FORM AEC-2
(3-64)

DATE

[redacted]

FORMERLY RESTRICTED DATA

Unauthorized disclosure subject to Administrative [redacted] APPROVED [redacted] Atomic Energy Act as Restricted [redacted] Dissemination Section [redacted], Atomic Energy Act, 1954.

Classified BY:

J.B. COONEY, JR.

UNITED STATES ATOMIC ENERGY COMMISSION

APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part 40, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.

1. (Check one)
- [x] (a) New license
- [ ] (b) Amendment to License No. _____
- [ ] (c) Renewal of License No. _____
- [ ] (d) Previous License No. _____

2. NAME OF APPLICANT

FIBER MATERIALS, INC. (James A. Crawford)

3. PRINCIPAL BUSINESS ADDRESS

BIDDEFORD INDUSTRIAL PARK
BIDDEFORD, MAINE 04005

4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED

BIDDEFORD INDUSTRIAL PARK
BIDDEFORD, MAINE 04005

THIS DOCUMENT DECLASSIFIED UNDER THE PROVISIONS OF EO 12958, DATED 4/17/95
By Authority of EO Tenyck #0776

OCT 22 1975

5. BUSINESS OR OCCUPATION

MANUFACTURER

6. (a) IF APPLICANT IS AN INDIVIDUAL, STATE CITIZENSHIP (Naturalization Authority and Number) (b) AGE

Date of Declassification 8/13/96

7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED

Raw material for further processing in accordance with customer's specifications.

Applicant
Check No. 16824
Amount $150.00
Date of Check 10-14-75
Date Check Rec'd 10-22-75
Received By

8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE

(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (Including % U or Th)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (in pounds)
NATURAL URANIUM			
URANIUM DEPLETED IN THE U-235 ISOTOPE			
THORIUM (ISOTOPE)	32%($3Al_2O_3 \cdot B_2O_3 \cdot 10SiO_2$) +68wt.%$ThO_2$	Natural Thorium 60%	Less than 500 lbs.

(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (in pounds)

Less than 500 lbs. (ThO_2) See addendum No. 1.

9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL, OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL RADIATION HAZARDS ASSOCIATED WITH EACH STEP OF THOSE PROCESSES.

The as-received fiber will be woven into items. During the weaving operation, a sizing which was coated at the time of its manufacture effectively confines any potential alpha airborne activity. The woven item is then baked to remove the sizing, checked for functional fit on a mandrel and packed for shipment in a DOT-approved container. For details see Addendum No. 2.

10. DESCRIBE THE MINIMUM TECHNICAL QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE THAT WILL BE REQUIRED OF APPLICANT'S SUPERVISORY PERSONNEL INCLUDING PERSON RESPONSIBLE FOR RADIATION SAFETY PROGRAM (OR OF APPLICANT IF APPLICANT IS AN INDIVIDUAL).

Training in alpha air monitoring, contamination control measures proper use of respiratory protection equipment and required protective clothing. Plant safety officer and/or qualified consultant. Mr. James A. Crawford will be responsible for training, and the health protection program.

11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9. INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air sampling, and other survey equipment as appropriate. The description of radiation detection instruments should include the instrument characteristics such as type of radiation detected, window thickness, and the range(s) of each instrument).

General air samplers, alpha survey instruments, operational air sampler, breathing-zone air sampler, alpha counting equipment, and exhaust air sampler. (For details see Addendum No. 3)

(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE, INCLUDING AIR SAMPLING EQUIPMENT (for film badges, specify method of calibrating and processing, or name supplier).

Alpha counting equipment, daily with standards traceable to NBS. Calibration of air sampling equipment - Monthly with standard traceable to NBS.

2079

[redacted]

[redacted]

11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, OR GASES, INCLUDING PLAN VIEW SHOWING TYPE AND LOCATION OF HOOD AND FILTERS. MINIMUM VELOCITIES MAINTAINED AT HOOD OPENINGS AND PROCEDURES FOR TESTING SUCH EQUIPMENT.

All operations which produce airborne activity will be performed in suitable ventilated enclosures equipped with double absolute filters tested in situ to 99.97% down to 0.3 microns.

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9. INCLUDE: (a) SAFETY FEATURES AND PROCEDURES TO AVOID NONNUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS.

See Items - 9, 10 and 11 a,b.

a. The material is not an explosive hazard and will not support combustion.

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

Operation Shutdown - Evacuation - Isolation - Decontamination of personnel and operating area.

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES.

General Air Monitoring - Daily
Operation Air Monitoring - As Required
Area Contamination Surveys - Daily

13. WASTE PRODUCTS: *If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here* ☐ *and explain on a supplemental sheet:*

(a) Quantity and type of radioactive waste that will be generated.

(b) Detailed procedures for waste disposal.

All waste and product will be shipped to customer in approved DOT container.

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

(a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.

(b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.

(c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (*Specify instrument used, date of calibration and calibration technique used*) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.

(d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

CERTIFICATE

(*This item must be completed by applicant*)

15. *The applicant, and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.*

FIBER MATERIALS, INC.
(*Applicant named in Item 2*)

Dated October 13, 1975

BY: [signature]
(*Print or type name under signature*)
PHILIP H. WATSON

Philip H. Watson, Manager Contracts
(*Title of certifying official authorized to act on behalf of the applicant*)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1968—O-295-054

[redacted]

[redacted]

ADDENDUM NO. 1

The following gives an estimate of the pounds of thorium which will be processed annually.

Fiscal Year	1976	1977	1978	1979	1980
Weight in Pounds	168	1080	1080	1080	600

ADDENDUM NO. 2

Description of Material

The material to be processed is a ThO_2 borosilicate fiber [32% ($3Al_2O_3 \cdot B_2O_3 \cdot 10SiO_2$) +68 wt.% ThO_2]. The material will be received from a commercial vendor (3M Company) on spools having a net weight of 1.2 pounds each.

Process

The yarn fiber (Thorium-loaded yarn) will be woven on a spinning machine to a specific configuration as specified by the customer. On completion of the spinning process, the woven part will be transferred to an open-face-hood line, and placed into a furnace to be baked to remove the sizing (which is a bonding agent contained in the yarn as supplied by the vendor). The part will then be removed from the furnace and placed on a mandrel, checked for dimensional fit, and packed for shipment in a DOT-approved shipping container. The baking, dimensional inspection and packaging processes are all performed in the open-face, ventilated-hood line.

Amount of Material in Process

Each woven part contains 1.6 pounds of ThO_2. Assuming one part being woven, one part being baked, one part being inspected, and one part being packaged for shipping the most material that could be processed at any one time would be approximately 6.4 pounds.

Radiation Hazard Control

Step No. 1 Unpacking spools of yarn from vendor presents no health hazard.

Step No. 2 Respooling and weaving thorium-loaded fiber-glass yarn into shapes presents no health hazard with existing sizing. Alpha air monitoring will be performed to continue to confirm this to be a fact.

[redacted]

Step No. 3 Baking out sizing will be performed in a well ventilated hood to control alpha airborne activity and off-gases from the furnace.

Step No. 4 Inspection and checking functional fit will be performed in a ventilated hood line.

Step No. 5 Packaging for shipment will be performed in a ventilated hood line.

Step No. 6 Surveying the outside surface of the package for alpha contamination, and decontaminating if necessary before removing the package from the hood line.

Step No. 7 Labeling the package, top and side, with Class I DOT sticker.

Control of Releases to Atmosphere

All exhaust air from the hood line (and furnace) will be filtered by double absolute filters tested in situ to 99.97% efficiency down to 0.3 microns. The effluent from the filter house will be sampled continuously for alpha airborne activity by an isokinetic stack sampler.

Waste Management

All waste solid (defective parts, scrap, etc.) and liquid waste generated from decontamination, will be shipped to customer for disposal in a ERDA-approved radioactive classified-material burial ground.

Personnel Precautionary Measures

1. Impervious gloves will be worn when direct handling of thorium-loaded fiber glass is required.

2. Long-sleeve lab coats will be donned upon entry to this isolated process area, and removed when leaving area.

3. Each employee will be issued a respirator equipped with a high efficiency particulate filter. Employees will be given instructions on proper use and care of respirator protective equipment. Respirator will be used in the event of an emergency, or when alpha air monitoring reveals levels greater than 4.4 $d/m/m^3$ of air.

4. Periodic arrangements for in vivo counting will be made for employees selected on a random basis.

ADDENDUM NO. 3

Monitoring Equipment

No. of Items	Description
1	Portable Gast air sampler- to be used for taking breathing-zone and operational air samples.
1	Proportional counter manufactured by Nuclear Measurements Corporation - to be used to count air samples and smear samples for alpha activity. Background for alpha: 0.1 c/m; beta and gamma: 24 c/m.
1	Decade scaler manufactured by Nuclear Measurements Corporation, with maximum counting rate of 1,000,000 c/m and precision of $\pm$ 0.1%.
2	Portable gas proportional alpha counter Model PAC-4G manufactured by Eberline Instrument Corporation. a. Active area: 50 cm^2 b. Window thickness: 0.85 mg/cm^2 Window material: Aluminized Mylar c. Efficiency: 50% of 2π for alpha d. Range: 0 to 500K cpm
5	General air samplers equipped with Rotometers, to sample at a rate of 17 l/min in process area (a room 30' x 40').
1	Isokinetic stack sampler, to sample effluent from filter house.

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U.S. ATOMIC ENERGY COMMISSION

MATERIALS DATA INPUT S/SNM

4 - SOURCE AND SNM REFERENCE COPY

A. TYPE OF ACTION AND IDENTIFICATION CODES

				DOCKET NUMBER	MAIL CONTROL NUMBER	CHANGE NAME/ ADDRESS
☐ NEW LICENSE	☐ AMENDMENT TO RENEW LICENSE	☐ AMENDMENT TO TERMINATE	☐ VOID			
☒ NEW LICENSE AND NEW LICENSEE	☐ OTHER AMENDMENT	☐ CLERICAL CHANGE NO AMENDMENT		040-08475	02079	☐

B. INDICATIVE INFORMATION:

INDIVIDUAL LICENSEES

NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)
NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)
NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)

ORGANIZATION LICENSEES

ORGANIZATION NAME (ALPHABETIC SEQUENCE)
Fiber Materials Inc.

DEPARTMENT OR BUREAU

ADDRESS

BUILDING, STREET	CITY	STATE	ZIP CODE
Biddeford Industrial Park	**EBiddeford**	**ME**	**004005**

TYPE OF APPLICANT	DATE REQUEST RECEIVED	INSTITUTION CODE	PENDING PROG. CODE	ACTUAL PROG. CODE
☐ U.S. GOVERNMENT AGENCY ☐ INDIVIDUAL LICENSEE ☒ ORGANIZATIONAL LICENSEE	10-22-75	14751	11300	

SECONDARY PROGRAM CODES AS REQUIRED:

#1	#2	#3	#4	#5

LICENSE NUMBER	DATE LICENSE ISSUED OR ACTION COMPLETED	EXPIRATION DATE	

APPLICANT'S COMMUNICATION DATED:	CLASSIFICATION	ASSIGNED TO	RESULTING AMD. NO.
10-14-75	U		

ENCLOSURES:

UNCLASSIFIED DESCRIPTION:

Ltr. req. license to use raw material for further processing.....

DISTRIBUTION:

Copy dept w/ Whipp Security Rm 1 1 1
10/29/75

PDR(Ltr only)

IE(region)

Licensee: Orig. to applicant
Cy 1 Files
Cy 2 IE:I
Cys 3-9 Files

OTHER REFERRALS

NAME	DATE	NAME	DATE
Dragonette: w/reg file	cy 10-29		
df 200035			

REL
0/1