

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended March 31, 2018

OR

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: 001-36481

ASPEN AEROGELS, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

04-3559972

(I.R.S. Employer
Identification No.)

**30 Forbes Road, Building B
Northborough, Massachusetts**
(Address of principal executive offices)

01532
(Zip Code)

Registrant's telephone number, including area code: (508) 691-1111

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 No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a 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	<input type="checkbox"/>	Accelerated filer	<input checked="" type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/> (Do not check if a smaller reporting company)	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input checked="" type="checkbox"/>

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

As of May 1, 2018, the registrant had 23,882,253 shares of common stock outstanding.

ASPEN AEROGELS, INC.
INDEX TO FORM 10-Q

	<u>Page</u>
<u>PART I FINANCIAL INFORMATION</u>	
Item 1. <u>Financial Statements</u>	
<u>Consolidated Balance Sheets (unaudited) as of March 31, 2018 and December 31, 2017</u>	1
<u>Consolidated Statements of Operations (unaudited) for the three months ended March 31, 2018 and 2017</u>	2
<u>Consolidated Statements of Cash Flows (unaudited) for the three months ended March 31, 2018 and 2017</u>	3
<u>Notes to Consolidated Financial Statements (unaudited)</u>	4
Item 2. <u>Management’s Discussion and Analysis of Financial Condition and Results of Operations</u>	14
Item 3. <u>Quantitative and Qualitative Disclosures About Market Risk</u>	25
Item 4. <u>Controls and Procedures</u>	25
<u>PART II OTHER INFORMATION</u>	
Item 1. <u>Legal Proceedings</u>	27
Item 1A. <u>Risk Factors</u>	27
Item 2. <u>Unregistered Sales of Equity Securities and Use of Proceeds</u>	27
Item 3. <u>Defaults Upon Senior Securities</u>	28
Item 4. <u>Mine Safety Disclosures</u>	28
Item 5. <u>Other Information</u>	28
Item 6. <u>Exhibits</u>	28
<u>SIGNATURES</u>	29

Trademarks, Trade Names and Service Marks

We own or have rights to use “Aspen Aerogels,” “Cryogel,” “Pyrogel,” “Spaceloft,” the Aspen Aerogels logo and other trademarks, service marks and trade names of Aspen Aerogels, Inc. appearing in this Quarterly Report on Form 10-Q. Solely for convenience, the trademarks, service marks and trade names referred to in this report are without the ® and TM symbols, but such references are not intended to indicate, in any way, that the owner thereof will not assert, to the fullest extent under applicable law, such owner’s rights to these trademarks, service marks and trade names. This report contains additional trademarks, service marks and trade names of other companies, which, to our knowledge, are the property of their respective owners.

PART I — FINANCIAL INFORMATION

Item 1. Financial Statements.

ASPEN AEROGELS, INC.
 Consolidated Balance Sheets
 (Unaudited)

	March 31, 2018	December 31, 2017
(In thousands, except share and per share data)		
Assets		
Current assets:		
Cash and cash equivalents	\$ 9,615	\$ 10,694
Accounts receivable, net of allowances of \$232 and \$93	20,134	26,764
Inventories	9,974	8,915
Prepaid expenses and other current assets	1,088	1,289
Total current assets	40,811	47,662
Property, plant and equipment, net	73,292	76,067
Other long-term assets	83	86
Total assets	<u>\$ 114,186</u>	<u>\$ 123,815</u>
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$ 7,032	\$ 10,653
Accrued expenses	3,939	5,862
Revolving line of credit	3,750	3,750
Deferred revenue	1,019	1,304
Total current liabilities	15,740	21,569
Deferred rent	1,263	1,303
Prepayment liability	1,962	—
Deferred revenue long-term	488	—
Total liabilities	19,453	22,872
Commitments and contingencies (Note 7)		
Stockholders' equity:		
Preferred stock, \$0.00001 par value; 5,000,000 shares authorized, no shares issued and outstanding at March 31, 2018 and December 31, 2017	—	—
Common stock, \$0.00001 par value; 125,000,000 shares authorized, 23,882,253 and 23,643,189 shares issued and outstanding at March 31, 2018 and December 31, 2017, respectively	—	—
Additional paid-in capital	538,720	538,088
Accumulated deficit	(443,987)	(437,145)
Total stockholders' equity	94,733	100,943
Total liabilities and stockholders' equity	<u>\$ 114,186</u>	<u>\$ 123,815</u>

See accompanying notes to unaudited consolidated financial statements.

ASPEN AEROGELS, INC.
Consolidated Statements of Operations
(Unaudited)

	Three Months Ended March 31,	
	2018	2017
	(In thousands, except share and per share data)	
Revenue:		
Product	\$ 22,521	\$ 22,326
Research services	553	676
Total revenue	<u>23,074</u>	<u>23,002</u>
Cost of revenue:		
Product	20,023	20,470
Research services	241	311
Gross profit	<u>2,810</u>	<u>2,221</u>
Operating expenses:		
Research and development	1,605	1,576
Sales and marketing	3,499	3,110
General and administrative	4,456	6,587
Total operating expenses	<u>9,560</u>	<u>11,273</u>
Loss from operations	<u>(6,750)</u>	<u>(9,052)</u>
Interest expense, net	<u>(92)</u>	<u>(26)</u>
Total interest expense, net	<u>(92)</u>	<u>(26)</u>
Net loss	<u>\$ (6,842)</u>	<u>\$ (9,078)</u>
Net loss per share:		
Basic and diluted	<u>\$ (0.29)</u>	<u>\$ (0.39)</u>
Weighted-average common shares outstanding:		
Basic and diluted	<u>23,567,019</u>	<u>23,257,541</u>

See accompanying notes to unaudited consolidated financial statements.

ASPEN AEROGELS, INC.
Consolidated Statements of Cash Flows
(Unaudited)

	Three Months Ended March 31,	
	2018	2017
(In thousands)		
Cash flows from operating activities:		
Net loss	\$ (6,842)	\$ (9,078)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	3,171	2,676
Stock-compensation expense	1,136	1,244
Lease incentives	(30)	(22)
Accretion of prepayment discount	10	—
Other	—	(1)
Changes in operating assets and liabilities:		
Accounts receivable	6,630	442
Inventories	(1,059)	(2,264)
Prepaid expenses and other assets	204	497
Accounts payable	(3,340)	2,238
Accrued expenses	(1,923)	125
Deferred revenue	(345)	(254)
Deferred rent	(10)	(22)
Net cash used in operating activities	<u>(2,398)</u>	<u>(4,419)</u>
Cash flows from investing activities:		
Capital expenditures	(677)	(2,146)
Net cash used in investing activities	<u>(677)</u>	<u>(2,146)</u>
Cash flows from financing activities:		
Prepayment proceeds under customer supply agreement, net	2,500	—
Repayment of obligations under capital lease	—	(7)
Payments made for employee restricted stock tax withholdings	(504)	(286)
Net cash provided by (used in) financing activities	<u>1,996</u>	<u>(293)</u>
Net decrease in cash	(1,079)	(6,858)
Cash at beginning of period	10,694	18,086
Cash at end of period	<u>\$ 9,615</u>	<u>\$ 11,228</u>
Supplemental disclosures of cash flow information:		
Interest paid	\$ 99	\$ 40
Income taxes paid	\$ —	\$ —
Supplemental disclosures of non-cash activities:		
Changes in accrued capital expenditures	\$ (281)	\$ (1,134)
Deferred revenue	<u>\$ 548</u>	<u>\$ —</u>

See accompanying notes to unaudited consolidated financial statements.

ASPEN AEROGELS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(UNAUDITED)

(1) Description of Business and Basis of Presentation

Nature of Business

Aspen Aerogels, Inc. (the Company) is an aerogel technology company that designs, develops and manufactures innovative, high-performance aerogel insulation used primarily in the energy infrastructure and building materials markets. The Company also conducts research and development related to aerogel technology supported by funding from several agencies of the U.S. government and other institutions in the form of research and development contracts.

The Company maintains its corporate offices in Northborough, Massachusetts. The Company has three wholly owned subsidiaries: Aspen Aerogels Rhode Island, LLC, Aspen Aerogels Germany, GmbH and Aspen Aerogels Georgia, LLC.

Liquidity

In August 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2014-15, Presentation of Financial Statements-Going Concern (Subtopic 205-40): Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern (ASU 2015-14). This ASU requires management to assess and evaluate whether conditions or events exist, considered in the aggregate, that raise substantial doubt about the entity's ability to continue as a going concern within one year after the financial statements issue date. The Company adopted this standard effective January 1, 2017.

At March 31, 2018, the Company had a cash and cash equivalents balance of \$9.6 million and \$3.8 million of outstanding borrowings under its revolving line of credit (see note 7). The existing revolving line of credit matures on April 28, 2019.

The Company is making investments to increase capacity at its existing manufacturing facility in East Providence, Rhode Island, to expand its sales and marketing efforts, and to develop new technologies and business opportunities. The Company expects its existing cash balance, the remaining \$2.5 million of the 2018 prepayment under its customer supply agreement (see note 7) and the amount anticipated to be available under the existing revolving line of credit will be sufficient to fund these investments. The Company has no mitigating plans in place to reduce its cash expenditures under its current operating plan.

Unaudited Interim Financial Information

The accompanying unaudited interim consolidated financial statements include the accounts of the Company and have been prepared in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP) and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Certain information and disclosures normally included in the consolidated financial statements prepared in accordance with U.S. GAAP have been condensed or omitted pursuant to such rules and regulations. As such, the information included in this Quarterly Report on Form 10-Q should be read in conjunction with the audited consolidated financial statements and accompanying notes in our Annual Report on Form 10-K for the year ended December 31, 2017 (the Annual Report), filed with the Securities and Exchange Commission on March 1, 2018.

In the opinion of the Company's management, the unaudited interim consolidated financial statements have been prepared on the same basis as the audited consolidated financial statements and include all adjustments that are of a normal recurring nature and necessary for the fair statement of the Company's financial position as of March 31, 2018 and the results of its operations for the three months ended March 31, 2018 and 2017 and the cash flows for the three month periods then ended. The Company has evaluated events through the date of this filing.

The results of operations for the three months ended March 31, 2018 are not necessarily indicative of the results to be expected for the year ending December 31, 2018 or any other period.

(2) Significant Accounting Policies

Principles of Consolidation

The accompanying consolidated financial statements, which have been prepared in accordance with U.S. GAAP, include the accounts of the Company and its wholly owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of the consolidated financial statements requires the Company to make a number of estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Significant items subject to such estimates and assumptions include allowances for doubtful accounts, sales returns and allowances, product warranty costs, inventory valuation, the carrying amount of property and equipment, stock-based compensation and deferred income taxes. The Company evaluates its estimates and assumptions on an ongoing basis using historical experience and other factors, including the current economic environment, which are believed to be reasonable under the circumstances. Management adjusts such estimates and assumptions when facts and circumstances warrant. Illiquid credit markets, volatile equity markets and declines in business investment increase the uncertainty inherent in such estimates and assumptions. As future events and their effects cannot be determined with precision, actual results could differ significantly from these estimates. Changes in these estimates resulting from continuing changes in the economic environment will be reflected in the financial statements in future periods.

Cash and Cash Equivalents

Cash equivalents include short-term, highly liquid instruments, which consist of money market accounts. All cash and cash equivalents are maintained with major financial institutions in North America. Deposits with these financial institutions may exceed the amount of insurance provided on such deposits; however, these deposits typically may be redeemed upon demand and, therefore, bear minimal risk.

Revenue Recognition

On January 1, 2018, the Company adopted Accounting Standards Codification 606, Revenue from Contracts with Customers (ASC 606). See note 3 for further details.

The Company recognizes revenue from the sale of products and performance of research and development services. Revenue is recognized when a customer obtains control of promised goods or services, in an amount that reflects the consideration which the Company expects to receive in exchange from those goods or services.

Sales returns are recorded based on historical sales and return information. Products that exhibit unusual sales return patterns due to quality or other manufacturing matters are specifically investigated and analyzed as part of the sales return accrual. The sales return accrual represents a reserve for products that may be returned due to quality concerns or authorized for destruction in the field. Sales return reserves are recorded at full original sales value. The Company rarely exchanges products from inventory for returned products. Sales return reserves were \$0.2 million and \$0.1 million at March 31, 2018 and December 31, 2017, respectively.

Stock-based Compensation

Stock-based compensation expense is measured at the grant date based on the fair value of the award. Expense is recognized on a straight-line basis over the requisite service period for all awards with service conditions. For performance-based awards, the grant date fair value is recognized as expense when the condition is probable of being achieved, and then on a graded basis over the requisite service period. The Company uses the Black-Scholes option-pricing model to determine the fair value of service-based option awards, which requires a number of complex and subjective assumptions including fair value of the underlying security, the expected volatility of the underlying security, a risk-free interest rate and the expected term of the option. The fair value of restricted stock and restricted stock unit grants is determined using the closing trading price of the Company's common stock on the date of grant. The fair value of awards containing market conditions is determined using a Monte Carlo simulation model based upon the terms of the conditions, the expected volatility of the underlying security, and other relevant factors.

During the three months ended March 31, 2018, the Company granted 483,679 restricted common stock units (RSUs) and non-qualified stock options (NSOs) to purchase 464,518 shares of common stock with a grant date fair value of \$2.2 million and \$1.0 million, respectively, to employees under the 2014 Employee, Director and Consultant Equity Incentive Plan (the 2014 Equity Plan). The employee RSUs and NSOs will vest over a three year period.

Stock-based compensation is included in cost of sales or operating expenses, as applicable, and consists of the following:

	Three Months Ended March 31,	
	2018	2017
	(In thousands)	
Cost of product revenue	\$ 154	\$ 204
Research and development expenses	111	138
Sales and marketing expenses	232	268
General and administrative expenses	639	634
Total stock-based compensation	<u>\$ 1,136</u>	<u>\$ 1,244</u>

Pursuant to the “evergreen” provisions of the 2014 Equity Plan, the number of shares of common stock authorized for issuance under the plan automatically increased by 472,863 shares to 7,009,460 shares effective January 1, 2018.

As of March 31, 2018, 3,769,133 shares of common stock were reserved for issuance upon the exercise or vesting, as appropriate, of outstanding stock-based awards granted under the 2014 Equity Plan. In addition, as of March 31, 2018, 90,288 shares of common stock were reserved for issuance upon the exercise of outstanding stock options granted under the Company’s 2001 Equity Incentive Plan, as amended (the 2001 Equity Plan). Any cancellations or forfeitures of the options outstanding under the 2001 Equity Plan will result in the shares reserved for issuance upon exercise of such options becoming available for grant under the 2014 Equity Plan. As of March 31, 2018, there were 1,927,221 shares of common stock available for grant under the 2014 Equity Plan.

Earnings per Share

The Company calculates net loss per common share based on the weighted-average number of common shares outstanding during each period. Potential common stock equivalents are determined using the treasury stock method. The weighted-average number of common shares included in the computation of diluted net loss gives effect to all potentially dilutive common equivalent shares, including outstanding stock options, RSUs and warrants. Common equivalent shares are excluded from the computation of diluted net loss per share if their effect is antidilutive.

Segments

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 in making decisions on how to allocate resources and assess performance. The Company’s chief operating decision maker is the Chief Executive Officer. The Company’s chief operating decision maker reviews consolidated operating results to make decisions about allocating resources and assessing performance for the entire Company. The Company views its operations and manages its business as one operating segment.

Information about the Company’s total revenues, based on shipment destination or services location, is presented in the following table:

	Three Months Ended March 31,	
	2018	2017
	(In thousands)	
Revenue:		
U.S.	\$ 9,882	\$ 9,130
International	13,192	13,872
Total	<u>\$ 23,074</u>	<u>\$ 23,002</u>

Warranty Costs

The Company provides warranties for its products and records the estimated cost within cost of sales in the period that the related revenue is recorded. The Company’s standard warranty period extends to one year from the date of shipment. This standard warranty provides that the Company’s products will be free from defects in material and workmanship, and will, under normal use, conform to the specifications for the product.

The Company’s products may be utilized in systems that involve new technical demands and new configurations. Accordingly, the Company regularly reviews and assesses whether warranty reserves should be recorded in the period the related revenue is recorded. For an initial shipment of product for use in a system with new technical demands or new configurations and where the

Company is unsure of meeting the customer's specifications, the Company will defer the recognition of product revenue and related costs until written customer acceptance is obtained.

The Company performs periodic testing of its aerogel blankets to ensure compliance with published performance specifications. From time to time, tests may indicate a product could potentially perform outside of these specifications. At that time, additional testing is initiated or the Company may conduct a root cause investigation. As of March 31, 2018, a test result has indicated that the tested samples performed outside the published performance specifications for a product and, as a result, the Company is performing additional testing. At this time, a liability has not been determined to be probable or estimable. The Company will continue to assess the results of these ongoing tests and, depending on results, could be subject to material warranty charges in future periods.

The Company did not record any warranty expense during the three months ended March 31, 2018. During the three months ended March 31, 2017 the Company recorded warranty expense of \$0.9 million. This specific warranty charge was related to product claims for a single product application issue. As of March 31, 2018, the Company had satisfied all outstanding warranty claims .

Recently Issued Accounting Standards

From time to time, new accounting pronouncements are issued by the FASB or other standard setting bodies. Recently issued standards typically do not require adoption until a future effective date. Prior to their effective date, the Company evaluates the pronouncements to determine the potential effects of adoption to its consolidated financial statements.

Standards Implemented Since December 31, 2017

In August 2015, the FASB issued a deferral of ASU 2014-09, Revenue from Contracts with Customers. The standard replaces the transaction- and industry-specific revenue recognition guidance under current U.S. GAAP with a principle based approach for determining revenue recognition. As a result of the deferral, public entities were required to apply the revised revenue recognition standard for the annual reporting period beginning on or after December 15, 2017, including interim periods within that annual reporting period. The Company adopted this standard using the modified retrospective method on January 1, 2018. The Company completed its analysis of the new revenue standard and determined that it will not materially impact the allocation and timing of recognition of previously reported revenues from the sale of products or performance of research and development services. In addition, the Company determined that there are no incremental contract costs or contract fulfillment costs to be recognized in connection with the adoption. Based on the Company's analysis, no adjustment to retained earnings was required as of the January 1, 2018 adoption date. Accordingly, the Company's application of the standard did not have a material impact on the Company's consolidated balance sheet at January 1, 2018 and did not have a material impact to its statement of operations for the three months ended March 31, 2018 and 2017 or the twelve months ended December 31, 2017.

In August 2016, the FASB issued ASU 2016-15, Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments (ASU 2016-15). This amendment addresses eight classification issues related to the statement of cash flows. The amendments in ASU 2016-15 are effective for public business entities for annual and interim periods in fiscal years beginning after December 15, 2017. The Company adopted the provisions of the amendment on January 1, 2018. The adoption of the standard has not resulted in any material impact to the Company's consolidated financial statements or other disclosures.

Standards to be Implemented

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842) . FASB ASU 2016-02 modifies the accounting for leases and requires that all leases be recorded on the consolidated balance sheets as assets and liabilities. This update is effective for fiscal years beginning after December 15, 2018. Early application is permitted. The Company has not yet selected a transition method and is evaluating the effect the updated standard will have on its consolidated financial statements and related disclosures. The Company currently expects that most of its operating lease commitments will be subject to the new standard and recognized as right-of-use assets and operating lease liabilities. The Company expects application of the standard will increase the reported value of both total assets and total liabilities upon adoption and will have a material impact on the Company's consolidated financial statements and other disclosures. Additionally, the Company is in the process of updating its systems, controls and procedures for maintaining and accounting for its lease portfolio under the new standard. As a result, the Company expects to adopt the new standard on January 1, 2019.

(3) Revenue from Contracts with Customers

On January 1, 2018, the Company adopted Accounting Standards Codification 606, Revenue from Contracts with Customers (ASC 606) using the modified retrospective method for all contracts not completed as of the date of adoption. The adoption of ASC 606 did not have a material impact on the allocation and timing of the recognition of previously reported revenues from the sale of

products, subsea projects or performance of research and development services. For the three months ended March 31, 2018, there was no difference in the accounting for revenue transactions under ASC 605 or ASC 606. In addition, the Company determined that there are no incremental contract costs or contract fulfillment costs associated with the adoption. The reported results for 2018 reflect the application of ASC 606 guidance while the reported results for 2017 were prepared under the guidance of ASC 605, Revenue Recognition (ASC 605). The adoption of ASC 606 represents a change in accounting principle that will more closely align revenue recognition with the delivery of the Company's product or research services and will provide financial statement readers with enhanced disclosures.

Revenue Recognition

Revenue is recognized when a customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange from those goods or services. To determine revenue recognition for arrangements within the scope of ASC 606, the Company performs the following five steps: (i) identification of the contract with a customer; (ii) identification of the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the separate performance obligations in the contract; and (v) recognize revenue associated with performance obligation as they are satisfied. The Company applies the five-step model to contracts when it is probable that the Company will collect the consideration it is entitled to in exchange for the goods or services it transfers to the customer. At contract inception, once the contract is determined to be within the scope of ASC 606, the Company assesses the goods or services promised within each contract and determines those that are performance obligations, and assesses whether each promised good or service is distinct. If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. Contracts that contain multiple performance obligations require an allocation of the transaction price based on the estimated relative standalone selling prices of the promised products or services underlying each performance obligation. The Company determines standalone selling prices based on the price at which the performance obligation is sold separately. If the standalone selling price is not observable through past transactions, the Company estimates the standalone selling price taking into account available information such as market conditions and internally approved pricing guidelines related to the performance obligations. The Company then recognizes as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

When determining the transaction price of a contract, an adjustment is made if payment from a customer occurs either significantly before or significantly after performance, resulting in a significant financing component. Applying the practical expedient in paragraph ASC 606-10-32-18, the Company does not assess whether a significant financing component exists if the period between when the Company performs its obligations under the contract and when the customer pays is one year or less. None of the Company's contracts as of January 1, 2018 and entered into during the three months ended March 31, 2018 contained a significant financing component as of March 31, 2018.

The Company records deferred revenue for product sales when the Company has delivered products but other performance obligations have not been satisfied or control has not been transferred to the customer.

Shipping and Handling Costs

Shipping and handling costs associated with outbound freight after control over a product has transferred to a customer are accounted for as fulfillment costs and are included in the cost of product revenue. The amount of revenue recognized reflects the consideration to which the Company expects to be entitled to receive in exchange for these products or research services.

Product Revenue

The Company generally enters into contracts containing one type of performance obligation. The Company recognizes product revenue when the performance obligation is satisfied, which is generally upon delivery according to contractual shipping terms within customer purchase orders.

The Company also enters into rebate agreements with certain customers. These agreements may be considered an additional performance obligation of the Company or variable consideration within a contract. Rebates are recorded as a reduction of revenue in the period the related product revenue is recognized. A corresponding liability is recorded as a component of deferred revenue on the consolidated balance sheets. These arrangements are primarily based on the customer attaining contractually specified sales volumes.

The Company estimates the amount of its product sales that may be returned by its customers and records this estimate as a reduction of revenue in the period the related product revenue is recognized. The Company currently estimates product return liabilities using historical rates of return, current quarter credit sales, and specific items of exposure on a contract by contract basis.

Subsea Projects

The Company manufactures and sells subsea products that are designed for pipe-in-pipe applications in offshore oil production and are typically customized to meet customer specifications. Subsea products typically have no alternative use and contain an enforceable right to payment. Customer invoicing terms for subsea products are typically based on certain milestones within the production and delivery schedule. Under the provisions of ASC 606, the Company recognizes revenue at a point in time when transfer of control of the products is passed to the customer, or over time utilizing the input/cost-to-cost method. The timing of revenue recognition is assessed on a contract by contract basis. During the three months ended March 31, 2018, the Company recognized \$0.8 million for subsea projects.

Research Services

The Company performs research services under contracts with various government agencies and other institutions. These contracts generally have one type of performance obligation: the provision of research services including functional licenses to any resulting intellectual property. The Company records revenue using the percentage-of-completion method in two ways: (1) for firm-fixed-price contracts, the Company accrues that portion of the total contract price that is allocable, on the basis of the Company's estimates of costs incurred to date to total contract costs; and (2) for cost-plus-fixed-fee contracts, the Company records revenue that is equal to total payroll cost incurred times a stated factor plus reimbursable expenses, to a stated upper limit. The primary cost under the Company's research service contracts is the labor effort expended in completing the research, and the only deliverable, other than the labor hours expended, is reporting of research results to the customer. Because the input measure of labor hours expended is also reflective of the output measure, it is a reliable means to measure the extent of progress toward completion. Revisions in cost estimates and fees during the course of the contract are reflected in the accounting period in which the facts that require the revisions become known. Contract costs and rates used to allocate overhead to contracts are subject to audit by the respective contracting government agency. Adjustments to revenue as a result of audit are recorded within the period they become known. To date, adjustments to revenue as a result of audit have been insignificant.

Disaggregation of Revenue

In the following table, revenue is disaggregated by primary geographical region and source of revenue:

	Three Months ended March 31, 2018		Total
	U.S.	International	
	(In thousands)		
Geographical region			
Asia	\$ —	\$ 8,228	\$ 8,228
Canada	—	1,675	1,675
Europe	—	2,455	2,455
Latin America	—	834	834
U.S.	9,882	—	9,882
	<u>\$ 9,882</u>	<u>\$ 13,192</u>	<u>\$ 23,074</u>
Source of revenue			
Product revenue	\$ 9,324	\$ 12,353	\$ 21,677
Subsea projects	5	839	844
Research services	553	—	553
	<u>\$ 9,882</u>	<u>\$ 13,192</u>	<u>\$ 23,074</u>

Contract Balances

The following table presents changes in the Company's contract assets and contract liabilities during the three months ended March 31, 2018:

	Balance at December 31, 2017	Additions	Deductions	Balance at March 31, 2018
(In thousands)				
Contract assets				
Subsea projects	\$ 2,463	\$ 466	\$ (2,925)	\$ 4
Research services	425	552	(518)	459
Total contract assets	<u>2,888</u>	<u>1,018</u>	<u>(3,443)</u>	<u>463</u>
Contract liabilities				
Deferred revenue				
Product revenue	1,178	1,025	(696)	1,507
Subsea projects	126	—	(126)	—
Total contract liabilities	<u>\$ 1,304</u>	<u>\$ 1,025</u>	<u>\$ (822)</u>	<u>\$ 1,507</u>

During the three months ended March 31, 2018, we recognized \$0.2 million of revenue as a result of changes in the contract assets and the contract liability balances in the respective periods.

A contract asset is recorded when the Company satisfies a performance obligation by transferring a promised good or service and has earned the right to consideration from its customer. These assets may represent a conditional or unconditional right to consideration.

A contract liability is recorded when consideration is received, or such consideration is unconditionally due, from a customer prior to transferring goods or services under the terms of the contract. Contract liabilities are recognized as revenue after control of the products or services is transferred to the customer and all revenue recognition criteria have been met.

(4) Inventories

Inventories consist of the following:

	March 31, 2018	December 31, 2017
(In thousands)		
Raw materials	\$ 2,447	\$ 2,543
Finished goods	7,527	6,372
Total	<u>\$ 9,974</u>	<u>\$ 8,915</u>

(5) Property, Plant and Equipment, Net

Property, plant and equipment consist of the following:

	March 31, 2018	December 31, 2017	Useful life
(In thousands)			
Construction in progress	\$ 7,726	\$ 7,699	—
Buildings	24,016	24,013	30 years
Machinery and equipment	118,688	118,786	3-10 years
Computer equipment and software	8,201	8,099	3 years
Total	<u>158,631</u>	<u>158,597</u>	
Accumulated depreciation	<u>(85,339)</u>	<u>(82,530)</u>	
Property, plant and equipment, net	<u>\$ 73,292</u>	<u>\$ 76,067</u>	

Depreciation expense was \$3.2 million and \$2.7 million for the three months ended March 31, 2018 and 2017, respectively.

Construction in progress included engineering designs and other pre-construction costs for the planned manufacturing facility in Statesboro, Georgia of \$7.2 million at both March 31, 2018 and December 31, 2017. The Company has delayed the project to construct the Statesboro, Georgia manufacturing facility to better align the timing of this capacity expansion with the Company's assessment of future demand.

(6) Accrued Expenses

Accrued expenses consist of the following:

	March 31, 2018	December 31, 2017
	(In thousands)	
Employee compensation	\$ 2,770	\$ 4,633
Other accrued expenses	1,169	1,229
Total	<u>\$ 3,939</u>	<u>\$ 5,862</u>

(7) Commitments and Contingencies

Customer Supply Agreement

The Company is party to an amended and restated supply agreement with BASF Polyurethanes GmbH (BASF) (the Supply Agreement) and a joint development agreement with BASF SE (the JDA). Pursuant to the Supply Agreement, the Company will sell exclusively to BASF the Company's Spaceloft A2 product at annual volumes to be specified by BASF, subject to certain volume limits. The Supply Agreement will terminate on December 31, 2027. Upon expiration of the Supply Agreement, the Company will be subject to a post-termination supply commitment for an additional two years. The JDA is designed to facilitate the collaboration between the parties on the development and commercialization of new products.

In addition, BASF, in its sole discretion, may make prepayments to the Company in the aggregate amount of up to \$22 million during the term of the Supply Agreement. BASF has agreed to make a prepayment in the amount of \$5.0 million to the Company in two equal installments in 2018 (the 2018 Prepayment). The amounts and terms of additional prepayment installments, if any, are subject to negotiation between the Company and BASF.

After January 1, 2019, the Company will, at BASF's instruction, credit up to 25.3% of any amounts invoiced by the Company for Spaceloft A2 product sold to BASF against the prepayment balance. However, BASF has no obligation to purchase products under the Supply Agreement. If any of the 2018 Prepayment remains uncredited as of December 31, 2021, BASF may request that the Company repay the uncredited amount to BASF. The prepayment obligation is secured by a security interest in real estate, plant and equipment at the Company's Rhode Island facility and a license to certain intellectual property.

As of March 31, 2018, the Company had received \$2.5 million of the 2018 Prepayment from BASF, which is recorded on the balance sheet as a prepayment liability, net of discount of \$0.5 million. The discount will be amortized into interest expense through December 31, 2021, or until the prepayment liability is fully credited by purchases from BASF.

Prepayment liability consists of the following:

	March 31, 2018	December 31, 2017
	(In thousands)	
Prepayment liability	\$ 2,500	\$ —
Discount on prepayment liability	(548)	—
Accretion of discount expense	10	—
Prepayment liability, less current maturities	<u>\$ 1,962</u>	<u>\$ —</u>

The deferred revenue associated with the prepayment liability represents a granting of the exclusive right to sell Spaceloft A2 over the term of the Supply Agreement. Deferred revenue will be amortized into revenue on a straight-line basis over the term of the Supply Agreement. At March 31, 2018, \$0.5 million was recorded as deferred revenue of which less than \$0.1 million recorded a component of short term deferred revenue.

Revolving Line of Credit

The Company entered into an Amended and Restated Loan and Security Agreement with Silicon Valley Bank (Loan Agreement), on August 31, 2014, which has been subsequently amended from time to time. On January 25, 2018, the Loan Agreement was amended to extend the maturity date of the facility to April 28, 2018. On April 25, 2018, the Loan Agreement was further amended to extend the maturity date of the facility to April 28, 2019. Under the Loan Agreement, the Company may borrow up to \$20.0 million subject to compliance with certain covenants and borrowing base limitations. At the Company's election, the interest rate applicable to borrowings may be based on the prime rate or LIBOR. Prime rate-based rates vary from prime rate plus 0.75% per annum to prime rate plus 2.00% per annum, while LIBOR-based rates vary from LIBOR plus 3.75% per annum to LIBOR plus 4.25% per annum. In addition, the Company is required to pay a monthly fee of 0.5% per annum of the average unused portion of the facility. Obligations under the Loan Agreement are secured by a security interest in all assets of the Company, including those at the East Providence facility, except for certain exclusions.

At March 31, 2018 and December 31, 2017, the Company had \$3.8 million and \$3.8 million drawn on the revolving credit facility. Under the Loan Agreement, the Company is required to comply with both non-financial and financial covenants, including minimum Adjusted EBITDA and minimum Adjusted Quick Ratio covenants, as defined. At March 31, 2018, the Company was in compliance with all such covenants.

The Company has been required to provide letters of credit to secure obligations under certain commercial contracts. The Company had outstanding letters of credit backed by the revolving credit facility of \$2.1 million and \$2.3 million at March 31, 2018 and December 31, 2017, respectively, which reduce the funds otherwise available to the Company under the facility.

At March 31, 2018, the effective amount available to the Company under the revolving credit facility was \$6.7 million after giving effect to the \$3.8 million in outstanding borrowings and \$2.1 million of outstanding letters of credit.

Litigation

The Company is, from time to time, a party to litigation that arises in the normal course of its business operations. See Part II, Item 1 ("Legal Proceedings") of this Quarterly Report on Form 10-Q for a description of certain of the Company's current legal proceedings. The Company is not presently a party to any litigation for which it believes a loss is probable requiring an amount to be accrued or a possible loss contingency requiring disclosure.

(8) Deferred Rent

The Company leases office and warehouse space in Northborough, Massachusetts and East Providence, Rhode Island.

For leases that contain fixed increases in the minimum annual lease payment during the original term of the lease, the Company recognizes rental expense on a straight-line basis over the lease term, and records the difference between rent expense and the amount currently payable as deferred rent.

Lease incentives for allowances for qualified leasehold improvements received from the landlord are amortized on a straight-line basis over the lease term. These improvements and the funding received from the landlord are recorded as fixed asset additions and a deferred rent liability on the consolidated balance sheets. The deferred rent liability is being amortized as a reduction to rent expense over the life of the lease.

Deferred rent consists of the following:

	March 31, 2018	December 31, 2017
	(In thousands)	
Deferred rent	\$ 1,472	\$ 1,511
Current maturities of deferred rent	(209)	(208)
Deferred rent, less current maturities	<u>\$ 1,263</u>	<u>\$ 1,303</u>

(9) Net Loss Per Share

The computation of basic and diluted net loss per share consists of the following:

	Three Months Ended March 31,	
	2018	2017
(In thousands, except share and per share data)		
Numerator:		
Net loss	\$ (6,842)	\$ (9,078)
Denominator:		
Weighted average shares outstanding, basic and diluted	23,567,019	23,257,541
Net loss per share, basic and diluted	\$ (0.29)	\$ (0.39)

Potentially dilutive common shares that were excluded from the computation of diluted net loss per share because they were anti-dilutive consist of the following:

	Three Months Ended March 31,	
	2018	2017
Common stock options	2,897,424	2,382,710
Restricted common stock units	961,997	954,928
Common stock warrants	—	115
Restricted common stock awards	151,859	153,277
Total	4,011,280	3,491,030

In the table above, anti-dilutive shares consist of those common stock equivalents that have (i) an exercise price above the average stock price for the period or (ii) related average unrecognized stock compensation expense sufficient to buy back the entire amount of shares. The Company excludes the shares issued in connection with restricted stock awards from the calculation of basic weighted average common shares outstanding until the restrictions lapse.

(10) Income Taxes

The Company incurred net operating losses and recorded a full valuation allowance against net deferred tax assets for all periods presented. Accordingly, the Company has not recorded a provision for federal or state income taxes.

The Securities and Exchange Commission staff issued Staff Accounting Bulletin No. 118 (SAB 118) to address the tax reform legislation enacted in the United States in 2017. In accordance with SAB 118, the Company has recognized the provisional tax impacts, related to the re-measurement of its deferred income tax assets and liabilities associated with the one-time mandatory transition tax on deemed repatriation as of December 31, 2017. Although the Company does not believe there will be any material adjustments in subsequent reporting periods, the ultimate impact may differ from the provisional amounts, due to, among other things, the significant complexity of the 2017 Tax Cuts and Jobs Act and anticipated additional regulatory guidance that may be issued by the IRS, changes in analysis, interpretations and assumptions the Company has made and actions the Company may take as a result of the 2017 Tax Cuts and Jobs Act.

(11) Subsequent Events

The Company has evaluated subsequent events through May 3, 2018, the date of issuance of the consolidated financial statements for the three months ended March 31, 2018.

On April 25, 2018, the Company's Loan Agreement was amended to extend the maturity date of the facility to April 28, 2019 and includes the modification of certain financial covenants.

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

The following information should be read in conjunction with the unaudited financial information and the notes thereto included in this Quarterly Report on Form 10-Q and the audited financial information and the notes thereto included in the Annual Report on Form 10-K for the year ended December 31, 2017, filed with the Securities and Exchange Commission (SEC) on March 1, 2018, which we refer to as the Annual Report.

Certain matters discussed in this Quarterly Report on Form 10-Q may be deemed to be forward-looking statements that involve risks and uncertainties. We make such forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. In this Quarterly Report on Form 10-Q, words such as “may,” “will,” “anticipate,” “estimate,” “expects,” “projects,” “intends,” “plans,” “believes” and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances) are intended to identify forward-looking statements.

Our actual results and the timing of certain events may differ materially from the results discussed, projected, anticipated, or indicated in any forward-looking statements. We caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate may differ materially from the forward-looking statements contained in this Quarterly Report. In addition, even if our results of operations, financial condition and liquidity, and the development of the industry in which we operate are consistent with the forward-looking statements contained in this Quarterly Report, they may not be predictive of results or developments in future periods.

The following information and any forward-looking statements should be considered in light of factors discussed elsewhere in this Quarterly Report on Form 10-Q and under “Risk Factors” in Item 1A of the Annual Report.

We caution readers not to place undue reliance on any forward-looking statements made by us, which speak only as of the date they are made. We disclaim any obligation, except as specifically required by law and the rules of the SEC, to publicly update or revise any such statements to reflect any change in our expectations or in events, conditions or circumstances on which any such statements may be based, or that may affect the likelihood that actual results will differ from those set forth in the forward-looking statements.

You should read the following discussion and analysis of financial condition and results of operations together with Part I Item 1 “Financial Statements,” which includes our financial statements and related notes, elsewhere in this Quarterly Report on Form 10-Q.

Overview

We design, develop and manufacture innovative, high-performance aerogel insulation used primarily in the energy infrastructure and building materials markets. We believe our aerogel blankets deliver the best thermal performance of any widely used insulation product available on the market today and provide a combination of performance attributes unmatched by traditional insulation materials. Our end-use customers select our products where thermal performance is critical and to save money, improve resource efficiency, enhance sustainability, preserve operating assets and protect workers.

Our insulation is used by oil producers and the owners and operators of refineries, petrochemical plants, liquefied natural gas facilities, power generating assets and other energy infrastructure. Our Pyrogel and Cryogel product lines have undergone rigorous technical validation by industry leading end-users and achieved significant market adoption. We also derive product revenue from the building materials and other end markets. Customers in these markets use our products for applications as diverse as wall systems, military and commercial aircraft, trains, buses, appliances, apparel, footwear and outdoor gear.

We generate product revenue through the sale of our line of aerogel blankets. We market and sell our products primarily through a sales force based in North America, Europe and Asia. The efforts of our sales force are supported by a small number of sales consultants with extensive knowledge of a particular market or region. Our sales force is responsible for establishing and maintaining customer and partner relationships, delivering highly technical information and ensuring high-quality customer service.

Our salespeople work directly with end-use customers and engineering firms to promote the qualification, specification and acceptance of our products. We also rely on an existing and well-established channel of qualified insulation distributors and contractors in more than 40 countries around the world to ensure rapid delivery of our products and strong end-user support. Our salespeople also work to educate insulation contractors about the technical and operating cost advantages of our aerogel blankets.

We also perform research services under contracts with various agencies of the U.S. government, including the Department of Defense and the Department of Energy, and other institutions. Research performed under contract with government agencies and other institutions enables us to develop and leverage technologies into broader commercial applications.

We manufacture our products using our proprietary technology at our facility in East Providence, Rhode Island. We have operated the East Providence facility since 2008 and have increased our annual nameplate capacity since that date to 50 million square feet of aerogel blankets. During 2018, we initiated a series of projects designed to increase this nameplate capacity to 60 million square feet of aerogel blankets by the end of 2020. We have also completed the design and engineering of a first line in a planned second manufacturing facility to be located in Statesboro, Georgia supported by a package of incentives from the State of Georgia and local governmental authorities. We have elected to delay construction of the Statesboro facility to better align the timing of this capacity expansion with our assessment of future demand.

We have entered into a strategic partnership with BASF to develop and commercialize products for the building materials and other markets. The strategic partnership includes an amended and restated supply agreement (the "BASF Supply Agreement") governing the sale of our Spaceloft A2 product to BASF and a joint development agreement targeting innovative products and technologies. Pursuant to the BASF Supply Agreement, BASF may, in its sole discretion, make a series of prepayments to the Company in the aggregate amount of up to \$22.0 million in support of our capacity expansion plans, our process improvement initiatives and our new business development efforts. BASF has agreed to make a prepayment to us in the amount of \$5.0 million in two equal installments in 2018, the first of which was received on March 1, 2018 in the amount of \$2.5 million. The 2018 prepayment will be either credited against amounts invoiced to BASF for Spaceloft A2 or repaid by us to BASF on or after December 31, 2021.

Our revenue for the three months ended March 31, 2018 was \$23.1 million, which represented an increase of \$0.1 million from the three months ended March 31, 2017. Net loss for the three months ended March 31, 2018 was \$6.8 million and net loss per diluted share was \$0.29. Net loss for the three months ended March 31, 2017 was \$9.1 million and net loss per diluted share was \$0.39.

Key Metrics and Non-GAAP Financial Measures

We regularly review a number of metrics, including the following key metrics, to evaluate our business, measure our performance, identify trends affecting our business, formulate financial projections and make strategic decisions.

Square Foot Operating Metric

We price our product and measure our product shipments in square feet. We estimate our annual nameplate capacity was 50 million square feet of aerogel blankets at March 31, 2018. We believe the square foot operating metric allows us and our investors to measure our manufacturing capacity and product shipments on a uniform and consistent basis. The following chart sets forth product shipments associated with recognized revenue in square feet for the periods presented:

	Three Months Ended	
	March 31,	
	2018	2017
	(In thousands)	
Product shipments in square feet	7,742	8,273

Adjusted EBITDA

We use Adjusted EBITDA, a non-GAAP financial measure, as a means to assess our operating performance. We define Adjusted EBITDA as net income (loss) before interest expense, taxes, depreciation, amortization, stock-based compensation expense and other items, which occur from time to time, that we do not believe are indicative of our core operating performance. Adjusted EBITDA is a supplemental measure of our performance that is not presented in accordance with U.S. GAAP. Adjusted EBITDA should not be considered as an alternative to net income (loss) or any other measure of financial performance calculated and presented in accordance with U.S. GAAP. In addition, our definition and presentation of Adjusted EBITDA may not be comparable to similarly titled measures presented by other companies.

We use Adjusted EBITDA:

- as a measure of operating performance because it does not include the impact of items that we do not consider indicative of our core operating performance;
- for planning purposes, including the preparation of our annual operating budget,

- to allocate resources to enhance the financial performance of our business; and
- as a performance measure under our bonus plan.

We also believe that the presentation of Adjusted EBITDA provides useful information to investors with respect to our results of operations and in assessing the performance and value of our business. Various measures of EBITDA are widely used by investors to measure a company's operating performance without regard to items that can vary substantially from company to company depending upon financing and accounting methods, book values of assets, capital structures and the methods by which assets were acquired.

Although measures similar to Adjusted EBITDA are frequently used by investors and securities analysts in their evaluation of companies, we understand that Adjusted EBITDA has limitations as an analytical tool, and you should not consider it in isolation or as a substitute for net income (loss), income (loss) from operations, net cash provided by (used in) operating activities or an analysis of our results of operations as reported under U.S. GAAP. Some of these limitations are:

- Adjusted EBITDA does not reflect our historical cash expenditures or future requirements for capital expenditures or other contractual commitments;
- Adjusted EBITDA does not reflect changes in, or cash requirements for, our working capital needs;
- Adjusted EBITDA does not reflect stock-based compensation expense;
- Adjusted EBITDA does not reflect our income tax expense or cash requirements to pay our income taxes;
- Adjusted EBITDA does not reflect our interest expense, or the cash requirements necessary to service interest or principal payments on our debt;
- Although depreciation, amortization and impairment charges are non-cash charges, the assets being depreciated, amortized or impaired will often have to be replaced in the future, and Adjusted EBITDA does not reflect any cash requirements for these replacements; and
- Other companies in our industry may calculate EBITDA or Adjusted EBITDA differently than we do, limiting their usefulness as a comparative measure.

Because of these limitations, our Adjusted EBITDA should not be considered as a measure of discretionary cash available to us to reinvest in the growth of our business or as a measure of cash available for us to meet our obligations.

To properly and prudently evaluate our business, we encourage you to review the U.S. GAAP financial statements included elsewhere in this Quarterly Report on Form 10-Q, and not to rely on any single financial measure to evaluate our business.

The following table presents a reconciliation of net loss, the most directly comparable U.S. GAAP measure, to Adjusted EBITDA for the periods presented:

	Three Months Ended	
	March 31,	
	2018	2017
	(In thousands)	
Net loss	\$ (6,842)	\$ (9,078)
Depreciation and amortization	3,171	2,676
Stock-based compensation (1)	1,136	1,244
Interest expense	92	26
Adjusted EBITDA	<u>\$ (2,443)</u>	<u>\$ (5,132)</u>

(1) Represents non-cash stock-based compensation related to vesting and modifications of stock option grants, vesting of restricted stock units and vesting of restricted common stock.

Our financial performance, including such measures as net income (loss), earnings per share and Adjusted EBITDA, are affected by a number of factors including volume and mix of aerogel products sold, average selling prices, our material and manufacturing costs, the costs associated with and timing of capacity expansions and start-up of additional production capacity, and the amount and timing of operating expenses, including patent enforcement costs. As we build out our manufacturing capacity in new facilities in the longer term, we expect increased manufacturing expenses will periodically have a negative impact on net income (loss), earnings per share and Adjusted EBITDA, but will set the framework for improved performance in the long term. Accordingly, we expect that our net income (loss), earnings per share and Adjusted EBITDA will vary from period to period, in particular as and when we expand our manufacturing capacity in new facilities.

As a result of the conclusion of a multiyear petrochemical project with a major Asian energy company and an expected decline in the volume of subsea projects, which together comprised 19 % of our product revenue during 2017, we may experience a decrease in revenue, an increase in net loss and loss per share and a decrease in Adjusted EBITDA during 2018. In addition, we plan to increase investment in new initiatives and personnel by approximately \$6.0 million during 2018 with the objective of restoring long-term growth in our existing markets and developing new business opportunities. As a result of a planned increase in manufacturing and operating expenses associated with these new initiatives and personnel, we may experience an increase in net loss and net loss per share and a decrease in Adjusted EBITDA during 2018 even in the event that we experience an increase in revenue during the year.

Emerging Growth Company Status

The JOBS Act permits an “emerging growth company” such as us to take advantage of an extended transition period to comply with new or revised accounting standards applicable to public companies. We have opted out of this provision and, as a result, we comply with new or revised accounting standards as required when they are adopted. This decision to opt out of the extended transition period under the JOBS Act is irrevocable.

Components of Our Results of Operations

Revenue

We recognize product revenue from the sale of our line of aerogel products and research services revenue from the provision of services under contracts with various agencies of the U.S. government and other institutions. Product and research services revenue is recognized upon the satisfaction of contractual performance obligations.

We record deferred revenue for product sales when (i) we have delivered products but other revenue recognition criteria have not been satisfied or (ii) payments have been received in advance of products being delivered.

We may experience a decrease in revenue during 2018 due to the conclusion of the multiyear petrochemical project with a major Asian energy company and an anticipated decrease in project related revenue in the subsea market, which together comprised 19% of our product revenue during 2017.

Cost of Revenue

Cost of product revenue consists primarily of materials and manufacturing expense. Cost of product revenue is recorded when the related product revenue is recognized.

Material is our most significant component of cost of product revenue and includes fibrous batting, silica materials and additives. Material costs as a percentage of product revenue vary from product to product due to differences in average selling prices, material requirements, product thicknesses and manufacturing yields. In addition, we provide warranties for our products and record the estimated cost within cost of sales in the period that the related revenue is recorded or when we become aware that a potential warranty claim is probable and can be reasonably estimated. As of March 31, 2018, a test result has indicated that the tested samples performed outside the published performance specifications for a product and, as a result, we are performing additional testing. At this time, a liability has not been determined to be probable or estimable. We will continue to assess the results of these ongoing tests and, depending on results, could be subject to material warranty charges in future periods. As a result of these factors, material costs as a percentage of revenue will vary from period to period due to changes in the mix of aerogel products sold or the estimated cost of warranties. However, in general, we expect material costs to decline as a percentage of revenue as we seek to achieve higher selling prices, material sourcing improvements, quality improvements and manufacturing yield enhancements for our aerogel products.

Manufacturing expense is also a significant component of cost of revenue. Manufacturing expense includes labor, utilities, maintenance expense, and depreciation on manufacturing assets. Manufacturing expense also includes stock-based compensation of manufacturing employees and shipping costs. As we increase manufacturing capacity in our East Providence, Rhode Island facility through 2020 and, over time, through the anticipated construction, operation, and expansion of a second manufacturing facility, we expect manufacturing expense as a percentage of product revenue will increase following each such expansion but will decrease in the long-term due to improved manufacturing productivity and increased product revenue supported by the additional capacity.

We expect that cost of product revenue in absolute dollars and as a percentage of product revenue will decrease during 2018 versus 2017. The projected decrease in cost of product revenue in absolute dollars and as a percentage of product revenue reflects the impact of a planned increase in manufacturing output and an expected favorable mix of products sold, offset, in part, by a planned increase in personnel and expense in support of our capacity expansion and growth initiatives.

Cost of research services revenue consists of direct labor costs of research personnel engaged in the contract research, third-party consulting expense, and associated direct material costs. This cost of revenue also includes overhead expenses associated with project resources, development tools and supplies. Cost of research services revenue is recorded when the related research services revenue is recognized.

Gross Profit

Our gross profit as a percentage of revenue is affected by a number of factors, including the volume of aerogel products produced and sold, the mix of aerogel products sold, average selling prices, our material and manufacturing costs, realized capacity utilization and the costs associated with expansions and start-up of production capacity. Accordingly, we expect our gross profit in absolute dollars and as a percentage of revenue to vary significantly from period to period. As and when we build out our manufacturing capacity, we expect increased manufacturing expenses will periodically have a negative impact on gross profit in the periods following any such expansion.

As a result of the conclusion of a multiyear petrochemical project with a major Asian energy company and an expected decrease in the volume of subsea projects, which together comprised 19% of our product revenue during 2017, we may experience a decrease in revenue and an associated decrease in gross profit in absolute dollars and as a percentage of revenue during 2018. In addition, we plan to increase investment in manufacturing personnel and expenses during 2018 in support of our objective to increase the capacity of our East Providence manufacturing facility, operational improvement initiatives and our new business development efforts. As a result of this planned increase in manufacturing expense, we may experience a decrease in gross profit even in the event that we experience an increase in revenue during the year.

However, in the longer term, we expect gross profit to improve as a percentage of revenue due to expected increases in manufacturing productivity and production volumes, supported by expected capacity expansions, improvements in manufacturing yields and realization of material purchasing efficiencies.

Operating Expenses

Operating expenses consist of research and development, sales and marketing, and general and administrative expenses. Operating expenses include personnel costs, legal fees, professional fees, service fees, insurance premiums, travel expense, facilities related costs and other costs and fees. The largest component of our operating expenses is personnel costs, consisting of salaries, benefits, incentive compensation and stock-based compensation. In any particular period, the timing and extent of personnel additions or reductions, legal activities, including patent enforcement actions, marketing programs, research efforts and a range of similar activities or actions could materially affect our operating expenses, both in absolute dollars and as a percentage of revenue.

We plan to increase investment in new initiatives and personnel during 2018 with the objective of restoring long-term growth in our existing markets and to develop new business opportunities. As a result of this planned increase in operating expenses for new initiatives and personnel, we expect to experience an increase in operating expenses both in absolute dollars and as a percentage of revenue during 2018.

Research and Development Expenses

Research and development expenses consist primarily of expenses for personnel engaged in the development of next generation aerogel compositions, form factors and manufacturing technologies. These expenses also include testing services, prototype expenses, consulting services, equipment depreciation, facilities costs and related overhead. We expense research and development costs as incurred. We expect to continue to devote substantial resources to the development of new aerogel technologies. We believe that these investments are necessary to maintain and improve our competitive position. We expect to continue to invest in research and engineering personnel and the infrastructure required in support of their efforts. While we expect that our research and development expenses will increase in absolute dollars but decrease as a percentage of revenue in the longer term, in the nearer term we expect such expenses will increase as a percentage of revenue.

Sales and Marketing Expenses

Sales and marketing expenses consist primarily of personnel costs, incentive compensation, marketing programs, travel and related costs, consulting expenses and facilities related costs. We plan to expand our sales force and sales consultants globally to drive anticipated growth in customers and demand for our products. While we expect that sales and marketing expenses will increase in absolute dollars but decrease as a percentage of revenue in the longer-term, in the nearer term we expect such expenses will increase as a percentage of revenue.

General and Administrative Expenses

General and administrative expenses consist primarily of personnel costs, legal expenses, consulting and professional services, audit and tax consulting costs, and expenses for our executive, finance, legal, human resources and information technology organizations. General and administrative expenses have increased as we have incurred additional costs related to operating as a publicly-traded company, which include costs of compliance with securities, corporate governance and related laws and regulations, investor relations expenses, increased insurance premiums, including director and officer insurance, and increased audit and legal fees. In addition, we expect our general and administrative expenses to increase as we add general and administrative personnel to support the anticipated growth of our business and continued expansion of our manufacturing operations. We also expect that the patent enforcement actions, described in more detail under “Legal Proceedings” in Part II, Item 1 of this Quarterly Report on Form 10-Q, if protracted, could result in significant additional legal expense over the medium to long-term. During 2018, we expect general and administrative expense will decrease both in absolute dollars and as a percentage of revenue due to an anticipated reduction in patent enforcement costs. In the longer term, however, we expect that general and administrative expenses will increase in absolute dollars but continue to decline and as a percentage of revenue.

Other Expense, Net

For the three months ended March 31, 2018, other expense, net consisted primarily of fees and interest expense related to our revolving credit facility. For the three months ended March 31, 2017, other expense, net consisted primarily of fees related to our revolving credit facility.

Provision for Income Taxes

We have incurred net losses since inception and have not recorded benefit provisions for U.S. federal income taxes or state income taxes since the tax benefits of our net losses have been offset by valuation allowances due to the uncertainty associated with the utilization of net operating loss carryforwards.

Results of Operations

Three months ended March 31, 2018 compared to the three months ended March 31, 2017

The following tables set forth a comparison of the components of our results of operations for the periods presented:

Revenue

	Three Months Ended March 31,				Change	
	2018		2017		Amount	Percentage
Amount	Percentage of Revenue	Amount	Percentage of Revenue			
(\$ in thousands)						
Revenue:						
Product	\$ 22,521	98%	\$ 22,326	97%	\$ 195	1%
Research services	553	2%	676	3%	(123)	(18)%
Total revenue	<u>\$ 23,074</u>	100%	<u>\$ 23,002</u>	100%	<u>\$ 72</u>	0%

The following chart sets forth product shipments in square feet for the periods presented:

	Three Months Ended March 31,		Change	
	2018	2017	Amount	Percentage
Product shipments in square feet (in thousands)	7,742	8,273	(531)	(6)%

Total revenue increased \$0.1 million, or less than 1%, to \$23.1 million for the three months ended March 31, 2018 from \$23.0 million in the comparable period in 2017. An increase in product revenue was offset, in large part, by a decrease in research services revenue.

Product revenue increased by \$0.2 million, or 1%, to \$22.5 million for the three months ended March 31, 2018 from \$22.3 million in the comparable period in 2017. This increase was principally the result of broad-based growth in the global downstream energy market, particularly in North America, and modest growth in the subsea market during the quarter, offset, in large part, by a decline in revenue in Asia resulting from the conclusion of the multiyear petrochemical project with a major Asian energy company.

Product revenue for the three months ended March 31, 2018 included \$6.7 million to a North American distributor and \$4.0 million to an Asian distributor. Product revenue for the three months ended March 31, 2017 included \$3.7 million to a North American distributor, \$3.4 million to an Asian distributor and \$2.6 million to a North American manufacturer.

The average selling price per square foot of our products increased by \$0.21, or 8%, to \$2.91 per square foot for the three months ended March 31, 2018 from \$2.70 per square foot for the three months ended March 31, 2017. The increase in average selling price reflected the impact of price increases enacted in early 2018 and an increase in the mix of high-priced subsea products, offset, in large part, by a decrease in the mix of products sold to the major Asian energy company with lower, project-based pricing. This increase in average selling price had the effect of increasing product revenue by \$1.6 million for the three months ended March 31, 2018 from the comparable period in 2017.

In volume terms, product shipments decreased by 0.5 million square feet, or 6%, to 7.7 million square feet of aerogel products for the three months ended March 31, 2018, as compared to 8.3 million square feet for the three months ended March 31, 2017. The decrease in product volume had the effect of decreasing product revenue by \$1.4 million for the three months ended March 31, 2018 from the comparable period in 2017.

Research services revenue decreased \$0.1 million, or 18%, to \$0.6 million for the three months ended March 31, 2018 from \$0.7 million in the comparable period in 2017. The decrease was primarily due to the timing and amount of funding available under existing research contracts during the three months ended March 31, 2018 from the comparable period in 2017.

Product revenue was 98% of total revenue for the three months ended March 31, 2018 and 97% for the three months ended March 31, 2017. Research services revenue was 2% of total revenue for the three months ended March 31, 2018 and 3% of total revenue for the three months ended March 31, 2017.

Cost of Revenue

	Three Months Ended March 31,						Change	
	2018			2017			Amount	Percentage
	Amount	Percentage of Related Revenue	Percentage of Total Revenue	Amount	Percentage of Related Revenue	Percentage of Total Revenue		
	(\$ in thousands)							
Cost of revenue:								
Product	\$ 20,023	89%	87%	\$ 20,470	92%	89%	\$ (447)	(2)%
Research services	241	44%	1%	311	46%	1%	(70)	(23)%
Total cost of revenue	<u>\$ 20,264</u>	88%	88%	<u>\$ 20,781</u>	90%	90%	<u>\$ (517)</u>	(2)%

Total cost of revenue decreased \$0.5 million, or 2%, to \$20.3 million for the three months ended March 31, 2018 from \$20.8 million in the comparable period in 2017. The decrease in total cost of revenue was primarily the result of a decrease in product cost of revenue.

Product cost of revenue decreased \$0.5 million, or 2%, to \$20.0 million for the three months ended March 31, 2018 from \$20.5 million in the comparable period in 2017. The \$0.5 million decrease was the result of a \$0.9 million or 9% decrease in material costs offset by a \$0.4 million increase in manufacturing expense. The decrease in material costs was principally driven by a decrease in warranty expense of \$0.9 million. The increase in manufacturing expense was the result of increases in depreciation expense of \$0.5 million and compensation expense of \$0.3 million, offset, in part, by a decrease in maintenance expense of \$0.4 million.

Product cost of revenue as a percentage of product revenue decreased to 89% during the three months ended March 31, 2018 from 92% during the three months ended March 31, 2017. This decrease was the result of the 2% decrease in product cost of revenue despite the 1% increase in product revenue for the three months ended March 31, 2018 from the comparable period in 2017.

Research services cost of revenue decreased \$0.1 million, or 23% to \$0.2 million for the three months ended March 31, 2018 from \$0.3 million in the comparable period in 2017. Cost of research service revenue as a percentage of research services revenue decreased to 44% during the three months ended March 31, 2018 from 46% in the comparable period in 2017 due to a reduction in outside services utilized to support the contracted research.

Gross Profit

	Three Months Ended March 31,				Change	
	2018		2017		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Gross profit	\$ 2,810	12%	\$ 2,221	10%	\$ 589	27%

Gross profit increased \$0.6 million, or 27%, to \$2.8 million for the three months ended March 31, 2018 from \$2.2 million in the comparable period in 2017. The increase in gross profit was the result of the \$0.1 million increase in total revenue and the \$0.5 million decrease in total cost of sales. The decrease in total cost of sales was driven primarily by the reduction in warranty expense for the three months ended March 31, 2018 versus the comparable period in 2017.

Gross profit as a percentage of total revenue increased to 12% of total revenue for the three months ended March 31, 2018 from 10% in the comparable period in 2017. In 2018, we expect gross profit as a percentage of total revenue will increase slightly versus 2017. The expected increase in gross profit reflects our expectation that the benefit of planned increases in manufacturing output and an expected favorable mix of products sold will be offset, in part, by increased costs associated with a planned increase in personnel and expense in support of our capacity expansion and growth initiatives.

Research and Development Expenses

	Three Months Ended March 31,				Change	
	2018		2017		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Research and development expenses	\$ 1,605	7%	\$ 1,576	7%	\$ 29	2%

Research and development expenses were \$1.6 million for the three months ended March 31, 2018 and 2017. Modest increases in compensation and related costs and professional fees for the three months ended March 31, 2018 were offset by decreases in other research expenses.

Research and development expenses as a percentage of total revenue were 7% for the three months ended March 31, 2018 and 2017. We expect that our research and development expenses during 2018 will increase from 2017 levels in support of investments in innovative products, advanced process technologies, and new markets. Due to the expected growth in research and development expenses, we expect research and development expenses as a percentage of total revenue to increase in 2018.

Sales and Marketing Expenses

	Three Months Ended March 31,				Change	
	2018		2017		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Sales and marketing expenses	\$ 3,499	15%	\$ 3,110	14%	\$ 389	13%

Sales and marketing expenses increased by \$0.4 million, or 13%, to \$3.5 million for the three months ended March 31, 2018 from \$3.1 million in the comparable period in 2017. The \$0.4 million increase was the result of increases in compensation and related costs of \$0.1 million, professional fees of \$0.1 million and other marketing costs of \$0.2 million.

Sales and marketing expenses as a percentage of total revenue increased to 15% for the three months ended March 31, 2018 from 14% in the comparable period in 2017 due principally to the increase in sales and marketing expenses during the three months ended March 31, 2018.

We expect sales and marketing expenses to increase during 2018 in line with a planned increase in sales personnel and marketing initiatives. Due to the expected growth in sales and marketing expenses, we expect sales and marketing expenses as a percentage of total revenue to increase in 2018.

General and Administrative Expenses

	Three Months Ended March 31,				Change	
	2018		2017		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
General and administrative expenses	\$ 4,456	19%	\$ 6,587	29%	\$ (2,131)	(32)%

General and administrative expenses decreased by \$2.1 million, or 32%, to \$4.5 million during the three months ended March 31, 2018 from \$6.6 million in the comparable period in 2017. The \$2.1 million decrease was primarily the result of a decrease in patent enforcement costs of \$2.6 million, offset, in part, by increases in compensation and related costs of \$0.1 million, legal and professional fees of \$0.1 million, and other administrative expenses of \$0.3 million.

General and administrative expenses as a percentage of total revenue decreased to 19% for the three months ended March 31, 2018 from 29% in the comparable period in 2017. This decrease was due primarily to the decrease in patent enforcement costs during the three months ended March 31, 2018 from the comparable period in 2017.

We expect general and administrative expenses to decrease during 2018 due to expected decreases in patent enforcement costs and stock-based compensation expense. Due to the projected decrease in general and administrative expenses, we expect general and administrative expenses as a percentage of total revenue to decrease in 2018.

Interest Expense, net

	Three Months Ended March 31,				Change	
	2018		2016		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Interest expense, net	\$ (92)	(0)%	\$ (26)	(0)%	\$ (66)	254%

Interest expense, net grew to \$0.1 million during the three months ended March 31, 2018 from less than \$0.1 million during the comparable period in 2017. The \$0.1 million increase in interest expense, net, was due to an increase in interest expense associated with increased outstanding balances under our revolving line of credit.

Liquidity and Capital Resources

Overview

We have experienced significant losses and invested substantial resources since our inception to develop, commercialize and protect our aerogel technology and to build a manufacturing infrastructure capable of supplying aerogel products at the volumes and costs required by our customers. These investments have included research and development and other operating expenses, capital expenditures and investment in working capital balances.

Through 2015, we experienced revenue growth and gained share in our target markets. Despite a decline in revenue in 2016 and 2017 and a potential decline in revenue in 2018, our financial projections anticipate long-term revenue growth, with increasing levels of gross profit and improved cash flows from operations. To support this growth, we expect to incur up to \$20.0 million of capital expenditures related to our plan to increase the capacity of our East Providence, Rhode Island manufacturing facility by 20% by the end of 2020. In addition we expect to incur up to \$130 million of capital expenditures to construct a first manufacturing line in a planned second manufacturing facility to be located in Statesboro, Georgia which, while currently delayed, we believe will ultimately be needed to support this expected long term growth in demand.

We believe that our existing cash balance and anticipated credit will be sufficient to fund a portion of the planned expansion of our East Providence manufacturing facility. BASF has agreed to make a prepayment in the amount of \$5.0 million to us in two equal installments in 2018 (the "2018 Prepayment") in support of our capacity expansion plans, our process improvement initiatives and our new business development efforts. As of March 31, 2018, we had received \$2.5 million the 2018 Prepayment from BASF. In addition, we plan to manage other capital expenditures and working capital balances to maintain the cash resources required to support current operating requirements and the initial phases of our capacity expansion plan.

Beyond 2018, we will need to supplement our cash balance with anticipated cash flows from operations, local government grants, debt financings, customer prepayments and equity financings, if necessary, to provide the capital required to complete the expansion of our existing manufacturing facility and the first production line in our second manufacturing facility.

Primary Sources of Liquidity

Our principal sources of liquidity are currently our cash and cash equivalents and our revolving credit facility with Silicon Valley Bank. Cash and cash equivalents consist primarily of cash and money market accounts on deposit with banks. As of March 31, 2018, we had \$9.6 million of cash and cash equivalents.

At March 31, 2018, we had debt obligations of \$3.8 million related to borrowings under our revolving credit facility with Silicon Valley Bank, \$2.1 million of outstanding letters of credit secured by the revolving credit facility and an obligation of \$2.5 million associated with prepayments received pursuant to the BASF Supply Agreement.

We have maintained the revolving credit facility with Silicon Valley Bank since March 2011, which has been amended from time to time. Under our revolving credit facility, we are permitted to borrow a maximum of \$20.0 million, subject to continued covenant compliance and borrowing base requirements. At our election, the interest rate applicable to borrowings under the revolving credit facility may be based on the prime rate or LIBOR. Prime rate-based rates vary from prime rate plus 0.75% per annum to prime rate plus 2.00% per annum, while LIBOR-based rates vary from LIBOR plus 3.75% per annum to LIBOR plus 4.25% per annum. In addition, we are required to pay a monthly unused revolving line facility fee of 0.5% per annum of the average unused portion of the revolving credit facility. The revolving credit facility matures on April 28, 2019.

The effective amount available to us under the facility at March 31, 2018 was \$6.7 million after giving effect to \$3.8 million of borrowings and \$2.1 million of letters of credit outstanding.

Analysis of Cash Flow

Net Cash Used in Operating Activities

During the three months ended March 31, 2018, we used \$2.4 million in net cash in operating activities, as compared to the use of \$4.4 million in net cash during the comparable period in 2017, a decrease in the use of cash of \$2.0 million. This decrease in use of cash was the result of the decrease in net loss adjusted for non-cash items of \$2.6 million, offset, in part, by a decrease in cash provided by changes in operating assets and liabilities of \$0.6 million.

Net Cash Used in Investing Activities

Net cash used in investing activities is primarily related to capital expenditures to support our growth. Net cash used in investing activities for the three months ended March 31, 2018 and 2017 was \$0.7 million and \$2.1 million, respectively, in capital expenditures primarily for machinery and equipment to improve the throughput and efficiency of our East Providence facility.

Net Cash Used in Financing Activities

Net cash provided by financing activities for the three months ended March 31, 2018 totaled \$2.0 million and consisted of \$2.5 million in prepayment proceeds under the BASF Supply Agreement, offset, in part, by \$0.5 million in cash used for payments made for employee tax withholdings associated with the vesting of restricted stock units. Net cash used in financing activities for the three months ended March 31, 2017 totaled \$0.3 million and included \$0.3 million for payments made for employee tax withholdings associated with the vesting of restricted stock units and less than \$0.1 million for repayments of obligations under capital leases.

Off Balance Sheet Arrangements

Since inception, we have not engaged in any off balance sheet activities as defined in Item 303(a)(4) of Regulation S-K.

Contractual Obligations and Commitments

There have been no material changes to our contractual obligations and commitments as reported in our Annual Report on Form 10-K for the year ending December 31, 2017, filed with the SEC on March 1, 2018.

Recent Accounting Pronouncements

Information regarding new accounting pronouncements is included in note 2 to our unaudited consolidated financial statements contained in Item 1 of this Quarterly Report on Form 10-Q.

Critical Accounting Policies and Estimates

Our financial statements are prepared in accordance with U.S. GAAP. The preparation of our financial statements and related disclosures requires us to make estimates, assumptions and judgments that affect the reported amount of assets, liabilities, revenue, costs and expenses and related disclosures. We believe that the estimates, assumptions and judgments involved in these accounting policies have the greatest potential impact on our financial statements and, therefore, we consider these to be our critical accounting policies. Accordingly, we evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions and conditions. See our Annual Report on Form 10-K for the year ended December 31, 2017, filed on March 1, 2018 with the SEC, and note 2 to our consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q for information about these critical accounting policies, as well as a description of our other significant accounting policies.

Certain Factors That May Affect Future Results of Operations

The SEC encourages companies to disclose forward-looking information so that investors can better understand a company's future prospects and make informed investment decisions. This Quarterly Report on Form 10-Q contains such "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These statements involve known and unknown risks, uncertainties and other important factors which may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements include, but are not limited to, statements about: our beliefs in the appropriateness of our assumptions, the accuracy of our estimates regarding expenses, loss contingencies, future revenues, future profits, uses of cash, available credit, capital requirements, and the need for additional financing; the performance of our aerogel blankets; our plans to construct a second manufacturing facility in Statesboro, Georgia; our plans to expand capacity in our East Providence, Rhode Island manufacturing facility; our estimates of annual production capacity; our strategic partnership with BASF and the potential benefits of such a relationship, including the potential for it to create new product and market opportunities; the BASF Supply Agreement, our exclusive supply to BASF of its Spaceloft A2 product, the potential for future cash advances from BASF under the BASF Supply Agreement (payment of which are subject to certain conditions) to provide a source of financing for some portion of the cost of the planned capacity expansion in our East Providence, Rhode Island manufacturing facility and planned construction of our proposed manufacturing plant expected to be located in Statesboro, Georgia, and the potential for BASF to become a significant customer for our products; our joint development agreement with BASF, and the potential for it to support the development of new aerogel products and technologies; our beliefs about the usefulness of the square foot operating metric; our beliefs about the financial metrics that are indicative of our core performance; our beliefs about the usefulness of our presentation of Adjusted EBITDA; our expectations about the effect of manufacturing capacity on financial metrics such as Adjusted EBITDA; our beliefs about the outcome, effects or estimated costs of current or potential litigation or their respective timing, including expected legal expense in connection with our patent enforcement actions; our expectations about hiring additional personnel; our plans to devote substantial resources to the development of new aerogel technology; our expectations about product mix; our expectations about future material costs and manufacturing expenses as a percentage of revenue; our expectations of future gross profit and the effect of manufacturing expenses, manufacturing capacity and productivity on gross profit; our expectations about our resources and other investments in new technology and related research and development activities and associated expenses; our expectations about short and long term (a) research and development (b) general and administrative and (c) sales and marketing expenses; our expectations of near term revenue declines; our expectations of revenue growth, increased gross profit, and improving cash flows over the long term; our intentions about managing capital expenditures and working capital balances; our expectations about incurring significant capital expenditures in the future; our expectations about the expansion of our workforce and resources and its effect on sales and marketing, general and administrative, and related expenses; our expectations about future product revenue and demand for our products; our expectations about the effect of stock based compensation on various costs and expenses; our expectations about potential sources of future financing; our beliefs about the impact of accounting policies on our financial statements; our beliefs about the effect of interest rates, inflation and foreign currency fluctuations on our results of operations and financial condition; and our beliefs about the expansion of our international operations.

Words such as "may," "will," "anticipate," "estimate," "expects," "projects," "intends," "plans," "believes" and words and terms of similar substance used in connection with any discussion of future operating or financial performance, identify forward-looking statements. All forward-looking statements are management's present expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those described in the forward-looking statements. These risks include, but are not limited to, those set forth in this Quarterly Report on Form 10-Q and under the heading "Risk Factors" contained in Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2017 filed on March 1, 2018.

In light of these assumptions, risks and uncertainties, the results and events discussed in the forward-looking statements contained in this Quarterly Report on Form 10-Q might not occur. Stockholders and other readers are cautioned not to place undue

reliance on the forward-looking statements, which speak only as of the date of this Quarterly Report on Form 10-Q. We are not under any obligation, and we expressly disclaim any obligation, to update or alter any forward-looking statements, whether as a result of new information, future events or otherwise. All subsequent forward-looking statements attributable to Aspen Aerogels, Inc. or to any person acting on its behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure results primarily from fluctuations in interest rates as well as from inflation. In the normal course of business, we are exposed to market risks, including changes in interest rates which affect our line of credit under our revolving credit facility as well as cash flows. We may also face additional exchange rate risk in the future as we expand our business internationally.

Interest Rate Risk

We are exposed to changes in interest rates in the normal course of our business. At March 31, 2018, we had unrestricted cash and cash equivalents of \$9.6 million. These amounts were held for working capital and capital expansion purposes and were invested primarily in deposit and money market accounts at a major financial institution in North America. Due to the short-term nature of these investments, we believe that our exposure to changes in the fair value of our cash as a result of changes in interest rates is not material.

As of March 31, 2018, we had \$3.8 million drawn and outstanding on our revolving credit facility. At March 31, 2018, we also had \$2.1 million of outstanding letters of credit supported by the revolving credit facility.

Under our revolving credit facility, we are permitted to borrow a maximum of \$20.0 million, subject to continued covenant compliance and borrowing base requirements. At our election, the interest rate applicable to borrowings under the revolving credit facility may be based on the prime rate or LIBOR. Prime rate-based rates vary from prime rate plus 0.75% per annum to prime rate plus 2.00% per annum, while LIBOR-based rates vary from LIBOR plus 3.75% per annum to LIBOR plus 4.25% per annum. In addition, we are required to pay a monthly unused revolving line facility fee of 0.5% per annum of the average unused portion of the revolving credit facility. On January 25, 2018, the Loan Agreement was amended to extend the maturity date of the facility to April 28, 2018. On April 25, 2018, the Loan Agreement was further amended to extend the maturity date of the facility to April 28, 2019.

At March 31, 2018, the amount available to us under the revolving credit facility was \$6.7 million after giving effect to the \$3.8 million in borrowings and \$2.1 million of letters of credit outstanding under the facility.

Inflation Risk

Although we expect that our operating results will be influenced by general economic conditions, we do not believe that inflation has had a material effect on our results of operations during the periods presented in this report. However, our business may be affected by inflation in the future.

Foreign Currency Exchange Risk

We are subject to inherent risks attributed to operating in a global economy. Principally all of our revenue, receivables, purchases and debts are denominated in U.S. dollars.

Item 4. Controls and Procedures.

(a) Evaluation of Disclosure Controls and Procedures .

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in the reports that we file or submit under the Securities and Exchange Act of 1934, as amended, or the Exchange Act, is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and is accumulated and communicated to our management, including our principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

As of March 31, 2018, our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act). Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only

reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on such evaluation, our principal executive officer and principal financial officer have concluded that, as of March 31, 2018, our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and is accumulated and communicated to our management, including our principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

(b) *Changes in Internal Controls* .

During the three months ended March 31, 2018, there were no changes in our internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15(d)-15(f) promulgated under the Exchange Act, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II — OTHER INFORMATION

Item 1. Legal Proceedings.

In May 2016, we filed a complaint for patent infringement against Nano Tech Co., Ltd. (“Nano”) and Guangdong Alison Hi Tech., Ltd. (“Alison”) and together with Nano, the “Respondents”) in the International Trade Commission (“ITC”). The ITC complaint alleged that these two China-based companies engaged in unfair trade practices by importing aerogel products in the United States that infringed, and/or are manufactured by processes that infringe, several of the Company’s patents in violation of Section 337 of the Tariff Act. In the ITC complaint, we sought exclusion orders from the ITC that direct the United States Customs and Border Protection to stop the importation of these infringing products. In June 2016, the ITC instituted an investigation based on our complaint. In September 2017, the Administrative Law Judge (“ALJ”) presiding over the ITC investigation issued an Initial Determination finding that Alison and Nano infringed our patents relating to aerogel insulation and/or the methods of manufacturing aerogel insulation. As part of the Initial Determination, the ALJ found that Alison and Nano infringed all the patent claims asserted against each of them across the three asserted patents and that Alison and Nano failed to prove that the asserted claims were invalid. The ALJ also recommended a limited exclusion order as a remedy to prevent the importation of infringing aerogel products into the United States. In February 2018, the ITC issued its final determination confirming the ALJ’s infringement and validity determinations except with respect to one dependent product claim where the ITC found the claim not infringed. The ITC also revised some of the ALJ’s claim constructions. However, the ITC affirmed that Alison and Nano each violated Section 337 of the Tariff Act and issued a limited exclusion order prohibiting importation of infringing aerogel insulation products manufactured by Alison and Nano. The exclusion order, which is enforced by the United States Customs and Border Protection, is currently in effect. Upon a request by a party, the final determination may be appealed to the United States Court of Appeals for the Federal Circuit. In addition to Respondents’ contention at the ITC that the asserted patents were invalid, Alison also filed petitions with the United States Patent and Trademark Office (“USPTO”) requesting Inter-Partes Review to cancel certain claims in three of the Company’s manufacturing process patents and one product patent. A three-member panel of Administrative Patent Judges at the USPTO denied all of Alison’s petitions to institute Inter-Partes Review challenging the validity of these Aspen patents. Alison also filed similar requests with the Chinese Patent Office (“SIPO”) seeking to invalidate two of our Chinese manufacturing process patents and two of our Chinese product patents. After the conclusion of the oral proceedings and before any decision issued by the SIPO, Alison withdrew all of its requests for invalidation of our Chinese patents.

In April 2016, we also filed a patent infringement suit at the District Court in Mannheim, Germany against the Respondents and two European resellers asserting their infringement of one of our German patents. We subsequently asserted infringement of another three patents against Nano and a European reseller of Alison’s products at the Mannheim court. We have since settled with one European reseller in exchange for a commitment not to procure infringing products and cooperation with our case. In January 2018, the court issued a series of judgments by acknowledgement (German, “Anerkenntnisurteil”) finding the second reseller, Hiltex, liable for infringement and also issued injunctions against Hiltex. The judgments resulted from a settlement agreement in which Hiltex agreed not to resell the infringing products in Europe where at least one of the asserted patents are active. The litigation against Alison and Nano remains ongoing. Nano also initiated a nullity actions in German Federal Patent Court against three of our asserted German manufacturing process patents. Alison likewise filed an opposition to one of the asserted patents at the European Patent Office (“EPO”) and also initiated nullity action against two other patents. Nano also filed an opposition against the same patent at the EPO.

Due to their nature, it is difficult to predict the outcome or the costs involved in any litigation or administrative proceedings, including any appeals process. Furthermore, the Respondents may have significant resources and interest to litigate and therefore, these litigation matters could be protracted and may ultimately involve significant legal expenses. In addition to the foregoing, we have been and may be from time to time party to other legal proceedings that arise in the ordinary course of business and to other patent enforcement actions to assert our patent rights.

Item 1A. Risk Factors.

There have been no material changes to the risk factors included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 filed on March 1, 2018.

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

(a) *Unregistered Sales of Equity Securities* . Not applicable.

(b) *Use of Proceeds from Initial Public Offering of Common Stock* .

We registered shares of our common stock in connection with our initial public offering pursuant to a registration statement on Form S-1 (File No. 333-195523), which was declared effective by the SEC on June 12, 2014, and a registration statement on Form S-1 (File No. 333-196719) filed pursuant to Rule 462(b) of the Securities Act of 1933, as amended.

We received aggregate net proceeds from the offering of approximately \$74.7 million, after deducting \$4.3 million of underwriting discounts and approximately \$3.5 million of offering expenses.

As of March 31, 2018, we have used \$19.8 million of the net proceeds of the offering to repay all amounts outstanding under our subordinated notes and our revolving credit facility; \$31.0 million of the net proceeds of the offering for capital expenditures related to our third production line; \$7.2 million of the net proceeds of the offering for our planned manufacturing facility in Statesboro, Georgia; and \$7.1 million of the net proceeds of the offering for general corporate purposes. The remainder of the net proceeds is held in a deposit account and money market account with a major financial institution in North America. We have broad discretion in the use of the net proceeds from our initial public offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our stock. There has been no material change in our planned use of the balance of the net proceeds from the offering as described in our final prospectus dated June 12, 2014, filed with the SEC on June 16, 2014.

(c) *Purchases of Equity Securities By the Issuer and Affiliated Purchasers* .

We did not repurchase any of our equity securities during the quarter ended March 31, 2018.

Item 3. Defaults Upon Senior Securities.

None.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.

None.

Item 6. Exhibits.

(a) Exhibits

- 10.1 [Sixth Amendment to the Amended and Restated Loan and Security Agreement, dated January 25, 2018, by and between the Company and Silicon Valley Bank.](#)
- 10.2* [Amended and Restated Supply Agreement, dated February 16, 2018 by and between the Company and BASF Polyurethanes GmbH .](#)
- 10.3* [Amended and Restated Side Agreement, dated February 16, 2018 between BASF Polyurethanes GmbH and the Company .](#)
- 31.1 [Certification of principal executive officer under Section 302\(a\) of the Sarbanes-Oxley Act of 2002 .](#)
- 31.2 [Certification of principal financial officer under Section 302\(a\) of the Sarbanes-Oxley Act of 2002 .](#)
- 32 [Certifications of the principal executive officer and the principal financial officer under Section 906 of the Sarbanes-Oxley Act of 2002 .](#)
- 101 The following materials from Aspen Aerogels, Inc.'s Quarterly Report on Form 10-Q for the quarter ended March 31, 2018, formatted in XBRL (eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets (unaudited) as of March 31, 2018 and December 31, 2017, (ii) the Consolidated Statements of Operations (unaudited) for the three months ended March 31, 2018 and 2017, (iii) the Consolidated Statements of Cash Flows (unaudited) for the three months ended March 31, 2018 and 2017, and (iv) the Notes to Consolidated Financial Statements (unaudited).

* Confidential treatment has been requested with respect to certain portions of this Exhibit, which portions have been omitted and filed separately with the Securities and Exchange Commission as part of an application for confidential treatment pursuant to the Securities Act of 1933, 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.

ASPEN AEROGELS, INC.

Date: May 3, 2018

By: /s/ Donald R. Young
Donald R. Young
President and Chief Executive Officer
(principal executive officer)

Date: May 3, 2018

By: /s/ John F. Fairbanks
John F. Fairbanks
Vice President, Chief Financial Officer and Treasurer
(principal financial officer and principal accounting officer)

**CONSENT AND SIXTH A MENDMENT
TO
AMENDED AND RESTATED LOAN AND SECURITY AGREEMENT**

This Consent and Sixth Amendment to Amended and Restated Loan and Security Agreement (this “ **Amendment** ”) is entered into this 25th day of January, 2018 by and between **SILICON VALLEY BANK** (“ **Bank** ”) and **ASPEN AEROGELS, INC.**, a Delaware corporation (“ **Borrower** ”) whose address is 30 Forbes Road, Building B, Northborough, Massachusetts 01532.

RECITALS

A. Bank and Borrower have entered into that certain Amended and Restated Loan and Security Agreement dated as of September 3, 2014, as amended by that certain Consent and First Amendment to Amended and Restated Loan and Security Agreement dated as of August 19, 2016, as further amended by that certain Second Amendment to Amended and Restated Loan and Security Agreement dated as of November 23, 2016, as further amended by that certain Third Amendment to Amended and Restated Loan and Security Agreement dated as of December 29, 2016, as further amended by that certain Fourth Amendment to Amended and Restated Loan and Security Agreement dated as of January 27, 2017, and as further amended by that certain Fifth Amendment to Amended and Restated Loan and Security Agreement dated as of September 27, 2017 (as amended, and as the same may from time to time be further amended, restated, amended and restated, modified and/or supplemented, the “ **Loan Agreement** ”).

B. Bank has extended credit to Borrower for the purposes permitted in the Loan Agreement.

C. Borrower has requested that Bank amend the Loan Agreement to make certain revisions to the Loan Agreement as more fully set forth herein.

D. Bank has agreed to so amend certain provisions of the Loan Agreement, but only to the extent, in accordance with the terms, subject to the conditions and in reliance upon the representations and warranties set forth below.

AGREEMENT

NOW, THEREFORE, in consideration of the foregoing recitals and other good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, and intending to be legally bound, the parties hereto agree as follows:

1. Definitions. Capitalized terms used but not defined in this Amendment shall have the meanings given to them in the Loan Agreement.

2. Amendments to Loan Agreement.

2.1 Section 6.7(a) (Insurance) . Section 6.7(a) is amended in its entirety and replaced with the following:

“(a) Keep its business and the Collateral insured for risks and in amounts standard for companies in Borrower’s industry and location and as Bank may reasonably request. Insurance policies shall be in a form, with financially sound and reputable insurance companies that are not Affiliates of Borrower, and in amounts that are reasonably satisfactory to Bank. All property policies insuring the Collateral shall have a lender’s loss payable endorsement showing Bank as a lender loss payee. All liability policies shall

show, or have endorsements showing, Bank as an additional insured. Bank shall be named as lender loss payee and/or additional insured with respect to any such insurance providing coverage in respect of any Collateral. Bank acknowledges that BASF, or its designee, may be named as an additional loss payee and additional insured on any and all such insurance policies during any time that the Supply Agreement and related documents remains in effect.”

2.2 Section 6.9(a) (Financial Covenants) . Section 6.9(a) is amended in its entirety and replaced with the following:

“(a) EBITDA. Borrower shall achieve, measured as of the end of each fiscal quarter during the following periods, EBITDA of at least (loss not worse than) the following for the following periods:

Period	Minimum EBITDA (maximum loss)
Trailing three (3) month period ending March 31, 2018	(\$5,000,000)”

2.3 Section 13 (Definitions). The following terms and their respective definitions set forth in Section 13.1 is amended in their entirety and replaced with the following:

“ **Adjusted Quick Ratio** ” means a ratio of (i) Quick Assets divided by (ii) the sum of (a) Current Liabilities plus (b) without duplication, all Obligations of Borrower to Bank, minus (c) the current portion of Deferred Revenue, minus (d) the Dollar Equivalent amount of all outstanding Letters of Credit.

“ **Borrowing Base** ” is (a) eighty percent (80%) of Eligible Accounts, plus (b) eighty percent (80%) of Eligible Foreign Accounts (provided, however, Eligible Foreign Accounts that are billed in a Foreign Currency shall have an advance rate of seventy percent (70%); and provided, further, that to the extent Eligible Foreign Accounts include BASF Receivables, such calculation shall be net of any credits Borrower is required to provide to BASF in connection the BASF Receivables due to each Pre-Payment pursuant to the Supply Agreement), provided, that, the availability under this subsection (b) plus the availability under subsection (c) below shall not exceed seventy-five percent (75%) of the Borrowing Base, plus (c) (i) when a Streamline Period is not in effect, the lesser of eighty percent (80%) of Eligible Specified Accounts or One Million Dollars (\$1,000,000) and (ii) during a Streamline Period, eighty percent (80%) of Eligible Specified Accounts (and with respect to subsections (c)(i) and (c)(ii) hereof, when added to the availability under subsection (b) above, in each case subject to the overall cap set forth in subsection (b) above), plus (d) the lesser of thirty-five percent (35%) of the value of Borrower’s Eligible Inventory (valued at the lower of cost or wholesale fair market value) or Three Million Dollars (\$3,000,000), as determined by Bank from Borrower’s most recent Borrowing Base Report (and as may subsequently be updated by Bank in Bank’s sole discretion based upon information received by Bank including, without limitation, Accounts that are paid and/or billed following the date of the Borrowing Base Report); provided, however, that Bank may decrease the foregoing amounts and percentages in its good faith business judgment based on events, conditions, contingencies, or risks which, as determined by Bank, may adversely affect the Collateral.

“ **Prime Rate Margin** ” is the rate per annum set forth under the relevant column heading below:

<u>Borrowing Base Component</u>	<u>Prime Rate Margin during a Streamline Period</u>	<u>Prime Rate Margin when a Streamline Period is not in effect</u>
Eligible Accounts	0.75%	1.25%
Eligible Foreign Accounts and Eligible Inventory	1.50%	2.00%

“ **Revolving Line Maturity Date** ” is April 28, 2018.

2.4 Section 13 (Definitions) . The following new defined terms are hereby inserted in Section 13.1, each in the appropriate alphabetical order:

“ **BASF** ” means BASF SE, a company organized under the laws of Germany, its affiliates, assignees or designees.

“ **BASF Receivables** ” means Accounts owing from BASF to Borrower from sales pursuant to the Supply Agreement which constitute Eligible Foreign Accounts.

“ **Sixth Amendment Effective Date** ” is January 25, 2018.

“ **Supply Agreement** ” means that certain Amended and Restated Supply Agreement by and between Borrower and BASF.

2.5 Exhibit B (Compliance Certificate) . The Compliance Certificate attached to the Loan Agreement as Exhibit B is amended in its entirety and replaced with the Compliance Certificate in the form of Exhibit B attached hereto.

3. Consent to BASF Transaction. Borrower has previously notified Bank that Borrower plans to enter into the Supply Agreement, a current draft of which is attached hereto in Schedule L, and seeks Bank’s approval to enter into the Supply Agreement and related collateral agreements with BASF creating certain Liens in favor of BASF on Borrower’s real and personal property. Pursuant to the terms of the Supply Agreement, Borrower may receive up to \$22,000,000 in advance payments from BASF toward the future purchase by BASF of Borrower’s products (the “ **Prepayment** ”), and as the first tranche of the Prepayment, Borrower expects to receive two payments from BASF, each on or about February 28, 2018 and July 1, 2018, respectively in the aggregate amount of \$5,000,000 (the “ **Prepayment Tranche 1** ”), however if the predetermined fraction (i.e. up to 25.3%) of the amount of invoices generated by Borrower for products sold and delivered to BASF and credited against the Pre-Payment Balance (as defined in the Supply Agreement) in accordance with the terms of the Supply Agreement is less than the Prepayment Tranche 1, Borrower may incur a Contingent Obligation in an aggregate amount of up to Five Million Dollars (\$5,000,000) and will be required to refund any remaining balance of the Prepayment Tranche 1 (collectively, the “ **BASF Indebtedness** ”). As collateral for the BASF Indebtedness, as further described in Annex 4 to the Supply Agreement, Borrower is granting to BASF or its affiliates thereof from time to time (i) a first priority lien on the real property owned by Borrower located at 3 Dexter Road, East Providence, Rhode Island (the “ **Rhode Island Plant** ”) and (ii) a first priority security interest in all machinery and equipment owned by Borrower located at the Rhode Island Plant (each of the foregoing, the “ **BASF Liens** ”). Borrower acknowledges that (i) incurring the BASF Indebtedness and (ii) creating the BASF Liens are prohibited under the terms of the Loan Agreement and the other Loan Documents, and

Borrower has requested that Bank consent to (A) the Borrower entering into the Supply Agreement and incurring the BASF Indebtedness thereunder, (B) granting the BASF Liens pursuant to the terms of the Supply Agreement, and (C) the other transactions contemplated by the Supply Agreement. Accordingly, notwithstanding the terms of Section 7.4 (*Indebtedness*) or Section 7.5 (*Encumbrance*) of the Loan Agreement, Bank hereby (i) consents to (A) the Borrower entering into the Supply Agreement and incurring the BASF Indebtedness thereunder (provided, however, the aggregate amount of the BASF Indebtedness shall not exceed Five Million Dollars (\$5,000,000) at any time), (B) granting the BASF Liens pursuant to the terms of the Supply Agreement and (C) the other transactions contemplated in the Supply Agreement, and (ii) acknowledges that (A) the BASF Indebtedness shall constitute “Permitted Indebtedness” under the Loan Agreement and the other Loan Documents and (B) the BASF Liens shall constitute “Permitted Liens” under the Loan Agreement and the other Loan Documents; provided, however, as a condition to the effectiveness of such consent, (a) no Event of Default shall exist and be continuing immediately prior to or immediately after the transactions described above, (b) Borrower provides the final version of the Supply Agreement to Bank prior to executing same in order to obtain Bank’s confirmation as to the effectiveness of this consent, and (c) at the time Borrower incurs the BASF Liens and BASF Indebtedness, Borrower shall provide the Bank with an Intercreditor Agreement, in form and substance reasonably satisfactory to the Bank, between BASF and Bank and acknowledged by Borrower (the “ **Intercreditor Agreement** ”). Bank and Borrower, at the request and expense of Borrower, will execute and deliver (as applicable) such additional documents and instruments in accordance with the terms of the Intercreditor Agreement evidencing the priority of liens set forth therein. The foregoing consent applies only to the subject matter set forth herein, and is not a consent to or waiver of any subsequent application of the same provision of the Loan Agreement, nor is it a waiver of any breach of any other provision of the Loan Agreement and the other Loan Documents. This consent does not establish a course of dealing upon which Borrower may rely on in the future.

4. Limitation of Amendments.

4.1 The amendments set forth in Section 2 above are effective for the purposes set forth herein and shall be limited precisely as written and shall not be deemed to (a) be a consent to any amendment, waiver or modification of any other term or condition of any Loan Document, or (b) otherwise prejudice any right or remedy which Bank may now have or may have in the future under or in connection with any Loan Document.

4.2 This Amendment shall be construed in connection with and as part of the Loan Documents and all terms, conditions, representations, warranties, covenants and agreements set forth in the Loan Documents, except as herein amended, are hereby ratified and confirmed and shall remain in full force and effect.

5. Representations and Warranties. To induce Bank to enter into this Amendment, Borrower hereby represents and warrants to Bank as follows:

5.1 Immediately after giving effect to this Amendment (a) the representations and warranties contained in the Loan Documents are true, accurate and complete in all material respects as of the date hereof (except to the extent such representations and warranties relate to an earlier date, in which case they are true and correct as of such date), and (b) no Event of Default has occurred and is continuing;

5.2 Borrower has the power and authority to execute and deliver this Amendment and to perform its obligations under the Loan Agreement, as amended by this Amendment;

5.3 The organizational documents of Borrower delivered to Bank on the Effective Date remain true, accurate and complete and have not been amended, supplemented or restated and are and

continue to be in full force and effect;

5.4 The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, have been duly authorized;

5.5 The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not and will not contravene (a) any law or regulation binding on or affecting Borrower, (b) any contractual restriction with a Person binding on Borrower, (c) any order, judgment or decree of any court or other governmental or public body or authority, or subdivision thereof, binding on Borrower, or (d) the organizational documents of Borrower;

5.6 The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not require any order, consent, approval, license, authorization or validation of, or filing, recording or registration with, or exemption by any governmental or public body or authority, or subdivision thereof, binding on Borrower, except as already has been obtained or made; and

5.7 This Amendment has been duly executed and delivered by Borrower and is the binding obligation of Borrower, enforceable against Borrower in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, liquidation, moratorium or other similar laws of general application and equitable principles relating to or affecting creditors' rights.

6. Ratification of Perfection Certificate . Borrower hereby ratifies, confirms and reaffirms, all and singular, the terms and disclosures contained in a certain Perfection Certificate dated as of January 26, 2017, and acknowledges, confirms and agrees that the disclosures and information Borrower provided to Bank in such Perfection Certificate have not changed, as of the date hereof.

7. No Defenses of Borrower. Borrower hereby acknowledges and agrees that Borrower has no offsets, defenses, claims, or counterclaims against Bank with respect to the Obligations, or otherwise, and that if Borrower now has, or ever did have, any offsets, defenses, claims, or counterclaims against Bank, whether known or unknown, at law or in equity, all of them are hereby expressly WAIVED and Borrower hereby RELEASES Bank from any liability thereunder.

8. Integration . This Amendment and the Loan Documents represent the entire agreement about this subject matter and supersede prior negotiations or agreements. All prior agreements, understandings, representations, warranties, and negotiations between the parties about the subject matter of this Amendment and the Loan Documents merge into this Amendment and the Loan Documents.

9. Counterparts. This Amendment may be executed in any number of counterparts and all of such counterparts taken together shall be deemed to constitute one and the same instrument.

10. Fees and Expenses . Borrower agrees to promptly pay Bank, upon receipt of an invoice, Bank's legal fees and expenses incurred in connection with this Amendment.

11. Effectiveness . This Amendment shall be deemed effective upon (a) the due execution and delivery to Bank of this Amendment by each party hereto, (b) Borrower's payment of (i) a fully-earned, non-refundable amendment fee in an amount equal to Twelve Thousand Dollars (\$12,000) and (ii) Bank's legal fees and expenses incurred in connection with this Amendment, (c) Bank's receipt of the Acknowledgment of Amendment and Reaffirmation of Guaranty substantially in the form attached hereto

as **Schedule 1**, duly executed and delivered by each Guarantor, and (d) the Invoice for Loan Charges, duly executed by each party thereto.

[Signature page follows.]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be duly executed and delivered as of the date first written above.

BANK

SILICON VALLEY BANK

By: /s/ Danny Donovan

Name: Danny Donovan

Title: VP _____

BORROWER

ASPEN AEROGELS, INC.

By: /s/ John F. Fairbanks

Name: John F. Fairbanks

Title: Chief Financial Officer _____

**ACKNOWLEDGMENT OF AMENDMENT
AND REAFFIRMATION OF GUARANTY**

Section 1. Guarantor hereby acknowledges and confirms that it has reviewed and approved the terms and conditions of the Fourth Amendment to Amended and Restated Loan and Security Agreement dated as of even date herewith (“the “**Amendment**”).

Section 2. Guarantor hereby consents to the Amendment and agrees that the Guaranty relating to the Obligations of Borrower under the Loan Agreement shall continue in full force and effect, shall be valid and enforceable and shall not be impaired or otherwise affected by the execution of the Amendment or any other document or instruction delivered in connection herewith.

Section 3. Guarantor represents and warrants that, after giving effect to the Amendment, all representations and warranties contained in the Guaranty are true, accurate and complete as if made the date hereof.

Dated as of January 24, 2018.

GUARANTOR :

ASPEN AEROGELS RHODE ISLAND LLC

By: /s/John F. Fairbanks

Name: John F. Fairbanks

Title: Chief Financial Officer

EXHIBIT B

COMPLIANCE CERTIFICATE

TO: SILICON VALLEY BANK Date:
FROM: ASPEN AEROGELS, INC.

The undersigned authorized officer of Aspen Aerogels, Inc. (“**Borrower**”) certifies that under the terms and conditions of the Amended and Restated Loan and Security Agreement between Borrower and Bank (as amended and in effect, the “**Agreement**”), (1) Borrower is in complete compliance for the period ending _____ with all required covenants except as noted below, (2) there are no Events of Default, (3) all representations and warranties in the Agreement are true and correct in all material respects on this date except as noted below; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date, (4) Borrower, and each of its Subsidiaries, has timely filed all required tax returns and reports, and Borrower has timely paid all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower except as otherwise permitted pursuant to the terms of Section 5.9 of the Agreement, and (5) no Liens have been levied or claims made against Borrower or any of its Subsidiaries, if any, relating to unpaid employee payroll or benefits of which Borrower has not previously provided written notification to Bank. Attached are the required documents supporting the certification. The undersigned certifies that these are prepared in accordance with GAAP consistently applied from one period to the next except as explained in an accompanying letter or footnotes. The undersigned acknowledges that no borrowings may be requested at any time or date of determination that Borrower is not in compliance with any of the terms of the Agreement, and that compliance is determined not just at the date this certificate is delivered. Capitalized terms used but not otherwise defined herein shall have the meanings given them in the Agreement.

Please indicate compliance status by circling Yes/No under “Complies” column.

Reporting Covenant	Required	Complies
Monthly financial statements with Compliance Certificate	Monthly within 30 days	Yes No
Quarterly financial statements	Quarterly within 45 days	Yes No
Annual financial statement (CPA Audited) + CC	FYE within 150 days	Yes No
10-Q, 10-K and 8-K	Within 5 days after filing with SEC	Yes No
A/R & A/P Agings, and Deferred Revenue reports	Monthly within 20 days	Yes No
Borrowing Base Reports and Inventory reports	15 th and last Business Day of each month (monthly within 20 days when a Streamline Period is in effect) and with each request for a Credit Extension;	Yes No
Projections	FYE within 30 days	Yes No
The following Intellectual Property was registered after the Effective Date (if no registrations, state “None”)		

Financial Covenant	Required	Actual	Complies
Maintain as indicated:			
Minimum EBITDA	(\$5,000,000)	\$	Yes No
Minimum Adjusted Quick Ratio	1.25:1.00	:1.00	Yes No

*See Section 6.9(a)

Performance Pricing		Applies
Adjusted Quick Ratio at least 1.50:1.00	Prime + 0.75% (Eligible Accounts) or Prime +1.25% (Eligible Foreign Accounts and Eligible Inventory); LIBOR + 3.75% (Eligible Accounts) or LIBOR +4.25% (Eligible Foreign Accounts and Eligible Inventory)	Yes No
Adjusted Quick Ratio less than 1.50:1.00	Prime + 1.50% (Eligible Accounts); Prime + 2.00% (Eligible Foreign Accounts and Eligible Inventory)	Yes No

The following financial covenant analyses and information set forth in Schedule 1 attached hereto are true and accurate as of the date of this Certificate.

The following are the exceptions with respect to the certification above: (If no exceptions exist, state "No exceptions to note.")

ASPEN AEROGELS, INC.

By:
 Name:
 Title:

BANK USE ONLY

Received by: _____
 AUTHORIZED SIGNER
 Date: _____
 Verified: _____
 AUTHORIZED SIGNER
 Date: _____
 Compliance Status: Yes No

Schedule 1 to Compliance Certificate

Financial Covenants of Borrower

In the event of a conflict between this Schedule and the Loan Agreement, the terms of the Loan Agreement shall govern.

I. EBITDA (Section 6.9(a))

Required: Borrower shall achieve, measured as of the end of each fiscal quarter during the following periods, EBITDA of at least (loss not worse than) the following for the following periods:

Period	Minimum EBITDA (maximum loss)
Trailing three (3) month period ending March 31, 2018	(\$5,000,000)

Actual:		
A.	Net Income	\$
B.	To the extent included in the determination of Net Income	
	1.The provision for income taxes	\$
	2.Depreciation expense	\$
	3.Amortization expense	\$
	4.Net Interest Expense	\$
	5.Non-cash stock compensation expense	\$
	6.The sum of lines 1 through 5	\$
C.	EBITDA (line A plus line B.6)	

Is line C equal to or greater than \$_____?

No, not in compliance Yes, in compliance

II. Minimum Adjusted Quick Ratio (Section 6.9(b))

Required: Maintain at all times, to be certified to Bank monthly as of the last day of each month, an Adjusted Quick Ratio of at least 1.25 to 1.00.

Actual:

- A. Aggregate value of the unrestricted cash of Borrower maintained with Bank
- B. Aggregate value of accounts receivable of Borrower, net of allowances for bad debt
- C. Quick Assets (the sum of lines A and B)
- D. Aggregate value of Obligations to Bank
- E. Without duplication of line D, the aggregate value of liabilities of Borrower (including all Indebtedness) that matures within one (1) year, but excluding all Subordinated Debt
- F. Current Liabilities (the sum of lines D and E)
- G. Aggregate value of all amounts received or invoiced by Borrower in advance of performance under contracts and not yet recognized as revenue
- H. The Dollar Equivalent amount of all outstanding Letters of Credit
- I. Line F minus line G minus line H
- J. Adjusted Quick Ratio (line C divided by line I)

Is line J equal to or greater than 1.25 to 1.00?

No, not in compliance Yes, in compliance

Schedule I

Supply Agreement

Amended and Restated Supply Agreement

between

BASF Polyurethanes GmbH

and

Aspen Aerogels, Inc.

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

**Amended and Restated
Supply Agreement (the “Agreement”)**

Between

BASF Polyurethanes GmbH

Elastogranstraße 60, 49443 Lemförde, Germany

-hereinafter along with its Affiliates referred to as “BASF”-

and

Aspen Aerogels, Inc.

30 Forbes Road, Building B, Northborough, MA 01532, United States of America

-hereinafter along with its Affiliates referred to as “ASPEN”-

BASF and ASPEN are hereinafter individually referred to as “**Party**” and collectively as “**Parties**”.

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

Preamble

Whereas, based on the Memorandum of Understanding dated July 31, 2015 by and between the Parties, the Parties wish to expand the long-term global market for Spaceloft A2 taking into account an increasing demand for Spaceloft A2 from BASF, and

Whereas, ASPEN wishes to supply and deliver and BASF wishes to purchase and receive Spaceloft A2 at mutually agreed terms and conditions, and

Whereas, ASPEN has commenced investment in (i) a capacity expansion program to increase production capacity of Spaceloft A2 and other aerogel products in its East Providence facility and in a second manufacturing plant, (ii) process optimization projects to reduce the cost of Spaceloft A2 and other aerogel products, and (iii) research, development and related activities in furtherance of the general goals of the JDA ("ASPEN Investment"), and

Whereas BASF is willing to support ASPEN Investment by entering into this Agreement together with the commitment to render a pre-payment for certain volumes of Spaceloft A2, and

Whereas, it is the common understanding of the Parties that the terms under which Spaceloft A2 will be sold and delivered by ASPEN shall also be applicable to the purchase and receipt of Spaceloft A2 by BASF and,

Whereas, the Parties wish to achieve and maintain competitiveness by innovation and productivity improvements in cooperation with each other as set forth herein,

Whereas, the Parties have previously entered into a supply agreement dated June 21, 2016 and hereby desire to modify said supply agreement as amended and restated in this Amended and Restated Agreement and

Now, therefore, the Parties hereto agree as follows:

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

Definitions

“Affiliate”	shall mean any entity that directly or indirectly controls, are controlled by, or are under common control with a Party;
“ ASPEN ”	shall mean ASPEN and any entity that is directly or indirectly controlled by ASPEN;
“ ASPEN Investment”	shall have the meaning as defined in the Preamble;
"BASF"	shall mean BASF Polyurethanes GmbH, Elastogranstraße 60, 49443 Lemförde, Germany, and any entity that is directly or indirectly controlled by, or under common control of BASF SE, Ludwigshafen/Rhine, Germany;
“BASF Markets”	shall have the meaning as defined in §1 and Annex 1 hereto;
“Effective Date”	shall mean the latest date set forth in the signature block below;
“EP20”	shall mean the set of activities contemplated, as of the Effective Date, by ASPEN to expand the manufacturing capacity of its East Providence, Rhode Island, United States of America plant by about twenty percent;
“ JDA ”	shall mean a framework joint development agreement to be entered into contemporaneously with this Agreement by ASPEN and BASF focusing on the joint development of new products, technology, intellectual property or know how;
“MoU”	shall mean the Memorandum of Understanding signed by ASPEN and BASF SE on July 31 st , 2015;
“Optimization Projects”	shall have the meaning as defined in §12 below;
“Phase-Out Volume”	shall have the meaning as defined in §11 below;
“Plant Two”	shall mean the first production line in a production facility, to be constructed by ASPEN in Statesboro, Georgia, United States of America as a capacity expansion for manufacturing aerogel products including Products;
“Pre-Marketing Phase”	shall mean the period from [***] until [***];

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

“Pre-Payment”	shall mean an amount of up to twenty two million U.S. Dollars (\$22,000,000) to be paid by BASF on its sole discretion to ASPEN in accordance with §5 in multiple tranches ;
“Pre-Payment Tranche”	shall mean an amount agreed by the Parties to be paid by BASF to ASPEN on or before a specified date as a component of Pre-Payment with an associated Target Date and, if applicable, a revised Total Volume Range in accordance with §5 and as set forth in Annex 4;
“Pre- P ayment Balance”	shall mean the remaining portion of the Pre-Payment which has not been previously applied against amounts invoiced for Product purchased by BASF hereunder, or otherwise repaid by ASPEN.
“Price”	shall mean the price for the Products to be paid by BASF to ASPEN calculated as set forth in the Side Agreement and further defined in §4 hereto, as amended pursuant to the Section 1.4 of this Agreement to add Successor Products;
“Product” or “Products”	shall mean individually or collectively Spaceloft A2 and, if added under Section 1.4, Successor Products;
“Recommended Measures”	shall mean non-binding recommendations by BASF to ASPEN for certain process optimization measures in accordance with §12 below;
“Safety Stock”	shall have the meaning as defined in §3;
“Security Interest”	shall mean collateral provided by ASPEN in favour of BASF SE to secure settlement of the Pre-Payment in accordance with §5 below and Annex 4 hereto;
“Side Agreement”	shall mean the side agreement between ASPEN and BASF dated June 21, 2016 and as amended and restated as of_____, setting out the manner of calculation of the Price of Products sold hereunder.
“Spaceloft A2 ”	shall mean [***] with properties complying with Specifications and marketed as of the Effective Date as Spaceloft ® A2;
“Specifications”	shall mean the specifications for the Products as further defined in §1 and Annex 1 hereto;

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

“ [***] Cost”	shall mean [***] , as further described in the Side Agreement.
“Successor Products”	shall mean any improvements, modifications or enhancements to Spaceloft A2 or the fabrication of panels or insulation boards incorporating Spaceloft A2, as agreed to by both Parties from time to time pursuant to §1.4 and §1.5;
“Target Date”	shall mean a date agreed by the Parties with respect to each Pre-Payment Tranche in accordance with §5;
“Target Volume”	shall mean the volume of Product to be sold and delivered by ASPEN and purchased and received by BASF in each calendar year as further defined in §2 below;
“Term”	shall mean the term of this Agreement in accordance with §11;
“Total Volume Range”	shall mean the total annual volume range of Products in accordance with Annex 2 hereto;
“Transaction”	shall mean the transfer of all or substantially all of the assets of ASPEN directly related to the performance under this Agreement or the acquisition of over 50% (fifty percent) of the voting capital stock of ASPEN, in each case, to a third party who does not already own in excess of 5% (five percent) of the voting capital stock of ASPEN on the date of this Agreement.

§1

Products

1.1 ASPEN agrees to sell and deliver exclusively to BASF and BASF agrees to purchase and receive Products from ASPEN on the terms and conditions of this Agreement for resale to third parties or for incorporation into value added products and systems for sale to customers making use of the Products within the BASF Markets identified in Annex 1. BASF will not sell or otherwise supply Product to third parties who BASF knows, or reasonably should know, intend to use the Products in any markets other than the BASF Markets. For the sake of clarity, BASF acknowledges that nothing in this Agreement restricts ASPEN’s ability to sell its products other than Products to any third party or within any market anywhere in the world.

1.2 In accordance with the Commission Regulation (EU No 1217/2010 of 14 December 2010 on the application of Article 101 (3) of the Treaty on the Functioning of the European Union to certain categories of research and development agreements, the Parties agree that the exclusivity of the supply of each of the respective Products from ASPEN to BASF as well as the restriction to the

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

BASF Markets with regard to sales by BASF to customers according to Article 1.1 will end [***] after the date of the first day the respective Product is being placed on the relevant market. Thereafter, exclusivity of the supply of each of the respective Products from ASPEN to BASF and the restriction to BASF Markets with regard to sales by BASF to customers may continue for a further period of [***] provided however that the joint market share of the Parties on the relevant market for the respective Product will be below [***] % during these [***]. If the relevant joint market share of the Parties is initially (i.e. at the end of the [***] period) not more than [***] % but subsequently rises above that level without exceeding [***] %, the provisions set forth in § 1.1 may continue to apply for a period of [***] consecutive calendar years following the year in which the [***] % market share threshold was first exceeded and shall thereafter cease to apply. If the relevant joint market shares of the Parties are initially not more than [***] % but subsequently rises above [***] %, the provisions set forth in § 1.1 may continue to apply for [***] calendar year following the year in which the level of [***] % was first exceeded. The time frames set forth in this § 1.2 third sentence and § 1.2 fourth sentence may not be combined so as to exceed a period of [***] calendar years. Nothing in this subsection 1.2 shall be construed to extend the Term of this Agreement, unless such Term is expressly extended or renewed by both Parties in writing.

1.3 The Products to be delivered shall be in accordance with the Specifications set forth in Annex 1 as of the date of delivery. The Specifications may be modified only upon the mutual written consent of both Parties.

1.4 ASPEN shall inform BASF at least [***], or such shorter period as may be agreed by both Parties in writing, in advance of any changes that recognizably affect the quality of a Product as set forth in the Specifications. In particular, ASPEN shall inform BASF of changes to processes involving the introduction of new technologies, changes to raw materials and transfer of production to another location. Products that are affected by such changes may only be shipped after ASPEN has obtained the written consent of BASF.

1.5 Through the Term, ASPEN may develop Successor Products that would be supplied to BASF subject to the Parties reaching agreement as to revised specifications, pricing, volumes, and related terms.

1.6 In case (i) BASF is not able to profitably meet the requirements of its customers or (ii) alternative product characteristics or specifications are required for BASF to meet legal requirements, in each case, with respect to Products, then BASF will immediately inform ASPEN thereof and provide ASPEN with a description of the specifications and characteristics of new products necessary to meet the requirements of BASF's customers. ASPEN will initiate commercially reasonable development efforts to improve, modify or enhance Spaceloft A2, but only

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

to the extent that the efforts could be reasonably expected to achieve the desired specifications and characteristics of such enhanced products within a period of [***]. If successfully developed, and on agreement of the Parties as to revised specifications, pricing, volumes, and related terms for such enhanced products as provided in Section 1.5, such enhanced products will be deemed Successor Products. If ASPEN cannot develop such enhanced products within a period of [***], the Parties will consider development of such enhanced products for inclusion as a project under the JDA.

§2

Volumes and Forecasting

2.1 During the Term, ASPEN will sell and deliver to BASF volumes of Product within the Total Volume Range for use in the BASF Markets, pursuant to §2.2 and §2.3.

2.2 During the Pre-Marketing Phase, BASF may elect to purchase Products in its sole discretion. BASF shall provide purchase orders for Product for delivery within calendar year [***]. The Parties will within [***] of ASPEN's receipt of each order develop a mutually agreeable delivery schedule for delivery of such Product consistent with ASPEN's lead times then in effect.

2.3 On or before [***] and each [***] thereafter, the Target Volume of Product to be purchased by BASF for the following calendar year, which shall be within the applicable Total Volume Range defined in Annex 2, shall be defined and ordered by BASF from ASPEN. The Parties will, within [***] of BASF's order, develop a mutually agreeable delivery schedule for delivery of Product aggregating to the Target Volume in the following calendar year consistent with ASPEN lead times. The purchase and sale of the Target Volume thus ordered for each calendar year shall be binding upon the Parties. BASF orders for Product in volumes in excess of the Target Volume for each calendar year shall be binding on ASPEN only on Aspen's express written acceptance of such orders.

§3

Safety Stock

3.1 ASPEN will build a Safety Stock of Product on or before [***] equivalent to [***] of the agreed Target Volume (see example in Annex 3) applicable to calendar year [***]. Such Safety Stock will be adjusted on or before [***] of each successive calendar year to [***] of the applicable Target Volume for such calendar year. At BASF's direction, Safety Stock may be utilized to meet Target Volume in the event of a Force Majeure as defined in Section 7.

3.2 In addition, BASF will be entitled to direct ASPEN to sell and deliver Safety Stock to BASF once in any calendar year in the event that BASF's requirements for Product exceed Target Volume

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

and ASPEN is unable to meet BASF's additional requirements. After any delivery and sale of Products from Safety Stock to BASF, ASPEN will take commercially reasonable efforts to replenish Safety Stock within a six month period. ASPEN shall use commercially reasonable efforts to rotate Safety Stock to reduce aging of such Safety Stock.

§4

Prices and Conditions

4.1 The Price for Product sold hereunder shall be calculated as set forth in the Side Agreement. The terms of this Agreement and the Side Agreement shall be the exclusive terms and conditions with respect to purchase and supply of Products under this Agreement and take precedence over any additional or different terms and conditions provided by either Party, to which notice of objection by the other Party is hereby given. Neither the commencement of performance, delivery nor receipt of products or payment shall be deemed an acceptance of any additional or different terms and conditions. None of the terms and conditions contained herein may be added to, modified, superseded or otherwise altered except in writing by duly authorized representatives of the parties.

4.2 All Prices are in United States dollars. Prices are exclusive of all charges or levies of any nature, including all applicable federal, state, provincial, municipal or other governmental excise, sales, use, value added, occupational, import duties, or similar taxes or tariffs now in force or enacted in the future (collectively, the "Additional Charges") and, therefore, are subject to an increase in an amount equal to any such Additional Charges that ASPEN may be required to collect or pay upon sale or delivery of Products purchased. A certificate of exemption or similar document in appropriate form for the jurisdiction of BASF's place of business and any jurisdiction to which Products are to be directly shipped hereunder is required in order to exempt the sale from sales or use tax liability. BASF shall obtain and furnish evidence of such exemption at the time of placement of order. BASF agrees to indemnify and hold harmless ASPEN and its successors and assigns from and against any liability for tax in connection with the sale or use, as well as the collection or withholding thereof, including penalties and interest. ASPEN will provide a certificate of origin with any shipment of Products. ASPEN and BASF will work together to ensure (including providing any reasonable declaration) the transactions pursuant to this Agreement can benefit from the anticipated Transatlantic Trade and Investment Partnership.

4.3 On request of BASF, ASPEN's books and records as they relate to annual Price calculations may be audited by an independent third party auditor without a prior business relationship with either BASF or ASPEN. Such audit will be to examine whether Price has been calculated by ASPEN in accordance with the provisions of this Agreement in all material respects. ASPEN will make available or provide access to all relevant documents to the third party auditor. The

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

independent auditor will provide a summary report to BASF and ASPEN on whether ASPEN's Price calculations are consistent in all material respects with the provisions of this Agreement. The third party auditor will keep all other information of ASPEN strictly confidential and will not disclose such information to BASF or any other third party. ASPEN shall bear the costs of the third party auditor in the event ASPEN's Price calculations are not consistent in all material respects with the provisions of this Agreement. Otherwise BASF shall bear such audit costs.

4.4 All orders must be placed in writing and verbal orders shall be confirmed in writing. All orders must include requested delivery dates, quantities, shipment destination and complete description of Products being ordered. After receipt of an order, ASPEN will confirm its acceptance in writing and may also inform BASF of an estimated ship date simultaneously or at a later date. Orders accepted or acknowledged by ASPEN cannot be cancelled without the prior written consent of ASPEN. No order can be cancelled after the order is shipped.

4.5 All Products will be shipped [***] (Incoterms 2010) from ASPEN's applicable facility in the U.S. to [***] ("Delivery Point") and further to [***] ("Destination Point" which, if not specified in the relevant order, will be [***]), unless agreed otherwise in writing. All shipping, handling, transportation, and insurance costs incurred following the release of Product from ASPEN's applicable facility in the U.S. to the Destination Point shall, to the extent paid by ASPEN, be either included as a separate item in the invoice for Products, or separately invoiced and payable by BASF. In no event shall ASPEN be liable for any delay in delivery caused between Delivery Point and Destination Point, nor shall the carrier selected by ASPEN for the transport from Delivery Point to Destination Point be deemed an agent of ASPEN. ASPEN may make partial shipments against an order in its sole discretion. Each such shipment shall constitute a separate sale, and BASF shall pay for the units shipped whether such shipment is in whole or partial fulfilment of an order. Title to Products shall pass to BASF upon delivery of Products at the Delivery Point.

4.6 BASF shall examine the Products as soon as possible after their arrival at the BASF's facility, and in any event not more than [***] following the Product's arrival at BASF's designated facility. BASF shall notify ASPEN in writing (i) with respect to missing Products, immediately upon receipt by reference to the accompanying bill of lading, and (ii) with respect to Products that do not conform to applicable Specifications or are damaged in transit due to inadequate packaging, within [***]. The Products will be deemed to conform to the applicable Specifications despite minor discrepancies that are usual in the trade, and BASF will not be entitled to abatement of the Price for such minor discrepancies. Where the Products are materially non-conforming, the remedies provided in the limited warranty set forth herein shall serve as BASF's exclusive remedy.

§5

Pre-Payment and Payment Terms

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

5.1 In order to support ASPEN Investment, BASF (or its Affiliate) will provide the Pre-Payment to ASPEN in accordance with Annex 4. The Parties agree that a specified portion of the Pre-Payment will be credited as provided in Annex 4 by ASPEN against payment due on sales and deliveries of Products by ASPEN to BASF after January 1, 2019 .

5.2 If by the Target Date associated with a specific Pre-Payment Tranche, credits associated with the sale and delivery of Product by ASPEN to BASF have not fully covered the value of the Pre-Payment Tranche, BASF shall be entitled to request from ASPEN the repayment of the remainder of the associated Pre-Payment Balance to BASF as specified in Annex 4 ("BASF Request"). The BASF Request may be executed at any time at or after the applicable Target Date with six weeks prior written notice. If ASPEN does not repay remaining Pre-Payment Balance by the due date per the BASF Request, BASF may apply a finance charge at the annual rate of [***], starting from the due date per the BASF Request. ASPEN shall be liable for any costs or expenses incurred by BASF in collecting any late payment, including, but not limited to, administrative and personnel costs, collection agency fees and expenses, court costs, and attorney's fees and expenses.

5.3 As collateral for the Pre-Payment, ASPEN will provide BASF with a Security Interest in ASPEN's assets in accordance with Annex 4.

5.4 ASPEN shall invoice all orders for Product on shipment. BASF shall settle all invoiced amounts due to ASPEN within [***] of the date of the corresponding invoice. Unless not otherwise instructed by BASF, ASPEN will apply an amount (if available) of the Pre-Payment Balance against payment of up to twenty five and three tenths percent (25.3%) of the invoiced Price of Product. BASF shall remit the remainder in cash in United States dollars by wire transfer. Cash payments not received within the prescribed time shall be assessed a finance charge at the annual rate of [***], starting from the invoice date. BASF shall be liable for any costs or expenses incurred by ASPEN in collecting any late payment, including, but not limited to, administrative and personnel costs, collection agency fees and expenses, court costs, and attorney's fees and expenses. Any credits applied pursuant to this Section 5.3 shall be deducted from the remaining Pre-Payment Balance associated with the earliest available Pre-Payment Tranche(s).

5.5 To the extent a BASF Affiliate orders and purchases Products pursuant to this Agreement, ASPEN shall send the respective invoice(s) directly to such Affiliate and such BASF Affiliate shall be responsible for payment of such invoices, subject to the partial credit against Pre-Payment Balance as described in § 5.1.

5.6 Any Pre-Payment hereunder shall not be construed as compensation for JDA activities. Any work contemplated in connection with these Pre-Payments shall not be construed to be any project under the JDA or within any Project Charters of the JDA. Mutually agreed Project Charters under the JDA shall exclusively govern the scope and terms of activities pursuant to the JDA.

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

6.1 ASPEN warrants to BASF that the Products supplied pursuant to this Agreement are free from defects in workmanship and materials for a period of one (1) year from the date of shipment to BASF. This limited warranty does not apply to fitness for any particular purpose or for use in any application. Since BASF may obtain devices which have the capability of testing whether Product meets the specifications, no claim of any kind with respect to the conformance of Product to the specifications, whether or not based on negligence, warranty, strict liability or any other theory of law, will be greater than the Price of the quantity of nonconforming Product in respect to which such claim is made. The foregoing constitutes BASF's exclusive remedy and ASPEN's sole obligation with respect to any such claim. This limited warranty does not extend to any Product that has been damaged or rendered defective (a) as a result of accident, misuse, abuse, negligence, installation, act of God, disaster, or other external cause, (b) by the use of parts not manufactured or sold by ASPEN, or (c) by modification or service by anyone other than (i) ASPEN or (ii) anyone authorized by ASPEN. ASPEN is not responsible for damage that occurs as a result of (i) BASF's failure to follow the instructions that accompany the Products or otherwise provided by ASPEN or (ii) by operation outside the usage parameters specified by ASPEN. No credit shall be allowed for repair work performed by BASF or unauthorized parties. BASF shall notify ASPEN of any non-conformance during the warranty period, obtain from ASPEN a return material authorization ("RMA") for the non-conforming Products, and return the non-conforming Products to ASPEN, freight prepaid, within [***] of receipt of the RMA, with a statement describing in reasonable specificity the non-conformity for which the Products are returned. ASPEN's exclusive obligation with respect to the non-conforming Products shall be, at ASPEN's option, to repair or replace any Product determined to be defective. Products that are repaired or replaced hereunder shall be warranted as set forth above for the remainder of the original warranty period or for [***] after the replacement Products are shipped to BASF, whichever is later.

6.2 NOTWITHSTANDING ANYTHING HEREIN TO THE CONTRARY OR ANY APPLICABLE LAW OR REGULATION, THE FOREGOING IS BASF'S SOLE AND EXCLUSIVE REMEDY FOR BREACH OF WARRANTY BY ASPEN WITH RESPECT TO THE PRODUCTS. ASPEN MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER WARRANTIES ARISING FROM COURSE OF DEALING OR USAGE ARE HEREBY EXCLUDED. IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW AND CANNOT BE DISCLAIMED ARE LIMITED IN DURATION TO THE LIMITED WARRANTY PERIOD SET FORTH HEREIN. BASF PURCHASES AND ACCEPTS THE PRODUCTS SOLELY ON THE BASIS OF THE LIMITED WARRANTY EXPRESSED HEREIN. UNDER NO CIRCUMSTANCES SHALL ASPEN BE LIABLE BY VIRTUE OF THIS LIMITED WARRANTY OR OTHERWISE FOR ANY SPECIAL,

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

INDIRECT, SECONDARY, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING BUT NOT LIMITED TO LOSS OF PRODUCTION TIME) TO ANY PERSON OR PROPERTY ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCTS. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY. THE LIABILITY OF ASPEN HEREUNDER FOR ALL CLAIMS EXCEPT FOR CLAIMS ACCORDING TO § 5.2 RELATED TO REPAYMENT OF REMAINING PRE_PAYMENT BALANCE, SHALL NOT EXCEED THE SUM OF BASF'S PAYMENTS FOR THE PRODUCTS THAT ARE THE SUBJECT OF DISPUTE. EXCEPT IN CONNECTION WITH AN AUTHORIZED SALE, FOR ANY PRODUCTS THAT ARE DIVERTED FROM ASPEN'S INTENDED COUNTRY OF DESTINATION TO ANOTHER COUNTRY OR JURISDICTION, THE WARRANTY IS HEREBY VOIDED. NOTWITHSTANDING ANY ALLOWED MARKETS OR END-APPLICATIONS AS DESCRIBED IN ANNEX 1, BASF SHALL BE RESPONSIBLE FOR ENSURING FITNESS FOR USE OF PRODUCTS IN ALLOWED MARKETS OR END-APPLICATIONS INCLUDING CONDUCTING ANY APPLICABLE TESTS. ACCORDINGLY, ASPEN HEREBY DISCLAIMS ANY LIABILITY, WARRANTY OR OTHERWISE WITH RESPECT THERETO.

§7

Force Majeure

7.1 Any and all events and circumstances beyond the reasonable control of the Parties including, but not limited to acts of God, fires, explosions, floods, earthquakes, civil commotions, riots, declared and undeclared wars, labor disputes, strikes, lock-outs, boycotts, picketing, other industrial disturbances, unavoidable break-downs and acts of authorities, military police actions, blockades, embargoes, insurrections, delays or curtailment of sources of supply of materials used in the manufacture of the Products, performance failure or delays of any person other than the Party, all interruptions of business and casualties (collectively, "Force Majeure") release the Party hereto from its respective obligations under or pursuant to this Agreement - in so far as the circumstances prevent the deliveries of Product by ASPEN or the takings or further processing of Product by BASF or BASF's Affiliates - for the duration of such contingencies and to the extent of the effects resulting therefrom.

7.2 If a Force Majeure event occurs, the Party affected shall inform the other Party as soon as practical indicating the expected duration and extent of such contingency. Moreover, the affected Party shall promptly take commercially reasonable efforts to settle such contingencies so that the performance of the obligations under this Agreement can be resumed as soon as possible.

§8

Good Faith

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

8.1 Both Parties recognise that they cannot anticipate all future technical and economic developments that could affect the rights, obligations and commitments contemplated herein. Therefore, ASPEN and BASF agree to cooperate and work with one another in good faith during the Term, taking into account any and all unanticipated developments and occurrences to minimise any undesired impact on the intent of this Agreement. If during the Term of this Agreement, there shall occur any unanticipated hardship affecting one of the Parties, whether economic or otherwise, [***], the Parties shall work with one another in good faith so as to minimise, to the extent possible, any adverse impact on the affected Party.

§9

Assignment

9.1 It is the common understanding of the Parties that the terms of the Agreement under which Product will be sold and delivered by ASPEN to BASF shall also be applicable to the sale and delivery of Product to BASF's Affiliates and also to the sale and delivery of Product from ASPEN's Affiliates to BASF and BASF Affiliates. Therefore, BASF Affiliates shall be entitled to order Product from ASPEN or ASPEN's Affiliates in their own name and on their own account at the terms laid down in this Agreement. In case BASF and BASF Affiliates have placed orders pursuant to the terms and conditions of this Agreement, the Target Volumes set out in Section 2 shall be fulfilled to the extent of the quantity invoiced to BASF and the respective BASF Affiliates.

9.2 In addition, each of the Parties is entitled to assign rights and obligations under this Contract, in whole or in part, to one of its Affiliates.

9.3 In addition, no consent shall be required to assign this Agreement as a part of a Transaction, provided that any Transaction will be subject to Section 11.6.

§10

Confidentiality

10.1 BASF and ASPEN agree that all non-public and/or proprietary information or samples ("Confidential Information") received or learned from the other Party, in connection with negotiations, performance and compliance of this Agreement will be treated as strictly confidential and each Party (i) shall not disclose Confidential Information of the other Party to third parties, and (ii) shall not use Confidential Information of the other Party for any purpose other than as expressly permitted in this Agreement unless otherwise agreed by the Parties in writing, in each case during the Term and for a period of ten (10) years after the termination or expiration of this Agreement. However, if a Party is required to disclose any Confidential Information of the other Party by a governmental authority pursuant to applicable laws or regulations, including, without limitation, the U.S. Securities and Exchange Commission, the Party required to make disclosure will immediately (if and to the extent allowed by law) (i) inform the other Party of such required disclosure, and (ii) may make such disclosure to the extent required by law, and, to the extent requested by the other

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

Party, shall use commercially reasonable efforts to seek confidential treatment of such Confidential Information if permitted by such laws or regulations under such circumstances. The provisions of this Section 10 shall not apply to (i) disclosures by each Party to its Affiliates and their respective personnel, or (ii) disclosure to a potential purchaser or financing source of each Party, including such purchaser's attorneys and consultants, provided that such persons receiving Confidential Information first agree to maintain the confidentiality of Confidential Information provided under this Agreement, subject to the terms and restrictions contained herein. Each Party is responsible for compliance with this Section 10 by any such persons to whom such Party discloses the other Party's Confidential Information.

10.2 Confidential Information excludes any information which a receiving Party can demonstrate by written evidence: (a) to be in the possession of the receiving Party at the time of disclosure without any restrictions; (b) already available or becomes available to the public through no fault of the receiving Party; (c) received by the receiving Party from a third party having a right to disclose it without restrictions; or (d) developed by the receiving Party without the knowledge or reference to information disclosed pursuant to this Agreement or other agreements between the Parties. The Confidential Information disclosed pursuant to this Agreement shall not be construed to be within the foregoing exclusions merely because such items are embraced by more general publically known information or information in Receiving Party's possession. Additionally, any combination of features shall not be construed within the foregoing exclusions, but only if combination itself and its principle of operation are within the foregoing exclusions.

10.3 BASF acknowledges and agrees that it will acquire no rights to use and/or disclose the Confidential Information of ASPEN by virtue of the utilization of such Confidential Information in the manufacture of Products sold to BASF hereunder.

§11

Term and Termination

11.1 This Agreement becomes effective on the Effective Date and shall terminate on December 31st, 2027 (the "Term"). The Parties agree to meet and discuss the potential for a successor arrangement to the Agreement at least [***] prior to the end of the Term.

11.2 In the event the Agreement is not renewed beyond December 31, 2027, ASPEN shall sell and deliver and BASF shall be obliged to purchase and receive under the same terms and conditions as laid out in the Agreement, the following Phase-Out Volumes:

(a) During the first calendar year following the expiration of the Agreement, the Phase-Out Volume shall be equal to [***] of the quantities invoiced by ASPEN to BASF during the final calendar year of the Agreement.

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

(b) During the second calendar year following the expiration of the Agreement, the Phase-Out Volume shall be equal to [***] of the quantities invoiced by ASPEN to BASF during the last final calendar year of the Agreement.

The terms and conditions of this Agreement shall continue to apply to purchases of Phase-Out Volumes

11.3 If either Party defaults in any of its obligations under this Agreement and, if it is capable of remedy, such default has not been remedied within thirty (30) days after the non-defaulting Party gives written notice thereof, the non-defaulting Party may at its discretion terminate this Agreement by giving written notice should such default be continuing.

11.4 Notwithstanding any other provision of this Agreement, no return or other refund of the Pre-Payment Balance shall be due before the applicable Target Date, absent a showing of fraud or willful misconduct on the part of ASPEN. ASPEN will also grant BASF access to its financial data upon request.

11.5 The following provisions will survive any expiration or termination of this Agreement: Sections 8, 10, 11, 12.3, 13, 14, 15 and 16.

11.6 ASPEN shall provide BASF written notice at least [***] prior to a proposed Transaction (a "Transaction Notice") identifying the proposed acquirer. BASF shall have the right to terminate this Agreement by written notice to ASPEN (the "Transaction Termination Notice") on or prior to the date that is [***] after the date of the Transaction Notice if any of the following is the case:

- (a) the proposed acquirer is a competitor of BASF;
- (b) the proposed acquirer does not provide reasonable assurance to BASF that this Agreement will in the future be performed in accordance with its terms, specifically with its §5, or
- (c) the proposed acquirer is for other material reasons (e.g. financial, political reasons) determined by BASF not to be a reasonably reputable supplier of the Products.

A termination pursuant to a Transaction Termination Notice shall be effective on the date of the Transaction.

11.7 Notwithstanding the foregoing, if specified in the Transaction Termination Notice, BASF may continue to purchase the remainder of its Target Volume for the remainder of the calendar year in which the Transaction Termination Notice is given and the subsequent calendar year, and the terms of this Agreement shall apply to all such sales.

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

11.8 Upon a termination of this Agreement pursuant to a Transaction Termination Notice, the remaining Pre-Payment Balance shall be due and payable to BASF within [***] of the date of the Transaction.

§12

Process Optimization

12.1 BASF and ASPEN agree to work together in good faith to identify optimization projects [***] (“Optimization Projects”) and [***] as set forth in the Side Agreement. ASPEN may from time to time submit Optimization Project proposals to BASF. BASF will assess such Optimization Project proposals in good faith to develop non-binding Recommended Measures, if any, to meet Optimization Project goals. In addition, BASF, in its sole discretion, may provide further assistance to ASPEN during implementation of Recommended Measures to help promote the likelihood of successful cost reductions. ASPEN, in its sole discretion, may elect to or not elect to implement Recommended Measures. BASF will not incur any liability with respect to ASPEN’s use of the Recommended Measures and related assistance.

12.2 If the cost of development of any Recommended Measures is expected to be significant, the Parties will, prior to the undertaking by BASF of any work related to such Recommended Measures, agree on a scope of work and any reimbursement of BASF to be paid by ASPEN, on a time and materials basis, for the work of BASF related to the Recommended Measures. If the implementation of any Recommended Measures and use thereof would infringe any patent owned or controlled by BASF, BASF shall inform ASPEN and the Parties shall reasonably negotiate and agree on the compensation, if any, due to BASF based on ASPEN’s practice of the patent as a part of the Recommended Measures. ASPEN shall have a worldwide, nonexclusive right and license, including the right to grant sublicenses, to practice such patent to the extent required to implement the Recommended Measures. Should either Party believe that work related to the Recommended Measures is likely to lead to patentable developments, the Parties will refer such work to the joint steering committee established under the JDA, and undertake the work related to such Recommended Measures and implement such Recommended Measures only (if at all) as a Project executed under the JDA.

12.3 For such Recommended Measures as ASPEN does implement, ASPEN shall have a nonexclusive, worldwide, royalty free, perpetual right and license, including the right to grant sublicenses in connection with a license of rights in ASPEN’s process to which the Recommended Measures relate, to use any intellectual property rights of BASF included in such Recommended Measures in implementing such Recommended Measures in ASPEN’s processes. ASPEN shall continue to solely own all rights in its manufacturing and other processes, including as modified by any Recommended Measures.

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

12.4 Except as provided in Section 12.2, BASF will not include in any Recommended Measures any patented technology or processes other than through a Project executed under the JDA.

§13

Other Terms and Conditions

13.1 Any alterations or amendments to any provision of this Agreement, including amendments to the Annexes hereto, shall only be valid if made in writing by authorized representatives of the Parties.

13.2 In the event that any of the provisions of this Agreement are invalid because they are inconsistent with the applicable law, this shall in no manner affect the validity of the other provisions of this Agreement. The Parties hereto shall be obliged to replace such invalid provisions by new provisions having similar economic effects.

13.3 Neither BASF's nor ASPEN's general or other conditions that may accompany orders or acknowledgements are applicable to any orders for Products placed pursuant to this Agreement.

13.4 Each Party represents and warrants that it has the authorizations required to enter into this Agreement and that entering into this Agreement is not inconsistent with any prior arrangements with or commitments to third parties.

13.5 The terms and conditions contained herein, including the Annexes hereto, constitute the entire agreement between the Parties with respect to the subject matter of this Agreement and shall supersede all prior and contemporaneous negotiations, agreements, statements, communications either oral or written between the Parties hereto with respect to the subject matter hereof. Notwithstanding the foregoing, the Parties agree that confidentiality agreements between them remain in effect according to their terms with respect to obligations of confidentiality and non-use with respect to information exchanged thereunder, and rights of ownership in intellectual property established under the terms of a Joint Development Agreement dated March 1, 2010 between ASPEN and BASF Construction Chemicals GmbH remain in effect. A supply agreement entered into by and between ASPEN and BASF Construction Chemicals GmbH, Trostberg, Germany, a n affiliate of BASF SE, Ludwigshafen, Germany, on February 17th, 2012, along with the amendments thereto, is hereby terminated in its entirety by mutual consent.

§14

Law and Jurisdiction

14.1 This Agreement, including the law and jurisdiction clause and any amendment hereto shall be governed by, interpreted and enforced in accordance with the substantive laws of Switzerland

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

without regard to the principles of conflict of laws and excluding the United Nations Convention on Contracts for International Sale of Goods of 11 April 1980(CISG). Any dispute, controversy or claim, arising out of or in relation to this Agreement, including the validity, invalidity, breach or termination thereof, shall be resolved by binding arbitration in accordance with the Swiss Rules of International Arbitration of the Swiss Chambers of Commerce in force on the date when the Notice of Arbitration is submitted in accordance with these Rules. The number of arbitrators shall be one (1). The seat of arbitration shall be Basel, Switzerland. The arbitral proceedings shall be conducted in English. All information involved in the arbitration shall be kept confidential. Notwithstanding the foregoing, the Parties recognize that a Party may suffer immediate, irreparable harm in certain circumstances, including a breach or threatened or anticipated breach of obligations under Section 10; accordingly, such Party is entitled, in addition to any other remedy available at law or in equity, to injunctive relief to specifically enforce the terms of this Agreement in a court of competent jurisdiction.

§ 15 Export Compliance

15.1 The Parties shall comply with their respective codes of conduct, all applicable laws and regulations, including but not limited to export controls, embargoes, sanctions and similar laws, regulations and requirements.

15.2 BASF acknowledges that the Products are subject to regulation by United States government agencies, which regulate export or diversion of the Products, information about the Products, and derivatives of the Products to certain countries and certain persons (collectively, "U.S. Export Control Laws"). BASF shall fully comply with all applicable laws and regulations, including trade control regulations in connection with its resale or use of Products. BASF will not export, sell, deliver or otherwise transfer any Products to any embargoed or sanctioned countries without necessary and appropriate licenses or approvals.

§ 16 Indemnification; Limitation of Liability

16.1 ASPEN shall indemnify BASF, and its directors, officers, employees, agents and their successors, against any infringement claims brought by a third party based on such third party's intellectual property only to the extent such claims relate to ASPEN's manufacture of the Products, up to the amount of the Price paid for the Product. ASPEN shall not be liable for any claims related to the use of the Products in any application. ASPEN shall have no liability for any claim of infringement resulting from compliance by ASPEN with BASF's designs, specifications or

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

instructions, or in the event of modification of the Products by BASF. In no event shall ASPEN have any liability for any infringement in excess of the purchase Price of the infringing Products.

16.2 BASF shall indemnify and hold harmless ASPEN, and its directors, officers, employees, agents and their successors against third party claims resulting from BASF's use of Products, whether alone or in combination with other products, including, but not limited to, infringement of intellectual property rights.

16.3 ASPEN's maximum liability for any losses and damages arising out of any cause whatsoever in connection with this Agreement shall in any event not exceed the sum of BASF's payments for the products that are the subject of dispute. ASPEN shall provide to BASF a certificate evidencing its insurance coverage on BASF's reasonable request. The aforesaid limitation of liability does not apply in cases of ASPEN's willful misconduct or gross negligence.

16.4 OTHER THAN WITH RESPECT TO REPAYMENT OF THE PREPAYMENT BALANCE AS PROVIDED HEREUNDER, AND FOR INDEMNIFICATION CLAIMS UNDER THIS SECTION 16, NO PARTY SHALL BE LIABLE TO THE OTHER PARTY UNDER THIS AGREEMENT FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, OR OTHER INDIRECT LOSS OR DAMAGE ARISING OUT OF THIS AGREEMENT AND/OR THE PERMITTED USE OF ANY INTELLECTUAL PROPERTY OR PROPRIETARY INFORMATION CREATED OR RECEIVED HEREUNDER, OR ARISING OUT OF NEGLIGENCE OR WILLFUL CONDUCT CAUSING PERSONAL INJURY OR TANGIBLE PROPERTY DAMAGE OF A THIRD PARTY OR ANY RESULTING OBLIGATION, WHETHER IN AN ACTION FOR OR ARISING OUT OF BREACH OF CONTRACT, TORT, OR ANY OTHER CAUSE OF ACTION AND WHETHER OR NOT SUCH DAMAGES ARE FORESEEABLE.

16.5 Provisions.

(a) When a reference is made in this Agreement to an "Article," "Section," "Exhibit" or "Schedule," such reference shall be to an Article or Section of, or an Exhibit or Schedule to, this Agreement unless otherwise indicated.

(b) The table of contents and headings contained in this Agreement are for reference purposes only and shall not affect in any way the meaning or interpretation of this Agreement.

(c) Whenever the words "include," "includes," or "including" are used in this Agreement, such words shall be deemed to be followed by the words "without limitation."

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

(d) The words “hereof,” “herein,” and “hereunder” and words of similar import when used in this Agreement refer to this Agreement as a whole and not to any particular provision of this Agreement unless otherwise expressly indicated in the accompanying text.

(e) The use of “or” is not intended to be exclusive unless otherwise expressly indicated in the accompanying text.

(f) The defined terms contained in this Agreement are applicable to the singular as well as the plural forms of such terms. Reference to the masculine gender shall be deemed to also refer to the feminine gender and vice versa.

(g) A reference to documents, instruments or agreements also refers to all addenda, exhibits or schedules thereto.

IN WITNESS WHEREOF, the parties have executed this Supply Agreement as of the dates set forth below.

ASPEN AEROGELS, INC. BASF POLYURETHANES GmbH

<u>/s/ John F. Fairbanks</u>	[***]	[***]
Name: John F. Fairbanks	Name: [***]	Name: [***]
Title: Chief Financial Officer	Title: [***]	Title: [***]
Date: February 16, 2018	Date: 02-16-2018	Date: 02-16-2018

—

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

List of Annexes:

- Annex 1: BASF Markets and Specifications
- Annex 2: Total Volume Range
- Annex 3: Safety Stock
- Annex 4: Pre-Payment and Security Interest

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

**Annex to the Agreement between BASF and ASPEN
– BASF Markets and Specifications**

Annex 1

BASF Markets

Market definitions are aligned to and based on categorization of markets set forth on [***] as of [***].

BASF Markets will be limited strictly to those markets specifically identified as approved in the chart below. Any additions or modifications to BASF Markets after the date hereof must be agreed to by both Parties in writing.

1. Construction
 - a. Use in [***] is approved.
 - b. Use in the following [***] is prohibited.
2. Transportation
 - a. Use in [***] is approved.
3. Industrial
 - a. Use in [***] is approved.
 - b. Use in [***] is prohibited.
4. Consumer
 - a. Use in [***] is approved.
 - b. Use in [***] is prohibited.

For purposes of clarity, any uses in [***] are allowed. Uses in [***] are prohibited.

The fact that a market or end-application is allowed in this Annex shall not be construed as ASPEN having determined that Products are fit for use in these markets or end-applications. BASF shall be solely responsible for ensuring fitness for use, including performing any additional tests, as necessary to market and sell the Products in these markets and end-applications in compliance with applicable regulations, industry standards and other product claims.

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

Specifications

[***]

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

Page 24 of 28

Total Volume Range

Commencing [***], in an amount not to exceed [***] of Products in any calendar year during the term of the Agreement, subject to revision pursuant to amendment of Annex 4 with respect to any additional Pre-Payment Tranche(s).

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

Safety Stock Example

Calendar Year: [***]
Total Volume Range (up to): [***]
Target Volume: [***]
Safety Stock Factor: [***]
[***] Safety Stock [***]

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

A Pre-Payment

1. Remitting of the Pre-Payment and any Pre-Payment Tranches by BASF is conditioned upon ASPEN granting the security interests as described in this Annex 4. Any Pre-Payment will be paid by BASF to ASPEN to the following bank account Aspen Aerogels, Inc.; [***].
2. After January 1, 2019, ASPEN will credit up to twenty five and three tenths percent (25.3%) of any amounts invoiced by ASPEN for Product sold and delivered to BASF pursuant to this Agreement against the available Pre-Payment Balance, if any.
3. Pursuant to §5.2, the Pre-Payment Balance associated with a specific Pre-Payment Tranche, if any, remaining after the applicable Target Date will be repaid by ASPEN by wire transfer to BASF to the following bank account: [***].
4. The Pre-Payment Balance may be repaid by ASPEN to BASF at any time in whole or in part and for any reason.

B Pre-Payment Tranche 1

1. BASF will remit to ASPEN by wire transfer five million U.S. dollars (\$5,000,000) in two installments of two million and five hundred thousand U.S. dollars (\$2,500,000) each on or before (i) the later of February 28, 2018 or 5 business days after the security interests as described in this Annex 4 are made effective and (ii) July 1, 2018, respectively.
2. Target Date with respect to this Pre-Payment Tranche 1 shall be December 31, 2021.
3. The repayment of Pre-Payment Tranche 1 according to Annex 4, A 2. is limited to an amount of U.S. dollars \$1,670,000 USD (one million six hundred and seventy thousand US dollars) in any given calendar year.
4. As specified in Annex 2, Total Volume Range in an amount not to exceed [***] of Products in any calendar year during the term of the Agreement.

C Additional Pre-Payment Tranches

1. Upon ASPEN's written request, BASF in its sole discretion may offer and Parties may agree to one or more additional Pre-Payment Tranche(s) to be paid by BASF to Aspen by amendment to this Annex 4.
2. The terms of each such additional Pre-Payment Tranche, if any, will specify pre-payment amounts, remittance dates, Target Dates, interest (if any) and revisions to Total Volume Range, if any. Such terms shall be agreed in writing and signed by both Parties.

D Security Interest

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

ASPEN and BASF will enter into a collateral agreement to secure ASPEN's obligation to repay the Pre-Payment Balance associated with a specific Pre-Payment Tranche, if any, by the applicable Target Date with the following elements:

1. With respect to ASPEN's manufacturing facility located at 3 Dexter Road, East Providence, Rhode Island USA (the "Rhode Island Plant"):
 - a. A first priority mortgage in all of the real estate owned by ASPEN which constitutes the Rhode Island Plant; and
 - b. A first priority security interest in all of the machinery and equipment owned by ASPEN which is located at the Rhode Island Plant, subject only to a subordinate security interest in favor of ASPEN's bank and other lenders.

2. With respect to intellectual property:

ASPEN will grant to its respective Rhode Island subsidiary nonexclusive licenses under ASPEN's patents as necessary in order to operate the machinery and equipment that is the subject of BASF's security interest while such machinery and equipment is located at the Rhode Island Plant. Such licenses will be assignable only to a future acquirer of the machinery and equipment at the Rhode Island Plant, and will terminate on any removal of the machinery and equipment from the Rhode Island Plant.

Following any repayment in full of the Pre-Payment, whether in the form of credits against the purchase price of Products, lump sum payments or otherwise, ASPEN's obligation to maintain the security interest will terminate, and BASF will execute any and all documents reasonably requested by ASPEN releasing all or any part of the security from any lien or encumbrance in favor of BASF.

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

Confidential and Proprietary Information of Aspen Aerogels

**Amended and Restated Side Agreement between
BASF Polyurethanes GmbH and Aspen Aerogels, Inc.**

This amended and restated Side Agreement (“Side Agreement”) is made the latest date set forth below (the “Effective Date”) by BASF Polyurethanes GmbH, Elastogranstraße 60, 49443 Lemförde, Germany (“BASF”) and Aspen Aerogels, Inc., 30 Forbes Road, Building B, Northborough, MA 01532, United States of America (“ASPEN”). BASF and ASPEN are each individually referred to as a “Party” and collectively as the “Parties”.

The Parties have entered into an amended and restated Supply Agreement (the “Supply Agreement”) dated as of the Effective Date providing, *inter alia*, for the supply by ASPEN of certain products to BASF. This Side Agreement is the Side Agreement referred to in the Supply Agreement establishing the pricing of Products sold under the Supply Agreement.

Capitalized terms used herein and not otherwise defined have the meanings as defined in the Supply Agreement.

1. Calculation of Price. The Price of Product sold by ASPEN and purchased by BASF or its Affiliates under the Supply Agreement for calendar year [***] will be set to [***] per square foot. The price for each successive calendar year will be determined on or before [***] of the previous calendar year by reference to the following cost-plus formula:

$$\text{Price} = [***] \text{ Cost } [***]$$

[***] Cost for the calendar year [***] will be set at [***] per square foot. [***] Cost for each successive calendar year will be determined on or before [***] of the previous calendar year by ASPEN in good faith and consistent with past practice (adjusted if necessary to reflect [***]). Such [***] Cost will include [***].

[***] for calendar year [***] will be [***]. [***] for each successive calendar year will be calculated by adding [***] of [***] Cost, or subtracting [***] of [***] Cost, [***], to the then [***]. However, in no case shall [***] be less than [***].

Notwithstanding the foregoing, [***]. However, under no circumstance is Aspen obliged to reveal to BASF directly or BASF entitled to request from Aspen any details about the customers [***]. Section 4.3 of the Supply Agreement shall apply to ASPEN records related to [***].

2. Calculation of [***] Cost. [***] Cost [***] will be the sum of [***] and [***]. For any period, [***] will be determined by ASPEN in good faith and consistent with past practice (adjusted if necessary to reflect [***]). [***] developed by Aspen will be subject to BASF audit rights as set forth in Section 4.3 of the Agreement.

For purposes of the calculation of [***] Cost:

[***] is [***] based on standard product formulation. [***] will include, without limitation, [***] that are required to manufacture Products that meet the Specifications.

Portions of this Exhibit, indicated by the mark “[***],” were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant’s application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

*** is the ***, to convert the raw materials into saleable Products that meet Specifications. *** will ***. *** will include the *** included in *** by Aspen consistent with past practice and in accordance with U.S. GAAP.

Normalized Full Capacity is the projected sustainable annual output of Products in the normal course of operations for Aspen's manufacturing assets in service at any point in time.

3. Successor Products. The Price of Successor Products (if any) shall be determined at the time the Parties agree to include the supply of such Successor Products under the terms of the Supply Agreement. No product will be deemed a Successor Product unless and until the Parties have agreed on the Price of such Successor Products.

4. Confidential Information. The terms of this Side Agreement will be deemed Confidential Information of ASPEN for purposes of Section 10 of the Supply Agreement.

[signature page follows]

Agreed and accepted.

ASPEN AEROGELS, INC. BASF POLYURETHANES GMBH

/s/ John F. Fairbanks *** **]

Name: John F. Fairbanks

Title: Chief Financial Officer

Date: February 16, 2018

Name: *** Name: ***]

Title: *** Title: ***]

Date: 02-16-2018

Date: 02-16-2018

77393948v.1

Portions of this Exhibit, indicated by the mark "[***]," were omitted and have been filed separately with the Securities and Exchange Commission pursuant to the Registrant's application requesting confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended.

CERTIFICATIONS UNDER SECTION 302

I, Donald R. Young, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Aspen Aerogels, 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: May 3, 2018

/s/ Donald R. Young

Donald R. Young
President and Chief Executive Officer
(principal executive officer)

CERTIFICATIONS UNDER SECTION 302

I, John F. Fairbanks, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Aspen Aerogels, 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: May 3, 2018

/s/ John F. Fairbanks

John F. Fairbanks

Vice President, Chief Financial Officer and Treasurer (principal financial officer and principal accounting officer)

CERTIFICATIONS UNDER SECTION 906

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of section 1350, chapter 63 of title 18, United States Code), each of the undersigned officers of Aspen Aerogels, Inc., a Delaware corporation (the "Company"), does hereby certify, to such officer's knowledge, that:

The Quarterly Report on Form 10-Q for the quarter ended March 31, 2018 (the "Form 10-Q") of the Company fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and the information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: May 3, 2018

/s/ Donald R. Young

Donald R. Young
President and Chief Executive Officer
(principal executive officer)

Dated: May 3, 2018

/s/ John F. Fairbanks

John F. Fairbanks
Vice President, Chief Financial Officer and Treasurer
(principal financial officer and principal accounting officer)

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.