



DIVISION OF
CORPORATION FINANCE

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

April 17, 2014

Via E-mail

John F. Fairbanks
Vice President, Chief Financial Officer and Treasurer
Aspen Aerogels, Inc.
30 Forbes Road, Building B
Northborough, MA 01532

**Re: Aspen Aerogels, Inc.
Draft Registration Statement on Form S-1
Submitted March 25, 2014
CIK No. 0001145986**

Dear Mr. Fairbanks:

We have reviewed your draft registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

General

1. If you intend to respond to these comments with an amended draft registration statement, please submit it and any associated correspondence in accordance with the guidance we provide in the Division's October 11, 2012 announcement on the SEC website at <http://www.sec.gov/divisions/corpfin/cfannouncements/drsfilingprocedures101512.htm>.
2. Please keep in mind that we may publicly post filing review correspondence in accordance with our December 1, 2011 policy (<http://www.sec.gov/divisions/corpfin/cfannouncements/edgarcorrespondence.htm>). If you intend to use Rule 83 (17 CFR 200.83) to request confidential treatment of information in the correspondence you submit on EDGAR, please properly mark that information in each of your confidential submissions to us so we do not repeat or refer to that information in our comment letters to you.

3. Please be advised that we will process this filing and any amendments without a price range. Since the price range triggers a number of disclosure matters, we will need sufficient time to process the amendment when it is included. Please understand that its effect on disclosure throughout the document may cause us to raise issues on areas not previously commented upon.
4. We encourage you to file the remaining exhibits, including the legal opinion, as soon as possible. Please understand that we will need adequate time to review these materials before effectiveness.
5. Please provide us with copies of any artwork or other graphics you intend to use in your prospectus.
6. Prior to the effectiveness of the registration statement, please arrange to have FINRA call us or provide us with a letter indicating that FINRA has completed its review of the underwriter arrangements for this offering and has no objection.
7. Please supplementally provide us with copies of all written communications, as defined in Rule 405 under the Securities Act, that you, or anyone authorized to do so on your behalf, present to potential investors in reliance on Section 5(d) of the Securities Act, whether or not they retain copies of the communications. Similarly, please supplementally provide us with any research reports about you that are published or distributed in reliance upon Section 2(a)(3) of the Securities Act of 1933 added by Section 105(a) of the Jumpstart Our Business Startups Act by any broker or dealer that is participating or will participate in your offering.

Table of Contents, page i

8. Please remove the sentence in the paragraph under the table of contents that advises investors that information is current only as of the date of the prospectus. This statement may suggest to investors that you are not responsible for omissions of material facts necessary to make your statements not misleading at the time of sale or contract of sale.

Our Core Market, page 2

9. We note your statement that your two principal products are used by “most” of the world’s largest oil producers, refiners and petrochemical companies. In addition, we note that you cite specific numbers of end users of your products for each of the major end markets, such as 24 of the world’s largest 25 refining companies using your aerogel blankets. Please tell us how you determined this data, including whether these are estimates based on your reasonable belief, as suggested by your disclosure under “Information about End-Use Customers” on page ii. To the extent this disclosure represents estimates, please clearly disclose this fact here and elsewhere where you discuss your end-use customers. Please also tell us how you selected which companies to highlight specifically (such as ExxonMobil, Petrobras, Chevron, etc.). For example,

please tell us whether it is by contribution to total revenue, largest customer in each end market, or some other method.

10. We note that you commissioned the research report by Freedonia Custom Research, Inc. Please file a consent from Freedonia pursuant to Rule 436 of Regulation C of the Securities Act or, in the alternative, please tell us why you do not believe you are required to do so.
11. We note that you cite various industry and scientific statistics, but do not always fully identify the source of the statistics. For example, we note your statement that “[a]ccording to Valero, world refining capacity is projected to increase . . .” but you do not identify Valero or the report used to obtain such information, including the date of the report. This is just one example. Please revise your disclosure throughout.

Prospectus Summary, page 1

12. Please add a cross reference to your introductory paragraph referencing where the glossary can be located. Although you have included a glossary of energy industry terms in Appendix A, please provide context for such terms where they are first used so that an investor may understand your use of such terms. For example, we note your use of abbreviations for certain measurements, such as on page two where you disclose that world refining capacity is “expected to increase approximately 1.5MMBbl/d on average per year from 2013 to 2017.” Without further context, the meaning of this statement is unclear. Please revise your disclosure throughout your prospectus as appropriate.

Overview, page 1

13. We note that you highlight your compound annual revenue growth rate and your total revenue since inception in the third paragraph of the summary. Please balance this disclosure by also prominently disclosing that you have incurred net losses each year since your inception, your total accumulated deficit, that you expect to continue to incur operating losses, and that your independent registered public accounting firm’s report expresses substantial doubt about your ability to continue as a going concern.

The Offering, page 8

14. To the extent you are dependent on the proceeds of this offering to repay the amount outstanding under your revolving line of credit, which is due June 2014, please clearly state this fact.

Risk Factors, page 14

Our contracts with U.S. government agencies may not be funded by future..., page 27

15. Please disclose the percentage of your revenues that are from your contracts with U.S. government agencies so that investors may understand the significance of this risk.

Use of Proceeds, page 41

16. Please disclose the amount of other funds necessary to accomplish the purposes for which the proceeds of the offering are to be used, including the sources of such funds. See Instruction 3 to Item 504 of Regulation S-K.

Business, page 83

17. Please include the financial information about geographic areas that is required by Item 101(d) of Regulation S-K or include a cross-reference to this data in the financial statements.

Markets, page 84

18. With respect to the chart on page 87, please supplementally tell us how you determined that your choices of illustrative project sizes for the different types of plants were appropriate.
19. We note your disclosure on page 87 that the chart of revenue opportunity estimates is “consistent with your [historical] approach.” However, one liquefaction project, which you predict will generate \$37 million of revenue, is considerably higher than any project you have listed. Please clarify whether you have previously derived similar revenue from liquefaction plant projects or, if not, why you think you will be able to do so in the future.

Our Solution, page 88

20. In order to allow investors to better assess your growth prospects, please consider disclosing the life cycle range of your key products in the various applications for which they are employed. For example, we note your products are used in energy insulation markets. It’s not clear if your products are capable of performing as intended for the entire life of the energy infrastructure assets or if your products will need to be replaced at regular periodic intervals. Consequently, it’s not clear if your sales are dependent upon new installations of your products at locations where your product is not currently employed or if your business will periodically generate sales from repeat business at locations where your product is currently installed.

Intellectual Property, page 101

21. We note your disclosure regarding certain patents that you consider important to your business and their expiration dates. Please disclose the particular patents and their importance to your business. See Item 101(c)(iv) of Regulation S-K.

Competition, page 103

22. Please supplementally disclose how you determined that your “market share has grown at a rapid rate in recent years” in the second paragraph on page 104. We note that your market share of the energy infrastructure market in 2010 was 1.8% and in 2013 it was 3.1%

Executive and Director Compensation, page 114

Narrative Disclosure to Summary Compensation Table, page 115

23. Please disclose the material terms of the option awards made in 2013. Please also indicate the portion of the 2013 option awards attributable to new grants versus the portion issued in exchange for the forfeiture of options. See Item 402(o)(4) of Regulation S-K.

Certain Relationships and Related Persons, Transactions, page 126

Convertible Notes and Warranty Financings, page 126

24. Please disclose Arcapita Venture I Limited’s discount rate for shares or provide a cross-reference where the discount factor can be found in the financial notes for the December 2011 Convertible Note Financing, the June 2012 Convertible Note Financing, and the 2013 Convertible Note and Warrant Financing. Additionally, please ensure that this reference is reflected in your principal stockholders table. See Item 404(a)(6) of Regulation S-K.
25. We note your disclosure that Arcapita Ventures I Limited will purchase common stock immediately prior to the offering based on the initial public offering price, subject to a discount factor. Please advise whether Arcapita Ventures I Limited will purchase shares that are being registered on this registration statement, or if it is purchasing shares in a separate private placement, or otherwise. Please also advise whether the arrangement for Arcapita to purchase shares based on the initial public offering price was negotiated at the time of the various convertible note financings or at some other time.

Principal Stockholders, page 132

26. We note that footnote (2) to the principal stockholders table includes a third romanette but discloses only two transactions. Please disclose the third transaction or revise this footnote to reflect that there are only two relevant transactions with respect to GKFF Ventures I, LLC's stock ownership.

Financial Statements

Note (2) – Summary of Basis of Presentation and Significant Accounting Policies, page F-9

Inventories – Page F-11

27. We note your policy disclosure indicates you allocate manufacturing overheads to the cost of conversion based on normal capacity of the company's production facility. We note elsewhere in your document that your production capacity since March 2011 is currently 40-44 million square feet of aerogel blankets. However, we note your actual production in the years presented may have been substantially less than your stated production capacity during those periods. Please tell us how you have considered the guidance of ASC 330-10-30-6 in your determination of costs allocated to inventory.

Subsequent Events

28. We are unable to locate a footnote within your financial statements indicating you have evaluated subsequent events, including the date through which subsequent events have been evaluated. Please refer to ASC 855-10-50-1 and provide the requisite disclosures.

Exhibit Index

29. We note you plan to request confidential treatment for Exhibit 10.17. To the extent that we have comments on your request, please note that we will issue them in a separate letter. Please further note that all comments on your request must be resolved before we will accelerate the effective date of your registration statement.
30. We note you have filed Exhibit 10.1.1 as Exhibit 10.11 and Exhibit 10.11 as Exhibit 10.1.1. Please correctly file these exhibits in your next filing.

John F. Fairbanks
Aspen Aerogels, Inc.
April 17, 2014
Page 7

You may contact Kevin Stertzel, Staff Accountant at 202-551-3723 or John Cash, Accounting Branch Chief at 202-551-3768 if you have questions regarding comments on the financial statements and related matters. Please contact David Korvin, Law Clerk at 202-551-3236 or Erin Jaskot Staff Attorney at 202-551-3442 with any other questions.

Sincerely,

/s/ Erin K. Jaskot, for

Pamela A. Long
Assistant Director

cc: Sahir Surmeli (Via E-mail)
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.