

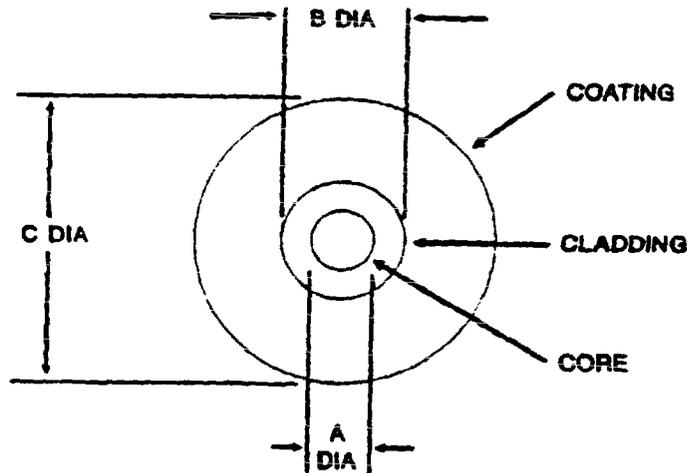
METRIC
 MIL-F-49291/2A
 8 July 1992
 SUPERSEDING
 DOD-F-49291/2
 30 MARCH 1987

MILITARY SPECIFICATION SHEET

FIBER, OPTICAL, 100/140 MICROMETERS, RADIATION HARDENED (METRIC)

This specification sheet is approved for use by all Departments and Agencies of the Department of Defense.

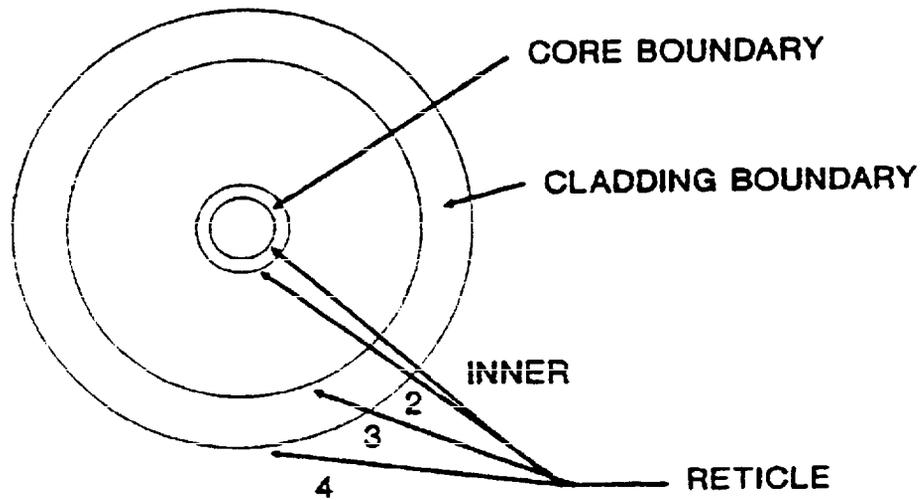
The requirements for acquiring the optical fibers described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-F-49291



Fiber index	PIN	Dimensions		
		A	B	C
Graded	M49291/2-01	140 ± 4	140 ± 6	250 ± 15
Graded (space qualified)	M49291/2-01S	140 ± 4	140 ± 6	250 ± 15
Quasi graded	M49291/2-02	140 ± 4	140 ± 6	250 ± 15

NOTE: Dimensions are in micrometers.

FIGURE 1. Dimensions and configuration of optical fiber construction.



Circle	Diameter of circle
Inner	96 Micrometers
Second	104 Micrometers
Third	134 Micrometers
Fourth	146 Micrometers

NOTE: Dimensions are in micrometers.

FIGURE 2. Tolerance fields.

REQUIREMENTS:

Classification:

Type: I
 Class: 1 or 2 (see PIN)
 Composition: A
 Size: V
 Wavelength: A

Dimensions and configuration:

Diameter: See Figures 1 and 2.

Ovality:

Core: 10 percent
 Cladding: 4 percent

Offset:

Core-to-cladding: < 6 micrometers
 Fiber-to-coating: < 17.5 micrometers (OCCR > 0.56)

Maximum percent of coating diameter change at the splice points: Not applicable.
 Continuous lengths: 1100 meters minimum.

Splices: Not allowed.

Tensile strength (proof test): 690 MPa.

Fiber mass/unit length (kg/km): 0.1 kg/km maximum.

Attenuation rate: Measurements made at 850 nm \pm 20 nm.

	<u>-46°C</u>	<u>+25°C</u>	<u>+71°C</u>
Non-nuclear:	3.50dB/km	3.50dB/km	3.50dB/km
After each required nuclear radiation resistance test:	5.50dB/km	4.50dB/km	4.50dB/km

Numerical aperture: 0.285 \pm 0.025 at 850 nanometers \pm 25 nm.

Bandwidth:

Graded index:

200 MHz·km (850nm \pm 20nm)

Quasi-graded:

100 MHz·km (850nm \pm 20nm)

Storage temperature: Applicable.

Temperature range:

Operating: -60°C to +85°C.
 Storage: -60°C to +85°C.

Fungus test: Applicable.

Nuclear radiation resistance: The nuclear radiation resistance characteristics of this optical fiber are classified and are contained in an appendix to this specification. Application to receive this appendix must be made through the US Army Communications-Electronics Command, ATTN: AMSEI-ED-TO, Fort Monmouth, NJ 07703-5016. Information concerning security clearance classification and "need to know" must be detailed in the request.

Mechanical strippability: Applicable, except the requirements of EIA/TIA-455-178 shall not apply.

Attenuation uniformity: Not Applicable.

Macrobend attenuation: Not Applicable.

Dispersion: Not Applicable.

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The following requirements and tests are applicable to space qualified PINs:

- a. Radiation: Only the steady-state response test applies. The dose rate shall be 50 Rads(Si)/minute with na total dose of 10 krads(Si)
- b. Torsion.
- c. Flexure.
- d. Dynamic tensile strength.
- e. Storage temperature.
- f. Thermal vacuum outgassing.
- g. Odor.
- h. Toxicity.

PIN (see Figure 1 and table I):

M49291/02-01
M49291/02-01S
M49291/02-02

TABLE I. Supersession data.

PIN	Superseding
M49291/2-01	D49291/2-01
M49291/2-01S	None
M49291/2-02	D49292/2-02

Revision letters are not used to denote changes due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - SH
Air Force - 85
NASA - NA

Review activities:
Army - MI, SC
Navy - AS
DLA - ES

User activity:
Air Force - 17

Preparing activity:
Army - CR

Agent:
DLA - ES

(Project 6010-0036-2)