

As filed with the Securities and Exchange
Commission on August 27, 1997
Registration No. 333-_____

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM S-3
Registration Statement
Under
The Securities Act of 1933

THERMO FIBERTEK INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

52-1762325
(I.R.S. Employer
Identification No.)

81 Wyman Street
Waltham, Massachusetts 02254-9046
(617) 622-1000
(Address, including zip code, and telephone number, including
area code, of registrant's principal executive offices)

Sandra L. Lambert, Secretary
Thermo Fibertek Inc.
c/o Thermo Electron Corporation
81 Wyman Street
P. O. Box 9046
Waltham, Massachusetts 02254-9046
(617) 622-1000
(Name, address, including zip code, and telephone number,
including area code, of agent for service)

Copies to:
Seth H. Hoogasian, Esquire
General Counsel
Thermo Fibertek Inc.
c/o Thermo Electron Corporation
81 Wyman Street
Waltham, Massachusetts 02254-9046

Approximate date of commencement of proposed sale to the
public: As soon as practicable after the Registration Statement
has become effective.

PAGE

If the only securities being registered on this Form are
being offered pursuant to dividend or interest reinvestment
plans, please check the following box. []

If any of the securities being registered on this Form are
to be offered on a delayed or continuous basis pursuant to Rule
415 under the Securities Act of 1933, other than securities
offered only in connection with dividend or interest reinvestment
plans, check the following box. [x]

If this Form is filed to register additional securities for
an offering pursuant to Rule 462(b) under the Securities Act,

please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If delivery of the prospectus is expected to be made pursuant to Rule 434, please check the following box. []

CALCULATION OF REGISTRATION FEE

Title of securities to be registered	Amount to be registered	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, \$.01 par value per share	12,644,628 shares	\$11.28	\$142,647,210	\$43,227

- (1) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(c) based on the average of the high and low sales prices of the Common Stock on the American Stock Exchange on August 22, 1997.

THE REGISTRANT HEREBY AMENDS THIS REGISTRATION STATEMENT ON SUCH DATE OR DATES AS MAY BE NECESSARY TO DELAY ITS EFFECTIVE DATE UNTIL THE REGISTRANT SHALL FILE A FURTHER AMENDMENT WHICH SPECIFICALLY STATES THAT THIS REGISTRATION STATEMENT SHALL THEREAFTER BECOME EFFECTIVE IN ACCORDANCE WITH SECTION 8(A) OF THE SECURITIES ACT OF 1933 OR UNTIL THIS REGISTRATION STATEMENT SHALL BECOME EFFECTIVE ON SUCH DATE AS THE COMMISSION, ACTING PURSUANT TO SAID SECTION 8(A), MAY DETERMINE.

PAGE

PROSPECTUS

12,644,628 Shares
THERMO FIBERTEK INC.
Common Stock

This Prospectus relates to the resale of 12,644,628 shares (the "Shares") of Common Stock, par value \$.01 per share (the "Common Stock"), of Thermo Fibertek Inc. (the "Company") issuable upon conversion of \$153,000,000 principal amount of the Company's outstanding 4-1/2% Convertible Subordinated Debentures due 2004 (the "Debentures"). The Debentures are convertible, at the option of the holder (a "Selling Shareholder"), at a conversion price of \$12.10 per share, subject to adjustment for certain events. The Shares may be offered from time to time in transactions on the American Stock Exchange, in negotiated transactions, through the writing of options on the Shares, or a combination of such methods of sale, at fixed prices that may be changed, at market prices prevailing at the time of sale, at prices related to such prevailing market prices or at negotiated prices. Such transactions may be effected by the sale of the Shares to or through broker-dealers, and such broker-dealers may receive compensation in the form of discounts, concessions or commissions from the sellers and/or the purchasers of the Shares for whom such broker-dealers may act as agent or to whom they sell as principal, or both (which compensation to a particular broker-dealer might be in excess of customary commissions). The sellers of the Shares and any broker-dealer who acts in connection with the sale of Shares hereunder may be deemed to be "underwriters" as that term is defined in the Securities Act of 1933, as amended (the "Securities Act"), and any commission received by them and profit on any resale of the Shares as principal might be deemed to be underwriting discounts and commissions under the Securities Act.

None of the proceeds from the sale of the Shares will be received by the Company. The Company has agreed to bear all expenses (other than underwriting discounts and selling commissions, and fees and expenses of counsel or other advisors to the sellers of the Shares) in connection with the registration and sale of the Shares being registered hereby. The Company has agreed to indemnify the sellers of the Shares against certain liabilities, including liabilities under the Securities Act as underwriter or otherwise.

THESE SECURITIES HAVE NOT BEEN APPROVED OR DISAPPROVED BY THE
SECURITIES AND EXCHANGE COMMISSION OR ANY STATE SECURITIES
COMMISSION NOR HAS THE SECURITIES AND EXCHANGE COMMISSION
OR ANY STATE SECURITIES COMMISSION PASSED UPON THE ACCU-
RACY OR ADEQUACY OF THIS PROSPECTUS. ANY REPRESENTATION
TO THE CONTRARY IS A CRIMINAL OFFENSE.

No dealer, salesman or other person has been authorized to
give any information or to make any representations other than
those contained or incorporated by reference in this Prospectus
regarding the Company or the offering made by this Prospectus,
and, if given or made, such information or representations must
not be relied upon as having been authorized by the Company or by
any other person. All information contained in this Prospectus
is as of the date of this Prospectus. Neither the delivery of
this Prospectus nor any sale or distribution and resale made
hereunder shall, under any circumstances, create any implication
that there has been no change in the affairs of the Company since
the date hereof. This Prospectus does not constitute an offer to
sell or a solicitation of any offer to buy any security other
than the securities covered by this Prospectus, nor does it
constitute an offer to or solicitation of any offer to buy any
security other than the securities covered by this Prospectus,
nor does it constitute an offer to or solicitation of any person
in any jurisdiction in which such offer or solicitation may not
be lawfully made.

_____, 1997

AVAILABLE INFORMATION

The Company is subject to the informational requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and in accordance therewith files reports, proxy statements and other information with the Securities and Exchange Commission (the "Commission"). Such reports, proxy statements and other information can be inspected and copied at the public reference facilities maintained by the Commission at 450 Fifth Street, N.W., Washington, D.C. 20549, and at the following Regional Offices of the Commission: 500 West Madison Street, Suite 1400, Chicago, Illinois 60661, and Seven World Trade Center, Suite 1300, New York, New York 10048. Copies of such material can also be obtained from the Public Reference Section of the Commission at 450 Fifth Street, N.W., Washington, D.C. 20549 at prescribed rates. The Commission also maintains a Web site at (<http://www.sec.gov>). The Common Stock of the Company is listed on the American Stock Exchange, and the reports, proxy statements and other information filed by the Company with the Commission can be inspected at the offices of the American Stock Exchange, 86 Trinity Place, New York, New York 10006.

The Company has filed with the Commission a registration statement (together with all amendments and exhibits thereto, the "Registration Statement") under the Securities Act with respect to the securities offered hereby. This Prospectus does not contain all of the information set forth in the Registration Statement, certain parts of which are omitted in accordance with the rules and regulations of the Commission. For further information, reference is made to the Registration Statement, copies of which may be obtained upon payment of the fees prescribed by the Commission from the Public Reference Section of the Commission at 450 Fifth Street, N.W., Washington, D.C. 20549, and at the Commission's regional offices at Seven World Trade Center, New York, New York, 10048 and at 500 West Madison Street, Chicago, Illinois, 60661.

The Company undertakes to provide without charge to each person to whom a copy of this Prospectus has been delivered, on the written or oral request of such person, a copy of any or all of the documents that have been or may be incorporated in this Prospectus by reference, other than exhibits to such documents (unless such exhibits are specifically incorporated by reference therein). Requests for such copies should be directed to: Sandra L. Lambert, Secretary, Thermo Fibertek Inc., 81 Wyman Street, P. O. Box 9046, Waltham, Massachusetts 02254-9046 (telephone number: (617) 622-1000).

THE COMPANY

The Company designs and manufactures processing machinery, products and accessories for the paper and paper-recycling industries. The Company's principal products include custom-engineered systems and equipment for the preparation of wastepaper for conversion into recycled paper; accessory equipment and related consumables important to the efficient operation of papermaking machines; and water-management systems essential for draining, purifying and recycling process water.

The Company's predecessors have been in operation for more than 80 years, and the Company has a large, stable customer base that includes most papermakers worldwide. The Company seeks to expand its business through the introduction of new products and technologies to these customers. The Company currently manufactures its products in several countries in Europe and North America, and licenses certain of its products for manufacture in South America and the Pacific Rim.

Recycling Equipment. The Company develops, designs and manufactures custom-engineered systems that remove debris, impurities and ink from wastepaper, and process it into a fiber mix used to produce either white or brown grades of recycled paper. The Company offers more than 20 products related to all aspects of the recycling process, including pulping and trash removal systems that convert wastepaper into pulp, thus increasing the efficiency of debris removal; poires, or scavengers, that remove large debris; cleaning and screening systems that remove contaminants such as metals, sand, plastic, glue and "stickies" from the pulp mixture; de-inking systems that remove ink particles from the pulp mixture; and reject-handling and water-treatment systems, including gravity type strainers and in-line filtration systems, as well as compactors and sand separators designed to recapture "good" fiber rejected with debris in the primary process line.

Accessories. The Company designs, develops and manufactures a wide range of accessories that continuously clean the rolls of a papermaking machine, remove the sheet, or web, from the roll, automatically cut the web during sheet breaks, and remove curl from the sheet. These functions are critical for paper manufacturers because they help avoid potential catastrophic damage to the papermaking equipment while reducing expensive machine downtime and improving paper quality. Accessories include doctors and related equipment that shed the sheet from the roll during sheet breaks and start-ups and keep rolls clean; and profiling systems that help ensure a uniform gloss on the web and control moisture and curl within the sheet.

Water-management Systems. The Company designs, develops and manufactures equipment used to drain water from the pulp's slurry, form the sheet web and reuse the process water. The systems include formation tables that control the amount of water

removed from the pulp slurry to form the paper web; showers and felt conditioning systems, used to clean and condition the fabrics and felts which in turn are used to transport the paper web through various stages of the papermaking machine; and water-filtration systems, consisting of pressure, gravity and vacuum assisted filters and strainers used to remove extraneous contaminants from the process water before reuse and to recover reusable fiber for recycling back into the pulp slurry.

Thermo Fibergen. The Company's majority-owned Thermo Fibergen Inc. subsidiary ("Thermo Fibergen") is currently developing equipment and systems to recover materials from papermaking sludge generated by plants that produce virgin and recycled pulp and paper. Thermo Fibergen's GranTek Inc. subsidiary employs patented technology to produce absorbing granules from papermaking sludge. These granules, marketed under the trade name BIODAC (R), are currently used as a carrier to deliver agricultural chemicals for professional turf, home lawn and garden, agricultural row crop and mosquito-control applications.

The Company faces significant competition in each of its principal markets. The Company competes principally on the basis of quality, service, technical expertise, product innovation, and price. The Company believes that the reputation it has established since its inception for quality products and in-depth process knowledge provides it with a competitive advantage.

ACQUISITION OF THE STOCK-PREPARATION BUSINESS OF THE BLACK CLAWSON COMPANY

In May 1997, the Company acquired the stock-preparation business, excluding the French subsidiary, of the Black Clawson Company and its affiliates ("Black Clawson"). In August 1997, the Company acquired the stock-preparation business of Black Clawson's French subsidiary. Black Clawson is a leading supplier of recycling equipment used in processing fiber for the manufacture of "brown paper," such as that used to make corrugated boxes and other containers.

The purchase price for Black Clawson's stock-preparation business was approximately \$108 million in cash. The purchase price is subject to a post-closing adjustment equal to the amount by which the net tangible assets of the business acquired as of the closing date are greater or less than, as the case may be, certain target amounts set forth in the Asset Purchase Agreement dated as of May 22, 1997 between the Company, and certain of its affiliates, and the Black Clawson Company, and certain of its affiliates. To finance the acquisition, the Company borrowed approximately \$110 million from Thermo Electron Corporation ("Thermo Electron") at an interest rate equal to the 90-day Commercial Paper Composite Rate plus 25 basis points, set at the beginning of each quarter. The Company repaid all of such

indebtedness with the net proceeds from the sale of the Debentures.

Black Clawson designs, engineers, manufactures and distributes paper stock-preparation systems and pulp processing systems, which are used in the recycling of waste paper and paperboard into wholly or partially recycled paper products and in the preparation of virgin pulp and paper. Black Clawson also supplies the customers of its stock-preparation systems with replacement and spare parts. In addition, Black Clawson's extensive research and development capabilities allow it to provide technologically advanced solutions to its customers' needs for pulp processing and stock-preparation systems. Black Clawson can design, engineer and supply substantially all of the components of a pulp processing and stock-preparation system for its customers.

Principal Products

Black Clawson's stock-preparation equipment uses various methods, including hydropulper technology, to prepare waste-paper and virgin pulp for recycling and formulation into paper stock. The hydropulper system processes cellulose fibers by blending wastepaper with water and chemicals to break larger fibers down into individual fibers and fiber bundles, which can then be processed and reformulated into paper products. Other products manufactured by Black Clawson include high density cleaning systems, used to remove metal and sand from paper to be recycled; screening systems, used in processing brown paper stock; pulp washers, used in virgin pulp mills to remove chemicals and cooking residues from the pulp; stock thickeners, used to drain water from paper stock to increase the consistency of the finished product; and dispersers, used to break up ink particles to facilitate their removal from paper being processed.

In prior years, approximately one-third of Black Clawson's revenue has come from sales of spare parts and service on the installed base of its equipment. Black Clawson has established a network of five independent repair and service centers which respond to customer requests for repairs or replacements. These centers purchase all required component parts for repairs from Black Clawson and replace or repair units to customer specifications.

Sales and Marketing

Black Clawson uses a multi-faceted approach to the sale and marketing of its products, combining direct sales to mills, exclusive sales representatives, distribution agreements and licensees. Black Clawson has teams of sales engineers based worldwide, who are responsible for the supervision of equipment installation, process and equipment troubleshooting, on-site customer training, operation and maintenance seminars, and system and process optimization at customers' mills. Black Clawson also

relies on an international network of exclusive sales representatives and distributors. In particular, Black Clawson has concentrated on developing and strengthening its representative and distributor network in Southeast Asia and China, as most of the recent growth in the pulp and paper industry has been in those areas.

Integration Strategy

The Company intends to integrate Black Clawson with its existing operations to rationalize the combined manufacturing, distribution and administrative functions. In particular, the Company expects to consolidate certain operations in North America and Europe. The Company also intends to take advantage of Black Clawson's presence in the Southeast Asia and China markets for recycled paper equipment. There can be no assurance, however, that the Company will be able to successfully integrate Black Clawson with its existing business.

Competition

Black Clawson's major competitors in the market for its stock-preparation equipment are Voith Sulzer Papiertechnik GmbH, Beloit Corporation, Sunds Defibrator, Maschinen Fabrik Andritz AG, Kvaerner Pulping Technologies, Ahlstrom Machine Company, and Celleco AB. Smaller niche suppliers also exist in various markets served by Black Clawson. The principal competitive factors in the sale of Black Clawson's paper recycling and stock-preparation equipment are technology, product differentiation, engineering expertise, price, delivery capability, quality and service.

GENERAL

The Company was incorporated on November 12, 1991 as a wholly owned subsidiary of Thermo Electron. The Company commenced an initial public offering of its Common Stock on October 9, 1992. Thermo Electron owned approximately 88.1% of the total outstanding shares of the Company's Common Stock as of July 31, 1997. The Company's principal executive offices are located at 81 Wyman Street, Waltham, Massachusetts 02254, and its telephone number is (617) 622-1000.

SELLING SHAREHOLDERS

The Selling Shareholders currently hold Debentures convertible into the Shares which are the subject of this Prospectus. It is unknown if, when or in what amounts a Selling Shareholder may offer Shares for sale and the names of the Selling Shareholders who may sell the Shares. There is no assurance that the Selling Shareholders will sell any or all of the Shares offered hereby.

Because the Selling Shareholders may offer all or some of the Shares pursuant to the offering contemplated by this Prospectus, and because there are currently no agreements, arrangements or understandings with respect to the sale of any of the Shares that will be held by the Selling Shareholders after completion of this offering, no estimate can be given as to the principal amount of the Shares that will be held by the Selling Shareholders after completion of this offering.

Other than as a result of the ownership of the Debentures, to the best of the Company's knowledge, none of the Selling Shareholders had any material relationship with the Company within the three year period ending on the date of this Prospectus.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The following documents previously filed with the Commission are incorporated in this Prospectus by reference:

- (1) The Company's Annual Report on Form 10-K for the fiscal year ended December 28, 1996, as amended.
- (2) The Company's Quarterly Report on Form 10-Q for the fiscal quarter ended March 29, 1997.
- (3) The Company's Current Report on Form 8-K, filed with the Commission on June 4, 1997, as amended by Amendment Nos. 1 and 2 on Form 8-K/A filed with the Commission on June 20, 1997 and August 5, 1997, respectively, with respect to the acquisition of the stock-preparation business of the Black Clawson Company and its affiliates.
- (4) The Company's Quarterly Report on Form 10-Q for the fiscal quarter ended June 28, 1997.
- (5) The Company's Current Report on Form 8-K, filed with the Commission on July 16, 1997, with respect to the sale of the Debentures.
- (6) The description of the Common Stock which is contained in the Company's Registration Statement on Form 8-A, filed under the Exchange Act, as amended.

All reports or proxy statements filed by the Company pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act subsequent to the date of this Prospectus and prior to the termination of the offering made hereby shall be deemed to be incorporated by reference in this Prospectus and to be a part hereof from the respective dates of filing such documents. Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified

or superseded for purposes of this Prospectus to the extent that a statement contained herein modifies, supersedes or replaces that statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Prospectus.

LEGAL MATTERS

The validity of the Common Stock offered hereby has been passed upon by Carl F. Barnes, Esq., Deputy General Counsel of the Company. Mr. Barnes owns or has the right to acquire, pursuant to the exercise of stock options, shares of the Common Stock of the Company and the common stock of Thermo Electron, the fair market value of which exceeds \$50,000.

EXPERTS

The financial statements of the Company and the Stock-Preparation Business of Black Clawson Company and Subsidiaries and the financial statement schedule of the Company incorporated by reference in the Registration Statement of which this Prospectus forms a part have been audited by Arthur Andersen LLP, independent public accountants, to the extent and for the periods as indicated in their reports with respect thereto, and are incorporated herein in reliance upon the authority of said firm as experts in giving said reports.

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The expenses incurred by the Company in connection with the issuance and distribution of the securities being registered are as follows. All amounts are estimated except the Securities and Exchange Commission registration fee and the American Stock Exchange listing fee.

	Amount

Securities and Exchange Commission Registration Fee	\$43,227
American Stock Exchange listing fee	17,500
Legal fees and expenses	1,000
Accounting fees and expenses	5,000
Miscellaneous	1,000
Total	\$67,727

Item 15. Indemnification of Directors and Officers.

The Delaware General Corporation Law and the Company's Certificate of Incorporation and By-Laws limit the monetary liability of directors to the Company and to its stockholders and provide for indemnification of the Company's officers and directors for liabilities and expenses that they may incur in such capacities. In general, officers and directors are indemnified with respect to actions taken in good faith in a manner reasonably believed to be in, or not opposed to, the best interests of the Company, and with respect to any criminal action or proceeding, actions that the indemnitee had no reasonable cause to believe were unlawful. The Company also has indemnification agreements with its directors and officers that provide for the maximum indemnification allowed by law.

Thermo Electron has an insurance policy which insures the directors and officers of Thermo Electron and its subsidiaries, including the Company, against certain liabilities which might be incurred in connection with the performance of their duties.

Item 16. Exhibits.

See the Exhibit Index included immediately preceding the exhibits to this Registration Statement.

Item 17. Undertakings.

(a) The undersigned Registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.

Provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the registration statement is on Form S-3, Form S-8 or Form F-3, and the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement.

- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the

securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 that is incorporated by reference in this registration statement shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant hereby certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Waltham, Commonwealth of Massachusetts, on this 27th day of August, 1997.

THERMO FIBERTEK INC.

By: /s/William A. Rainville

William A. Rainville,
President and Chief
Executive Officer

KNOW ALL MEN BY THESE PRESENTS that each individual whose signature appears below constitutes and appoints John N. Hatsopoulos, Paul F. Kelleher, Seth H. Hoogasian, Sandra L. Lambert and Melissa F. Riordan, and each of them, as his true and lawful attorneys-in-fact and agents for the undersigned, with full power of substitution, for and in the name, place and stead of the undersigned, to sign and file with the Securities and Exchange Commission under the Securities Act of 1933 any and all amendments and exhibits to this Registration Statement and any and all applications and other documents to be filed with the Securities and Exchange Commission pertaining to the registration of the securities covered hereby, with full power and authority to do and perform any and all acts and things whatsoever requisite and necessary or desirable.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

Signature -----	Title -----	Date -----
/s/William A. Rainville William A. Rainville	President, Chief Executive Officer and Director	August 27, 1997
/s/John N. Hatsopoulos John N. Hatsopoulos	Vice President, Chief Financial Officer and Director	August 27, 1997

Signature -----	Title -----	Date -----
/s/Paul F. Kelleher Paul F. Kelleher	Chief Accounting Officer	August 27, 1997
/s/Walter J. Bornhorst Walter J. Bornhorst	Director	August 27, 1997
George N. Hatsopoulos	Director	August 27, 1997
/s/Donald E. Noble Donald E. Noble	Chairman of the Board and Director	August 27, 1997

EXHIBIT INDEX

Exhibit Number -----	Description of Exhibit -----	Sequential Page No. -----
5.1	Opinion of Carl F. Barnes, Esq.	
23.1	Consent of Arthur Andersen LLP	
23.2	Consent of Carl F. Barnes, Esq. (contained in Exhibit 5)	
24.1	Power of Attorney (See Signature Page)	

AA972310025

THERMO FIBERTEK INC.
81 Wyman Street
P. O. Box 9046
Waltham, Massachusetts 02254-9046

August 27, 1997

Thermo Fibertek Inc.
81 Wyman Street
P. O. Box 9046
Waltham, Massachusetts 02254-9046

Re: Registration Statement on Form S-3

Dear Sirs:

I am Deputy General Counsel to Thermo Fibertek Inc., a Delaware corporation (the "Company"), and have acted as counsel in connection with the registration under the Securities Act of 1933, as amended, on Form S-3 (the "Registration Statement"), of 12,644,628 shares (the "Shares") of Common Stock, par value \$.01 per share, of the Company issuable upon conversion of \$153,000,000 principal amount of the Company's outstanding 4-1/2% Convertible Subordinated Debentures due 2004 (the "Debentures").

I or a member of my staff have reviewed the corporate proceedings taken by the Company with respect to the authorization of the issuance of the Shares. I or a member of my staff have also examined and relied upon originals or copies, certified or otherwise authenticated to my satisfaction, of all corporate records, documents, agreements or other instruments of the Company and have made all investigations of law and have discussed with the Company's representatives all questions of fact that I have deemed necessary or appropriate.

Based upon and subject to the foregoing, I am of the opinion that:

1. The Company is a corporation duly organized, validly existing and in corporate good standing under the laws of the State of Delaware.
2. The issuance and sale of the Shares as contemplated in the Registration Statement have been duly authorized by the Company.

3. The Shares, when issued upon conversion of the Debentures, will be validly issued, fully paid and nonassessable.

I hereby consent to the filing of this opinion as Exhibit 5.1 to the Registration Statement.

Very truly yours,

/s/ Carl F. Barnes

CFB/bb

Exhibit 23.1

Consent of Independent Public Accountants

As independent public accountants, we hereby consent to the incorporation by reference in this registration statement of our report dated February 3, 1997 (except with respect to the matter discussed in Note 14 as to which the date is February 26, 1997), included in Thermo Fibertek Inc.'s Form 10-K, for the year ended December 28, 1996, and our report dated August 4, 1997, for the stock-preparation business of Black Clawson Company and Subsidiaries included in Thermo Fibertek Inc.'s Current Report on Form 8-K/A dated May 22, 1997 (as amended June 20, 1997 and August 5, 1997), and to all references to our Firm included in this registration statement.

Arthur Andersen LLP

Boston, Massachusetts