



TEXTILE RESEARCH INSTITUTE

P.O. BOX 625, PRINCETON, NEW JERSEY 08542

609-924-3150

HEINZ J. JANSEN
SECRETARY-TREASURER

August 9, 1985

United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Re: License No. 29-01987-02
Control No. 15550

Gentlemen:

Pursuant to the captioned license, TRI is authorized to use in research certain nuclear material listed in item 6 of the attached copy of the license. However, we are in need of a beta source containing 0.1 mCi of Strontium-90 and we are requesting authorization for the use of this additional nuclear material in our research.

The beta source will be used in conjunction with a Geiger counter for gauging the mass per unit area of sheet materials placed between the source and the counter. Please refer to the attached copy of vendor's catalog for specifications. The source unit would be purchased from Amersham Corporation, 2636 S. Clearbrook Drive, Arlington Heights, Illinois 60005.

Should you require additional information in considering this request, please contact me.

11:01A 92 AUG 58.

Sincerely yours,

8510230279 851001
REG1 LIC30
29-01987-02

PDR

RECEIVED

Heinz J. Jansen
Heinz J. Jansen

HJJ:mmm
Enclosure

Aug 23 I

Applicant.....
Check No. 22291
Amount/Fee Category \$120/3M
Type of Fee Amendment
Date Check Recd. 9/16
Received By. Jacques / M

"OFFICIAL RECORD COPY"

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MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee

¹Textile Research Institute

P. O. Box 625

²Princeton, New Jersey 08540In accordance with letter dated
August 2, 19833. License number 29-01987-02 is amended in
its entirety to read as follows:

4. Expiration date September 30, 1988

5. Docket or
Reference No.6. Byproduct, source, and/or
special nuclear material7. Chemical and/or physical
form8. Maximum amount that licensee
may possess at any one time
under this license

A. Bromine 82

A. Any

A. Not to exceed 5
millicuries total

B. Calcium 45

B. Any

B. Not to exceed 10
millicuries total

C. Carbon 14

C. Any

C. Not to exceed 20
millicuries total

D. Chlorine 36

D. Any

D. Not to exceed 5
millicuries total

E. Hydrogen 3

E. Any

E. Not to exceed 20
millicuries total

F. Phosphorus 32

F. Any

F. Not to exceed 10
millicuries total

G. Sulfur 35

G. Any

G. Not to exceed 20
millicuries total

9. Authorized use

A. through G. For use in the research and development of textiles and related
material.

CONDITIONS

10. Licensed material shall be used only at the licensee's facility at 601 Prospect
Avenue, Princeton, New Jersey.11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code
of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers;
Inspections" and Part 20, "Standards for Protection Against Radiation."

12. Licensed material shall be used by, or under the supervision of, Dr. H. D. Weigmann.

Strontium-90 (+ Yttrium-90)

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Disc sources (ceramic)

Strontium-90 as a ceramic pellet doubly encapsulated stainless steel capsules.

Quality control

Wipe test A
Immersion test L

Prototype testing

IAEA Special form, SFC.171
ANSI classification, C64343

Emission checked against standards using a Kr ion chamber.

Extended area sources (metal foil)

A strontium-90 compound incorporated in rolled silver foil, face thickness 50 μ m (50mg/cm²).

Quality control

Wipe test A
Immersion test L

Emission checked against standards using a 2 π ion chamber; output tolerance \pm 10%.

Prototype testing

ANSI classification, C34232

Point sources

Strontium-90 incorporated in a 1mm diameter glass bead, sealed in a welded stainless steel capsule, window thickness 50 μ m (40mg/cm²).

Quality control

Wipe test A
Immersion test L

Prototype testing

ANSI classification, C54243

Emission checked against standards using a 2 π ion chamber.

Higher activity sources

⁹⁰Sr foils of higher activities can also be manufactured. They are normally supplied as discs mounted in stainless steel capsules with stainless steel windows, thickness 50 μ m (40mg/cm²); a typical capsule is illustrated in fig. 14.

Maximum activity up to 3Ci at a loading of 1Ci/cm².

activity* mCi	capsule type	code
2	X.117	SIF.1171
10	X.117	SIF.1174
20	X.117	SIF.1175
50	X.117	SIF.1176
100	X.117	SIF.1177

*activity tolerance -0, +25%

Availability: D4

nominal activity mCi	active dimensions		overall dimensions		code
	length mm	width mm	length mm	width mm	
10	100	12.5	140	25	SIC.7
20	100	12.5	140	25	SIC.10

Availability: D6

activity* mCi	capsule type	code
0.1	X.111	SIF.31
1	X.111	SIF.32
10	X.111	SIF.33

*activity tolerance -0, +25%

Availability: D4

Quality control

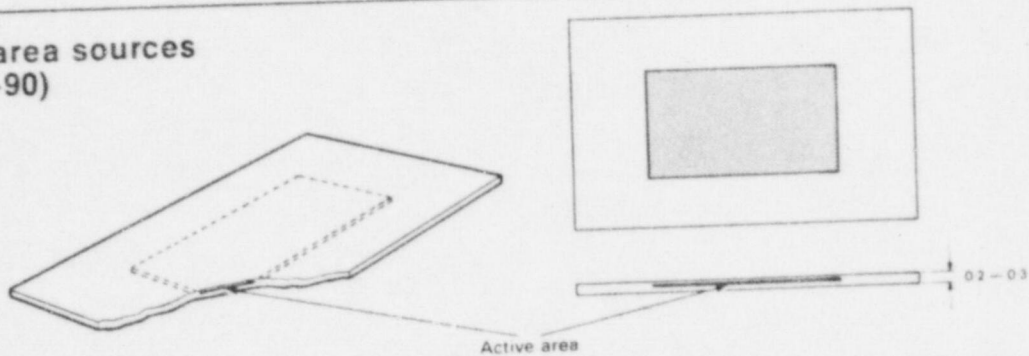
Wipe test A
Bubble test D
Immersion test L

Activity tolerance -0, +25%

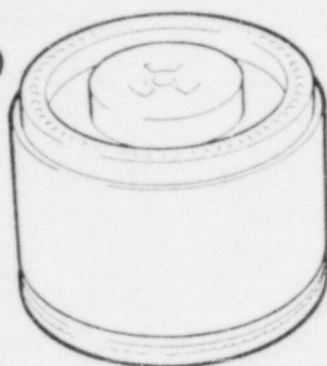
Availability: D*

Beta sources

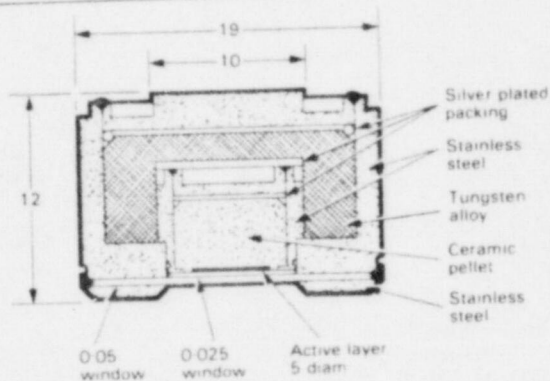
Extended area sources (strontium-90)



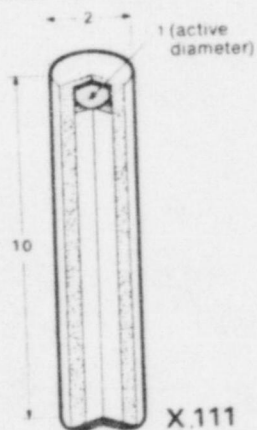
Disc sources (strontium-90)



X.117



Point sources (strontium-90)



X.111

0.1 mc

Typical higher activity source (strontium-90)

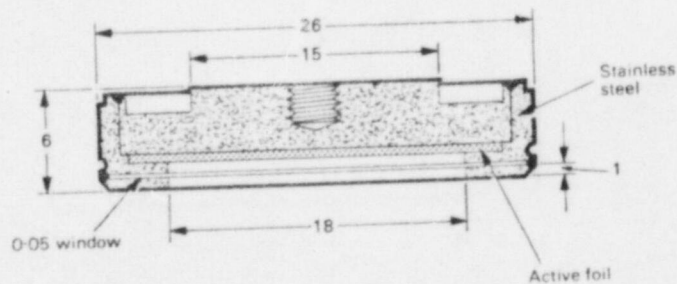
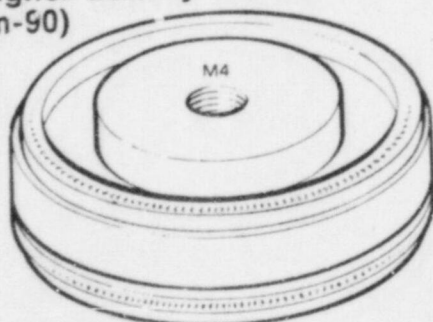


Fig. 14

Dimensions in mm