject us to sanctions or investigations by the SEC, the applicable stock exchange or other regulatory authorities, which would require additional financial and management resources. In order to evaluate the effectiveness of internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act, management has conducted an assessment, including testing, using the criteria in Internal Control – Integrated Framework, issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") using the 2013 framework. Our system of internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Because of its inherent limitations, internal control over financial reporting may not prevent or detect all misstatements.

We are subject to stringent and changing U.S. and foreign laws, regulations, rules, contractual obligations, policies and other obligations related to data privacy and security. Our actual or perceived failure to comply with such obligations could lead to regulatory investigations or actions; litigation; fines and penalties; disruptions of our business operations; reputational harm; loss of revenue or profits; loss of customers or sales; and other adverse business consequences.

In the ordinary course of business, we collect, receive, store, process, generate, use, transfer, disclose, make accessible, protect, secure, dispose of, transmit, and share (commonly known as processing) personal data and other sensitive information, including proprietary and confidential business data, trade secrets, and intellectual property. Our data processing activities subject us to various data privacy and security obligations, which can include laws, regulations, guidance, industry standards, external and internal privacy and security policies, contracts, and other obligations that govern the processing of personal data by us and on our behalf.

In the United States, federal, state, and local governments have enacted numerous data privacy and security laws, including data breach notification laws, personal data privacy laws, and consumer protection laws (e.g. (e.g., Section 5 of the Federal Trade Commission Act), and other similar laws (e.g., wiretapping laws). For example, the California Consumer Privacy Act of 2018 ("CCPA") imposes obligations on businesses to which it applies, such as providing specific disclosures in privacy notices and affording California residents certain rights related to their personal data and applies to personal information of consumers, business representatives, and employees who are California residents. The CCPA provides for civil penalties of up to $7,500 per violation and allows private litigants affected by certain data breaches to recover significant statutory damages. In addition, the California Privacy Rights Act of 2020 ("CPRA"), effective January 1, 2023, expands the CCPA, including by establishing a new California Privacy Protection Agency to implement and enforce the CPRA and adding a new right for individuals to correct their personal information. Other states have also enacted data privacy laws, including Virginia and Colorado. In addition, data privacy and security laws have been proposed at the federal, state, and local levels in recent years, which could further complicate compliance efforts.

Outside the United States, an increasing number of laws, regulations, and industry standards apply to data privacy and security. For example, the European Union's General Data Protection Regulation ("EU GDPR") and the United Kingdom's GDPR ("UK GDPR") impose strict requirements for processing the personal data of individuals located in the European Economic Area ("EEA") and the UK, respectively. For example, under the EU GDPR, government regulators may impose temporary or definitive bans on data processing, as well as fines of up to €20 million or 4% of annual global revenue, whichever is greater. The GDPR also allows for private litigation related to processing of personal data brought by classes of data subjects or consumer protection organizations authorized at law to represent their interests. Additionally, in Canada, the Personal Information Protection and Electronic Documents Act ("PIPEDA") and various related provincial laws, as well as Canada's Anti-Spam Legislation ("CASL"), may apply to our operations. We also have customers in Asia, and may be subject to new and emerging data privacy regimes in Asia, such as China's Personal Information Protection Law and Japan's Act on the Protection of Personal Information.

In addition, certain jurisdictions have enacted data localization laws and cross-border personal data transfer laws, which could make it more difficult to transfer information across jurisdictions (such as transferring or receiving personal data that originates in Europe or other jurisdictions). Existing mechanisms that may facilitate cross-border personal data transfers may change or be invalidated.

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We are also bound by contractual obligations related to data privacy and security, and our efforts to comply with such obligations may not be successful. We publish privacy policies, marketing materials and other statements, such as compliance with certain certifications or self-regulatory principles, regarding data privacy and security. If these policies, materials or statements are found to be deficient, lacking in transparency, deceptive, unfair, or misrepresentative of our practices, we may be subject to investigation, enforcement actions by regulators or other adverse consequences.

Obligations related to data privacy and security are quickly changing in an increasingly stringent fashion, creating some uncertainty as to the effective future legal framework. Additionally, these obligations may be subject to differing applications and interpretations, which may be inconsistent or in conflict among jurisdictions. Preparing for and complying with these obligations may require us to devote significant resources (including, without limitation, financial and time-related resources). These obligations may necessitate changes to our information technologies, systems, and practices and to those of any third parties that process personal data on our behalf.

Although we endeavor to comply with all applicable data privacy and security obligations, we may at times fail (or be perceived to have failed) to do so. Moreover, despite our efforts, our personnel or third parties upon whom we rely may fail to comply with such obligations, which could negatively impact our business operations and compliance posture. For example, any failure by a third-party processor to comply with applicable law, regulations, or contractual obligations could result in adverse effects, including inability to or interruptions in our ability to operate our business and proceedings against us by governmental entities or others.

If we fail, or are perceived to have failed, to address or comply with data privacy and security obligations, we could face significant consequences. These consequences may include, but are not limited to, government enforcement actions (e.g., investigations, fines, penalties, audits, inspections, and similar); litigation (including class-related claims); additional reporting requirements and/or oversight; bans on processing personal data; and orders to destroy or not use personal data.

Any of these events could have a material adverse effect on our reputation, business, or financial condition, including but not limited to: loss of customers; interruptions or stoppages in our business operations; inability to process personal data or to operate in certain jurisdictions; limited ability to develop or commercialize our products; expenditure of time and resources to defend any claim or inquiry; adverse publicity; or revision or restructuring of our operations.

If our information technology systems or data, or those of third parties upon which we rely, are or were compromised, we could experience adverse consequences resulting from such compromise, including but not limited to regulatory investigations or actions; litigation; fines and penalties; disruptions of our business operations; reputational harm; loss of revenue or profits; loss of customers; and other adverse consequences.

In the ordinary course of our business, we may process proprietary, confidential, and sensitive data, including personal data, intellectual property, and trade secrets (collectively, sensitive information).

Cyberattacks, malicious internet-based activity, and online and offline fraud are prevalent and continue to increase. These threats are becoming increasingly difficult to detect. These threats come from a variety of sources, including traditional computer “hackers,” threat actors, personnel (such as through theft or misuse), sophisticated nation-states, and nation-state-supported actors. Some actors now engage and are expected to continue to engage in cyber-attacks, including without limitation nation-state actors for geopolitical reasons and in conjunction with military conflicts and defense activities. During times of war and other major conflicts, we and the third parties upon which we rely may be vulnerable to a heightened risk of these attacks, including retaliatory cyber-attacks, that could materially disrupt our systems and operations, supply chain, and ability to produce, sell and distribute our products.

We and the third parties upon which we rely may be subject to a variety of evolving threats, including but not limited to social-engineering attacks (including through phishing attacks), malicious code (such as viruses and worms), malware (including as a result of advanced persistent threat intrusions), denial-of-service attacks (such as credential stuffing), credential harvesting, personnel misconduct or error, ransomware attacks, supply-chain attacks, software bugs, server malfunctions, software or hardware failures, loss of data or other information technology assets, adware, telecommunications failures, earthquakes, fires, floods, and other similar threats.

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Ransomware attacks, including those perpetrated by organized criminal threat actors, nation-states, and nation-state-supported actors, are becoming increasingly prevalent and severe – particularly for companies like ours that are engaged in manufacturing – and can lead to significant interruptions in our operations, loss of data and income, reputational harm, and diversion of funds. Extortion payments may alleviate the negative impact of a ransomware attack, but we may be unwilling or unable to make such payments due to, for example, applicable laws or regulations prohibiting such payments. Additionally, remote work has become more common and has increased risks to our information technology systems and data, as more of our employees utilize network connections, computers and devices outside our premises or network, including working at home, while in transit and in public locations. Future or past business transactions (such as acquisitions or integrations) could also expose us to additional cybersecurity risks and vulnerabilities, as our systems could be negatively affected by vulnerabilities present in acquired or integrated entities’ systems and technologies. A security incident or other interruption could result in unauthorized, unlawful, or accidental acquisition, modification, destruction, loss, alteration, encryption, disclosure of, or access to our sensitive information. A security incident or other interruption could disrupt our ability (and that of third parties upon whom we rely) to provide our products. Furthermore, we may discover security issues that were not found during due diligence of such acquired or integrated entities, and it may be difficult to integrate companies into our information technology environment and security program.

We rely upon third-party service providers and technologies to operate critical business systems to process sensitive information in a variety of contexts, including, without limitation, third-party providers of cloud-based infrastructure, encryption and authentication technology, employee email, content delivery to customers, manufacturing processing, process orders and invoices, payments, inventory management and other functions. We also depend on these systems to respond to customer inquiries, support our overall internal control process, maintain property, plant and equipment records, and pay amounts due to vendors and other creditors. Our ability to monitor these third parties' information security practices is limited, and these third parties may not have adequate information security measures in place. While we may be entitled to damages if our third-party service providers fail to satisfy their privacy or security-related obligations to us, any award may be insufficient to cover our damages, or we may be unable to recover such award. In addition, supply-chain attacks have increased in frequency and severity, and we cannot guarantee that third parties' infrastructure in our supply chain or our third-party partners' supply chains have not been compromised. We may share or receive sensitive information with or from third parties.

We may expend significant resources or modify our business activities in an effort to protect against security incidents. Certain data privacy and security obligations may require us to implement and maintain specific security measures, industry-standard or reasonable security measures to protect our information technology systems and sensitive information.

While we have implemented security measures designed to protect against security incidents, there can be no assurance that these measures will be effective. We take steps to detect and remediate vulnerabilities, but we may not be able to detect and remediate all vulnerabilities because the threats and techniques used to exploit such vulnerabilities change frequently and are often sophisticated in nature. Therefore, such vulnerabilities could be exploited but may not be detected until after a security incident has occurred. These vulnerabilities pose material risks to our business.

Despite our efforts to identify and remediate vulnerabilities, if any, in our information technology systems, our efforts may not be successful. Further, we may experience delays in developing and deploying remedial measures designed to address any such identified vulnerabilities. Applicable data privacy and security obligations may require us to notify relevant stakeholders of security incidents. Such disclosures are costly, and the disclosures or the failure to comply with such requirements could lead to adverse consequences.

If we (or third parties upon whom we rely) experience a security incident or are perceived to have experienced a security incident, we may experience adverse consequences. These consequences may include: government enforcement actions (for example, investigations, fines, penalties, audits, and inspections); additional reporting requirements and/or oversight; restrictions on processing data (including personal data); litigation (including class claims); indemnification obligations; negative publicity; reputational harm; monetary fund diversions; interruptions in our operations (including availability of data); financial loss; and other similar harms. Security incidents and attendant consequences may negatively impact our ability to grow and operate our business. Our contracts may not contain limitations of liability, and even where they do, there can be no assurance that limitations of liability in our contracts are sufficient to protect us from liabilities, damages, or claims related to our data privacy and security obligations. We cannot be sure that our insurance coverage will be adequate or sufficient to protect us from or to mitigate liabilities arising out of our data privacy and security practices, that such coverage will continue to be available on commercially reasonable terms or at all, or that such coverage will pay future claims. In addition to experiencing a security incident, third parties may gather, collect, or infer sensitive information about us from public sources, data brokers, or other means that reveals competitively sensitive details about our organization and could be used to undermine our competitive advantage or market position.

Risks Related to Ownership of Our Shares

Our Certificate of Incorporation provides, subject to limited exceptions, that the Delaware Court of Chancery is the sole and exclusive forum for certain stockholder litigation matters, which could limit our stockholders' ability to obtain a chosen judicial forum for disputes with us or our directors, officers, employees or stockholders.

Our Certificate of Incorporation requires, to the fullest extent permitted by law, that derivative actions brought in our name, actions against directors, officers and employees for breach of fiduciary duty and other similar actions may be brought in the Delaware Court of Chancery or, if that court lacks subject matter jurisdiction, another federal or state court situated in the State of Delaware. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and consented to the forum provisions in our Certificate of Incorporation. In addition, our Certificate of Incorporation provides that the federal district courts of the United States shall be the exclusive forum for the resolution of any complaint asserting a cause of action under the Securities Act.

This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum of its choosing for disputes with us or any of our directors, officers, other employees or stockholders, which may discourage lawsuits with respect to such claims. Alternatively, if a court were to find the choice of forum provision contained in our Certificate of Incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business, operating results and financial condition.

Our charter documents and Delaware law could prevent a takeover that stockholders consider favorable and could also reduce the market price of our stock.

Our Certificate of Incorporation and Bylaws contain provisions that could delay or prevent a change in control of us. These provisions could also make it more difficult for stockholders to elect directors and take other corporate actions. These provisions include:

- initially providing for a classified Board with staggered, three-year terms;
- authorizing our Board to issue Preferred Stock with voting or other rights or preferences that could discourage a takeover attempt or delay changes in control;
- prohibiting cumulative voting in the election of directors;
- providing that vacancies on our Board may generally be filled only by a majority of directors then in office, even though less than a quorum;
- prohibiting the adoption, amendment or repeal of the Bylaws or the repeal of the provisions of our Certificate of Incorporation regarding the election and removal of directors without the required approval of at least two-thirds of the shares entitled to vote at an election of directors;

- prohibiting stockholder action by written consent;
- limiting the persons who may call special meetings of stockholders; and
- requiring advance notification of stockholder nominations and proposals.

These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our Board, which is responsible for appointing the members of our management. In addition, the provisions of Section 203 of the General Corporation Law of the State of Delaware ("DGCL") will govern us. These provisions may prohibit large stockholders, in particular those owning 15% or more of our outstanding voting stock, from merging or combining with us for a certain period of time without the consent of our Board. These and other provisions in our Certificate of Incorporation and our Bylaws under Delaware law could discourage potential takeover attempts, reduce the price investors might be willing to pay in the future for shares of our Common Stock and result in the market price of our Common Stock being lower than it would be without these provisions.

Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Our Certificate of Incorporation and Bylaws provide that we will indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law.

In addition, as permitted by Section 145 of the DGCL, the Bylaws and its indemnification agreements that we entered into with our directors and officers provide that:

- we will indemnify our directors and officers for serving us in those capacities or for serving other business enterprises at our request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful;
- we may, in our discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law;
- we will be required to advance expenses, as incurred, to our directors and officers in connection with defending a proceeding, except that such directors or officers shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification;
- we will not be obligated pursuant to our Bylaws to indemnify a person with respect to proceedings initiated by that person against us or our other indemnities, except with respect to proceedings authorized by our Board or brought to enforce a right to indemnification;
- the rights conferred in the Bylaws are not exclusive, and we are authorized to enter into indemnification agreements with our directors, officers, employees and agents and to obtain insurance to indemnify such persons; and
- we may not retroactively amend our Bylaw provisions to reduce our indemnification obligations to directors, officers, employees and agents.

We do not intend to pay dividends for the foreseeable future.

We have has never declared or paid any cash dividends on our capital stock and do not intend to pay any cash dividends in the foreseeable future. We expect to retain future earnings, if any, to fund the development and growth of our business. Any future determination to pay dividends on our capital stock will be at the discretion of our Board. In addition, our loan agreements contain restrictions on our ability to pay dividends.

The market price and trading volume of our Common Stock has been and may be volatile and could decline significantly.

The stock markets, including Nasdaq on which we have listed the shares of our Common Stock under the symbol "ORGN," have from time to time experienced significant price and volume fluctuations. Even if an active, liquid and orderly trading market is sustained for our Common Stock, the market price of our Common Stock has been and may be volatile and could decline significantly. Our Common Stock experienced such a decline in August 2023. In addition, the trading volume in our Common Stock may fluctuate and cause significant price variations to occur. If the market price of our Common Stock declines significantly, you may be unable to resell your shares at or above the market price of our Common Stock at which your purchased our Common Stock. We cannot assure you that the market price of Common Stock will not fluctuate widely or decline significantly in the future in response to a number of factors, including, among others, the following:

- the realization of any of the risk factors presented in this Report;
- actual or anticipated differences in our estimates, or in the estimates of analysts, for our revenues, results of operations, level of indebtedness, liquidity or financial condition;

- additions and departures of key personnel;
- failure to comply with the requirements of Nasdaq;
- failure to comply with the Sarbanes-Oxley Act or other laws or regulations;
- future issuances, sales, resales or repurchases or anticipated issuances, sales, resales or repurchases, of our securities;
- publication of research reports about us;
- the performance and market valuations of other similar companies;
- commencement of, or involvement in, litigation involving us;
- broad disruptions in the financial markets, including sudden disruptions in the credit markets;
- speculation in the press or investment community;
- actual, potential or perceived control, accounting or reporting problems;
- changes in accounting principles, policies and guidelines; and
- other events or factors, including those resulting from infectious diseases, health epidemics and pandemics, natural disasters, war, acts of terrorism or responses to these events.

In the past, securities class-action litigation has often been instituted against companies following periods of volatility in the market price of their shares. This type of litigation could result in substantial costs and divert our management's attention and resources, which could have a material adverse effect on us.

In addition, litigation, including securities class action litigation, has often followed announcements of significant business transactions, such as the sale of a company or announcement of any other strategic transaction, or the announcement of negative events, such as negative earnings results. These events may also result in investigations by the Securities and Exchange Commission. We are, and may in the future be, the target of this type of litigation.

We have been named as a defendant in purported securities class action lawsuits. These, and any additional securities litigation, could result in substantial losses and may divert management's time and attention from our business.

In August 2023 and October 2023, a consolidated putative securities class action complaint was commenced in the Eastern District of California against us and certain of our officers, alleging violations of the Exchange Act. The lawsuit alleges that the defendants made materially false and misleading statements and omitted allegedly material information related to, among other things, our operating timelines. The plaintiffs seek unspecified damages, attorneys' fees and other costs, each on behalf of a purported class of persons and entities who purchased or otherwise acquired our publicly traded securities between February 23, 2023 and August 9, 2023. It is possible that additional suits will be filed with respect to these same matters and also naming us and/or our officers and directors as defendants.

The current securities litigation and any future litigation of this type could result in diversion of management's attention and resources, which could adversely impact our business. Monitoring and defending against legal actions is time-consuming for our management and detracts from our ability to focus fully on our business activities.

We dispute the claims that have been asserted against us and intend to defend against them. Litigation, however, is inherently uncertain, and we are unable to predict the outcome or to estimate the range of loss, if any, that could result from an unfavorable outcome. We also cannot provide any assurance that the ultimate resolution of this litigation will not have a material adverse effect on our reputation, business, prospects, results of operations or financial condition.

Our quarterly operating results may fluctuate significantly and could fall below the expectations of securities analysts and investors due to seasonality and other factors, some of which are beyond our control, resulting in a decline in our stock price.

Our quarterly operating results may fluctuate significantly because of several factors, including:

- labor availability and costs for hourly and management personnel;
- profitability of our products;
- changes in interest rates;
- impairment of long-lived assets;
- macroeconomic conditions, such as inflation and increasing interest rates, which may increase the risk of a potential recession;
- negative publicity relating to products we serve;
- changes in consumer preferences and competitive conditions;
- expansion to new markets; and
- fluctuations in commodity prices.

If securities or industry analysts do not publish or cease publishing research or reports about us, our business, or our market, or if they change their recommendations regarding our Common Stock adversely, then the price and trading volume of our Common Stock could decline.

The trading market for our Common Stock will be influenced by the research and reports that industry or securities analysts may publish about us, our business, our market, or our competitors. Accordingly, we must maintain confidence among current and future analysts, ratings agencies and other parties in our long-term financial viability and business prospects. Maintaining such confidence may be particularly complicated by certain factors including those that are largely outside of our control, such as limited operating history, market unfamiliarity, any delays in scaling manufacturing to meet demand and our eventual production and sales performance compared with the market expectations. If any of the analysts who may cover us change their recommendation regarding our Common Stock adversely, or provide more favorable relative recommendations about our competitors, the price of our Common Stock would likely decline. If any analyst who may cover us were to cease coverage of the us or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our stock price or trading volume to decline.

Future issuances of debt securities and equity securities may adversely affect us, including the market price of our Common Stock and may be dilutive to existing stockholders.

In the future, we may incur debt or issue equity ranking senior to our Common Stock. Those securities will generally have priority upon liquidation. Such securities also may be governed by an indenture or other instrument containing covenants restricting its operating flexibility. Additionally, any convertible or exchangeable securities that we issue in the future may have rights, preferences and privileges more favorable than those of our Common Stock. Because our decision to issue debt or equity in the future will depend on market conditions and other factors beyond our control, we cannot predict or estimate the amount, timing, nature or success of our future capital raising efforts. As a result, future capital raising efforts may reduce the market price of our Common Stock and be dilutive to existing stockholders.

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There can be no assurance that we will be able to comply with the continued listing standards of Nasdaq.

Our Common Stock and the public warrants that were issued in connection with Artius' initial public offering (the "Public Warrants") are currently listed on Nasdaq. If Nasdaq delists our securities from trading on its exchange for failure to meet the listing standards, we and our stockholders could face significant material adverse consequences including:

- a limited availability of market quotations for our securities;
- reduced liquidity for our securities;
- a determination that our Common Stock is a "penny stock" which will require brokers trading in our Common Stock to adhere to more stringent rules and possibly result in a reduced level of trading activity in the secondary trading market for our securities; or
- a decreased ability to issue additional securities or obtain additional financing in the future.

If we fail to satisfy the continued listing requirements of Nasdaq such as the corporate governance requirements or the minimum share price requirement, Nasdaq may take steps to delist our securities. Such a delisting would likely have a negative effect on the price of the securities and would impair your ability to sell or purchase the securities when you wish to do so. In the event of a delisting, we can provide no assurance that any action taken by us to restore compliance with listing requirements would allow our securities to become listed again, stabilize the market price or improve the liquidity of our securities, prevent our securities from dropping below the Nasdaq minimum share price requirement or prevent future non-compliance with Nasdaq's listing requirements. Additionally, if our securities are not listed on, or become delisted from, Nasdaq for any reason, and are quoted on the OTC Bulletin Board, an inter-dealer automated quotation system for equity securities that is not a national securities exchange, the liquidity and price of our securities may be more limited than if we were quoted or listed on Nasdaq or another national securities exchange. You may be unable to sell your securities unless a market can be established or sustained.

The National Securities Markets Improvement Act of 1996, which is a federal statute, prevents or preempts the states from regulating the sale of certain securities, which are referred to as "covered securities." Because Common Stock and Public Warrants are listed on Nasdaq, they are covered securities. Although the states are preempted from regulating the sale of our securities, the federal statute does allow the states to investigate companies if there is a suspicion of fraud, and, if there is a finding of fraudulent activity, then the states can regulate or bar the sale of covered securities in a particular case. While we are not aware of a state, other than the State of Idaho, having used these powers to prohibit or restrict the sale of securities issued by blank check companies, certain state securities regulators view blank check companies unfavorably and might use these powers, or threaten to use these powers, to hinder the sale of securities of blank check companies in their states. Further, if we were no longer listed on Nasdaq, our securities would not be covered securities and we would be subject to regulation in each state in which we offer our securities.

Sales of a substantial number of shares of our common stock by our existing stockholders could cause the price of our common stock to decline.

At any time, sales of a substantial number of shares of our common stock in the public market could occur, or there could be a perception in the market that the holders of a large number of shares of common stock intend to sell shares, and any such event could reduce the market price of our common stock. Substantially all of the shares of our common stock outstanding and shares issued upon the exercise of stock options outstanding under our equity incentive plans, subject to applicable securities law restrictions and excluding shares of restricted stock that will remain unvested, may be able to be sold in the public market. We are unable to predict the effect that sales may have on the prevailing market price of Common Stock and Public Warrants.

To the extent our Warrants are exercised, additional shares of Common Stock will be issued, which will result in dilution to the holders of Common Stock and increase the number of shares eligible for resale in the public market. Sales, or the potential sales, of substantial numbers of shares in the public market by the selling securityholders could increase the volatility of the market price of Common Stock or adversely affect the market price of Common Stock.

There is no guarantee that the Warrants will be in the money at the time they become exercisable, and they may expire worthless.

The exercise price for our Warrants is $11.50 per share of Common Stock. There is no guarantee that the Warrants will be in the money following the time they become exercisable and prior to their expiration, and as such, the Warrants may expire worthless. Our Warrants became exercisable on July 25, 2021.

We may amend the terms of the Warrants in a manner that may be adverse to holders with the approval by the holders of at least 50% of the then-outstanding Public Warrants. As a result, the exercise price of your Warrants could be increased, the exercise period could be shortened and the number of shares of our Common Stock purchasable upon exercise of a Warrant could be decreased, all without your approval.

Our Warrants are issued in registered form under the Warrant Agreement between the warrant agent and us. The Warrant Agreement provides that the terms of the Warrants may be amended without the consent of any holder to cure any ambiguity or correct any defective provision, but requires the approval by the holders of at least 50% of the then-outstanding Public Warrants to make any change that adversely affects the interests of the registered holders of Public Warrants. Accordingly, we may amend the terms of the Public Warrants in a manner adverse to a holder if holders of at least 50% of the then-outstanding Public Warrants approve of such amendment. Although our ability to amend the terms of the Public Warrants with the consent of at least 50% of the then-outstanding Public Warrants is unlimited, examples of such amendments could be amendments to, among other things, increase the exercise price of the Warrants, convert the Warrants into cash or stock (at a ratio different than initially provided), shorten the exercise period or decrease the number of shares of our Common Stock purchasable upon exercise of a Warrant.

We may redeem unexpired Warrants prior to their exercise at a time that is disadvantageous to warrant holders, thereby making such Warrants worthless.

We have the ability to redeem outstanding Warrants at any time after they become exercisable and prior to their expiration, at a price of $0.01 per Warrant, provided that the last reported sales price of our Common Stock equals or exceeds $18.00 per share (as adjusted for stock splits, stock dividends, reorganizations, recapitalizations and the like) for any 20 trading days within a 30 trading-day period ending on the third trading day prior to the date on which we give proper notice of such redemption and provided certain other conditions are met. If and when the Warrants become redeemable by us, we may exercise our redemption right even if we are unable to register or qualify the underlying securities for sale under all applicable state securities laws. Redemption of the outstanding Warrants could force you (a) to exercise your Warrants and pay the exercise price therefor at a time when it may be disadvantageous for you to do so, (b) to sell your Warrants at the then-current market price when you might otherwise wish to hold your Warrants or (c) to accept the nominal redemption price which, at the time the outstanding Warrants are called for redemption, is likely to be substantially less than the market value of your Warrants.

In addition, we may redeem your Warrants after they become exercisable for a number of shares of Common Stock determined based on the redemption date and the fair market value of our Common Stock. Any such redemption may have similar consequences to a cash redemption described above. In addition, such redemption may occur at a time when the Warrants are "out-of-the-money," in which case, you would lose any potential embedded value from a subsequent increase in the value of our Common Stock had your Warrants remained outstanding.

We may issue additional shares of Common Stock or other equity securities without shareholder approval, which would dilute shareholders' ownership interests and may depress the market price of the Common Stock.

As of June 30, 2023 September 30, 2023 we have Warrants outstanding to purchase an aggregate of 35,476,627 shares of Common Stock. Pursuant to the Merger Agreement, we may issue up to 25,000,000 shares of our Common Stock as Earnout Shares. In addition, pursuant to the 2021 EIP Plan and the ESPP, we may issue an aggregate of up to 34,401,760 shares of Common Stock, which amount is subject to increase from time to time. We may also issue additional shares of Common Stock or other equity securities of equal or senior rank in the future in connection with, among other things, future acquisitions or repayment of outstanding indebtedness, without stockholder approval, in a number of circumstances. The issuance of additional shares or other equity securities of equal or senior rank would have the following effects:

- existing stockholders' proportionate ownership interest in us will decrease;
- the amount of cash available per share, including for payment of dividends in the future, may decrease;
- the relative voting strength of each previously outstanding Common Stock may be diminished; and
- the market price of the Common Stock may decline.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

Joshua Lee, General Counsel, entered into a pre-arranged stock trading plan on June 15, 2023. Mr. Lee's plan provides for the sale of up to 30,253 shares of the Company's common stock between November 10, 2023 and December 31, 2024. This trading plan was entered into during an open insider trading window and is intended to satisfy the affirmative defense of Rule 10b5-1(c) under the Securities Exchange Act of 1934, as amended, and the Company's policies regarding transactions in the Company's securities. None.

Item 6. Exhibits

				Incorporated by Reference						Incorporated by Reference		
Exhibit No.	Exhibit No.	Description	Form	File No.	Exhibit	Filing Date	Exhibit No.	Description	Form	File No.	Exhibit	Filing Date
3.1	3.1	Amended and Restated Certificate of Incorporation of the Company.	8-K	001-39378	3.3	July 1, 2021	3.1	Amended and Restated Certificate of Incorporation of the Company.	8-K	001-39378	3.3	July 1, 2021
3.2	3.2	Bylaws of the Company.	8-K	001-39378	3.2	June 29, 2021	3.2	Bylaws of the Company.	8-K	001-39378	3.2	June 29, 2021
3.3	3.3	Amendment No. 2 to Offtake Supply Agreement (Origin 2) by and between Origin Materials Operating, Inc. and Pepsi-Cola Advertising and Marketing, Inc., dated May 10, 2023.	10-Q	001-39378	3.3	May 10, 2023	3.3	Amendment No. 2 to Offtake Supply Agreement (Origin 2) by and between Origin Materials Operating, Inc. and Pepsi-Cola Advertising and Marketing, Inc., dated May 10, 2023.	10-Q	001-39378	3.3	May 10, 2023
3.4	3.4	Transition, Separation and Advisory Agreement between the Company and Nate Whaley dated June 14, 2023	8-K	001-39378	NA	June 13, 2023	3.4	Transition, Separation and Advisory Agreement between the Company and Nate Whaley dated June 14, 2023	8-K	001-39378	NA	June 13, 2023
10.1	10.1	Danone_Origin_Offtake Amendment 2	10-Q	001-39378	10.1	August 9, 2023	10.1	Second Amendment to the Offtake Supply Agreement by and between Danone Asia Pte Ltd. and the Company, dated as of July 10, 2023	10-Q	001-39378	10.1	August 9, 2023

10.2	10.2	First Amendment to Lease for 930 Riverside Parkway, Suite 40-60, West Sacramento, CA 95605, by and between Schnitzer Properties, LLC and Origin Materials Operating, Inc., dated August 1, 2023	10-Q	001-39378	10.2	August 9, 2023
10.3	10.3	First Amendment to Lease for 930 Riverside Parkway, Suite 70, West Sacramento, CA 95605, by and between Schnitzer Properties, LLC and Origin Materials Operating, Inc., dated August 1, 2023	10-Q	001-39378	10.3	August 9, 2023
10.4	10.4	Second Amendment to Lease for 930 Riverside Parkway, Suite 10-30, West Sacramento, CA 95605, by and between Schnitzer Properties, LLC and Origin Materials Operating, Inc., dated August 1, 2023	10-Q	001-39378	10.4	August 9, 2023

10.5	10.5	Fifth Amendment to Lease for 970 Riverside Parkway, Suite 40, West Sacramento, CA 95605, by and between Schnitzer Properties, LLC and Origin Materials Operating, Inc., dated August 1, 2023	10-Q	001-39378	10.5	August 9, 2023
10.6	10.6	Offer Letter, dated September 25, 2023, by and between Origin Materials, Inc. and Matthew Plavan	8-K	001-39378	10.1	10/1/2023

10.2	First Amendment to Lease for 930 Riverside Parkway, Suite 40-60, West Sacramento, CA 95605, by and between Schnitzer Properties, LLC and Micromidas, Inc., dated August 1, 2023	10-Q	001-39378	10.2	August 9, 2023
10.3	First Amendment to Lease for 930 Riverside Parkway, Suite 70, West Sacramento, CA 95605, by and between Schnitzer Properties, LLC and Micromidas, Inc., dated August 1, 2023	10-Q	001-39378	10.3	August 9, 2023
10.4	Second Amendment to Lease for 930 Riverside Parkway, Suite 10-30, West Sacramento, CA 95605, by and between Schnitzer Properties, LLC and Micromidas, Inc., dated August 1, 2023	10-Q	001-39378	10.4	August 9, 2023
10.5	Fifth Amendment to Lease for 970 Riverside Parkway, Suite 40, West Sacramento, CA 95605, by and between Schnitzer Properties, LLC and Micromidas, Inc., dated August 1, 2023	10-Q	001-39378	10.5	August 9, 2023
31.1*	Certification of Co-Principal Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities Exchange Act of 1934, as amended.				
31.2*	Certification of Co-Principal Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities Exchange Act of 1934, as amended.				
31.3*	Certification of Principal Financial Officer pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities Exchange Act of 1934, as amended.				
32.1*+	Certification of Co-Principal Executive Officers and Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
101.INS*	Inline XBRL Instance Document				
101.SCH*	Inline XBRL Taxonomy Extension Schema Document				
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF*	Inline XBRL Taxonomy Extension Definitions Linkbase Document				

101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	Inline XBRL Taxonomy Extension Label Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

31.1*	Certification of Co-Principal Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities Exchange Act of 1934, as amended.
31.2*	Certification of Co-Principal Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) promulgated under the Securities Exchange Act of 1934, as amended.
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32.1*+	Certification of Co-Principal Executive Officers and Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS*	Inline XBRL Instance Document
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101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	Inline XBRL Taxonomy Extension Label Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

* Filed herewith.

\+ Furnished herewith and not deemed to be "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and shall not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ORIGIN MATERIALS, INC.

Date: August 9, 2023 November 9, 2023	By:	/s/ John Bissell
		John Bissell
		Co-Chief Executive Officer
Date: August 9, 2023 November 9, 2023	By:	/s/ Rich Riley
		Rich Riley
		Co-Chief Executive Officer
Date: August 9, 2023 November 9, 2023	By:	/s/ Nate Whaley Matt Plavan
		Nate Whaley Matt Plavan
		Chief Financial Officer

Exhibit 10.1

***** = CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.**

SECOND AMENDMENT TO OFFTAKE SUPPLY AGREEMENT (ORIGIN 2)

This Second Amendment ("**Second Amendment**") to the Offtake Supply Agreement (Origin 2) dated August 1, 2022 ("Agreement") between Danone Asia Pte Ltd. ("**Buyer**") and Origin Materials Operating, Inc. ("**Seller**") is entered into and hereby modifies certain terms and conditions of the Agreement. All capitalized terms used herein will have the same meanings as set forth in the Agreement.

This Amendment shall be effective on July 10, 2023 (the "**Second Amendment Effective Date**").

The Parties agree as follows:

1. **Modification to Section 2.3(a)(i) of the Agreement.** The Section of the Agreement entitled Buyer Offtake Notice Condition shall be modified as set forth below:

   "Buyer shall have, on or prior to [***] (the "**Outside Date**"), delivered to Seller written notice (the "**Buyer Offtake Notice**") specifying: (i) the precise Offtake Amount it wishes to purchase per Contract Year under this Agreement…"

2. **Miscellaneous**. Except as set forth in this Second Amendment, the Agreement has not been modified and its terms and conditions shall remain in full force and effect. In the event of any conflict between the terms and conditions of the Agreement, the Second Amendment shall control. All references to the Agreement shall be deemed to refer to the Agreement as amended by this Second Amendment. Any provision of this Second Amendment which is prohibited or unenforceable in any jurisdiction where such provision would otherwise be applied, shall, as to such provision and such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions of this Second Amendment or affecting the validity or enforceability of such provision in any other jurisdiction. This Second Amendment may be amended only upon the written consent of the Parties.

IN WITNESS WHEREOF, the Parties have executed this Second Amendment as of the date set forth above.

Origin Materials Operating, Inc.:		**Danone Asia Pte Ltd.:**	
By:		By:	
Name:		Name:	
Title:		Title:	

Exhibit 10.2

***** = CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.**

FIRST AMENDMENT
OF LEASE AGREEMENT FOR 930 RIVERSIDE PARKWAY-SUITES 40-60

THIS FIRST AMENDMENT OF LEASE AGREEMENT (this "Amendment")is made and entered into as of August 1, 2023 ("Effective Date") by and among **SCHNITZER PROPERTIES, LLC,** an Oregon limited liability company formerly known as Harsch Investment Properties, LLC, an Oregon limited liability company ("Lessor"), and Origin Materials Operating, Inc., formerly **MICROMIDAS, INC.,** a Delaware C-Corporation doing business as Origin Materials ("Lessee"),

RECITALS

A. Lessor, and Lessee, entered into that cettain Standard Industrial/Commercial Multi-Lessee Tenant-Net dated August 16, 2021 (the "Lease")for that certain leased premises located at Suite 930 Riverside Parkway, Suites 40-60 West Sacramento, California as more particularly described in the Lease Agreement (the "Premises").

B. Lessee and Lessor desire to amend the Lease to: (i) extend the Lease Term and (ii) for Lessor to provide Lessee a Tenant Improvement Allowance.

AGREEMENTS

NOW, THEREFORE for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the parties agree the Recitals hereto are true and correct and are incorporated herein, and fmther agree as follows:

1. **Term/Base Monthly Rent.** Subject to compliance with all terms and conditions of the Lease: (i) the Extended Term Expiration Date of the Lease is hereby extended from October 31, 2028 to December 31, 2033, wherein the Extended Term Expiration Date shall be now known as the "Term" ("Term") and (ii) Lessee shall retain the Option to Extend the Lease past the Term, as set out in Section 63 of the Lease; however, in determining the "Adjusted Base Rent" for the Option period, Lessor and Lessee agree that the tenant improvements covered by the Tenant Improvement Allowance (as set forth in Section 2 below) shall be excluded from the determination of the Adjusted Base Rent.

In consideration of the foregoing and the grant by Lessor of the Tenant Improvement Allowance below, Lessee agrees that the monthly Base Rent for the Premises for the Term beginning January 1, 2024, shall be as follows:

Months	**Base Monthly Rent (NNN)**
1/1/24 - 12/31/24	[***]
1/1/25 - 12/31/25	[***]
1/1/26 - 12/31/26	[***]
1/1/27 - 12/31/27	[***]
1/1/28 - 12/31/28	[***]
1/1/29 - 12/31/29	[***]
1/1/30 - 12/31/30	[***]
1/1/31 - 12/31/31	[***]
1/1/32 - 12/31/32	[***]
l/ 1/33 - 12/31/33	[***]

2. **Tenant Improvement Allowances.** Lessee previously exhausted the prior "Tenant Improvement Allowance" under the Lease. Subject to compliance with all terms and conditions of this Lease, Lessor shall provide Lessee with three (3) separate Tenant Improvement Allowances as follows: (i) One Hundred Thousand Dollars **($100,000.00)** between July 1, 2023 and July 1, 2024; (ii) One

Hundred Fifty Thousand Dollars **($150,000.00)** between December 15, 2023 through December 15, 2024; and (iii) Two Hundred Fifty Thousand Dollars **($250,000.00)** between December 15, 2024 and December 15, 2025 ("Tenant Improvement Allowance"). Lessee agrees there is only a Total Tenant Improvement Allowance in the amounts set fo1th above and such Total Tenant Improvement Allowance may be utilized by Tenant between all Leased Premises.

For Lessor to be responsible for reimbursement of any of the three (3) Tenant Improvement Allowances: (i) the Tenant shall submit to Lessor all final and paid receipts, lien releases, proof of payment, itemized proposals, contracts and any other reasonably required paperwork ("Paperwork") with written notice to Lessor requesting reimbursement for the applicable Tenant Improvement Allowance installment and (ii) the applicable Tenant Improvement Allowance must be utilized by Lessee prior to submission of paperwork and the submission of Paperwork required by Lessor shall be submitted to Lessor within the applicable time period set fmth above, otherwise any remaining amount of the Tenant Improvement Allowance of the applicable time period shall be waived by Lessee. Lessor will reimburse Lessee within thi1ty (30) days of Lessor's receipt of the request and Paperwork the portion of the Tenant Improvement Allowance supported thereby, not to exceed the applicable Tenant Improvement Allowance installment.
There shall be no right by Lessee to carry over any remaining amount of the Tenant Improvement Allowance from one period to the next period set fo1th above. Lessor shall have no duty or obligation to fund any Tenant Improvement Allowance if Lessee is monetary or material nonmonetary default of the Lease or Other Leased Premises (defined below) at the time of submission of the request for reimbursement. Lessee warrants, represents and agrees that the Tenant Improvement Allowances set forth above shall only be used for the costs related to actual physical improvements to, and as approved by Lessor or as recommended or required by Applicable Requirements to only the Premises or to 930 Riverside Parkway, Suites 10-30, 970 Riverside Parkway, Suite 40 and/or 930 Riverside Parkway, Suite 70 ("Other Leased Premises") all of the foregoing of which Lessee must be occupying under separate leases with Lessor at the time of submission of the Paperwork and request for reimbursement. At any time, should Lessee transfer the Lease or any lease for the Other Leased Premises or should Lessee and Lessor agree to terminate any of the Other Leased Premises or the Lease, then the amount of the Tenant Improvement Allowance remaining shall be reduced pro rata based on the total square footage reduced by the square footage so transferred or terminated by the parties.

Lessee shall submit all plans, contractor(s) selection and designs to Lessor for approval, which approval shall not be unreasonably withheld. The Tenant Improvement Allowance shall not be

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utilized for soft costs, FF&E, data cabling, or any other items considered to be personal property. Lessee shall not commence any tenant improvements covered by the Tenant Improvement Allowance without Lessor's written consent of the alterations, which consent shall not be unreasonably withheld and provided to Lessee within ten (10) days of Lessor's receipt of the notice. Lessee shall provide Lessor with access to the Premises and/or Other Leased Premises, if requested by Lessor to approve the request, within such ten (10) days' time period, otherwise the time for Lessor approval shall be extended day-for-day until Lessor is provided access to the Premises and/or Other Leased Premises, as applicable. The failure to do so notify Lessor shall result in Lessor not being obligated to Lessee to reimburse for such tenant improvement work under the Tenant Improvement Allowance.

3. **Section 39.2 of the original Lease dated May 22, 2022 shall be amended as follows:**
   a) Any options granted in the Lease to Lessee shall be available to any Permitted Transferee (defined in Section 64) or assignees or subleases in compliance with Section 12 of the Lease..

4. **Modification amending Section 12.2** (**c) in the original Lease dated May 22, 2020 shall be amended to read:**
   a) Lessor's consent to any assignment or subletting shall not be unreasonably withheld or delayed so long as Lessee is in full compliance with Lease.

5. **Section 12.2** (g):
   a) This section shall provide that no consent is required for Permitted Transferees (defined in Section 64).

6. **Section 63 fin the Addendum to the original Lease dated May 22, 2022:**

Section 63 (c) the determination of Fair Market Value shall not include above standard tenant improvements installed and paid for by Tenant (i.e. specialty improvements germane to Tenant's Use of the Premises) regarding electrical, plumbing, drainage, sewer, mechanical, HVAC, code ADA upgrades, and other lab and research related improvements.

In consideration of the foregoing modifications of the original Lease, Lessee hereby represents and agrees that to the best of Lessee's knowledge, without fmther inquiry, Lessee does not know of any claims against the Lessor arising out of or related to the Lease or the Premises as of the Effective Date and waives any such known claims against Lessor related to the foregoing.

7. **Authority to Execute Amendment.** Each individual executing this Amendment represents that he is duly authorized to execute and deliver this Amendment on behalf of such patty and that this Amendment is binding upon such party in accordance with its terms.

8 **Effect of Amendment.** Except as otherwise modified by this Amendment, the Lease Agreement shall remain unmodified and in full force and effect. In the event of any conflict or inconsistency between the terms and conditions of the Lease Agreement and the terms and conditions of this Amendment, the terms and conditions of this Amendment shall prevail. Any capitalized terms used and not otherwise defined herein shall have the same meanings and definitions as set forth in the Lease Agreement.

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9. **Conditions Precedent.** This Amendment shall be effective only when (a) the same shall have been executed and delivered by all patties; (b) the required updated and current insurance certificate(s) as set out in paragraph 54 of the Lease shall have been delivered to Lessor by Lessee and (iii) similar amendments are signed by Lessee for the Other Leased Premises.

THE SUBMISSION OF THIS ASSIGNMENT OF LEASE FOR EXAMINATION AND NEGOTIATION DOES NOT CONSTITUTE AN OFFER TO LEASE OR A RESERVATION OF OR OPTION FOR THE PREMISES. THIS DOCUMENT AND THE OBLIGATIONS HEREUNDER SHALL BECOME EFFECTIVE AND BINDING ON THE PARTIES ONLY UPON EXECUTION AND DELIVERY OF THIS LEASE AMENDMENT AND SIMILAR LEASE AMENDMENTS FOR THE OTHER LEASED PREMISES BY LESSEE AND BY LESSOR.

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IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and effective on the Effective Date.

LESSOR:

SCHNITZER PROPERTIES, LLC
an Oregon limited liability company

By: */s/ John Shorey*
Name: John Shorey
Title: Senior Vice President

LESSEE:

ORIGIN MATERIALS OPERATING, INC.
a Delaware corporation

By: */s/ Nate Whaley*
Name: Nate Whaley
Title: Chief Financial Officer

Exhibit 10.3

***** = CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.**

FIRST AMENDMENT
OF LEASE AGREEMENT FOR 930 RIVERSIDE PARKWAY-SUITE 70

THIS FIRST AMENDMENT OF LEASE AGREEMENT (this "Amendment")is made and entered into as of August I, 2023 ("Effective Date") by and among **SCHNITZER PROPERTIES, LLC,** an Oregon limited liability company formerly known as Harsch Investment Properties, LLC, an Oregon limited liability company ("Lessor"), and Origin Materials Operating, Inc., formerly **MICROMIDAS, INC.,** a Delaware C-Corporation doing business as Origin Materials ("Lessee").

RECITALS

A. Lessor, and Lessee, entered into that certain Standard Industrial/Commercial Multi-Lessee Tenant-Net dated February 25, 2022 (the "Lease")for that certain leased premises located at Suite 930 Riverside Parkway, Suite 70 West Sacramento, California 95605 as more particularly described in the Lease Agreement (the "Premises").

B. Lessee and Lessor desire to amend the Lease to: (i) extend the Lease Term and (ii) for Lessor to provide Lessee a Tenant Improvement Allowance.

AGREEMENTS

NOW, THEREFORE for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the parties agree the Recitals hereto are true and correct and are incorporated herein, and further agree as follows:

1. Term/Base Monthly Rent. Subject to compliance with all terms and conditions of the Lease: (i) the Extended Term Expiration Date of the Lease is hereby extended from October 31, 2028 to December 31, 2033, wherein the Extended Term Expiration Date shall be now known as the "Term" ("Term") and (ii) Lessee shall retain the Option to Extend the Lease past the Term, as set out in Section 63 of the Lease; however, in determining the "Adjusted Base Rent" for the Option period, Lessor and Lessee agree that the tenant improvements covered by the Tenant Improvement Allowance (as set forth in Section 2 below) shall be excluded from the determination of the Adjusted Base Rent.

In consideration of the foregoing and the grant by Lessor of the Tenant Improvement Allowance below, Lessee agrees that the monthly Base Rent for the Premises for the Term beginning January 1, 2024, shall be as follows:

Months	Base Monthly Rent (NNN)
1/1/24 - 12/31/24	[***]
1/1/25 - 12/31/25	[***]
1/1/26 - 12/31/26	[***]
1/1/27 - 12/31/27	[***]
1/1/28 - 12/31/28	[***]
1/1/29 - 12/31/29	[***]
1/1/30 - 12/31/30	[***]
1/1/31 - 12/31/31	[***]
1/1/32 - 12/31/32	[***]
1/1/33 - 12/31/33	[***]

2. **Tenant Improvement Allowances.** Lessee previously exhausted the prior "Tenant Improvement Allowance" under the Lease. Subject to compliance with all terms and conditions of this Lease, Lessor shall provide Lessee with three (3) separate Tenant Improvement Allowances as follows: (i) One Hundred Thousand Dollars **($100,000.00)** between July 1, 2023 and July 1, 2024; (ii) One Hundred Fifty Thousand Dollars **($150,000.00)** between December 15, 2023 through December 15, 2024; and (iii) Two Hundred Fifty Thousand Dollars **($250,000.00)** between December 15, 2024 and December 15, 2025 ("Tenant Improvement Allowance"). Lessee agrees there is only a Total Tenant Improvement Allowance in the amounts set forth above and such Total Tenant Improvement Allowance may be utilized by Tenant between all Leased Premises.

For Lessor to be responsible for reimbursement of ahy of the three (3) Tenant Improvement Allowances: (i) the Tenant shall submit to Lessor all final and paid receipts, lien releases, proof of payment, itemized proposals, contracts and any other reasonably required paperwork ("Paperwork") with written notice to Lessor requesting reimbursement for the applicable Tenant Improvement Allowance installment and (ii) the applicable Tenant Improvement Allowance must be utilized by Lessee prior to submission of paperwork and the submission of Paperwork required by Lessor shall be submitted to Lessor within the applicable time period set forth above, otherwise any remaining amount of the Tenant Improvement Allowance of the applicable time period shall be waived by Lessee. Lessor will reimburse Lessee within thirty (30) days of Lessor's receipt of the request and Paperwork the portion of the Tenant Improvement Allowance supported thereby, not to exceed the applicable Tenant Improvement Allowance installment.
There shall be no right by Lessee to carry over any remaining amount of the Tenant Improvement Allowance from one period to the next period set forth above. Lessor shall have no duty or obligation to fund any Tenant Improvement Allowance if Lessee is monetary or material nonmonetary default of the Lease or Other Leased Premises (defined below) at the time of submission of the request for reimbursement. Lessee warrants, represents and agrees that the Tenant Improvement Allowances set forth above shall only be used for the costs related to actual physical improvements to, and as approved by Lessor or as recommended or required by Applicable Requirements to only the Premises or to 930 Riverside Parkway, Suites 40-60, 970 Riverside Parkway, Suite 40 and/or 930 Riverside Parkway, Suites 10-20 ("Other Leased Premises") all of the foregoing of which Lessee must be occupying under separate leases with Lessor at the time of submission of the Paperwork and request for reimbursement. At any time, should Lessee transfer the Lease or any lease for the Other Leased Premises or should Lessee and Lessor agree to terminate any of the Other Leased Premises or the Lease, then the amount of the Tenant Improvement Allowance remaining shall be reduced pro rata based on the total square footage reduced by the square footage so transferred or terminated by the parties.

Lessee shall submit all plans, contractor(s) selection and designs to Lessor for approval, which approval shall not be unreasonably withheld. The Tenant Improvement Allowance shall not be

utilized for soft costs, FF&E, data cabling, or any other items considered to be personal property. Lessee shall not commence any tenant improvements covered by the Tenant Improvement Allowance without Lessor's written consent of the alterations, which consent shall not be unreasonably withheld and provided to Lessee within ten (10) days of Lessor's receipt of the notice. Lessee shall provide Lessor with access to the Premises and/or Other Leased Premises, if requested by Lessor to approve the request, within such ten (10) days' time period, otherwise the time for Lessor approval shall be extended day-for-day until Lessor is provided access to the Premises and/or Other Leased Premises, as applicable. The failure to do so notify Lessor shall

result in Lessor not being obligated to Lessee to reimburse for such tenant improvement work under the Tenant Improvement Allowance.

3. **Section 39.2 of the original Lease dated May 22, 2022 shall be amended as follows:**

a) Any options granted in the Lease to Lessee shall be available to any Permitted Transferee (defined in Section 64) or assignees or subleases in compliance with Section 12 of the Lease..

4. **Modification amending Section 12.2** (**c) in the original Lease dated May 22, 2020 shall be amended to read:**

a) Lessor's consent to any assignment or subletting shall not be unreasonably withheld or delayed so long as Lessee is in full compliance with Lease.

5. **Section 12.2** (**g**):

a) This section shall provide that no consent is required for Permitted Transferees (defined in Section 64).

6. **Section 63 fin the Addendum to the original Lease dated May 22, 2022:**

Section 63 (c) the determination of Fair Market Value shall not include above standard tenant improvements installed and paid for by Tenant (i.e. specialty improvements germane to Tenant's Use of the Premises) regarding electrical, plumbing, drainage, sewer, mechanical, HVAC, code ADA upgrades, and other lab and research related improvements.

In consideration of the foregoing modifications of the original Lease, Lessee hereby represents and agrees that to the best of Lessee's knowledge, without fmiher inquiry, Lessee does not know of any claims against the Lessor arising out of or related to the Lease or the Premises as of the Effective Date and waives any such known claims against Lessor related to the foregoing.

7. **<u>Authority to Execute Amendment.</u>**Each individual executing this Amendment represents that he is duly authorized to execute and deliver this Amendment on behalf of such party and that this Amendment is binding upon such party in accordance with its terms.

8 **<u>Effect of Amendment</u>.** Except as otherwise modified by this Amendment, the Lease Agreement shall remain unmodified and in full force and effect. In the event of any conflict or inconsistency between the terms and conditions of the Lease Agreement and the terms and conditions of this Amendment, the terms and conditions of this Amendment shall prevail. Any capitalized terms used and not otherwise defined herein shall have the same meanings and definitions as set forth in the Lease Agreement.

9. **Conditions Precedent.** This Amendment shall be effective only when (a) the same shall have been executed and delivered by all patties; (b) the required updated and current insurance certificate(s) as set out in paragraph 54 of the Lease shall have been delivered to Lessor by Lessee and (iii) similar amendments are signed by Lessee for the Other Leased Premises.

THE SUBMISSION OF THIS ASSIGNMENT OF LEASE FOR EXAMINATION AND NEGOTIATION DOES NOT CONSTITUTE AN OFFER TO LEASE OR A RESERVATION OF OR OPTION FOR THE PREMISES. THIS DOCUMENT AND THE OBLIGATIONS HEREUNDER SHALL BECOME EFFECTIVE AND BINDING ON THE PARTIES ONLY UPON EXECUTION AND DELIVERY OF THIS LEASE AMENDMENT AND SIMILAR LEASE AMENDMENTS FOR THE OTHER LEASED PREMISES BY LESSEE AND BY LESSOR.

The remainder of this page is intentionally blank.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and effective on the Effective Date.

LESSOR:

SCHNITZER PROPERTIES, LLC
an Oregon limited liability company

By: */s/ John Shorey*
Name: John Shorey
Title: Senior Vice President

LESSEE:

ORIGIN MATERIALS OPERATING, INC.
a Delaware corporation

By: */s/ Nate Whaley*
Name: Nate Whaley
Title: Chief Financial Officer

Exhibit 10.4

***** = CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.**

SECOND AMENDMENT
OF LEASE AGREEMENT FOR 930 RIVERSIDE PARKWAY-SUITES 10-30

THIS SECOND AMENDMENT OF LEASE AGREEMENT (this "Amendment") is made and entered into as of August **1,** 2023 ("Effective Date") by and among **SCHNITZER PROPERTIES, LLC,** an Oregon limited liability company formerly known as Harsch Investment Properties, LLC, an Oregon limited liability company ("Lessor"), and Origin Materials Operating, Inc., formerly **MICROMIDAS, INC.,** a Delaware C-Corporation doing business as Origin Materials ("Lessee"),

RECITALS

A. Lessor, and Lessee, entered into that certain Standard Industrial/Commercial Multi-Lessee Tenant-Net dated May 22, 2020 as amended by First Amendment dated August 16, 2021 (the "Lease") for that certain leased premises located at Suite 930 Riverside Parkway, Suites 10-30 West Sacramento, California as more particularly described in the Lease Agreement (the "Premises").

B. Lessee and Lessor desire to amend the Lease to: (i) extend the Lease Term and (ii) for Lessor to provide Lessee a Tenant Improvement Allowance.

AGREEMENTS

NOW, THEREFORE for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the parties agree the Recitals hereto are true and correct and are incorporated herein, and further agree as follows:

1. Term/Base Monthly Rent. Subject to compliance with all terms and conditions of the Lease: (i) the Extended Term Expiration Date of the Lease is hereby extended from October 31, 2028 to December 31, 2033, wherein the Extended Term Expiration Date shall be now known as the "Term" ("Term") and (ii) Lessee shall retain the Option to Extend the Lease past the Term, as set out in Section 63 of the Lease; however, in determining the "Adjusted Base Rent" for the Option period, Lessor and Lessee agree that the tenant improvements covered by the Tenant Improvement Allowance (as set fo11h in Section 2 below) shall be excluded from the determination of the Adjusted Base Rent.

In consideration of the foregoing and the grant by Lessor of the Tenant Improvement Allowance below, Lessee agrees that the monthly Base Rent for the Premises for the Term beginning January **1,** 2024, shall be as follows:

Months	**Base Monthly Rent (NNN)**
l/ 1/24 - 12/31/24	[***]
1/1/25 - 12/31/25	[***]
1/1/26 - 12/31/26	[***]
1/1/27 - 12/31/27	[***]
1/1/28 -12/31/28	[***]
1/1/29- 12/31/29	[***]
1/1/30 - 12/31/30	[***]
1/1/31 - 12/31/31	[***]
1/1/32 - 12/31/32	[***]
1/1/33 - 12/31/33	[***]

2. **Tenant Improvement Allowances.** Lessee previously exhausted the prior "Tenant Improvement Allowance" under the Lease. Subject to compliance with all terms and conditions of this Lease, Lessor shall provide Lessee with three (3) separate Tenant Improvement Allowances as follows: (i) One Hundred Thousand Dollars **($100,000.00)** between July 1, 2023 and July 1, 2024; (ii) One Hundred Fifty Thousand Dollars **($150,000.00)** between December 15, 2023 through December 15, 2024; and (iii) Two Hundred Fifty Thousand Dollars **($250,000.00)** between December 15, 2024 and December 15, 2025 ("Tenant Improvement Allowance"). Lessee agrees there is only a Total Tenant Improvement Allowance in the amounts set fo1th above and such Total Tenant Improvement Allowance may be utilized by Tenant between all Leased Premises.

For Lessor to be responsible for reimbursement of any of the three (3) Tenant Improvement Allowances: (i) the Tenant shall submit to Lessor all final and paid receipts, lien releases, proof of payment, itemized proposals, contracts and any other reasonably required paperwork ("Paperwork") with written notice to Lessor requesting reimbursement for the applicable Tenant Improvement Allowance installment and (ii) the applicable Tenant Improvement Allowance must be utilized by Lessee prior to submission of paperwork and the submission of Paperwork required by Lessor shall be submitted to Lessor within the applicable time period set forth above, otherwise any remaining amount of the Tenant Improvement Allowance of the applicable time period shall be waived by Lessee. Lessor will reimburse Lessee within thi1ty (30) days of Lessor's receipt of the request and Paperwork the portion of the Tenant Improvement Allowance supported thereby, not to exceed the applicable Tenant Improvement Allowance installment. There shall be no right by Lessee to carry over any remaining amount of the Tenant Improvement Allowance from one period to the next period set forth above. Lessor shall have no duty or obligation to fund any Tenant Improvement Allowance if Lessee is monetary or material nonmonetary default of the Lease or Other Leased Premises (defined below) at the time of submission of the request for reimbursement. Lessee warrants, represents and agrees that the Tenant Improvement Allowances set forth above shall only be used for the costs related to actual physical improvements to, and as approved by Lessor or as recommended or required by Applicable Requirements to only the Premises or to 930 Riverside Parkway, Suites 40-60, 970 Riverside Parkway, Suite 40 and/or 930 Riverside Parkway, Suite 70 ("Other Leased Premises") all of the foregoing of which Lessee must be occupying under separate leases with Lessor at the time of submission of the Paperwork and request for reimbursement. At any time, should Lessee transfer the Lease or any lease for the Other Leased Premises or should Lessee and Lessor agree to terminate any of the Other Leased Premises or the Lease, then the amount of the Tenant Improvement Allowance remaining shall be reduced pro rata based on the total square footage reduced by the square footage so transferred or terminated by the parties.

Lessee shall submit all plans, contractor(s) selection and designs to Lessor for approval, which approval shall not be unreasonably withheld. The Tenant Improvement Allowance shall not be utilized for soft costs, FF&E, data cabling, or any other items considered to be personal prope1ty. Lessee shall not commence any tenant improvements covered by the Tenant Improvement Allowance without Lessor's written consent of the alterations, which consent shall not be unreasonably withheld and provided to Lessee within ten (10) days of Lessor's receipt of the notice. Lessee shall provide Lessor with access to the Premises and/or Other Leased Premises, if requested by Lessor to approve the request, within such ten (I 0) days' time period, otherwise the time for Lessor approval shall be extended day-for-day until Lessor is provided access to the Premises and/or Other Leased Premises, as applicable. The failure to do so notify Lessor shall result in Lessor not being obligated to Lessee to reimburse for such tenant improvement work under the Tenant Improvement Allowance.

3. **Section 39.2 of the original Lease dated May 22, 2022 shall be amended as follows:**

a) Any options granted in the Lease to Lessee shall be available to any Permitted Transferee (defined in Section 64) or assignees or subleases in compliance with Section 12 of the Lease..

4. **Modification amending Section 12.2 (c) in the original Lease dated May 22, 2020 shall be amended to read:**

a) Lessor's consent to any assignment or subletting shall not be unreasonably withheld or delayed so long as Lessee is in full compliance with Lease.

5. **Section 12.2** (**g**):

a) This section shall provide that no consent is required for Permitted Transferees (defined in Section 64).

6. **Section 63 fin the Addendum to the original Lease dated May 22, 2022:**

Section 63 (c) the determination of Fair Market Value shall not include above standard tenant improvements installed and paid for by Tenant (i.e. specialty improvements germane to Tenant's Use of the Premises) regarding electrical, plumbing, drainage, sewer, mechanical, HVAC, code ADA upgrades, and other lab and research related improvements.

In consideration of the foregoing modifications of the original Lease, Lessee hereby represents and agrees that to the best of Lessee's knowledge, without fu1ther inquiry, Lessee does not know of any claims against the Lessor arising out of or related to the Lease or the Premises as of the Effective Date and waives any such known claims against Lessor related to the foregoing.

7. **Authority to Execute Amendment.** Each individual executing this Amendment represents that he is duly authorized to execute and deliver this Amendment on behalf of such party and that this Amendment is binding upon such patty in accordance

with its terms.

8 **Effect of Amendment.** Except as otherwise modified by this Amendment, the Lease Agreement shall remain unmodified and in full force and effect. In the event of any conflict or inconsistency between the terms and conditions of the Lease Agreement and the terms and conditions of this Amendment, the terms and conditions of this Amendment shall prevail.

Any capitalized terms used and not otherwise defined herein shall have the same meanings and definitions as set forth in the Lease Agreement.

9. **Conditions Precedent.** This Amendment shall be effective only when (a) the same shall have been executed and delivered by all patties; (b) the required updated and current insurance certificate(s) as set out in paragraph 54 of the Lease shall have been delivered to Lessor by Lessee and (iii) similar amendments are signed by Lessee for the Other Leased Premises.

THE SUBMISSION OF THIS ASSIGNMENT OF LEASE FOR EXAMINATION AND NEGOTIATION DOES NOT CONSTITUTE AN OFFER TO LEASE OR A RESERVATION OF OR OPTION FOR THE PREMISES. THIS DOCUMENT AND THE OBLIGATIONS HEREUNDER SHALL BECOME EFFECTIVE AND BINDING ON THE PARTIES ONLY UPON EXECUTION AND DELIVERY OF THIS LEASE AMENDMENT AND SIMILAR LEASE AMENDMENTS FOR THE OTHER LEASED PREMISES BY LESSEE AND BY LESSOR.

The remainder of this page is intentionally blank.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and effective on the Effective Date.

LESSOR:

SCHNITZER PROPERTIES, LLC
an Oregon limited liability company

By: *<u>/s/ John Shorey</u>*
Name: John Shorey
Title: Senior Vice President

LESSEE:

ORIGIN MATERIALS OPERATING, INC.
a Delaware corporation

By: *<u>/s/ Nate Whaley</u>*
Name: Nate Whaley
Title: Chief Financial Officer

Exhibit 10.5

***** = CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) IS THE TYPE THAT THE REGISTRANT TREATS AS PRIVATE OR CONFIDENTIAL.**

FIFTH AMENDMENT
OF LEASE AGREEMENT FOR 970 RIVERSIDE PARKWAY-SUITE 40

THIS FIFTH AMENDMENT OF LEASE AGREEMENT (this "Amendment")is made and entered into as of August 1, 2023 ("Effective Date") by and among **SCHNITZER PROPERTIES, LLC,** an Oregon limited liability company formerly known as Harsch Investment Properties, LLC, an Oregon limited liability company ("Lessor"), and Origin Materials Operating, Inc., formerly **MICROMIDAS, INC.,** a Delaware C-Corporation doing business as Origin Materials ("Lessee").

RECITALS

A. Lessor, and Lessee, entered into that ce1tain Standard Industrial/Commercial Multi-Lessee Tenant-Net dated February 28, 2013 as amended by First Amendment dated May 20, 2013, Second Amendment dated May 11, 2015, Third Amendment dated May 22, 2020 and Fourth Amendment dated August 16, 2021 (the "Lease")for that certain leased premises located at Suite 970 Riverside Parkway, Suite 40 West Sacramento, California 95605 as more particularly described in the Lease Agreement (the "Premises").

B. Lessee and Lessor desire to amend the Lease to: (i) extend the Lease Term and (ii) for Lessor to provide Lessee a Tenant Improvement Allowance.

AGREEMENTS

NOW, THEREFORE for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the parties agree the Recitals hereto are true and correct and are incorporated herein, and further agree as follows:

1. **Term/Base Monthly Rent.**Subject to compliance with all terms and conditions of the Lease: (i) the Extended Term Expiration Date of the Lease is hereby extended from October 31, 2028 to December 31, 2033, wherein the Extended Term Expiration Date shall be now known as the "Term" ("Term") and (ii) Lessee shall retain the Option to Extend the Lease past the Term, as set out in Section 63 of the Lease; however, in determining the "Adjusted Base Rent" for the Option period, Lessor and Lessee agree that the tenant improvements covered by the Tenant Improvement Allowance (as set fmth in Section 2 below) shall be excluded from the determination of the Adjusted Base Rent.

In consideration of the foregoing and the grant by Lessor of the Tenant Improvement Allowance below, Lessee agrees that the monthly Base Rent for the Premises for the Term beginning January 1, 2024, shall be as follows:

Months	**Base Monthly Rent (NNN)**
1/1/24 - 12/31/24	[***]
1/1/25 - 12/31/25	[***]
1/1/26 - 12/31/26	[***]
1/1/27 - 12/31/27	[***]
1/1/28 - 12/31/28	[***]

1/1/29 - 12/31/29	[***]
1/1/30 - 12/31/30	[***]
1/1/31 - 12/31/31	[***]
1/1/32 - 12/31/32	[***]
1/1/33 - 12/31/33	[***]

2. **Tenant Improvement Allowances.** Lessee previously exhausted the prior "Tenant Improvement Allowance" under the Lease. Subject to compliance with all terms and conditions of this Lease, Lessor shall provide Lessee with three (3) separate Tenant Improvement Allowances as follows: (i) One Hundred Thousand Dollars **($100,000.00)** between July 1, 2023 and July 1, 2024; (ii) One Hundred Fifty Thousand Dollars **($150,000.00)** between December 15, 2023 through December 15, 2024; and (iii) Two Hundred Fifty Thousand Dollars **($250,000.00)** between December 15, 2024 and December 15, 2025 ("Tenant Improvement Allowance"). Lessee agrees there is only a Total Tenant Improvement Allowance in the amounts set forth above and such Total Tenant Improvement Allowance may be utilized by Tenant between all Leased Premises.

For Lessor to be responsible for reimbursement of any of the three (3) Tenant Improvement Allowances: (i) the Tenant shall submit to Lessor all final and paid receipts, lien releases, proof of payment, itemized proposals, contracts and any other reasonably required paperwork ("Paperwork") with written notice to Lessor requesting reimbursement for the applicable Tenant Improvement Allowance installment and (ii) the applicable Tenant Improvement Allowance must be utilized by Lessee prior to submission of paperwork and the submission of Paperwork required by Lessor shall be submitted to Lessor within the applicable time period set forth above, otherwise any remaining amount of the Tenant Improvement Allowance of the applicable time period shall be waived by Lessee. Lessor will reimburse Lessee within thirty (30) days of Lessor's receipt of the request and Paperwork the portion of the Tenant Improvement Allowance suppo1ied thereby, not to exceed the applicable Tenant Improvement Allowance installment.
There shall be no right by Lessee to carry over any remaining amount of the Tenant Improvement Allowance from one period to the next period set fotih above. Lessor shall have no duty or obligation to fund any Tenant Improvement Allowance if Lessee is monetary or material nonmonetary default of the Lease or Other Leased Premises (defined below) at the time of submission of the request for reimbursement. Lessee warrants, represents and agrees that the Tenant Improvement Allowances set forth above shall only be used for the costs related to actual physical improvements to, and as approved by Lessor or as recommended or required by Applicable Requirements to only the Premises or to 930 Riverside Parkway, Suites 40-60, 930 Riverside Parkway, Suites 10-30 and/or 930 Riverside Parkway, Suite 70 ("Other Leased Premises") all of the foregoing of which Lessee must be occupying under separate leases with Lessor at the time of submission of the Paperwork and request for reimbursement. At any time, should Lessee transfer the Lease or any lease for the Other Leased Premises or should Lessee and Lessor agree to terminate any of the Other Leased Premises or the Lease, then the amount of the Tenant Improvement Allowance remaining shall be reduced pro rata based on the total square footage reduced by the square footage so transferred or terminated by the pa1iies.

Lessee shall submit all plans, contractor(s) selection and designs to Lessor for approval, which approval shall not be unreasonably withheld. The Tenant Improvement Allowance shall not be utilized for soft costs, FF&E, data cabling, or any other items considered to be personal property. Lessee shall not commence any tenant improvements covered by the Tenant Improvement Allowance without Lessor's written consent of the alterations, which consent shall not be unreasonably withheld and provided to Lessee within ten (l 0) days of Lessor's receipt of the notice. Lessee shall provide Lessor with access to the Premises and/or Other Leased Premises, if requested by Lessor to approve the request, within such ten (10) days' time period, otherwise the time for Lessor approval shall be extended day-for-day until Lessor is provided access to the Premises and/or Other Leased Premises, as applicable. The failure to do so notify Lessor shall result in Lessor not being obligated to Lessee to reimburse for such tenant improvement work under the Tenant Improvement Allowance.

3. **Section 39.2 of the original Lease dated May 22, 2022 shall be amended as follows:**

a) Any options granted in the Lease to Lessee shall be available to any Permitted Transferee (defined in Section 64) or assignees or subleases in compliance with Section 12 of the Lease..

4. **Modification amending Section 12.2** (**c) in the original Lease dated May 22, 2020 shall be amended to read:**

a) Lessor's consent to any assignment or subletting shall not be unreasonably withheld or delayed so long as Lessee is in full compliance with Lease.

5. **Section 12.2** (**g**):

a) This section shall provide that no consent is required for Permitted Transferees (defined in Section 64).

6. **Section 63 fin the Addendum to the original Lease dated May 22, 2022:**

Section 63 (c) the determination of Fair Market Value shall not include above standard tenant improvements installed and paid for by Tenant (i.e. specialty improvements germane to Tenant's Use of the Premises) regarding electrical, plumbing, drainage, sewer, mechanical, HVAC, code ADA upgrades, and other lab and research related improvements.

In consideration of the foregoing modifications of the original Lease, Lessee hereby represents and agrees that to the best of Lessee's knowledge, without fmther inquiry, Lessee does not know of any claims against the Lessor arising out of or related to the Lease or the Premises as of the Effective Date and waives any such known claims against Lessor related to the foregoing.

7. **Authority to Execute Amendment.** Each individual executing this Amendment represents that he is duly authorized to execute and deliver this Amendment on behalf of such patty and that this Amendment is binding upon such party in accordance with its terms.

8 **Effect of Amendment.** Except as otherwise modified by this Amendment, the Lease Agreement shall remain unmodified and in full force and effect. In the event of any conflict or inconsistency between the terms and conditions of the Lease Agreement and the terms and conditions of this Amendment, the terms and conditions of this Amendment shall prevail.

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Any capitalized terms used and not otherwise defined herein shall have the same meanings and definitions as set forth in the Lease Agreement.

9. **Conditions Precedent.** This Amendment shall be effective only when (a) the same shall have been executed and delivered by all parties; (b) the required updated and current insurance certificate(s) as set out in paragraph 54 of the Lease shall have been delivered to Lessor by Lessee and (iii) similar amendments are signed by Lessee for the Other Leased Premises.

THE SUBMISSION OF THIS ASSIGNMENT OF LEASE FOR EXAMINATION AND NEGOTIATION DOES NOT CONSTITUTE AN OFFER TO LEASE OR A RESERVATION OF OR OPTION FOR THE PREMISES. THIS DOCUMENT AND THE OBLIGATIONS HEREUNDER SHALL BECOME EFFECTIVE AND BINDING ON THE PARTIES ONLY UPON EXECUTION AND DELIVERY OF THIS LEASE AMENDMENT AND SIMILAR LEASE AMENDMENTS FOR THE OTHER LEASED PREMISES BY LESSEE AND BY LESSOR.

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IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and effective on the Effective Date.

LESSOR:	**LESSEE:**
SCHNITZER PROPERTIES, LLC	**ORIGIN MATERIALS OPERATING, INC.**
an Oregon limited liability company	a Delaware corporation
By: */s/ John Shorey*	By: */s/ Nate Whaley*
Name: John Shorey	Name: Nate Whaley
Title: Senior Vice President	Title: Chief Financial Officer

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Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, John Bissell, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Origin Materials, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 9, 2023 November 9, 2023

By: /s/ John Bissell
John Bissell
Co-Chief Executive Officer
(Co-Principal Executive Officer)

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Rich Riley, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Origin Materials, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 9, 2023 November 9, 2023

By: /s/ Rich Riley
Rich Riley
Co-Chief Executive Officer
(Co-Principal Executive Officer)

Exhibit 31.3

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Nate Whaley, Matt Plavan, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Origin Materials, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 9, 2023 November 9, 2023

By: /s/ Nate Whaley Matt Plavan
Nate Whaley Matt Plavan
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. § 1350), John Bissell, Co-Chief Executive Officer of Origin Materials, Inc. (the "Company"), Rich Riley, Co-Chief Executive Officer of the Company, and Nate Whaley, Chief Financial Officer of the Company, each hereby certifies that, to the best of their knowledge:

1. The Company's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2023 September 30, 2023, to which this Certification is attached as Exhibit 32.1 (the "Report"), fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 9, 2023 November 9, 2023

By: /s/ John Bissell

John Bissell
Co-Chief Executive Officer
(Co-Principal Executive Officer)

By: /s/ Rich Riley

Rich Riley
Co-Chief Executive Officer
(Co-Principal Executive Officer)

By: /s/ Nate Whaley Matt Plavan

Nate Whaley Matt Plavan
Chief Financial Officer
(Principal Financial Officer)

This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Origin Materials, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing.

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