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

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**FORM 8-K**

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**CURRENT REPORT  
Pursuant to Section 13 or 15(d)  
of the Securities Exchange Act of 1934**

**Date of Report (Date of Earliest Event Reported): February 13, 2020**

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**Aspen Aerogels, Inc.**  
(Exact name of Registrant as Specified in Its Charter)

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**Delaware**  
(State or Other Jurisdiction  
of Incorporation)

**001-36481**  
(Commission  
File Number)

**04-3559972**  
(I.R.S. Employer  
Identification No.)

**30 Forbes Road, Building B,  
Northborough, MA**  
(Address of Principal Executive Offices)

**01532**  
(Zip Code)

**Registrant's Telephone Number, Including Area Code: (508) 691-1111**

**Not Applicable**  
(Former Name or Former Address, if Changed Since Last Report)

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Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

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

Title of each class	Trading Symbol	Name of exchange on which registered
Common Stock	ASPN	The New York Stock Exchange

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

Emerging growth company

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

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**Item 1.01. Entry Into a Material Definitive Agreement.**

On February 13, 2020, Aspen Aerogels, Inc. (the “Company”) entered into an underwriting agreement (the “Underwriting Agreement”) with Craig-Hallum Capital Group LLC, as representative of the several underwriters named in Schedule I therein (the “Underwriters”), relating to the underwritten public offering of 1,700,000 shares of the Company’s common stock, par value \$0.00001 per share (the “Offering”). The price to the public in the Offering was \$8.25 per share. The gross proceeds to the Company from the Offering are expected to be approximately \$14.0 million, before deducting underwriting discounts and commissions and estimated offering expenses payable by the Company, but excluding any exercise of the Underwriters’ option to purchase additional shares of common stock. The Offering is anticipated to close on or about February 18, 2020, subject to customary closing conditions. In addition, under the terms of the Underwriting Agreement, the Company granted the Underwriters an option, exercisable for 30 days, to purchase up to 255,000 additional shares of common stock to cover over-allotments, if any.

The Underwriting Agreement contains customary representations, warranties and agreements by the Company, customary conditions to closing, indemnification obligations of the Company and the Underwriters, including for liabilities under the Securities Act of 1933, as amended (the “Securities Act”), other obligations of the parties and termination provisions. The Offering was made pursuant to the Company’s effective registration statement on Form S-3 (Registration Statement No. 333-227158) previously filed with the Securities and Exchange Commission (“SEC”) and a related prospectus supplement and accompanying prospectus. The Underwriting Agreement is filed as Exhibit 1.1 to this report and is incorporated herein by reference. The foregoing description of the terms of the Underwriting Agreement does not purport to be complete and is qualified in its entirety by reference to such exhibit. A copy of the opinion of Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C. relating to the legality of the issuance and sale of the shares in the Offering is attached as Exhibit 5.1 hereto.

**Item 8.01. Other Events.**

On February 13, 2020, the Company issued a press release announcing that it had priced the Offering. A copy of this press release is attached as Exhibit 99.1 hereto and the information contained therein is incorporated herein by reference.

This report contains “forward-looking statements” within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, as amended, including statements regarding the Company’s expectations with respect to the Offering, including its ability to complete the Offering and its expected and intended use of proceeds from the Offering. These and any other forward-looking statements in this report are based on management’s current 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 set forth in or implied by such forward-looking statements. These risks and uncertainties include, but are not limited to, the risks and uncertainties associated with market conditions and the satisfaction of customary closing conditions related to the offering, as well as risks and uncertainties detailed in the Company’s periodic filings with the SEC, including, but not limited to, the Company’s Annual Report on Form 10-K for the year ended December 31, 2018, the Company’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2019, the final prospectus supplement related to the Offering filed with the SEC on February 13, 2020 and from time to time the Company’s other investor communications. The Company is providing the information in this report as of this date and does not undertake any obligation to update any forward-looking statements contained in this report as a result of new information, future events or otherwise, except to the extent required by law.

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**Item 9.01. Financial Statements and Exhibits.**

Exhibits

- 1.1 [Underwriting Agreement, dated February 13, 2020, by and between Aspen Aerogels, Inc. and Craig-Hallum Capital Group LLC, as representative of the several underwriters named therein.](#)
- 5.1 [Opinion of Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C.](#)
- 23.1 [Consent of Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C. \(included in Exhibit 5.1\)](#)
- 99.1 [Press Release of Aspen Aerogels, Inc., dated February 13, 2020, announcing the pricing of the underwritten public offering.](#)

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**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 hereunto duly authorized.

Aspen Aerogels, Inc.

Date: February 13, 2020

By: /s/ John F. Fairbanks

Name: John F. Fairbanks

Title: Vice President, Chief Financial Officer and Treasurer

**Aspen Aerogels, Inc.**  
**Common Stock par value \$0.00001 per share**

**Underwriting Agreement**

February 13, 2020

CRAIG-HALLUM CAPITAL GROUP LLC  
As Representative of the several  
Underwriters named in Schedule I attached hereto  
222 South Ninth Street, Suite 350  
Minneapolis, Minnesota 55402

Ladies and Gentlemen:

Aspen Aerogels, Inc., a Delaware corporation (the “Company”), proposes, subject to the terms and conditions stated herein, to issue and sell to the Underwriters named in Schedule I hereto (the “Underwriters”), for whom you are acting as representative (the “Representative”), an aggregate of 1,700,000 shares (the “Firm Shares”) and, at the election of the Underwriters, up to 255,000 additional shares (the “Optional Shares”) of Common Stock, par value of \$0.00001 per share (“Stock”), of the Company (the Firm Shares and the Optional Shares that the Underwriters elect to purchase pursuant to Section 2 hereof being collectively called the “Shares”).

The Company has prepared and filed with the U.S. Securities and Exchange Commission (the “Commission”) a shelf registration statement on Form S-3 (File No. 333-227158), including a base prospectus (the “Base Prospectus”) to be used in connection with the public offering and sale of the Shares and such amendments to such registration statement as may have been required to be filed with the Commission as of to the date of this Agreement. Such registration statement, as amended, including the financial statements, exhibits and schedules thereto, in the form in which it became effective under the U.S. Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder (collectively, the “Act”), including all documents incorporated or deemed to be incorporated by reference therein and any information deemed to be a part thereof at the time of effectiveness pursuant to Rule 430A or Rule 430B under the Act, is called the “Registration Statement.” Any registration statement filed by the Company pursuant to Rule 462(b) under the Act in connection with the offer and sale of the Shares is called the “Rule 462(b) Registration Statement,” and from and after the date and time of filing of any such Rule 462(b) Registration Statement the term “Registration Statement” shall include the Rule 462(b) Registration Statement.

The preliminary prospectus supplement dated February 12, 2020 to the Base Prospectus describing the Shares and the offering thereof, together with the Base Prospectus as so supplemented, is called the “Preliminary Prospectus,” and the Preliminary Prospectus and any other prospectus supplement to the Base Prospectus in preliminary form that describes the Shares and the offering thereof and is used prior to the filing of the Prospectus (as defined below), together with the Base Prospectus, is called a “preliminary prospectus.” Promptly after execution and delivery of this Agreement, the Company will prepare and file with the Commission a final prospectus supplement to the Base Prospectus relating to the Shares and the offering thereof in accordance with the provisions of Rule 430B and Rule 424(b) of the Act. Such final prospectus supplement (including the Base Prospectus as so supplemented), in the form filed with the Commission pursuant to Rule 424(b), is herein called the “Prospectus.”

Any “issuer free writing prospectus” as defined in Rule 433 under the Act relating to the Shares is hereinafter called an “Issuer Free Writing Prospectus.”

All references in this Agreement to amendments or supplements to the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, or the Prospectus shall be deemed to mean and include the filing of any document under the U.S. Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder (collectively, the “Exchange Act”) that is or is deemed to be incorporated by reference in the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus, or the Prospectus, as the case may be.

All references in this Agreement (i) to the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus or the Prospectus, any amendments or supplements to any of the foregoing, or any free writing prospectus, shall include any copy thereof filed with the Commission pursuant to its Electronic Data Gathering, Analysis and Retrieval System or any successor system thereto (“EDGAR”), (ii) to the Prospectus shall be deemed to include any “electronic Prospectus” provided for use in connection with the offering of the Shares, and (iii) to financial statements and schedules and other information which is “described,” “contained,” “included” or “stated” in the Registration Statement, the Preliminary Prospectus, any preliminary prospectus, the Base Prospectus or the Prospectus (or other references of like import) shall be deemed to mean and include all such financial statements and schedules and other information which is incorporated by reference in or otherwise deemed by the Act to be a part of or included in the Registration Statement, the Base Prospectus, any preliminary prospectus or the Prospectus, as the case may be.

1. The Company represents and warrants to, and agrees with, each of the Underwriters that:

a) The Registration Statement and any post-effective amendment thereto have become effective under the Act. The Company has complied, to the Commission’s satisfaction, with all requests of the Commission for additional or supplemental information, if any. No stop order suspending the effectiveness of the Registration Statement, any post-effective amendment, or any part thereof is in effect and no proceedings for such purpose have been instituted or are pending or, to the best knowledge of the Company, are contemplated or threatened by the Commission. At the time the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 was filed with the Commission, or, if later, at the time the Registration Statement was originally filed with the Commission, the Company met the then-applicable requirements for use of Form S-3 under the Act, and as of the date of this Agreement, the

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Company meets the requirements for the use of Form S-3 under the Act, including, but not limited to, General Instruction I.B.1 of Form S-3. The documents incorporated or deemed to be incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus, at the time they were or hereafter are filed with the Commission, or became or become effective under the Exchange Act, as the case may be, complied and will comply in all material respects with the requirements of the Exchange Act;

b) No order preventing or suspending the use of any preliminary prospectus (including the Preliminary Prospectus), any Issuer Free Writing Prospectus, or the Prospectus (or any supplement thereto) has been issued by the Commission and no proceeding for that purpose has been initiated or is pending, or to the knowledge of the Company, contemplated or threatened by the Commission. Each preliminary prospectus (including the Preliminary Prospectus), at the time of filing thereof or the time of first use within the meaning of the Act, conformed in all material respects to the requirements of the Act and the rules and regulations of the Commission thereunder, and did not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided, however*, that this representation and warranty shall not apply to any statements or omissions made in reliance upon and in conformity with information furnished in writing to the Company by an Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 9(b) hereof;

c) For the purposes of this Agreement, the “Applicable Time” is 6:00 a.m. (Eastern time) on the date of this Agreement. The Preliminary Prospectus, as supplemented by (A) each Issuer Free Writing Prospectus listed on Schedule II hereto and (B) the pricing information set forth on Schedule III hereto, taken together (collectively with the Preliminary Prospectus, the “General Disclosure Package”), as of the Applicable Time, did not include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; and each Issuer Free Writing Prospectus (including a road show that is an Issuer Free Writing Prospectus but is not required to be filed under Rule 433 under the Act) does not conflict with the information contained in the Registration Statement, the General Disclosure Package or the Prospectus and each such Issuer Free Writing Prospectus, when taken together with the General Disclosure Package, as of the Applicable Time, did not include any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided, however*, that this representation and warranty shall not apply to statements or omissions made in an Issuer Free Writing Prospectus in reliance upon and in conformity with information furnished in writing to the Company by an Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 9(b) hereof;

d) The Registration Statement conforms, and the Prospectus and any further amendments or supplements to the Registration Statement and the Prospectus will conform, in all material respects to the requirements of the Act and the rules and regulations of the Commission thereunder and do not and will not, as of the applicable effective date as to each part of the

Registration Statement and as of the applicable filing date as to the Prospectus and any amendment or supplement thereto, taken together, contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading; *provided, however*, that this representation and warranty shall not apply to any statements or omissions made in reliance upon and in conformity with information furnished in writing to the Company by an Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 9(b) hereof;

e) With respect to the stock options, stock bonus and other stock plan or arrangements (the “Awards”) granted pursuant to the stock-based compensation plans of the Company (the “Company Stock Plans”), (i) each Award intended to qualify as an “incentive stock option” under Section 422 of the Internal Revenue Code of 1986, as amended (the “Code”), so qualifies, (ii) each grant of a an Award was duly authorized no later than the date on which the grant of such Award was by its terms to be effective (the “Grant Date”) by all necessary corporate action, including, as applicable, approval by the board of directors of the Company (or a duly constituted and authorized committee thereof) and any required stockholder approval by the necessary number of votes or written consents, and the award agreement governing such grant (if any) was duly executed and delivered by each party thereto, (iii) each such grant was made in all material respects in accordance with the terms of the Company Stock Plans, the Exchange Act and all other applicable laws and regulatory rules or requirements including the rules of the New York Stock Exchange (such rules the “Exchange Rules” and such stock exchange the “Exchange”) and any other exchange on which Company securities are traded, and (iv) each such grant was properly accounted for in accordance with GAAP in the financial statements (including the related notes) of the Company and disclosed in the Company’s filings with the Commission in accordance with the Exchange Act. The Company has not knowingly granted, and there is no and has been no policy or practice of the Company of granting, Awards prior to, or otherwise coordinating the grant of Awards with, the release or other public announcement of material information regarding the Company or its subsidiaries or their results of operations or prospects;

f) Since the date of the latest audited financial statements included or incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus, except in each case as otherwise disclosed in the Registration Statement, the General Disclosure Package and the Prospectus, (i) neither the Company nor any of its subsidiaries shall have sustained any loss or interference with its business that is material to the Company and its subsidiaries taken as a whole and that is from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental or regulatory action, order or decree; (ii) there shall not have been any material change in the capital stock, short-term debt or long-term debt of the Company or any of its subsidiaries, taken as a whole (other than borrowings, if any, under the revolving credit facility described in the Registration Statement, General Disclosure Package and the Prospectus or capital leases, if any, in the ordinary course of business), or any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock (other than payments of cash in lieu of fractional shares), or any material adverse change, or any development involving a prospective material adverse change, in or affecting the business, properties, management, financial position, stockholders’ equity, results of operations or prospects of the Company and its

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subsidiaries, taken as a whole (a “Material Adverse Effect”); and (iii) neither the Company nor any of its subsidiaries has entered into any transaction or agreement (other than purchase orders) that is material to the Company and its subsidiaries taken as a whole or incurred any liability or obligation, direct or contingent, that is material to the Company and its subsidiaries taken as a whole;

g) The Company and its subsidiaries have good and marketable title in fee simple to all real property and good and marketable title to all personal property owned by them, in each case free and clear of all liens, claims, security interests, or other encumbrances and defects except such as are described in the Registration Statement, General Disclosure Package and the Prospectus or such as (i) do not materially affect the value of such property and do not interfere with the use made and proposed to be made of such property by the Company and its subsidiaries or (ii) would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect; and any real property and buildings held under lease by the Company and its subsidiaries are held by them under valid, subsisting and enforceable leases with such exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company and its subsidiaries;

h) The Company has been duly incorporated and is validly existing as a corporation in good standing under the laws of the state of Delaware, with power and authority (corporate and other) to own its properties and conduct its business as described in the Registration Statement, General Disclosure Package and the Prospectus, and has been duly qualified as a foreign corporation for the transaction of business and is in good standing under the laws of each other jurisdiction in which it owns or leases properties or conducts any business so as to require such qualification, or is subject to no material liability or disability by reason of the failure to be so qualified in any such jurisdiction, in each case, except where the failure to so qualify would not have a Material Adverse Effect; and each Significant Subsidiary (as defined below) of the Company has been duly formed and is validly existing as a limited liability company or similar business entity in good standing under the laws of its jurisdiction of incorporation; “Significant Subsidiary” shall have the meaning specified in Rule 1-02 of Regulation S-X under the Act; the Company does not own or control, directly or indirectly, or own any capital stock or other equity or ownership in, any corporation, association or other entity other than the subsidiaries and joint ventures listed on Exhibit 21.1 of the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2018;

i) The Company has an authorized capitalization as set forth in the General Disclosure Package and the Prospectus and all of the outstanding shares of capital stock of the Company have been duly authorized and validly issued and are fully paid, non-assessable, have been issued in compliance with all federal and state, Blue Sky and foreign securities laws, were not issued in violation of any pre-emptive or similar rights and conform to the description of the Stock contained in the General Disclosure Package and the Prospectus; the holders of such capital stock are not subject to personal liability by reason of being such holders; and all of the issued shares of capital stock of each subsidiary of the Company have been duly authorized and validly issued, are fully paid and non-assessable and are owned directly or indirectly by the Company, free and clear of all liens, encumbrances, restrictions on voting or transfer, equities or claims; except as described in or expressly contemplated by the General Disclosure Package and the Prospectus, upon the consummation of the offering contemplated hereby there will be no

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outstanding rights (including, without limitation, pre-emptive rights), warrants or options to acquire, or instruments convertible into or exchangeable for, any shares of capital stock or other equity interest in the Company or any of its subsidiaries, or any contract, commitment, agreement, understanding or arrangement of any kind relating to the issuance of any capital stock of the Company or any such subsidiary, any such convertible or exchangeable securities or any such rights, warrants or options;

j) The unissued Shares to be issued and sold by the Company to the Underwriters hereunder have been duly authorized and, when issued and delivered against payment therefor as provided herein, will be validly issued and fully paid and non-assessable and conform to the description of the Stock contained in the Registration Statement, General Disclosure Package and the Prospectus; and the issuance of the Shares is not subject to any pre-emptive or similar rights other than those that have been waived;

k) The issue and sale of the Shares and the execution and delivery of, and compliance by the Company with, this Agreement and the consummation by the Company of the transactions herein contemplated (i) will not conflict with or result in a breach or violation of any of the terms or provisions of, or constitute a default under, any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries is bound or to which any of the property or assets of the Company or any of its subsidiaries is subject, (ii) will not violate (x) the provisions of the Certificate of Incorporation or Bylaws of the Company or (y) any statute or any law, judgement, regulation, order, decree, rule or regulation of any court, arbitrator or federal, state, local or foreign governmental agency or body, or regulatory authority having jurisdiction over the Company or any of its subsidiaries or any of their properties or assets (each a "Governmental Authority"), except, in the case of clauses (i) or (ii) hereof, for conflicts, breaches or violations that would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect; and no consent, approval, authorization, order, registration or qualification of or with any such Governmental Authority is required for the issue and sale of the Shares or the consummation by the Company of the transactions contemplated by this Agreement, except (A) the registration under the Act of the Shares or (B) such consents, approvals, authorizations, orders, registrations or qualifications as may be required under state securities or Blue Sky laws in connection with the purchase and distribution of the Shares by the Underwriters, the Financial Industry Regulatory Authority, Inc. ("FINRA"), or the Exchange;

l) Neither the Company nor any of its subsidiaries is (A) in violation of its Certificate of Incorporation or Bylaws or other similar organizational documents, (B) in breach of or otherwise in default in the performance or observance of any obligation, agreement, covenant or condition contained in any indenture, mortgage, deed of trust, loan agreement, lease or other agreement or instrument to which it is a party or by which it or any of its properties may be bound or (C) in violation of any law or statute or any judgment, order, rule or regulation of any Governmental Authority, except in the case of (B) and (C) for such defaults as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect;

m) The statements set forth in the General Disclosure Package and Prospectus under the caption "Description of Common Stock", insofar as they purport to constitute a summary of the terms of the Stock, and under the captions "Underwriting" and "Material U.S. Federal Tax Considerations for Non-U.S. Holders", insofar as they purport to describe the provisions of the laws and documents referred to therein, are accurate in all material respects;

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n) Other than as set forth in the Registration Statement, the General Disclosure Package and the Prospectus, there are no legal or governmental investigations or proceedings pending to which the Company or any of its subsidiaries is a party or of which any property of the Company or any of its subsidiaries is the subject which, if determined adversely to the Company or any of its subsidiaries, would individually or in the aggregate reasonably be expected to have a Material Adverse Effect or that are required under the Act to be disclosed in the Registration Statement, the General Disclosure Package and the Prospectus; and, to the Company's knowledge, no such proceedings are threatened or contemplated by governmental authorities or threatened by others;

o) The Company is not and, after giving effect to the offering and sale of the Shares and the application of the proceeds thereof, will not be required to register as an "investment company", as such term is defined in the Investment Company Act of 1940, as amended (the "Investment Company Act");

p) At the time of filing the Registration Statement and any post-effective amendment thereto, at the earliest time thereafter that the Company or any offering participant made a *bona fide* offer (within the meaning of Rule 164(h)(2) under the Act) of the Shares and at the date hereof, the Company was not and is not an "ineligible issuer," as defined in Rule 405 under the Act;

q) KPMG LLP, who has certified certain financial statements of the Company and its subsidiaries is (i) an independent registered public accounting firm within the meaning of the Act, and(ii) a registered public accounting firm (as defined in Section 2(a)(12) of the Sarbanes-Oxley Act of 2002 (the "Sarbanes-Oxley Act"));

r) The Company and the each of its Significant Subsidiaries maintains systems of "internal control over financial reporting" (as defined in Rule 13a-15(f) of the Exchange Act) that comply with the requirements of the Exchange Act and have been designed by, or under the supervision of, their respective principal executive and principal financial officers, or persons performing similar functions, 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 ("GAAP"). The Company maintains a system of internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management's general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management's general or specific authorization; (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences and (v) interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus fairly presents the information called for in all material respects and is prepared in accordance with the Commission's rules and guidelines applicable thereto. Based on the Company's most recent evaluation of its internal

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controls over financial reporting pursuant to Rule 13a-15(c) of the Exchange Act, there are no “material weaknesses” in the Company’s internal controls. The Company’s auditors and the audit committee of the board of directors of the Company have been advised of: (i) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which have adversely affected or are reasonably likely to adversely affect the Company’s ability to record, process, summarize and report financial information; and (ii) to the knowledge of the Company, any fraud, whether or not material, that involves management or other employees who have a significant role in the Company’s internal controls over financial reporting;

s) The interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement fairly presents the information called for in all material respects and has been prepared in accordance with the Commission’s rules and guidelines applicable thereto;

t) Since the date of the latest audited financial statements included or incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus, there has been no change in the Company’s internal control over financial reporting that has materially adversely affected, or is reasonably likely to materially adversely affect, the Company’s internal control over financial reporting;

u) The Company maintains disclosure controls and procedures (as such term is defined in Rule 13a-15(e) under the Exchange Act) that comply with the requirements of the Exchange Act; such disclosure controls and procedures have been designed to ensure that information that is required to be disclosed relating to the Company and its subsidiaries is made known to the Company’s principal executive officer and principal financial officer by others within those entities; and such disclosure controls and procedures are effective. The Company has carried out evaluations of the effectiveness of its disclosure controls and procedures as required by Rule 13a-15 of the Exchange Act. The Company has utilized such controls and procedures in preparing and evaluating the disclosures in the Registration Statement, the General Disclosure Package and in the Prospectus;

v) This Agreement has been duly authorized, executed and delivered by the Company, and constitutes a valid, legal and binding obligation of the Company, enforceable in accordance with its terms, except as rights to indemnity hereunder may be limited by federal or state and Blue Sky securities laws and except as such enforceability may be limited by bankruptcy, insolvency, reorganization or similar laws affecting the rights of creditors generally and subject to general principles of equity. The Company has full right, power and authority to execute and deliver this Agreement and to perform its obligations, including the authorization, issuance and sale of the Shares as contemplated hereunder;

w) Each of the agreements described under the headings “Certain Relationships and Related Person Transactions” in the General Disclosure Package and the Prospectus conforms in all material respects to the descriptions thereof contained in the General Disclosure Package and the Prospectus;

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x) No relationship, direct or indirect, exists between or among the Company or any of its subsidiaries, on the one hand, and the directors, officers, stockholders, customers or suppliers of the Company or any of its subsidiaries, on the other, that is required by the Act to be described in the Registration Statement, General Disclosure Package and the Prospectus and that is not so described in such documents;

y) The Company and its subsidiaries own or possess adequate rights to use all patents, patent applications, trademarks, service marks, trade names, trademark registrations, service mark registrations, copyrights, licenses and know-how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems, inventions, methods, processes or procedures) (collectively, the “Intellectual Property”) necessary for the conduct of their respective businesses except where the failure to own or possess such rights would not reasonably be expected to result in a Material Adverse Effect; and the conduct of their respective businesses will not conflict in any respect with any such rights of others except for any such conflicts as would not reasonably be expected to result in a Material Adverse Effect, and the Company and its subsidiaries have not received any notice of any claim of infringement of or conflict with any such rights of others;

z) Except as described in the Registration Statement, the General Disclosure Package, and the Prospectus: (i) to the knowledge of the Company, there is no infringement, misappropriation or violation by third parties of any Company Intellectual Property, (ii) there is no pending or, to the knowledge of the Company, threatened, action, suit, proceeding or claim by others challenging the Company’s or its subsidiaries’ rights in or to any Company Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such claim, (iii) the Company Intellectual Property has not been adjudged invalid or unenforceable, in whole or in part, and there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others challenging the validity or scope of any Company Intellectual Property, and (iv) there is no pending or, to the knowledge of the Company, threatened action, suit, proceeding or claim by others that the Company or its subsidiaries infringe, misappropriate or otherwise violate any Intellectual Property or other proprietary rights of others, and neither the Company nor any of its subsidiaries has received any written notice of such claim and the Company is unaware of any other fact which would form a reasonable basis for any such claim, except, in the case of (i), (ii), (iii) and (iv), as would not reasonably be expected to result in a Material Adverse Effect;

aa) The Company and its subsidiaries have taken reasonable security measures to protect the secrecy, confidentiality and value of all of their material Intellectual Property;

bb) All patent applications owned by the Company or its subsidiaries and filed with the U.S. Patent and Trademark Office (the “PTO”) or any foreign or international patent authority that have resulted in patents or currently pending applications that describe inventions, necessary to conduct the business of the Company or its subsidiaries as now conducted or as described in the Registration Statement, the General Disclosure Package and the Prospectus to be conducted (collectively, the “Company Patent Applications”), have been or were duly and properly filed, except where the failure to make such filings would not reasonably be expected to result in a Material Adverse Effect;

cc) The Company and its subsidiaries have timely filed all federal, state, local and foreign tax returns required to be filed as of the date hereof (except in any case in which the failure to so file would not reasonably be expected to have a Material Adverse Effect) and paid all taxes due thereon to the extent that any taxes are due and payable, except for any tax that is currently being contested in good faith or taxes the failure of which to pay would not reasonably be expected to have a Material Adverse Effect; and except as otherwise disclosed in the Registration Statement, the General Disclosure Package and the Prospectus, there is no tax deficiency that has been, or could reasonably be expected to be, asserted against the Company or any of its subsidiaries or any of their respective properties or assets except as would not reasonably be expected to have a Material Adverse Effect;

dd) The Company and its subsidiaries possess, and are in compliance in all material respects with, all licenses, certificates, permits, orders and other authorizations issued by, and have made all declarations and filings with, the appropriate federal, state, local or foreign governmental, regulatory authorities, or self-regulatory bodies that are necessary for the ownership or lease of their respective properties or the conduct of their respective businesses as described in the Registration Statement, the General Disclosure Package and the Prospectus, except where the failure to possess or make the same would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, and all such licenses, certificates, permits, orders and other authorizations are valid and in full force and effect except as described in the Registration Statement, the General Disclosure Package and the Prospectus. Neither the Company nor any of its subsidiaries has received notice of any revocation of any such license, certificate, permit, order or authorization or, to the knowledge of the Company, that any such license, certificate, permit, order or authorization will not be renewed in the ordinary course;

ee) No labor disturbance by, or dispute with, employees of the Company or any of its subsidiaries exists or, to the Company's knowledge, is contemplated or threatened, and the Company is not aware of any existing or imminent labor disturbance by the employees of any of its or its subsidiaries' principal suppliers, contractors or customers, that except, in each case, for any labor dispute or disturbance as would not reasonably be expected to have a Material Adverse Effect;

ff) (i) The Company and its subsidiaries (x) are in compliance with all applicable federal, state, local and foreign laws, rules, regulations, decisions and orders relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants (collectively, "Environmental Laws"); (y) have received and are in compliance with all permits, licenses or other approvals required of them under Environmental Laws to conduct their respective businesses; and (z) have not received any notice that the Company believes currently poses any actual or potential liability under or relating to any Environmental Laws, including for the investigation or remediation of any disposal or release of hazardous or toxic substances or wastes, pollutants or contaminants, and have no knowledge of any event or condition that would reasonably be expected to result in any such notice, except where the receipt of such notice would not reasonably be expected to have a Material Adverse Effect, and (ii) the Company is not aware of any liabilities or costs associated with Environmental Laws or with hazardous or toxic substances or wastes, pollutants or contaminants of or relating to the Company or its subsidiaries, except in each case covered by clauses (i) and (ii) hereof, for any such failure to comply with, or failure to receive required permits, licenses or approvals, or liabilities or costs, as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect;

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gg) Except as described in the Registration Statement, the General Disclosure Package and the Prospectus, there are no proceedings that are pending, or that are known by the Company to be contemplated, against the Company or any of its subsidiaries under any Environmental Laws in which a governmental entity is also a party, other than such proceedings regarding which it is reasonably believed no monetary sanctions of \$100,000 or more will be imposed;

hh) (i) Each “employee benefit plan” within the meaning of Section 3(3) of the Employee Retirement Income Security Act of 1974, as amended (“ERISA”), that is maintained, administered or contributed to by the Company or any of its affiliates for employees or former employees of the Company and its affiliates (each, a “Plan”), has been maintained in compliance with its terms and the requirements of any applicable statutes, orders, rules and regulations, including but not limited to ERISA and the Code; (ii) no prohibited transaction, within the meaning of Section 406 of ERISA or Section 4975 of the Code, has occurred with respect to any Plan excluding transactions effected pursuant to a statutory or administrative exemption; and (iii) no failure to meet the “minimum funding standard” or “minimum required contribution” (as such terms are defined in Section 412 or 430 of the Code or Section 302 of ERISA) has occurred, and no failure to meet the minimum “accumulated funding standard deficiency” as defined in Section 412 of the Code has been incurred with respect to any Plan, whether or not waived, and the fair market value of the assets of each Plan (excluding for these purposes accrued but unpaid contributions) exceeds the present value of all benefits accrued under such Plan determined using reasonable actuarial assumptions, (iv) no other event set forth in Section 4043(b) of ERISA (excluding events with respect to which the 30-day notice requirement under Section 4043 of ERISA has been waived) has occurred with respect to any Plan; except in the cases of (i), (ii), (iii) and (iv) as would not reasonably be expected to have a Material Adverse Effect;

ii) Except as described in the General Disclosure Package, there are no persons with registration rights or other similar rights to have any securities registered pursuant to the Registration Statement or otherwise registered by the Company under the Act;

jj) There is and has been no failure on the part of the Company or, to the knowledge of the Company, any of the Company’s directors or officers, in their capacities as such, to comply in all material respects with any provision of the Sarbanes-Oxley Act and the rules and regulations promulgated in connection therewith including Section 402 related to loans and Sections 302 and 906 related to certifications;

kk) The Company and its subsidiaries have insurance from reputable insurers covering their respective properties, operations, personnel and businesses, including business interruption insurance, which insurance is in amounts and insures against such losses and risks as are adequate to protect the Company and its subsidiaries and their respective businesses; all policies of insurance and any fidelity or surety bonds insuring the Company or any of its subsidiaries or their respective properties, operations, personnel and businesses are in full force and effect; the Company and its subsidiaries are in compliance with the terms of such policies

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and instruments in all material respects; there are no claims by the Company or any of its subsidiaries under any such policy or instrument as to which any insurance company is denying liability or defending under a reservation of rights clause; and neither the Company nor any of its subsidiaries has (i) received notice from any insurer or agent of such insurer that capital improvements or other expenditures are required or necessary to be made in order to continue such insurance; (ii) any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage at reasonable cost from similar insurers or to provide self-insurance as may be necessary to continue its business; or (iii) been refused any insurance coverage sought or applied for.

ll) Neither the Company nor any of its subsidiaries or, to the Company's knowledge, any director, officer, agent, employee, affiliate or other person associated with or acting on behalf of the Company or any of its subsidiaries (i) has used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity; (ii) have made any direct or indirect unlawful payment to any foreign or domestic government official or employee from corporate funds; (iii) violated, is in violation, and its participation in the offering will not violate any provision of the U.S. Foreign Corrupt Practices Act of 1977, the Bribery Act of 2010 of the United Kingdom, any applicable law or regulation implementing the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, or any other applicable anti-bribery or corruption law, rule, or regulation of similar purposes and scope, or (iv) made any bribe, rebate, payoff, influence payment, kickback or other unlawful payment; the Company and its subsidiaries have instituted, maintain and enforce, and will continue to maintain and enforce policies and procedures designed to promote and ensure compliance with all applicable anti-bribery and anti-corruption laws;

mm) Except as disclosed in the Registration Statement, the General Disclosure Package and the Prospectus, none of the Company's subsidiaries is currently prohibited, directly or indirectly, under any agreement or other instrument to which it is a party or is subject, from paying any dividends to the Company, from making any other distribution on such subsidiary's capital stock, from repaying to the Company any loans or advances to such subsidiary from the Company or from transferring any of such subsidiary's properties or assets to the Company or any other subsidiary of the Company;

nn) Neither the Company nor any of its subsidiaries is a party to any contract, agreement or understanding with any person (other than this Agreement) that would give rise to a valid claim against any of them or any Underwriter for a brokerage commission, finder's fee or like payment in connection with the offering and sale of the Shares;

oo) Neither the Company nor any of its subsidiaries has taken, directly or indirectly, any action designed to or that could reasonably be expected to cause or result in any stabilization or manipulation of the price of the Shares in violation of state or U.S. federal securities law;

pp) The application of the proceeds received by the Company from the issuance, sale and delivery of the Shares as described in the Prospectus will not violate Regulation T, U or X of the Board of Governors of the Federal Reserve System;

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qq) Any third-party statistical or market-related data included or incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus is based on or derived from sources that the Company believes to be reliable and accurate in all material respects, and nothing has come to the attention of the Company that has caused the Company to believe such sources are not reliable and accurate in all material respects;

rr) The operations of the Company and its subsidiaries are and have been conducted at all times in compliance with applicable financial recordkeeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the money laundering statutes of all jurisdictions where the Company conducts business including but not limited to, applicable federal, state, international, foreign or other laws, regulations or government guidance regarding anti-money laundering, including, without limitation, Title 18 U.S. Code section 1956 and 1957, the Patriot Act, the Bank Secrecy Act, and international anti-money laundering principles or procedures by an intergovernmental group or organization, such as the Financial Action Task Force on Money Laundering, of which the United States is a member and with which designation the United States representative to the group or organization continues to concur, all as amended, and any Executive order, directive, or regulation pursuant to the authority of any of the foregoing, or any orders or licenses issued thereunder (collectively, the “Money Laundering Laws”) and no action, suit or proceeding by or before any Governmental Authority involving the Company or any of its subsidiaries with respect to the Money Laundering Laws is pending or, to the Company’s knowledge, threatened;

ss) Neither the Company nor any of its subsidiaries, to the Company’s knowledge, any director, officer, agent, employee or affiliate of the Company or any of its subsidiaries is an individual or entity that is (i) currently the target of any U.S. sanctions administered or enforced by the Office of Foreign Assets Control of the U.S. Treasury Department, the U.S. Department of State, the United Nations Security Council, the European Union, Her Majesty’s Treasury or other relevant sanctions authority (collectively, “Sanctions”), (ii) owned or controlled by any person or entity that is the target of Sanctions, nor (iii) located, organized or resident in a country or territory that is the subject of Sanctions (including, without limitation, the Crimea Region of Ukraine, Cuba, Iran, North Korea, Sudan and Syria); the Company will not, directly or indirectly, use the proceeds of the offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other person or entity, (i) to fund or facilitate any activities of or business with any individual or entity, or in or with any country or territory, that, at the time of such funding or facilitation, is the target of Sanctions or (ii) in any other manner that will result in a violation by any individual or entity (including any individual or entity participating in the transaction, whether as underwriter, advisor, investor or otherwise) of Sanctions; the Company, its subsidiaries, and their respective directors, officers and employees are in compliance with Sanctions; and for the past five years, neither the Company nor any of its subsidiaries has knowingly engaged in, and is not now knowingly engaged in, any dealings or transactions with any individual or entity, or in any country or territory, that at the time of the dealing or transaction is or was the subject of Sanctions;

tt) The financial statements (including the related notes thereto) of the Company and its consolidated subsidiaries included or incorporated by reference in the General Disclosure Package and the Prospectus comply in all material respects with the applicable requirements of the Act and the Exchange Act, as applicable, and present fairly in all material respects the

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financial position of the Company and its consolidated subsidiaries as of the dates indicated and the results of their operations and the changes in their cash flows for the periods specified; such financial statements have been prepared in conformity with GAAP applied on a consistent basis throughout the periods covered thereby, and any supporting schedules included in the General Disclosure Package and the Prospectus present fairly the information required to be stated therein; and the other financial information included in the General Disclosure Package and the Prospectus, including all non-GAAP financial information (i) has been derived from the accounting records of the Company and its consolidated subsidiaries and presents fairly in all material respects the information shown thereby (ii) complies with the requirements of Regulation G and Item 10 of Regulation S-K under the Act; and, except as disclosed in the General Disclosure Package and the Prospectus, there are no material off-balance sheet arrangements (as defined in Regulation S-K under the Act, Item 303(a)(4)(ii)) or any other relationships with unconsolidated entities or other persons, that may have a material current or, to the Company's knowledge, material future effect on the Company's financial condition, results of operations, liquidity, capital expenditures, capital resources or significant components of revenue or expenses. No other financial statements or schedules are required to be included in the General Disclosure Package or the Prospectus;

uu) The documents incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus, when they were filed with the Commission, conformed in all material respects to the requirements of the Act or the Exchange Act, as applicable, and none of such documents contained any untrue statement of a material fact or omitted to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading;

vv) Except as disclosed in the Registration Statement, the General Disclosure Package and the Prospectus (i)(x) to the Company's knowledge, there has been no security breach, attack or other compromise of or relating to any of the Company's or any of its subsidiaries' information technology and computer systems, networks, hardware, software, data (including the data of their respective customers, employees, suppliers, vendors and any third party data maintained by or on behalf of them), equipment or technology (collectively, "IT Systems and Data") and (y) the Company and its subsidiaries have not been notified in writing of, and have no knowledge of any event or condition that would reasonably be expected to result in, any security breach or other compromise to their IT Systems and Data, except as would not, in the case of this clause (i), individually or in the aggregate, have a Material Adverse Effect; (ii) the Company and its subsidiaries have been in compliance with all applicable laws or statutes and all judgments, orders, rules and regulations of any Governmental Authority, internal policies and contractual obligations relating to (x) the privacy and security of IT Systems and Data, (y) the protection of such IT Systems and Data from unauthorized use, access, misappropriation or modification and (z) the collection, use, transfer, storage, disposal and disclosure by the Company and its subsidiaries of personally identifiable information and/or any other information collected from or provided by third parties, except as would not, in the case of this clause (ii), individually or in the aggregate, have a Material Adverse Effect; (iii) the Company and its subsidiaries have implemented commercially reasonable backup and disaster recovery and security plans, procedures and facilities for their respective businesses consistent with industry standards and practices; and (iv) the Company and its subsidiaries have taken commercially reasonable steps to protect the IT Systems and Data;

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ww) No forward-looking statement (within the meaning of Section 27A of the Act and 21E of the Exchange Act) included or incorporated by reference in any of the Registration Statement, the General Disclosure Package or the Prospectus has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith;

xx) The Company has not distributed and will not distribute any prospectus or other offering material in connection with the offering and sale of the Shares other than any Preliminary Prospectus, the General Disclosure Package or the Prospectus or other materials permitted by the Act to be distributed by the Company; provided, however, that, except as set forth on Schedule II, the Company has not made and will not make any offer relating to the Shares that would constitute a free writing prospectus, except in accordance with the provisions of Section 6(a) of this Agreement;

yy) The Stock is registered pursuant to Section 12(b) of the Exchange Act and is included or approved for listing on the Exchange and the Company has not taken any action designed to, or likely to have the effect of, terminating the registration of the Stock under the Exchange Act or delisting the Stock from the Exchange, and the Company has not received any notification that the Commission or the Exchange is contemplating terminating such registration or listing. The Company has complied in all material respects with the applicable requirements of the Exchange for maintenance of inclusion of Stock thereon. The Company has filed an application to include the Shares on the Exchange.

zz) The Company and each of its subsidiaries (A) is in compliance, in all material respects, with any and all applicable foreign, federal, state and local laws, rules, regulations, treaties, statutes and codes promulgated by any and all governmental authorities (including pursuant to the Occupational Health and Safety Act) relating to the protection of human health and safety in the workplace ("Occupational Laws"); (B) has received all material permits, licenses or other approvals required of it under applicable Occupational Laws to conduct its business as currently conducted; and (C) is in compliance, in all material respects, with all terms and conditions of any such permits, licenses or approvals. No action, proceeding, revocation proceeding, writ, injunction or claim is pending or, to the Company's knowledge, threatened against the Company or any of its subsidiaries relating to Occupational Laws, and the Company does not have knowledge of any facts, circumstances or developments relating to its operations or cost accounting practices that could reasonably be expected to form the basis for or give rise to such actions, suits, investigations or proceedings; and

aaa) Any certificate signed by any officer of the Company and delivered to you or to counsel for the Underwriters shall be deemed a representation and warranty by the Company to the Underwriters as to the matters covered thereby.

2. a) Subject to the terms and conditions, and on the basis of the representations, warranties, and covenants herein set forth (i) the Company agrees to issue and sell to each of the Underwriters, and each of the Underwriters agrees, severally and not jointly, to purchase from the Company, at a purchase price per share of \$7.755, the number of Firm Shares set forth opposite the name of such Underwriter in Schedule I hereto and (ii) in the event and to the extent that the Underwriters shall exercise the election to purchase Optional Shares as provided below, the Company agrees to issue and sell to each of the Underwriters, and each of the Underwriters

agrees, severally and not jointly, to purchase from the Company, at the purchase price per share set forth in clause (i) of this Section 2(a), that portion of the number of Optional Shares as to which such election shall have been exercised (to be adjusted by you so as to eliminate fractional shares) determined by multiplying such number of Optional Shares by a fraction, the numerator of which is the maximum number of Optional Shares which such Underwriter is entitled to purchase as set forth opposite the name of such Underwriter in Schedule I hereto and the denominator of which is the maximum number of Optional Shares that all of the Underwriters are entitled to purchase hereunder.

b) The Company hereby grants to the Underwriters the right to purchase at their election up to 255,000 Optional Shares, at the purchase price per share set forth in Section 2(a) above, for the sole purpose of covering sales of shares in excess of the number of Firm Shares, provided that the purchase price per Optional Share shall be reduced by an amount per share equal to any dividends or distributions declared by the Company and payable on the Firm Shares but not payable on the Optional Shares. Any such election to purchase Optional Shares may be exercised in whole or from time to time in part only by written notice from you to the Company, given within a period of 30 calendar days after the date of this Agreement, setting forth the aggregate number of Optional Shares to be purchased and the date on which such Optional Shares are to be delivered, as determined by you but in no event earlier than the First Time of Delivery (as defined in Section 4 hereof) or, unless you and the Company otherwise agree in writing, earlier than two or later than ten business days after the date of such notice.

3. Upon the authorization by you of the release of the Firm Shares, the several Underwriters propose to offer the Firm Shares for sale upon the terms and conditions set forth in the Prospectus.

4. a) The Shares to be purchased by each Underwriter hereunder, in definitive form, and in such authorized denominations and registered in such names as the Representative may request upon at least forty-eight hours' prior notice to the Company shall be delivered by or on behalf of the Company to the Representative, through the facilities of the Depository Trust Company ("DTC"), for the account of such Underwriter, against payment by or on behalf of such Underwriter of the purchase price therefor by wire transfer of Federal (same-day) funds to the account specified by the Company to the Representative at least forty-eight hours in advance. The Company will cause the certificates representing the Shares to be made available for checking and packaging at least twenty-four hours prior to the Time of Delivery (as defined below) with respect thereto at the office of DTC or its designated custodian (the "Designated Office"). The time and date of such delivery and payment shall be, with respect to the Firm Shares, 10:00 a.m. New York City time, on February 18, 2020 or such other time and date as the Representative and the Company may agree upon in writing, and, with respect to the Optional Shares, on the date specified by the Representative in the written notice given by the Representative of the Underwriters' election to purchase such Optional Shares, or such other time and date as the Representative and the Company may agree upon in writing. Such time and date for delivery of the Firm Shares is herein called the "First Time of Delivery", such time and date for delivery of the Optional Shares, if not the First Time of Delivery, is herein called an "Additional Time of Delivery", and each such time and date for delivery is herein called a "Time of Delivery".

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b) The documents to be delivered at each Time of Delivery by or on behalf of the parties hereto pursuant to Section 8 hereof, including the cross receipt for the Shares and any additional documents requested by the Underwriters pursuant to Section 8(m) hereof, will be delivered at the offices of Faegre Drinker Biddle & Reath LLP, 2200 Wells Fargo Center, 90 South Seventh Street, Minneapolis, Minnesota 55402 (the “Closing Location”), and the Shares will be delivered at the Designated Office, all at such Time of Delivery.

5. The Company covenants and agrees with each of the Underwriters:

a) To prepare the Prospectus in a form approved by you and to file such Prospectus pursuant to Rule 424(b) under the Act not later than the Commission’s close of business on the second business day following the execution and delivery of this Agreement; during the period beginning on the date hereof and ending on the later of the last Time of Delivery or such date, as in the opinion of counsel for the Underwriter, the Prospectus is no longer required by law to be delivered (assuming the absence of Rule 172 under the Act), in connection with the sales by the Underwriter or a dealer (the “Prospectus Delivery Period”) to make no further amendment or any supplement to the Registration Statement or the Prospectus which shall be reasonably disapproved by you promptly after reasonable notice thereof; to advise you, promptly after it receives notice thereof, of the time when any amendment to the Registration Statement has been filed or becomes effective or any amendment or supplement to the Prospectus has been filed and to furnish you with copies thereof; to file promptly all material required to be filed by the Company with the Commission pursuant to Rule 433(d) under the Act; to advise you, promptly after it receives notice thereof, of the issuance by the Commission of any stop order or of any order suspending the effectiveness of the Registration Statement or any post-effective amendment thereto or of any order preventing or suspending the use of any prospectus in respect of the Shares, of the suspension of the qualification of the Shares for offering or sale in any jurisdiction, of the initiation or threatening of any proceeding for any such purpose, of any request by the Commission for the amending or supplementing of the Registration Statement or the Prospectus or for additional information, or of any proceedings to remove, suspend or terminate from listing or quotation the Stock from the Exchange or any other securities exchange upon which it is listed for trading or included or designated for quotation, or of the threatening or initiation of any proceeding for any such purpose; and, in the event of the issuance of any stop order or of any order preventing or suspending the use of any prospectus or suspending any such qualification, to promptly use its best efforts to obtain the withdrawal of such order. Additionally, the Company agrees that it shall comply with the provisions of Rules 424(b) and 430B, as applicable, under the Act and will use its reasonable efforts to confirm that any filings made by the Company under Rule 424(b), Rule 433 or Rule 462 were received in a timely manner by the Commission (without reliance on Rule 424(b)(8) or Rule 164(b)).;

b) Promptly from time to time to take such action as you may reasonably request to qualify the Shares for offering and sale under the securities laws of such jurisdictions as you may request and to comply with such laws so as to permit the continuance of sales and dealings therein in such jurisdictions for as long as may be necessary to complete the distribution of the Shares, provided that in connection therewith the Company shall not be required to qualify as a foreign corporation or to file a general consent to service of process in any jurisdiction or to subject itself to taxation in any jurisdiction in which it was not otherwise subject to taxation;

c) Prior to 10:00 a.m., New York City time, on the business day next succeeding the date of this Agreement (or such later time as may be agreed to by the Company and the Representative on behalf of the Underwriters) and from time to time, to furnish the Underwriters with written and electronic copies of the Prospectus in New York City in such quantities as you may reasonably request, and, if the delivery of a prospectus (or in lieu thereof, the notice referred to in Rule 173(a) under the Act) is required at any time prior to the expiration of nine months after the time of issue of the Prospectus in connection with the offering or sale of the Shares and if at such time any event shall have occurred as a result of which the Prospectus as then amended or supplemented would include an untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made when such Prospectus (or in lieu thereof, the notice referred to in Rule 173(a) under the Act) is delivered, not misleading, or, if for any other reason it shall be necessary during such same period to amend or supplement the Prospectus in order to comply with the Act, to notify you and upon your request to prepare and furnish without charge to each Underwriter and to any dealer in securities as many written and electronic copies as you may from time to time reasonably request of an amended Prospectus or a supplement to the Prospectus which will correct such statement or omission or effect such compliance; and in case any Underwriter is required to deliver a prospectus (or in lieu thereof, the notice referred to in Rule 173(a) under the Act) in connection with sales of any of the Shares at any time nine months or more after the time of issue of the Prospectus, upon your request but at the expense of such Underwriter, to prepare and deliver to such Underwriter as many written and electronic copies as you may request of an amended or supplemented Prospectus complying with Section 10(a)(3) of the Act;

d) To make generally available to its securityholders as soon as practicable (which may be satisfied by filing with EDGAR), but in any event not later than fifteen months after the end of the Company's current fiscal quarter, an earnings statement of the Company and its subsidiaries (which need not be audited) covering a 12-month period and complying with Section 11(a) of the Act and the rules and regulations of the Commission thereunder (including, at the option of the Company, Rule 158);

e) During the period beginning from the date hereof and continuing to and including the date 90 days after the date of the Prospectus (the "Lock-Up Period"), not to (i) offer, sell, contract to sell, pledge, grant any option to purchase, make any short sale or otherwise transfer or dispose of, directly or indirectly, or file with the Commission a registration statement under the Act relating to, any securities of the Company that are substantially similar to the Shares, including but not limited to any options or warrants to purchase shares of Stock or any securities that are convertible into or exchangeable for, or that represent the right to receive, Stock or any such substantially similar securities, or publicly disclose the intention to make any offer, sale, pledge, disposition or filing or (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the Stock or any such other securities, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of Stock or such other securities, in cash or otherwise, without your prior written consent.

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The restrictions contained in the preceding paragraph shall not apply to (a) the Shares to be sold hereunder by the Company, (b) the issuance by the Company of shares of Stock upon the exercise of an option to purchase Stock or the settlement of a restricted stock unit, in each case, granted under the Plans referred to in the Prospectus, the grant of options to purchase Stock, restricted stock, restricted stock units and/or other equity incentive awards to employees, consultants, advisors, officers or directors of the Company under the Plans referred to in the Prospectus, or the issuance of shares of Stock upon the exercise of a warrant or the conversion or exchange of a security outstanding on the date hereof, (c) the filing by the Company of one or more registration statements on Form S-8 or a successor form thereto to register securities issuable by the Company upon the exercise of options or other awards granted by the Company in connection with the Company's equity incentive plans referred to in the Prospectus, or (d) the issuance of Shares in connection with an acquisition, joint venture, development agreement or license by the Company or one or more of its subsidiaries of or with the business, assets, securities or property of another person or entity, whether through merger, asset acquisition, stock purchase, license, joint venture or otherwise; *provided, however*, that in the case of clause (d) of this paragraph, the issuance of such shares of Stock by the Company be subject to the condition that each recipient of such shares has previously signed a lock-up agreement substantially to the effect set forth in Section 8(k) hereof for the remainder of the Lock-Up Period.

f) To furnish to its stockholders as soon as practicable after the end of each fiscal year an annual report (including a balance sheet and statements of income, stockholders' equity and cash flows of the Company and its consolidated subsidiaries certified by independent public accountants) and, as soon as practicable after the end of each of the first three quarters of each fiscal year, to make available to its stockholders consolidated summary financial information of the Company and its consolidated subsidiaries for such quarter in reasonable detail; *provided, however*, that the Company may satisfy the requirements of this section by making such reports or information available on its website or by electronically filing such information through EDGAR as long as such posting or filing complies with the Exchange Act;

g) During a period of three years from the effective date of the Registration Statement, to furnish or make available to you copies of all reports or other communications (financial or other) furnished to stockholders, and to deliver to you (i) as soon as they are available and upon your request, copies of any current, periodic or annual reports and financial statements furnished to or filed with the Commission or any national securities exchange on which any class of securities of the Company is listed, other than those reports and financial statements that are available through EDGAR (or any successor to such system); and (ii) such additional information concerning the business and financial condition of the Company as you may from time to time reasonably request (such financial statements to be on a consolidated basis to the extent the accounts of the Company and its subsidiaries are consolidated in reports furnished to its stockholders generally or to the Commission), *provided* that no such additional information shall be required except to the extent the disclosure of additional information would not result in a violation of Regulation FD (without requiring new disclosure to third parties in order to avoid violation of Regulation FD), *provided further* that the Company may satisfy the requirements of this paragraph by posting any such information on its website;

h) To use its best efforts to list, subject to notice of issuance, the Shares on the Exchange;

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i) To file with the Commission such information on Form 10-Q or Form 10-K as may be required by Rule 463 under the Act, and during the Prospectus Delivery Period, the Company will file on a timely basis with the Commission such periodic and special reports as required by the Act;

j) If the Company elects to rely upon Rule 462(b), the Company shall file a Rule 462(b) Registration Statement with the Commission in compliance with Rule 462(b) by 10:00 P.M., Washington, D.C. time, on the date of this Agreement, and the Company shall at the time of filing either pay to the Commission the filing fee for the Rule 462(b) Registration Statement or give irrevocable instructions for the payment of such fee pursuant to Rule 111(b) under the Act;

k) Upon request of any Underwriter, to furnish, or cause to be furnished, to such Underwriter an electronic version of the Company's trademarks, servicemarks and corporate logo for use on the website, if any, operated by such Underwriter for the purpose of facilitating the on-line offering of the Shares contemplated by this Agreement (the "License"); *provided, however*, that the License shall be used solely for the purpose described above, is granted without any fee and may not be assigned or transferred;

l) The Company has not taken, and will not take, directly or indirectly, any action designed to or that could reasonably be expected to cause or result in any stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares;

m) The Company shall take or cause to be taken all necessary action required by law to qualify the Shares for sale under the securities laws of such states or jurisdictions as you reasonably designate and to continue such qualifications in effect so long as required for the distribution of the Shares, except that the Company shall not be required in connection therewith to qualify as a foreign corporation or to execute a general consent to service of process in any state;

n) The Company will furnish, at its own expense, to the Underwriters and counsel for the Underwriters copies of the Registration Statement, and to the Underwriters and any dealer each preliminary prospectus, the General Disclosure Package, the Prospectus, any issuer free writing prospectus, and all amendments and supplements to such documents, in each case as soon as available and in such quantities as such Underwriters and counsel for the Underwriters may from time to time reasonably request;

o) During the Prospectus Delivery Period, the Company will comply with all requirements imposed upon it by the Act, as now and hereafter amended, and as from time to time in force, and by the Exchange Act so far as necessary to permit the continuance of sales of or dealings in the Shares as contemplated by the provisions hereof, the General Disclosure Package and the Prospectus. If during such period any event occurs as a result of which the Prospectus (or if the Prospectus is not yet available to prospective purchasers, the General Disclosure Package) would include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances then existing, not misleading, or if during such period it is necessary or appropriate in the opinion of

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the Company or its counsel or the Underwriter or counsel to the Underwriter to amend the Registration Statement or supplement the Prospectus (or, if the Prospectus is not yet available to prospective purchasers, the General Disclosure Package) to comply with the Act or to file under the Exchange Act any document which would be deemed to be incorporated by reference in the Prospectus (or if the Prospectus is not yet available to prospective purchasers, the General Disclosure Package) in order to comply with the Act or the Exchange Act, the Company promptly will (x) notify you of such untrue statement or omission, (y) amend the Registration Statement or supplement the Prospectus (or, if the Prospectus is not yet available to prospective purchasers, the General Disclosure Package) or file such document (at the expense of the Company) so as to correct such statement or omission or effect such compliance, and (z) notify you when any amendment to the Registration Statement is filed or becomes effective or when any supplement to the Prospectus (or, if the Prospectus is not yet available to prospective purchasers, the General Disclosure Package) is filed; and

p) During the Prospectus Delivery Period, the Company will comply with all applicable provisions of the Sarbanes-Oxley Act.

6. a) The Company represents and agrees that, without the prior consent of the Representative, it has not made and will not make any offer relating to the Shares that would constitute a “free writing prospectus” as defined in Rule 405 under the Act; each Underwriter represents and agrees that, without the prior consent of the Company and the Representative, it has not made and will not make any offer relating to the Shares that would constitute a free writing prospectus; any such free writing prospectus the use of which has been consented to by the Company and the Representative is listed on Schedule II hereto;

b) The Company has complied and will comply with the requirements of Rule 433 under the Act applicable to any Issuer Free Writing Prospectus, including timely filing with the Commission or retention where required and legending; and the Company represents that it has satisfied and agrees that it will satisfy the conditions under Rule 433 under the Act to avoid a requirement to file with the Commission any electronic road show; and

c) The Company agrees that if at any time following issuance of an Issuer Free Writing Prospectus any event occurred or occurs as a result of which such Issuer Free Writing Prospectus would conflict with the information in the Registration Statement, the General Disclosure Package or the Prospectus or would include an untrue statement of a material fact or omit to state any material fact necessary in order to make the statements therein, in the light of the circumstances then prevailing, not misleading, the Company will give prompt notice thereof to the Representative and, if requested by the Representative, will prepare and furnish without charge to each Underwriter an Issuer Free Writing Prospectus or other document which will correct such conflict, statement or omission; *provided, however*, that this representation and warranty shall not apply to any statements or omissions in an Issuer Free Writing Prospectus made in reliance upon and in conformity with information furnished in writing to the Company by an Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 9(b) hereof.

7. The Company, whether or not the transactions contemplated hereunder are consummated or this Agreement is terminated, will pay or cause to be paid (A) all expenses (including transfer taxes allocated to the respective transferees) incurred in connection with the delivery to the Underwriters of the Shares, (B) all expenses and fees (including, without limitation, fees and expenses of the Company's accountants and counsel but, except as otherwise provided below, not including fees of the Underwriters' counsel) in connection with the preparation, printing, filing, delivery, and shipping of the Registration Statement (including the financial statements therein and all amendments, schedules, and exhibits thereto), the Shares, each Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, any issuer free writing prospectus and any amendment thereof or supplement thereto, and the printing, delivery, and shipping of this Agreement and other underwriting documents, including Blue Sky Memoranda (covering the states and other applicable jurisdictions), (C) all filing fees incurred in connection with the qualification of the Shares for offering and sale by the Underwriters or by dealers under the securities or blue sky laws of the states and other jurisdictions which you shall designate, (D) the fees and expenses of the transfer agent or registrar, (E) the filing fees incident to any required review and approval by FINRA of the terms of the sale of the Shares, (F) listing fees, if any, (G) the costs and expenses of the Company relating to investor presentations or any "roadshow" undertaken in connection with marketing of the Shares, (H) all reasonable, out-of-pocket, accountable expenses of the Underwriters (including but not limited to reasonable fees and disbursements of the Underwriters' counsel and the Underwriters' reasonable travel, database, printing, postage, facsimile and telephone expenses) incurred in connection with the Underwriters' investigation of the Company, preparing to market and marketing the Shares, sale of the Shares or in contemplation of performing its obligations hereunder, which amount will not exceed \$125,000 in the aggregate, and (I) all other costs and expenses of the Company incident to the performance of its obligations hereunder that are not otherwise specifically provided for herein.

8. The obligations of the Underwriters hereunder, as to the Shares to be delivered at each Time of Delivery, shall be subject, in their discretion, to the condition that all representations and warranties and other statements of the Company herein are, at and as of such Time of Delivery, true and correct, the condition that the Company shall have performed all of its obligations hereunder theretofore to be performed, and the following additional conditions:

a) The Prospectus shall have been filed with the Commission pursuant to Rule 424(b) under the Act within the applicable time period prescribed for such filing by the rules and regulations under the Act and in accordance with Section 5(a) hereof; all material required to be filed by the Company pursuant to Rule 433(d) under the Act shall have been filed with the Commission within the applicable time period prescribed for such filing by Rule 433; if the Company has elected to rely upon Rule 462(b) under the Act, the Rule 462(b) Registration Statement shall have become effective by 10:00 P.M., Washington, D.C. time, on the date of this Agreement; no stop order suspending the effectiveness of the Registration Statement or any part thereof shall have been issued and no proceeding for that purpose shall have been initiated or threatened by the Commission; no stop order suspending or preventing the use of the Prospectus or any Issuer Free Writing Prospectus shall have been initiated or threatened by the Commission; and all requests for additional information on the part of the Commission shall have been complied with to your reasonable satisfaction;

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b) Faegre Drinker Biddle & Reath LLP, counsel for the Underwriters, shall have furnished to you such written opinion and negative assurance letter in form and substance satisfactory to you, dated such Time of Delivery;

c) Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel for the Company, shall have furnished to you their written opinion and negative assurance letter in form and substance satisfactory to you, dated such Time of Delivery;

d) The Chief Legal Counsel of the Company shall have furnished to you a certificate regarding intellectual property statements contained in the Registration Statement, the General Disclosure Package and the Prospectus in form and substance satisfactory to you, dated as of the Time of Delivery;

e) On the date of the Prospectus at a time prior to the execution of this Agreement and at each Time of Delivery, KPMG LLP shall have furnished to you a letter or letters, dated the respective dates of delivery thereof, in form and substance satisfactory to you;

f) You shall not have advised the Company that (i) the Registration Statement or any amendment thereof or supplement thereto contains an untrue statement of a material fact which, in your opinion, is material or omits to state a material fact which, in your opinion, is required to be stated therein or necessary to make the statements therein not misleading, or (ii) the General Disclosure Package or the Prospectus, or any amendment thereof or supplement thereto, or any issuer free writing prospectus contains an untrue statement of fact which, in your opinion, is material, or omits to state a fact which, in your opinion, is material and is required to be stated therein, or necessary to make the statements therein, in light of the circumstances under which they are made, not misleading.

g) Since the date of the latest audited financial statements included or incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus, except in each case as otherwise disclosed in the Registration Statement, the General Disclosure Package and the Prospectus, (i) neither the Company nor any of its subsidiaries shall have sustained any loss or interference with its business that is material to the Company and its subsidiaries taken as a whole and that is from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental or regulatory action, order or decree; (ii) there shall not have been any material change in the capital stock, short-term debt or long-term debt of the Company or any of its subsidiaries, taken as a whole (other than borrowings, if any, under the revolving credit facility described in the Registration Statement, General Disclosure Package and the Prospectus or capital leases, if any, in the ordinary course of business), or any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock (other than payments of cash in lieu of fractional shares), or any change, or any development involving a prospective change, in or affecting the business, properties, management, financial position, stockholders' equity, results of operations or prospects of the Company and its subsidiaries, taken as a whole; and (iii) neither the Company nor any of its subsidiaries has entered into any transaction or agreement (other than purchase orders) or incurred any liability or obligation, direct or contingent, the effect of which, in any such case described in clause (i), (ii) or (iii), is in your judgment so material and adverse as to make it impracticable or inadvisable to proceed with the public offering, sale or the delivery of the Shares being delivered at such Time of Delivery on the terms and in the manner contemplated by this Agreement, the General Disclosure Package and the Prospectus;

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h) On or after the Applicable Time (i) no downgrading shall have occurred in the rating accorded the Company's debt securities or preferred stock by any "nationally recognized statistical rating organization", as that term is defined by the Commission for purposes of Rule 436(g)(2) under the Act, and (ii) no such organization shall have publicly announced that it has under surveillance or review, with possible negative implications, its rating of any of the Company's debt securities or preferred stock;

i) On or after the Applicable Time there shall not have occurred any of the following: (i) a suspension or material limitation in trading in securities generally on the Exchange or on The Nasdaq Stock Market LLC; (ii) a suspension or material limitation in trading in the Company's securities on the Exchange; (iii) a general moratorium on commercial banking activities declared by either Federal or New York State authorities or a material disruption in commercial banking or securities settlement or clearance services in the United States; (iv) the outbreak or escalation of hostilities involving the United States or the declaration by the United States of a national emergency or war or (v) the occurrence of any other calamity or crisis or any change in financial, political or economic conditions in the United States or elsewhere, if the effect of any such event specified in clause (iv) or (v) in your judgment makes it impracticable or inadvisable to proceed with the public offering or the delivery of the Shares being delivered at such Time of Delivery on the terms and in the manner contemplated in the Prospectus;

j) The Shares to be sold at such Time of Delivery shall have been duly listed, subject to notice of issuance, on the Exchange;

k) The Company shall have obtained and delivered to the Underwriters executed copies of a lock-up agreement from each of the persons listed on Schedule IV hereto, substantially in the form set forth in Annex I attached hereto;

l) The Company shall have complied with the provisions of Section 5(c) hereof with respect to the furnishing of prospectuses on the business day next succeeding the date of this Agreement;

m) The Company shall have furnished or caused to be furnished to you at such Time of Delivery certificates of officers of the Company reasonably satisfactory to you as to the accuracy of the representations and warranties of the Company herein at and as of such Time of Delivery, as to the performance by the Company of all of its obligations hereunder to be performed at or prior to such Time of Delivery, as to the matters set forth in subsections (a), (f), and (g) of this Section, and as to such other matters as you may reasonably request;

n) The Company shall have furnished or caused to be furnished to you on the date of the Prospectus at a time prior to the execution of this Agreement and at each Time of Delivery a certificate of the Chief Financial Officer of the Company certifying certain financial information included or incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus;

o) The Company shall have furnished or caused to be furnished to you at such Time of Delivery a certificate of the Secretary of the Company reasonably satisfactory to you certifying the Company's charter and bylaws and certain resolutions of the board of directors and committees thereof, and as to such other matters as you may reasonably request;

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p) FINRA shall have raised no objection to the fairness and reasonableness of the underwriting terms and arrangements;

q) The Representative shall have received on and as of such Time of Delivery satisfactory evidence of the good standing of the Company and its subsidiaries in their respective jurisdictions of organization and their good standing as foreign entities in such other jurisdictions as the Representative may reasonably request, in each case in writing or any standard form of telecommunication from the appropriate governmental authorities of such jurisdictions; and

r) The Company shall have furnished to you and counsel for the Underwriters such additional documents, certificates and evidence as you or they may have reasonably requested.

9. a) The Company will indemnify and hold harmless each Underwriter and any affiliate thereof that assists such Underwriter in the distribution of the Shares, and each of their respective directors, officers and employees and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Act or Section 20 of the Exchange Act, against any losses, claims, damages or liabilities, joint or several, to which such Underwriter may become subject, under the Act or otherwise (including in settlement of any litigation if such settlement is effected with the written consent of the Company), insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, including the 430B Information and any other information deemed to be a part of the Registration Statement at the time of effectiveness and at any subsequent time pursuant to the Act, if applicable, any Preliminary Prospectus, the General Disclosure Package or the Prospectus, or any amendment or supplement thereto, any Issuer Free Writing Prospectus, any "issuer information" filed or required to be filed pursuant to Rule 433(d) under the Act, or any materials or information provided to investors by, or with the approval of, the Company in connection with the marketing of the offering of the Shares, including any "road show" (as defined in Rule 433 under the Act) not constituting an Issuer Free Writing Prospectus, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, and will reimburse each Underwriter for any legal or other expenses reasonably incurred by such Underwriter in connection with investigating or defending any such action or claim as such expenses are incurred; provided, however, that the Company shall not be liable in any such case to the extent that any such loss, claim, damage or liability arises out of or is based upon an untrue statement or alleged untrue statement or omission or alleged omission made in the Registration Statement, any Preliminary Prospectus, the General Disclosure Package or the Prospectus, or any amendment or supplement thereto, or any Issuer Free Writing Prospectus, in reliance upon and in conformity with written information furnished to the Company by any Underwriter through the Representative expressly for use therein, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in subsection (b) below.

b) Each Underwriter will indemnify and hold harmless the Company, its directors (including any person who, with his or her consent, is named in the Registration Statement as about to become a director of the Company), officers and employees, and each person, if any, who controls the Company within the meaning of Section 15 of the Act or Section 20 of the Exchange Act, against any losses, claims, damages or liabilities to which the Company may become subject, under the Act or otherwise, insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, any Preliminary Prospectus, the General Disclosure Package or the Prospectus, or any amendment or supplement thereto, or any Issuer Free Writing Prospectus, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was made in the Registration Statement, any Preliminary Prospectus, the General Disclosure Package or the Prospectus, or any amendment or supplement thereto, or any Issuer Free Writing Prospectus, in reliance upon and in conformity with written information furnished to the Company by such Underwriter through the Representative expressly for use therein; and will reimburse the Company for any legal or other expenses reasonably incurred by the Company in connection with investigating or defending any such action or claim as such expenses are incurred, it being understood and agreed upon that the only such information furnished by any Underwriter consists of the following information in the Prospectus furnished on behalf of each Underwriter: the second paragraph under the caption "Underwriting."

c) Promptly after receipt by an indemnified party under subsection (a) or (b) above of notice of the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such subsection, notify the indemnifying party in writing of the commencement thereof; but the omission so to notify the indemnifying party shall not relieve it from any liability which it may have to any indemnified party except to the extent such indemnifying party has been materially prejudiced by such failure (through the forfeiture of substantive rights or defenses). In case any such action shall be brought against any indemnified party and it shall notify the indemnifying party of the commencement thereof, the indemnifying party shall be entitled to participate therein and, to the extent that it shall wish, jointly with any other indemnifying party similarly notified, to assume the defense thereof, with counsel satisfactory to such indemnified party (who shall not, except with the consent of the indemnified party, be counsel to the indemnifying party), and, after notice from the indemnifying party to such indemnified party of its election so to assume the defense thereof, the indemnifying party shall not be liable to such indemnified party under such subsection for any legal expenses of other counsel or any other expenses, in each case subsequently incurred by such indemnified party, in connection with the defense thereof other than reasonable costs of investigation. No indemnifying party shall, without the written consent of the indemnified party, effect the settlement or compromise of, or consent to the entry of any judgment with respect to, any pending or threatened action or claim in respect of which indemnification or contribution may be sought hereunder (whether or not the indemnified party is an actual or potential party to such action or claim) unless such settlement, compromise or judgment (i) includes an unconditional release of the indemnified party from all liability arising out of such action or claim and (ii) does not include a statement as to or an admission of fault, culpability or a failure to act, by or on behalf of any indemnified party. Notwithstanding the foregoing, if at any time an indemnified party shall have requested in writing an indemnifying party to reimburse the

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indemnified party for fees and expenses of counsel as contemplated by Sections 9(a) or 9(b) hereof, the indemnifying party agrees that it shall be liable for any settlement of any proceeding effected without its written consent if (i) such settlement is entered into more than 45 days after receipt by such indemnifying party of the aforesaid written request and (ii) such indemnifying party shall not have reimbursed the indemnified party in accordance with such written request or disputed in good faith the indemnified party's entitlement to such reimbursement prior to the date of such settlement.

d) If the indemnification provided for in this Section 9 is unavailable to or insufficient to hold harmless an indemnified party under subsection (a) or (b) above in respect of any losses, claims, damages or liabilities (or actions in respect thereof) referred to therein, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party as a result of such losses, claims, damages or liabilities (or actions in respect thereof) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Shares. If, however, the allocation provided by the immediately preceding sentence is not permitted by applicable law or if the indemnified party failed to give the notice required under subsection (c) above, then each indemnifying party shall contribute to such amount paid or payable by such indemnified party in such proportion as is appropriate to reflect not only such relative benefits but also the relative fault of the Company on the one hand and the Underwriters on the other in connection with the statements or omissions which resulted in such losses, claims, damages or liabilities (or actions in respect thereof), as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other shall be deemed to be in the same proportion as the total net proceeds from the offering (before deducting expenses) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters with respect to the offering of the Shares hereunder, in each case as set forth in the table on the cover page of the Prospectus. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company on the one hand or the Underwriters on the other and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contribution pursuant to this subsection (d) were determined by *pro rata* allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take account of the equitable considerations referred to above in this subsection (d). The amount paid or payable by an indemnified party as a result of the losses, claims, damages or liabilities (or actions in respect thereof) referred to above in this subsection (d) shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending any such action or claim. Notwithstanding the provisions of this subsection (d), no Underwriter shall be required to contribute any amount in excess of the amount by which the total underwriting discounts and commissions received by such Underwriter with respect to the offering of the Shares exceeds the amount of any damages that such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission.

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No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligations in this subsection (d) to contribute are several in proportion to their respective underwriting obligations and not joint.

e) The obligations of the Company under this Section 9 shall be in addition to any liability which the Company may otherwise have and shall extend, upon the same terms and conditions, to each person, if any, who controls any Underwriter within the meaning of the Act and each broker-dealer affiliate of any Underwriter; and the obligations of the Underwriters under this Section 9 shall be in addition to any liability which the respective Underwriters may otherwise have and shall extend, upon the same terms and conditions, to each officer and director of the Company (including any person who, with his or her consent, is named in the Registration Statement as about to become a director of the Company) and to each person, if any, who controls the Company within the meaning of the Act.

f) a) You shall have the right to terminate this Agreement by giving notice to the Company as hereinafter specified at any time at or prior to the First Time of Delivery, and the option referred to in Section 2(b), if exercised, may be cancelled at any time prior to any Additional Time of Delivery, if (i) the Company shall have failed, refused or been unable, at or prior to such Time of Delivery, to perform any agreement on its part to be performed hereunder, (ii) any condition of the Underwriters' obligations hereunder is not fulfilled, (iii) trading in the Stock shall have been suspended by the Commission or the Exchange or trading in securities generally on the NYSE American, the Nasdaq Stock Market or the Exchange shall have been suspended, (iv) minimum or maximum prices for trading shall have been fixed, or maximum ranges for prices for securities shall have been required, on the NYSE American, the Nasdaq Stock Market or the Exchange, by such exchange or by order of the Commission or any other Governmental Authority having jurisdiction, (v) a banking moratorium shall have been declared by federal or New York state authorities or a material disruption in commercial banking or securities settlement or clearance services in the United States, or (vi) there shall have occurred any attack on, outbreak or escalation of hostilities or act of terrorism involving the United States, any declaration by the United States of a national emergency or war, any material adverse change in financial markets, any substantial change or development involving a prospective substantial change in United States or international political, financial or economic conditions, or any other calamity or crisis that, in your judgment, is material and adverse and makes it impractical or inadvisable to proceed with the completion of the sale of and payment for the Shares.

b) If you elect to terminate this Agreement as provided in this Section, the Company shall be notified promptly by you by telephone, confirmed by letter.

c) No party shall be relieved of any liability under this Agreement arising from any breach of its obligations hereunder occurring prior to termination of this Agreement as a result of the termination of this Agreement.

10. a) If any Underwriter shall default in its obligation to purchase the Shares which it has agreed to purchase hereunder at a Time of Delivery, you may in your discretion arrange for you or another party or other parties to purchase such Shares on the terms contained herein. If within thirty-six hours after such default by any Underwriter you do not arrange for the purchase of such Shares, then the Company shall be entitled to a further period of thirty-six hours within which to procure another party or other parties satisfactory to you to purchase such Shares on such terms. In the event that, within the respective prescribed periods, you notify the Company that you have so arranged for the purchase of such Shares, or the Company notifies you that it has so arranged for the purchase of such Shares, you or the Company shall have the right to postpone such Time of Delivery for a period of not more than seven days, in order to effect whatever changes may thereby be made necessary in the Registration Statement or the Prospectus, or in any other documents or arrangements, and the Company agrees to file promptly any amendments to the Registration Statement or amendments or supplements to the Prospectus, in each case, which in your reasonable opinion may thereby be made necessary. The term "Underwriter" as used in this Agreement shall include any person substituted under this Section with like effect as if such person had originally been a party to this Agreement with respect to such Shares.

b) If, after giving effect to any arrangements for the purchase of the Shares of a defaulting Underwriter or Underwriters by you and the Company as provided in subsection (a) above, the aggregate number of such Shares which remains unpurchased does not exceed one-eleventh of the aggregate number of all the Shares to be purchased at such Time of Delivery, then the Company shall have the right to require each non-defaulting Underwriter to purchase the number of shares which such Underwriter agreed to purchase hereunder at such Time of Delivery and, in addition, to require each non-defaulting Underwriter to purchase its pro rata share (based on the number of Shares which such Underwriter agreed to purchase hereunder) of the Shares of such defaulting Underwriter or Underwriters for which such arrangements have not been made; but nothing herein shall relieve a defaulting Underwriter from liability for its default.

c) If, after giving effect to any arrangements for the purchase of the Shares of a defaulting Underwriter or Underwriters by you and the Company as provided in subsection (a) above, the aggregate number of such Shares which remains unpurchased exceeds one-eleventh of the aggregate number of all the Shares to be purchased at such Time of Delivery, or if the Company shall not exercise the right described in subsection (b) above to require non-defaulting Underwriters to purchase Shares of a defaulting Underwriter or Underwriters, then this Agreement (or, with respect to an Additional Time of Delivery, the obligations of the Underwriters to purchase and of the Company to sell the Optional Shares) shall thereupon terminate, without liability on the part of any non-defaulting Underwriter or the Company, except for the expenses to be borne by the Company and the Underwriters as provided in Section 7 hereof and the indemnity and contribution agreements in Section 9 hereof; but nothing herein shall relieve a defaulting Underwriter from liability for its default.

11. The respective indemnities, agreements, representations, warranties and other statements of the Company and the several Underwriters, as set forth in this Agreement or made by or on behalf of them, respectively, pursuant to this Agreement or in certificates delivered pursuant hereto, shall remain in full force and effect, regardless of any investigation (or any statement as to the results thereof) made by or on behalf of any Underwriter or any controlling person of any Underwriter, or the Company, or any officer or director or controlling person of the Company, and shall survive delivery of and payment for the Shares to and by the Underwriters hereunder and any termination of this Agreement.

12. If this Agreement shall be terminated pursuant to Section 10 hereof, the Company shall not then be under any liability to any Underwriter except as provided in Sections 7 and 9 hereof; but, if for any other reason, any Shares are not delivered by or on behalf of the Company as provided herein (including for a failure to meet the conditions precedent in Section 8 hereof), the Company will reimburse the Underwriters through you for all out-of-pocket expenses approved in writing by you, including fees and disbursements of counsel, reasonably incurred by the Underwriters in making preparations for the purchase, sale and delivery of the Shares not so delivered, but the Company shall then be under no further liability to any Underwriter except as provided in Sections 7 and 9 hereof; *provided* that Sections 1, 9 and 11 shall survive such termination and remain in full force and effect.

13. The Company acknowledges that the Underwriters' research analysts and research departments are required to be independent from their respective investment banking divisions and are subject to certain regulations and internal policies, and that such Underwriters' research analysts may hold views and make statements or investment recommendations and/or publish research reports with respect to the Company and/or the offering that differ from the views of their respective investment banking divisions. The Company hereby waives and releases, to the fullest extent permitted by law, any claims that the Company may have against the Underwriters with respect to any conflict of interest that may arise from the fact that the views expressed by their independent research analysts and research departments may be different from or inconsistent with the views or advice communicated to the Company by such Underwriters' investment banking divisions. The Company acknowledges that each of the Underwriters is a full service securities firm and as such from time to time, subject to applicable securities laws, may effect transactions for its own account or the account of its customers and hold long or short positions in debt or equity securities of the companies that may be the subject of the transactions contemplated by this Agreement.

14. a) In all dealings hereunder, you shall act on behalf of each of the Underwriters, and the parties hereto shall be entitled to act and rely upon any statement, request, notice or agreement on behalf of any Underwriter made or given by you as the Representative.

b) All statements, requests, notices and agreements hereunder shall be in writing, and if to the Underwriters shall be delivered or sent by mail, telex or facsimile transmission to you as the Representative at Craig-Hallum Capital Group LLC, 222 South Ninth Street, Suite 350, Minneapolis, Minnesota 55402, Attention: General Counsel, with a copy to (which shall not constitute notice) Faegre Drinker Biddle & Reath LLP, 2200 Wells Fargo Center, 90 South Seventh Street, Minneapolis, Minnesota 55402, Attention: Jonathan R. Zimmerman; and if to the Company shall be delivered or sent by mail, telex or facsimile transmission to the address of the Company set forth in the Registration Statement, Attention: Secretary, with a copy (which shall not constitute notice) to Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, MA 02111, Attention: Sahir Surmeli and John T. Rudy (fax number 617-542-2241); or in each case to such other address as the person to be notified may have requested in writing. Any such statements, requests, notices or agreements shall take effect upon receipt thereof. Any party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of a new address for such purpose.

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c) In accordance with the requirements of the USA Patriot Act (Title III of Pub. L. 107-56 (signed into law October 26, 2001)), the Underwriters are required to obtain, verify and record information that identifies their respective clients, including the Company, which information may include the name and address of their respective clients, as well as other information that will allow the Underwriters to properly identify their respective clients.

15. This Agreement shall be binding upon, and inure solely to the benefit of, the Underwriters, the Company and, to the extent provided in Sections 9 and 11 hereof, the officers and directors of the Company and each person who controls the Company or any Underwriter, and their respective heirs, executors, administrators, successors and assigns, and no other person, entity, or firm shall acquire or have any right under or by virtue of this Agreement. No purchaser of any of the Shares from any Underwriter shall be deemed a successor or assign by reason merely of such purchase.

16. Time shall be of the essence of this Agreement. As used herein, the term “business day” shall mean any day when the Commission’s office in Washington, D.C. is open for business.

17. The Company acknowledges and agrees that (i) the purchase and sale of the Shares, the price, and the other terms of the Shares set forth in this Agreement is an arm’s-length commercial transaction between the Company, on the one hand, and the several Underwriters, on the other, and the Company is capable evaluating and understanding, and understands and accepts the terms, risks, and conditions of the transactions contemplated by this Agreement, (ii) in connection therewith and with the process leading to such transaction each Underwriter is acting solely as a principal and not the agent or fiduciary of the Company, (iii) no Underwriter has assumed an advisory or fiduciary responsibility in favor of the Company with respect to the offering contemplated hereby or the process leading thereto (irrespective of whether such Underwriter has advised or is currently advising the Company on other matters) or any other obligation to the Company except the obligations expressly set forth in this Agreement, (iv) the Company has been advised that the Underwriters and their affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that the Underwriters have no obligation to disclose such interest and transactions to the Company by virtue of any fiduciary, advisory or agency relationship, (v) the Company has been advised that each Underwriter is acting, in respect of the transactions contemplated by this Agreement, solely for the benefit of such Underwriter, and not on behalf of the Company, (vi) the Company has consulted its own legal and financial advisors to the extent it deemed appropriate. The Company agrees that it will not claim that the Underwriters, or any of them, has rendered advisory services of any nature or respect, or owes a fiduciary or similar duty to the Company, in connection with such transaction or the process leading thereto, and waives to the fullest extent permitted by law,.

18. This Agreement supersedes all prior agreements and understandings (whether written or oral) between the Company and the Underwriters, or any of them, with respect to the subject matter hereof including that certain engagement letter dated February 6, 2020, by and between the Company and the Representative, except as to the provisions contained in Sections 5, 10, and 15 thereto that shall survive and remain in full force and effect.

**19. THIS AGREEMENT AND ANY MATTERS RELATED TO THIS TRANSACTION SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK. THE COMPANY AGREES THAT ANY SUIT OR PROCEEDING ARISING IN RESPECT OF THIS AGREEMENT OR OUR ENGAGEMENT WILL BE TRIED EXCLUSIVELY IN THE U.S. DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK OR, IF THAT COURT DOES NOT HAVE SUBJECT MATTER JURISDICTION, IN ANY STATE COURT LOCATED IN THE CITY AND COUNTY OF NEW YORK AND THE COMPANY AGREES TO SUBMIT TO THE JURISDICTION OF, AND TO VENUE IN, SUCH COURTS.**

20. The Company and each of the Underwriters hereby irrevocably waives, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Agreement or the transactions contemplated hereby.

21. This Agreement may be executed by any one or more of the parties hereto in any number of counterparts, each of which shall be deemed to be an original, but all such counterparts shall together constitute one and the same instrument.

22. Notwithstanding anything herein to the contrary, the Company is authorized to disclose to any persons the U.S. federal and state income tax treatment and tax structure of the potential transaction and all materials of any kind (including tax opinions and other tax analyses) provided to the Company relating to that treatment and structure, without the Underwriters imposing any limitation of any kind. However, any information relating to the tax treatment and tax structure shall remain confidential (and the foregoing sentence shall not apply) to the extent necessary to enable any person to comply with securities laws. For this purpose, "tax structure" is limited to any facts that may be relevant to that treatment.

23. This Agreement may not be amended or modified unless in writing by all of the parties hereto, and no condition herein (express or implied) may be waived unless waived in writing by each party whom the condition is meant to benefit. The invalidity or unenforceability of any Section, paragraph or provision of this Agreement shall not affect the validity or enforceability of any other Section, paragraph or provision hereof. If any Section, paragraph or provision of this Agreement is for any reason determined to be invalid or unenforceable, there shall be deemed to be made such minor changes (and only such minor changes) as are necessary to make it valid and enforceable.

*[Remainder of page intentionally left blank. Signature page follows.]*

If the foregoing is in accordance with your understanding, please sign and return to us a counterpart hereof, and upon the acceptance hereof by you, on behalf of each of the Underwriters, this letter and such acceptance hereof shall constitute a binding agreement among each of the Underwriters and the Company. It is understood that your acceptance of this letter on behalf of each of the Underwriters is pursuant to the authority set forth in a form of Agreement among Underwriters, the form of which shall be submitted to the Company for examination upon request, but without warranty on your part as to the authority of the signers thereof.

Very truly yours,

**Aspen Aerogels, Inc.**

By: /s/ John F. Fairbanks

Name: John F. Fairbanks

Title: Vice President, Chief Financial Officer and  
Treasurer

Accepted as of the date hereof:

**Craig-Hallum Capital Group LLC**

By: /s/ Rick Hartfiel

Name: Rick Hartfiel

Title: Head of Investment Banking

On behalf of itself and each of the several Underwriters

*Signature Page to Underwriting Agreement*

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**SCHEDULE I**

**Underwriters**

<u>Underwriter</u>	<u>Total Number of Firm Shares to be Purchased</u>
Craig-Hallum Capital Group LLC	1,700,000
Total	<u>1,700,000</u>

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**SCHEDULE II**  
**Issuer Free Writing Prospectuses**

None.

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**SCHEDULE III**  
**Pricing Information**

Number of Firm Shares: 1,700,000

Number of Optional Shares: 255,000

Public Offering Price per Share: \$ 8.25

Underwriting Discount: 6.0%

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**SCHEDULE IV**

**Persons Subject to the Lock-Up Period Pursuant to Lock-up Agreements**

Donald R. Young

Rebecca A. Blalock

Robert M. Gervis

Steven R. Mitchell

Mark L. Noetzel

William P. Noglows

Richard F. Reilly

Kelley W. Conte

John F. Fairbanks

George L. Gould, Ph.D.

Corby C. Whitaker

Gregg R. Landes



February 13, 2020

Aspen Aerogels, Inc.  
30 Forbes Road, Building B  
Northborough, MA 01532

Ladies and Gentlemen:

This opinion is furnished to you in connection with a Prospectus Supplement, dated February 13, 2020, to a Prospectus dated September 18, 2018 (the “**Prospectus and Prospectus Supplement**”), filed pursuant to a Registration Statement on Form S-3, Registration No. 333-227158 (the “**Registration Statement**”), filed by Aspen Aerogels, Inc., a Delaware corporation (the “**Company**”), with the Securities and Exchange Commission (the “**Commission**”) under the Securities Act of 1933, as amended (the “**Securities Act**”), with respect to an aggregate of 1,955,000 shares (the “**Shares**”) of its common stock, \$0.00001 par value per share (the “**Common Stock**”), which includes 255,000 shares of Common Stock that may be sold pursuant to the exercise of an option to purchase additional shares. The Shares are to be sold pursuant to an Underwriting Agreement (the “**Underwriting Agreement**”) dated February 13, 2020 by and between the Company and Craig-Hallum Capital Group LLC, as representative of the underwriters listed in Schedule I thereto, which will be filed as an exhibit to a Current Report on Form 8-K and incorporated by reference into the Registration Statement. All capitalized terms used herein and not otherwise defined shall have the respective meanings given to them in the Registration Statement.

In connection with this opinion, we have examined originals or copies, certified or otherwise identified to our satisfaction, of: (i) the Restated Certificate of Incorporation of the Company; (ii) the Restated Bylaws of the Company, as amended through the date hereof; (iii) certain resolutions of the Board of Directors of the Company (the “**Board**”) relating to the issuance, sale and registration of the Shares; (iv) the Registration Statement, together with the exhibits thereto filed with the Commission; (v) the Underwriting Agreement; and (vi) the Prospectus and Prospectus Supplement. In addition, we have examined originals or copies, certified or otherwise identified to our satisfaction, of certain other corporate records, documents, instruments and certificates of public officials and of the Company, and we have made such inquiries of officers of the Company and public officials and considered such questions of law as we have deemed necessary for purposes of rendering the opinions set forth herein. Our opinions are limited to the matters stated herein and no opinion is implied or may be inferred beyond the matters expressly stated. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not sought to independently verify such matters.

In our examination, we have assumed the genuineness of all signatures, the legal capacity of natural persons, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified or photostatic copies and the authenticity of the originals of such copies.

Our opinion is limited to the General Corporation Law of the State of Delaware and we express no opinion with respect to the laws of any other jurisdiction. No opinion is expressed herein with respect to the qualification of the Shares under the securities or blue sky laws of any state or any foreign jurisdiction.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

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BOSTON      LONDON      LOS ANGELES      NEW YORK      SAN DIEGO      SAN FRANCISCO      WASHINGTON

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C.



Based upon the foregoing, we are of the opinion that the Shares have been authorized for issuance and, when the Shares are issued and paid for in accordance with the Underwriting Agreement, the Shares will be validly issued, fully paid and non-assessable.

We understand that you wish to file this opinion with the Commission as an exhibit to a Current Report on Form 8-K for incorporation by reference into the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K promulgated under the Securities Act and to reference the firm's name under the caption "Legal Matters" in the Prospectus Supplement, and we hereby consent thereto. In giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission promulgated thereunder.

Very truly yours,

/s/ Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C.

Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C.

**Aspen Aerogels, Inc. Announces Pricing of Public Offering of Common Stock**

**NORTHBOROUGH, Mass., February 13, 2020** — Aspen Aerogels, Inc. (NYSE: ASPN) (“Aspen”) today announced the pricing of an underwritten public offering of 1,700,000 shares of its common stock, at a purchase price to the public of \$8.25 per share. In addition, in connection with the offering, Aspen has granted the underwriter a 30-day option to purchase up to an additional 255,000 shares of common stock solely to cover over-allotments, if any. The gross proceeds to Aspen from this offering are expected to be approximately \$14.0 million, before deducting underwriting discounts and commissions and estimated offering expenses payable by Aspen, but excluding any exercise of the underwriter’s option to purchase additional shares of common stock. The offering is expected to close on or about February 18, 2020, subject to customary closing conditions.

All of the securities in the offering are being sold by Aspen. Aspen intends to use the net proceeds from the offering for working capital and general corporate purposes.

Craig-Hallum Capital Group is acting as the sole managing underwriter for the offering.

A shelf registration statement on Form S-3 (File No. 333-227158) relating to the public offering of the shares of common stock described above was filed with the Securities and Exchange Commission (the “SEC”) and declared effective by the SEC on September 18, 2018. A preliminary prospectus supplement and accompanying prospectus relating to and describing the terms of the offering were filed with the SEC on February 12, 2020. A final prospectus supplement and accompanying prospectus relating to and describing the terms of the offering will be filed with the SEC and made available on the SEC’s web site at [www.sec.gov](http://www.sec.gov). Copies of the final prospectus supplement and accompanying prospectus relating to the offering may also be obtained, when available, by contacting Craig-Hallum Capital Group LLC, 222 South Ninth Street, Suite 350, Minneapolis, MN 55402, Attn: Equity Capital Markets, by telephone at (612) 334-6300 or by e-mail at [prospectus@chlm.com](mailto:prospectus@chlm.com).

This press release does not constitute an offer to sell or the solicitation of an offer to buy any of these securities, nor will there be any sale of these securities in any state or other jurisdiction in which such offer, solicitation or sale is not permitted.

**About Aspen Aerogels, Inc.**

Aspen is the global leader in aerogel technology. The company’s mission is to enable its customers and partners to achieve their own objectives around the global megatrends of resource efficiency and sustainability. Aspen’s Cryogel® and Pyrogel® products are valued by the world’s largest energy infrastructure companies. Aspen’s Spaceloft® products provide building owners with industry-leading energy efficiency including options for a safe, non-combustible fire rating. The company’s strategy is to partner with world-class industry leaders to leverage its aerogel technology platform into additional markets. Headquartered in Northborough, Mass., Aspen manufactures its products at its East Providence, R.I. facility.

**Investor Relations Contact**

John F. Fairbanks  
Chief Financial Officer  
Phone: (508) 691-1150  
[jfairbanks@aerogel.com](mailto:jfairbanks@aerogel.com)

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**Special Note Regarding Forward-Looking and Cautionary Statements**

This press release and any related discussion contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995, regarding, among other things, the public offering of Aspen’s common stock. Such forward-looking statements are based on current expectations and involve inherent risks and uncertainties, including factors that could delay, divert or change any of them, and could cause actual results to differ materially from those projected in its forward-looking statements. Meaningful factors which could cause actual results to differ, including the completion of the public offering and the expected uses of proceeds from the public offering, as well as other factors, are discussed in the risks and uncertainties detailed from time to time in Aspen’s filings with the SEC, including without limitation, the risk factors discussed under the heading “Risk Factors” in Aspen’s Annual Report on Form 10-K for the year ended December 31, 2018 and filed with the SEC on March 8, 2019, as well as any updates to those risk factors filed from time to time in Aspen’s subsequent periodic and current reports filed with the SEC. All statements contained in this press release are made only as of the date of this press release, and Aspen does not intend to update this information unless required by law.