

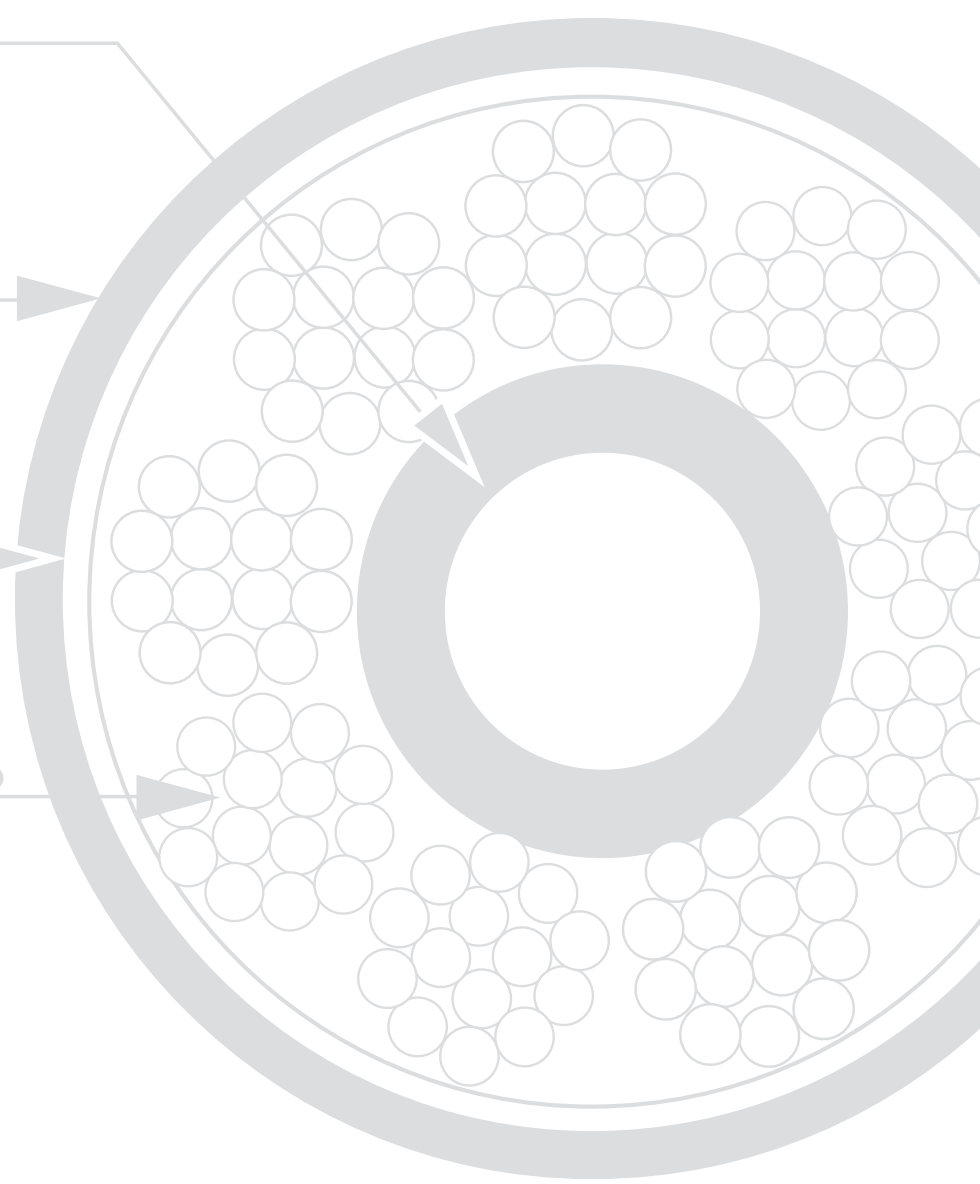
**POLYMER OPTICAL FIBER
SPECIFICATIONS**

REFLECTIVE PVC CORE

PVC OUTER JACKET

PROTECTIVE MYLAR TAPE

PMMA ACRYLIC FIBER OPTIC STRAND





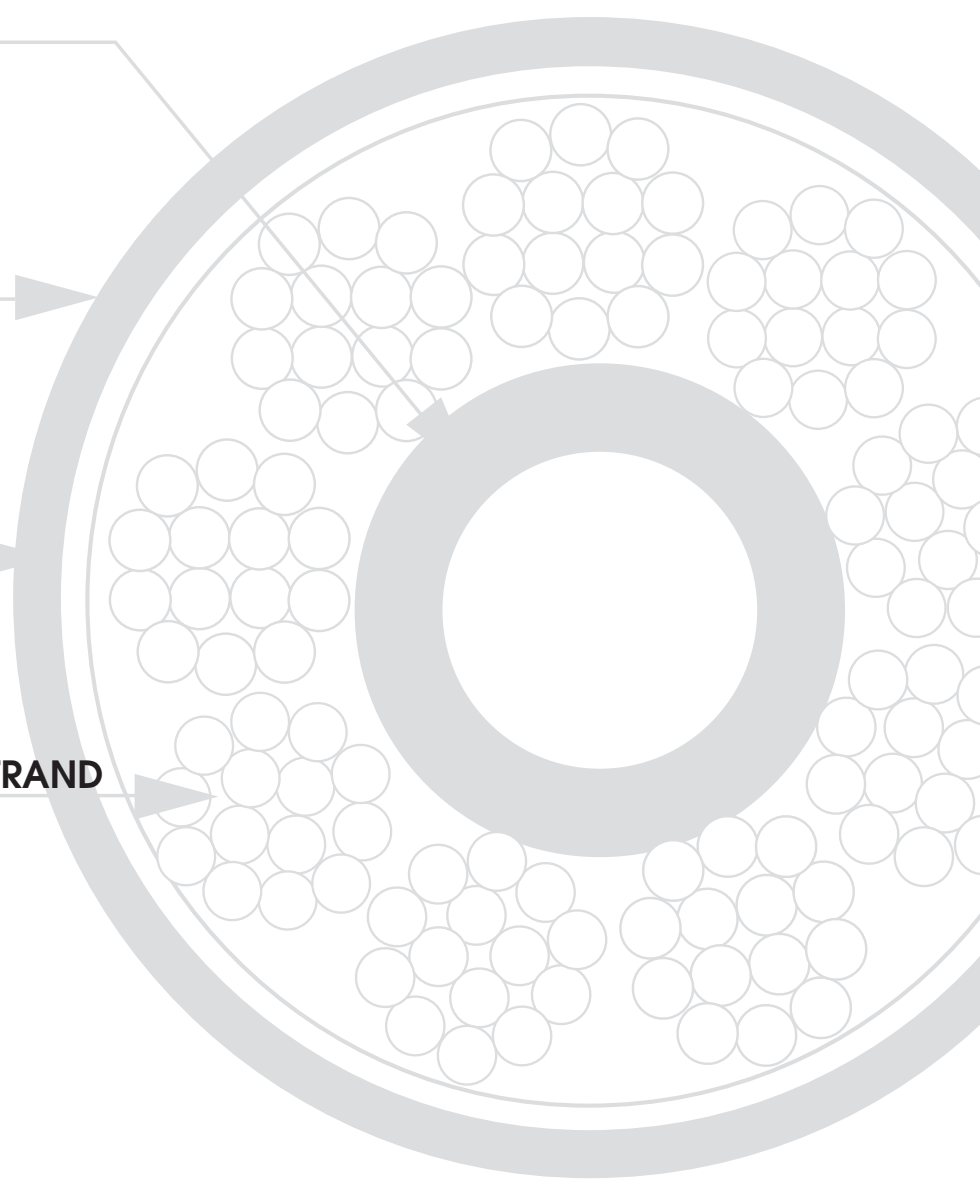
I.	REFLECTIVE INNER CORE DATA SHEET	
A.	WHITE (GA-2175)	4-5
II.	PVC OUTER JACKET DATA SHEET	
A.	CLEAR (GA-2175)	8-9
B.	BLACK (GA-2175)	10-11
III.	PROTECTIVE MYLAR DATA SHEET	
A.	PMMA ACRYLIC M100	14
IV.	FIBER OPTIC STRAND SPECIFICATIONS	16
A.	OPTICAL PROPERTIES	
	1. SPECTRAL ATTENUATION	17
	2. TRANSMITTED RATE BY LENGTH.....	18
B.	PHYSICAL PROPERTIES	
	1. TENSILE STRENGTH.....	19
	2. STATIC BENDING	20
	3. CYCLIC BENDINGS.....	21
	3. ELONGATION	22
C.	THERMAL PROPERTIES	
	1. DURABILITY TO LOW TEMPERATURE.....	23
	2. DURABILITY TO HIGH TEMPERATURE.....	24
	3. DURABILITY TO HEATING WITH MOISTURE.....	25
	5. WEATHERABILITY	26
	6. HEAT SHRINKAGE	27
D.	CHEMICAL RESISTANCE	
	1. SULFURIC ACID (34.6 WT%)	28
	2. SODIUM HYDROXIDE (10 WT%)	29
	3. ENGINE OIL	30
	4. SEA WATER (5 WT%)	31

REFLECTIVE PVC CORE

PVC OUTER JACKET

PROTECTIVE MYLAR TAPE

PMMA ACRYLIC FIBER OPTIC STRAND





GA-2175 UV WHITE

APPLICATION: Specialty jacket compound designed for service in direct sunlight and resistant to fungal growth

PROPERTIES	VALUE	ASTM#
Durometer "A", Inst./15 sec +/- 2	90/85	D-2240
Specific Gravity, +/-2	1.24	D-792
Tensile Strength, psi	3,400	D-412
100% Modules, psi	1050	D-412
Elongation, %	360	D-412
Brittle Point, °C	-41	D-746
Oxygen Index, %	22.5	D-2863
Weight Loss, % (7 days @ 100°C, 1 mm thickness)	2.8	—

WEATHERING RESISTANCE	VALUE	ASTM#
1) Change a property after 4000 hr in a "Carbon Arc Weatherometer"		
Tensile Strength, % change	+3	D-750
Elongation at Break, % change	-8	D-750
Hardness, %0 change	+1	D-750
2) Fungus Resistance (Mildew Causing Microorganism)		
Observation of sample stain	None	E-1428-91
Growth Specimens	None	G-21-90

CHEMICAL RESISTANCE	VALUE	ASTM#
Water Extraction, % (10 days 40°C)	0.4	—
Soap Extraction, % (24 hrs. @ 60°C, 1% soap solution)	1.9	—
Sea Water Extraction, % (10 days 40°C)	1.2	—

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GA-2175 UV-3083 WHITE



PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: NA **Vapor Pressure:** NA **Vapor Density:** NA **Solubility in Water:** Negligible
Melting Point: 300°F **Softens at:** 270-280°F **Evaporation Rate:** NA **Specific Gravity:** 1.20
Appearance & Color: Round or hexagonal pellets, essentially odorless

FIRE AND EXPLOSION DATA

Flash Point: NA, 735°F ASTM-1929 **Flammable Limits:** NA LEL: NA **UEL:** NA

Fire Extinguishing Media: Water spray, carbon dioxide or dry chemicals.

Special Fire Fighting Procedures:

- To reduce flame intensity and to absorb irritating fumes, apply water spray or fog
- Shut off all incoming electricity from equipment or wiring.
- Use self-containing breathing apparatus.

Unusual Fire and Explosion Hazards:

- NFPA lists an ignition temperature of 608°F for PVC Plasticizer (Dust Cloud) with a minimum concentration of 0.035 oz/cu.ft.
- Fire conditions produce hydrogen chloride, carbon dioxide and carbon monoxide.

REACTIVITY DATA

Stability: Stable at normal processing temperatures.

Incompatibility: NA - Soluble in certain ketones and organic solvents.

Hazardous Decomposition or Byproducts: Hydrogen chloride, carbon dioxide, carbon monoxide may evolve.

Hazardous Polymerization: Will not occur with ordinary use.

HEALTH HAZARD DATA

Route(s) of entry: None **Health Hazards (acute and chronic):** None known

Carcinogenicity: NA **NTP:** NA **IARC:** NA **OSHA:** NA

Signs and Symptoms of Exposure: None known; however, prolonged processing at elevated temperature above 380°F may produce fumes which may be irritating to the eyes and respiratory systems.

Medical Conditions Generally Aggravated By Exposure: None known.

First Aid Procedures: Not normally required; however, if irritation occurs or persists, remove affected individual from area and consult a physician. If molten material comes in contact with the skin, immerse under a running stream of water until cooled. DO NOT attempt to remove the material from the skin. Removal can result in tissue damage. Get immediate medical attention.

PRECAUTIONS FOR SAFE HANDLING AND USE

- **If Material Is Released or Spilled:** sweep, shovel or vacuum up and place into appropriate disposal container.
- **As a Waste Product:** Material can be disposed of in sanitary landfills or by methods of incinerations; in accordance with Federal, State and Local regulations.
- **During Processing:** Ventilate process vapors.

OSHA Standard 1910.1017 on Vinylchloride monomer, limits worker exposure to 1 ppm (8 hr. avg.) and requires monitoring and other precautions of Polyvinylchloride in storage, handling, and use. The following material label is also required: "Contains Vinylchloride monomer - Vinylchloride is a Cancer Suspect Agent", however, "fabricated products" not subject to "reprocessing or re-melting", are an exception to this regulation. Now, low monomer content PVC compounds operate below and comply with the OSHA 0.5 ppm action level, assuming that normal conditions and ventilation are provided in the work area. Further developments on resins and regulations are pending.

CONTROL MEASURES

Respiratory Protection: Not required with normal handling.

Ventilation: Local exhaust required to control normal process vapors and vapors which may evolve at elevated temperatures.

Protective Clothing or Equipment: Although not required under normal handling conditions, protective gloves and eye protection should be worn while handling this material.

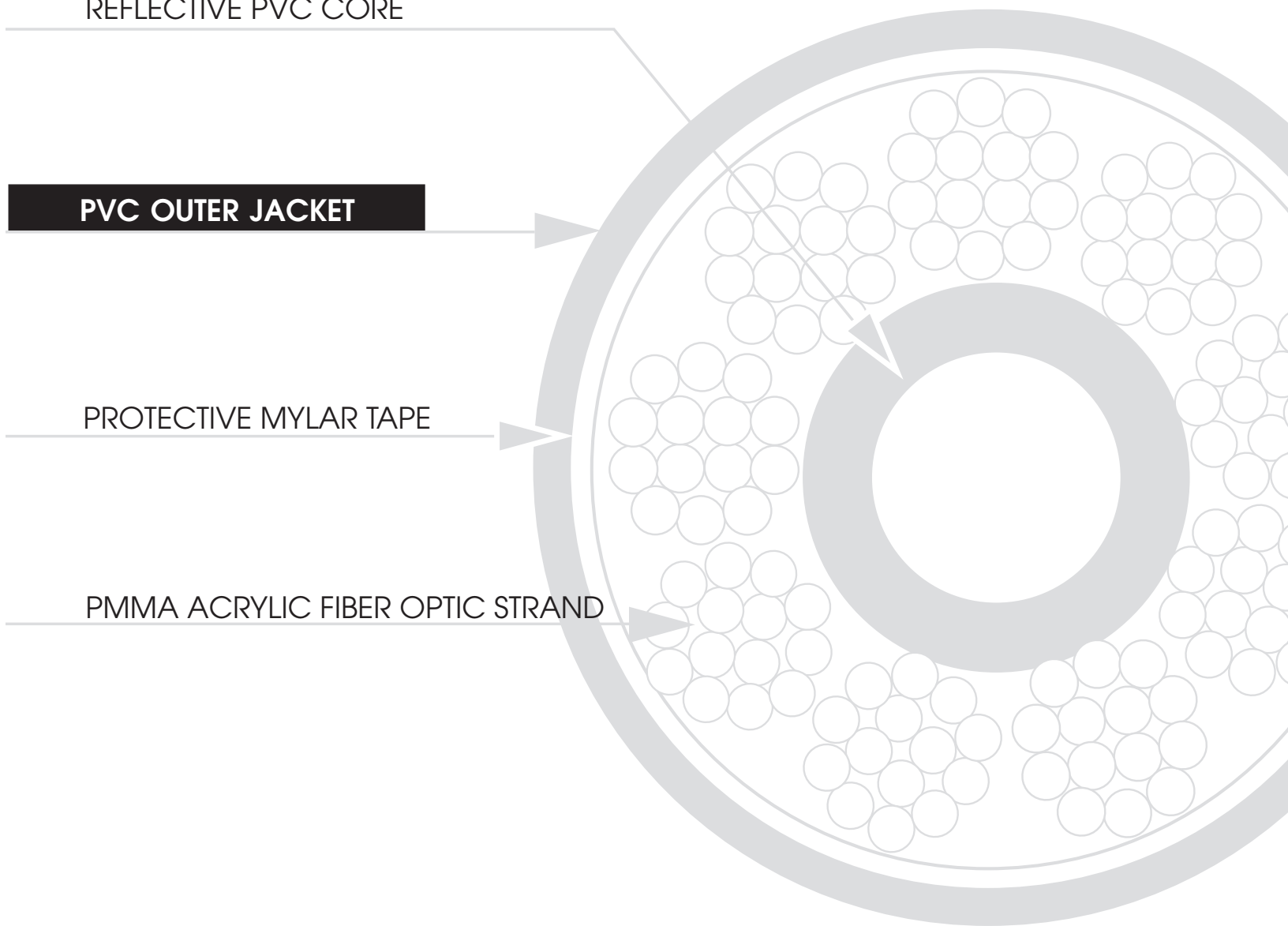
Work/Hygienic Practices: Normal hygienic practices should be followed.

REFLECTIVE PVC CORE

PVC OUTER JACKET

PROTECTIVE MYLAR TAPE

PMMA ACRYLIC FIBER OPTIC STRAND





GA-2175 UV CLEAR

APPLICATION: Specialty clear jacket compound designed for service in direct sunlight and resistant to fungal growth

PROPERTIES	VALUE	ASTM#
Durometer "A", Inst./15 sec +/- 2	73/67	D-2240
Specific Gravity, +/-2	1.21	D-792
Tensile Strength, psi	2,310	D-412
100% Modules, psi	1050	D-412
Elongation, %	466	D-412
Brittle Point, °C	-41	D-746
Oxygen Index, %	22.5	D-2863
Weight Loss, % (7 days @ 100°C, 1 mm thickness)	2.8	—

WEATHERING RESISTANCE	VALUE	ASTM#
1) Change a property after 4000 hr in a "Carbon Arc Weatherometer"		
Tensile Strength, % change	+5	D-750
Elongation at Break, % change	-11	D-750
Hardness, pts change	+2	D-750
2) Fungus Resistance (Mildew Causing Microorganism)		
Observation of sample stain	None	E-1428-91
Growth Specimens	None	G-21-90

CHEMICAL RESISTANCE	VALUE	ASTM#
Water Extraction, % (10 days 40°C)	0.4	—
Soap Extraction, % (24 hrs. @ 60°C, 1% soap solution)	1.9	—
Sea Water Extraction, % (10 days 40°C)	1.2	—

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GA-2175 UV CLEAR



PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: NA **Vapor Pressure:** NA **Vapor Density:** NA **Solubility in Water:** Negligible
Melting Point: 300°F **Softens at:** 270-280°F **Evaporation Rate:** NA **Specific Gravity:** 1.20
Appearance & Color: Round or hexagonal pellets, essentially odorless

FIRE AND EXPLOSION DATA

Flash Point: NA, 735°F ASTM-1929 **Flammable Limits:** NA LEL: NA **UEL:** NA

Fire Extinguishing Media: Water spray, carbon dioxide or dry chemicals.

Special Fire Fighting Procedures:

- To reduce flame intensity and to absorb irritating fumes, apply water spray or fog
- Shut off all incoming electricity from equipment or wiring.
- Use self-containing breathing apparatus.

Unusual Fire and Explosion Hazards:

- NFPA lists an ignition temperature of 608°F for PVC Plasticizer (Dust Cloud) with a minimum concentration of 0.035 oz/cu.ft.
- Fire conditions produce hydrogen chloride, carbon dioxide and carbon monoxide.

REACTIVITY DATA

Stability: Stable at normal processing temperatures.

Incompatibility: NA - Soluble in certain ketones and organic solvents.

Hazardous Decomposition or Byproducts: Hydrogen chloride, carbon dioxide, carbon monoxide may evolve.

Hazardous Polymerization: Will not occur with ordinary use.

HEALTH HAZARD DATA

Route(s) of entry: None **Health Hazards (acute and chronic):** None known

Carcinogenicity: NA **NTP:** NA **IARC:** NA **OSHA:** NA

Signs and Symptoms of Exposure: None known; however, prolonged processing at elevated temperature above 380°F may produce fumes which may be irritating to the eyes and respiratory systems.

Medical Conditions Generally Aggravated By Exposure: None known.

First Aid Procedures: Not normally required; however, if irritation occurs or persists, remove affected individual from area and consult a physician. If molten material comes in contact with the skin, immerse under a running stream of water until cooled. DO NOT attempt to remove the material from the skin. Removal can result in tissue damage. Get immediate medical attention.

PRECAUTIONS FOR SAFE HANDLING AND USE

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OSHA Standard 1910.1017 on Vinylchloride monomer, limits worker exposure to 1 ppm (8 hr. avg.) and requires monitoring and other precautions of Polyvinylchloride in storage, handling, and use. The following material label is also required: "Contains Vinylchloride monomer - Vinylchloride is a Cancer Suspect Agent", however, "fabricated products" not subject to "reprocessing or re-melting", are an exception to this regulation. Now, low monomer content PVC compounds operate below and comply with the OSHA 0.5 ppm action level, assuming that normal conditions and ventilation are provided in the work area. Further developments on resins and regulations are pending.

CONTROL MEASURES

Respiratory Protection: Not required with normal handling.

Ventilation: Local exhaust required to control normal process vapors and vapors which may evolve at elevated temperatures.

Protective Clothing or Equipment: Although not required under normal handling conditions, protective gloves and eye protection should be worn while handling this material.

Work/Hygienic Practices: Normal hygienic practices should be followed.



GA-2175 UV-405 BLACK

APPLICATION: Specialty jacket compound designed for service in direct sunlight and resistant to fungal growth

PROPERTIES	VALUE	ASTM#
Durometer "A", Inst./15 sec +/- 2	85/78	D-2240
Specific Gravity, +/-2	1.21	D-792
Tensile Strength, psi	3,421	D-412
100% Modules, psi	1050	D-412
Elongation, %	380	D-412
Brittle Point, °C	-41	D-746
Oxygen Index, %	22.5	D-2863
Weight Loss, % (7 days @ 100°C, 1 mm thickness)	2.8	—

WEATHERING RESISTANCE	VALUE	ASTM#
1) Change a property after 4000 hr in a "Carbon Arc Weatherometer"		
Tensile Strength, % change	+7	D-750
Elongation at Break, % change	-14	D-750
Hardness, pts change	+3	D-750
2) Fungus Resistance (Mildew Causing Microorganism)		
Observation of sample stain	None	E-1428-91
Growth Specimens	None	G-21-90

CHEMICAL RESISTANCE	VALUE	ASTM#
Water Extraction, % (10 days 40°C)	0.4	—
Soap Extraction, % (24 hrs. @ 60°C, 1% soap solution)	1.9	—
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GA-2175 UV-405 BLACK



PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: NA **Vapor Pressure:** NA **Vapor Density:** NA **Solubility in Water:** Negligible
Melting Point: 300°F **Softens at:** 270-280°F **Evaporation Rate:** NA **Specific Gravity:** 1.20
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Fire Extinguishing Media: Water spray, carbon dioxide or dry chemicals.

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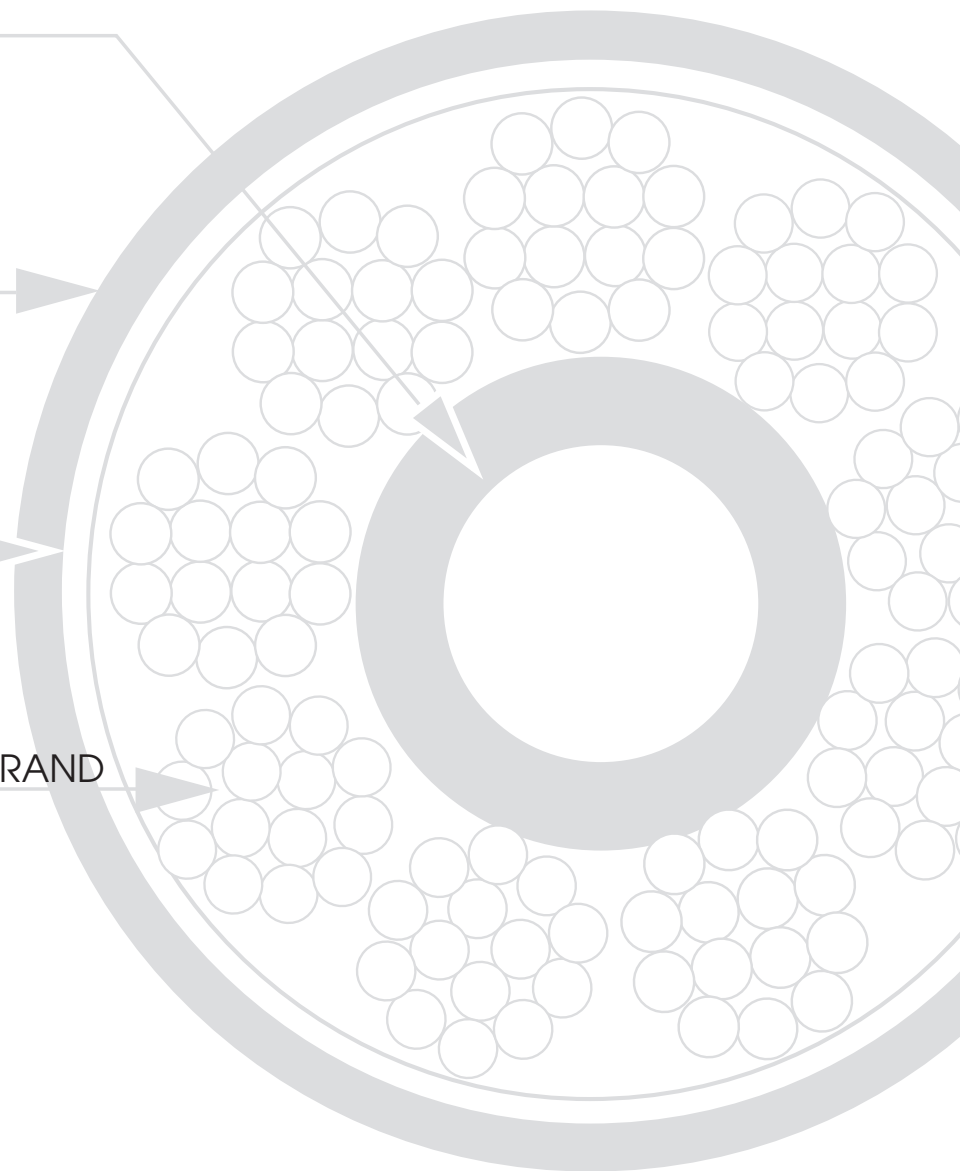
Work/Hygienic Practices: Normal hygienic practices should be followed.

REFLECTIVE PVC CORE

PVC OUTER JACKET

PROTECTIVE MYLAR TAPE

PMMA ACRYLIC FIBER OPTIC STRAND





M100

CONSTRUCTION: 0.00092" (23 µm) polyester film

DESCRIPTION: Slit film which wraps and binds conductors, separating them from cable fillers and jacketing materials.

TYPICAL PROPERTIES	ENGLISH	METRIC	TEST METHOD
Overall Thickness	0.00092 inch	23 µm	ASTM D 374
Yield Strength	15,000 psi	103 MPa	ASTM D 882
Density		1.395 g/cm ³	ASTM D 1505
Tensile Strength	30,000 psi	206 MPa	ASTM D 882
Elongation at Product Break	150%	150%	ASTM D 882
Dielectric Strength	4.0 kV		ASTM D 149
Maximum Continuous Operating Temperature	220°F	105°C	UL 746B
Color	Natural (Clear)		

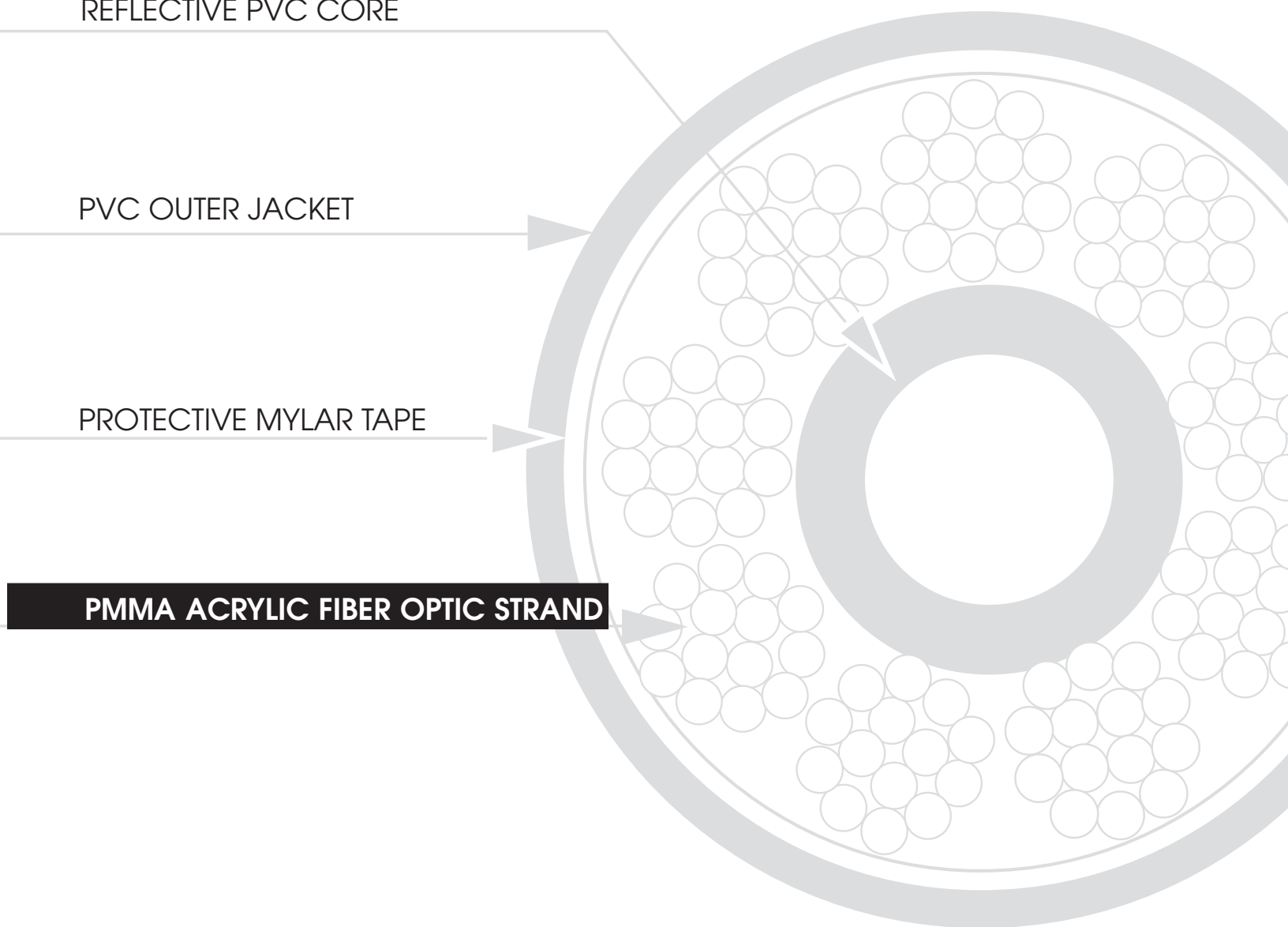
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REFLECTIVE PVC CORE

PVC OUTER JACKET

PROTECTIVE MYLAR TAPE

PMMA ACRYLIC FIBER OPTIC STRAND





SPECIFICATIONS

PRODUCT CODE: PGR-FB750

				ITEM	UNIT	PROPERTY			
						MIN	AVERAGE	MAX	
STRUCTURE	CABLE	CORD	FIBER	CORE MATERIAL	—	POLYMETHYL METHACRYLATE			
				CORE DIAMETER	µm	690	735	780	
				CLADDING MATERIAL	—	FLUORINATED POLYMER			
				CLADDING DIAMETER	µm	705	750	795	
				NUMERICAL APERTURE	—	—	0.50	—	
					NUMBER OF FIBER	FIBERS		—	
					SHEATH MATERIAL	—	—		
					SHEATH COLOR	—	—		
					CORD DIAMETER	mm	—	—	—
					CORD WIDTH	mm	—	—	—
					TENSION MEMBER	—	—		
					JACKET MATERIAL	—	—		
					JACKET COLOR	—	—		
					CABLE DIAMETER	mm	—	—	—
AVAILABLE TEMPERATURE RANGE PERMANENT USE					°C	-40	—	70	
OPTICAL PROPERTIES			SPECTRUM ATTENUATION	dB/km	—	—	250		
PHYSICAL PROPERTIES			TENSILE STRENGTH (yield point)	kg	3.3	—	—		
			ALLOWABLE BENDING RADIUS	mm	9	—	—		

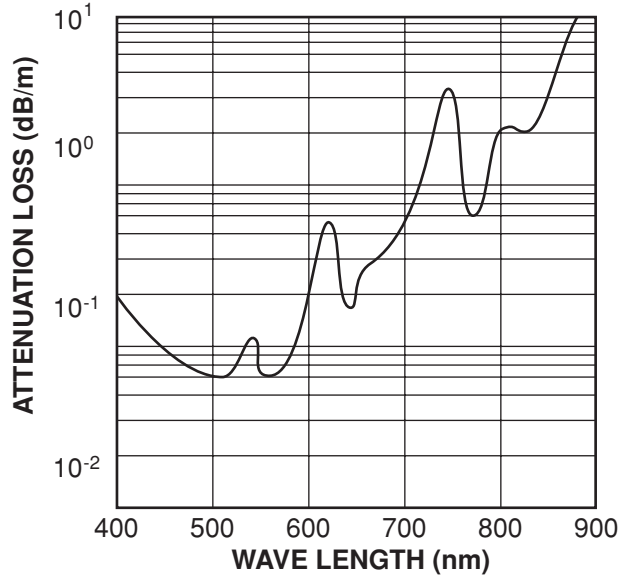
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SPECTRAL ATTENUATION



PRODUCT CODE: PGR-FB750

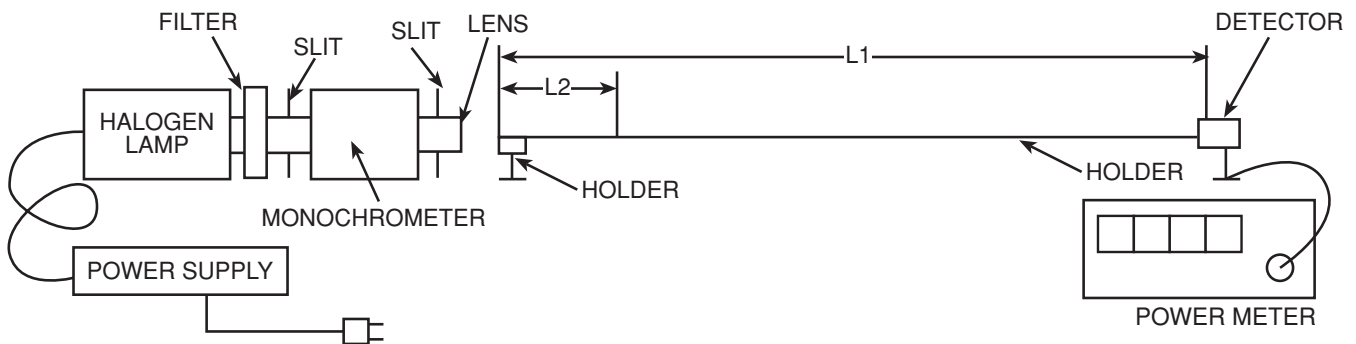
RESULT:



TEST CONDITION

Measured Method : Cut Back Method
 Temperature, Relative Humidity : 25°C 65 %RH
 Light Source : Halogen Lamp
 Launch NA : 0.25

EQUIPMENT



$$\text{Attenuation Loss (dB/m)} = (P1 - P2) / (L2 - L1)$$

- L1, L2 : Sample Length (m)
- P1 : Transmitted Light Power at Cord Length L1 (dBm)
- P2 : Transmitted Light Power at Cord Length L2 (dBm)

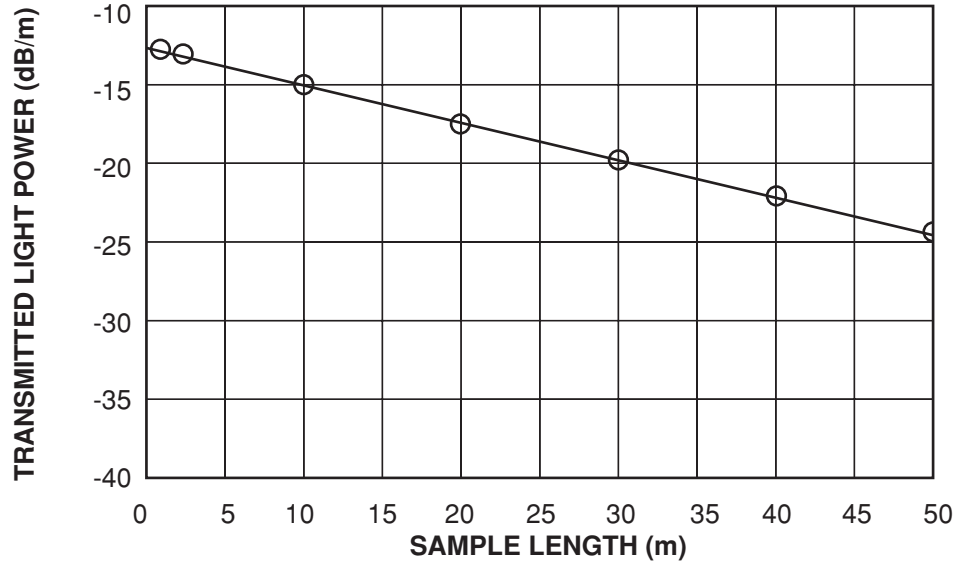
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TRANSMITTED RATE BY LENGTH

PRODUCT CODE: PGR-FB750

RESULT:



TEST CONDITION

Light Source : 660 nm LED
Sensor : Power Meter
Temperature : 25°C

EQUIPMENT



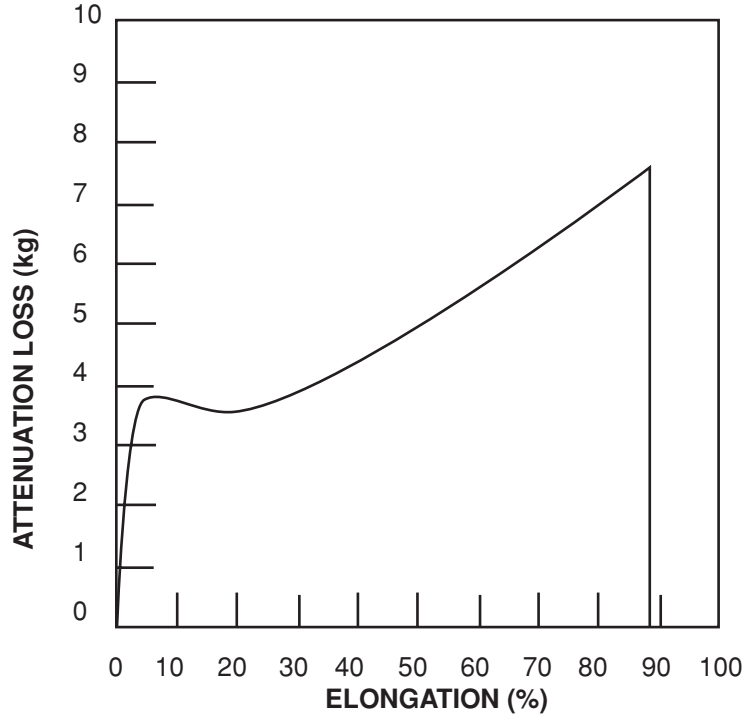
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TENSILE STRENGTH



PRODUCT CODE: PGR-FB750

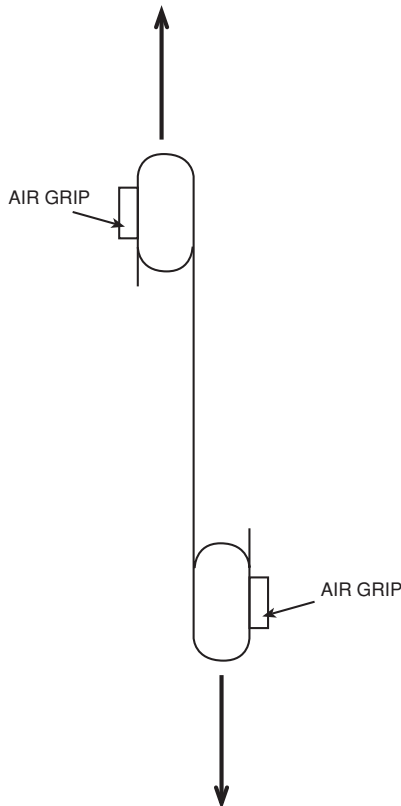
RESULT:



TEST CONDITION

Sample Length : 20 cm
Tensile Speed : 10 cm/min

EQUIPMENT



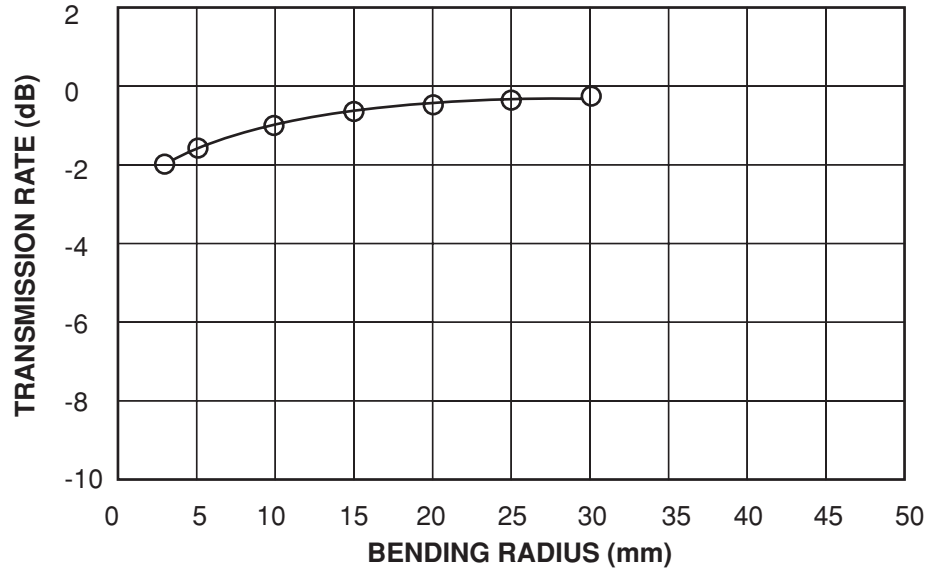
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STATIC BENDING

PRODUCT CODE: PGR-FB750

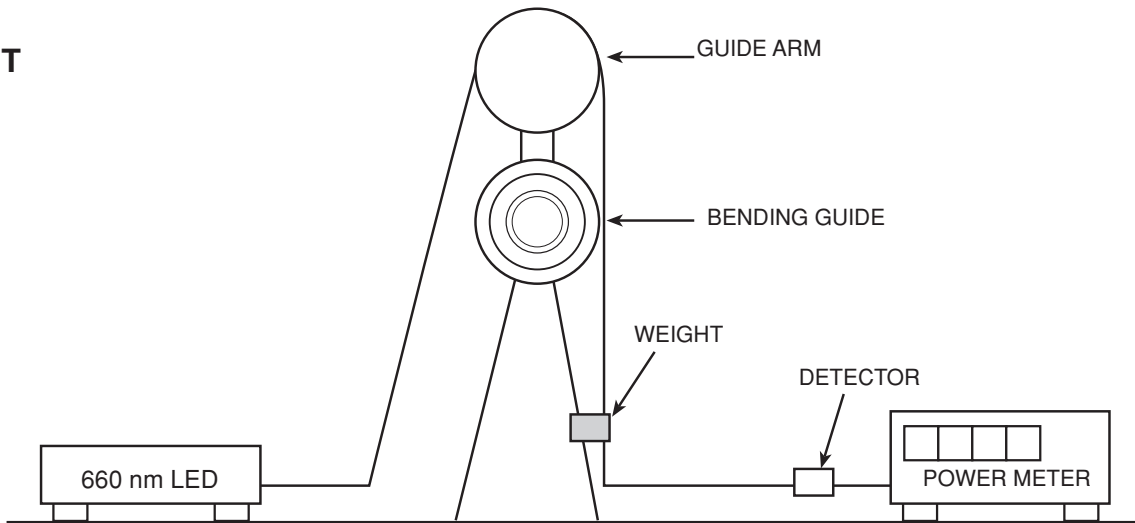
RESULT:



TEST CONDITION

Bending Angle : 360°
 Weight : 400 g

EQUIPMENT



$$\text{Transmission Rate (dB)} = 10 \times \log \frac{\text{Transmitted Light Power after Bending } (\mu\text{m})}{\text{Transmitted Light Power before Bending } (\mu\text{m})}$$

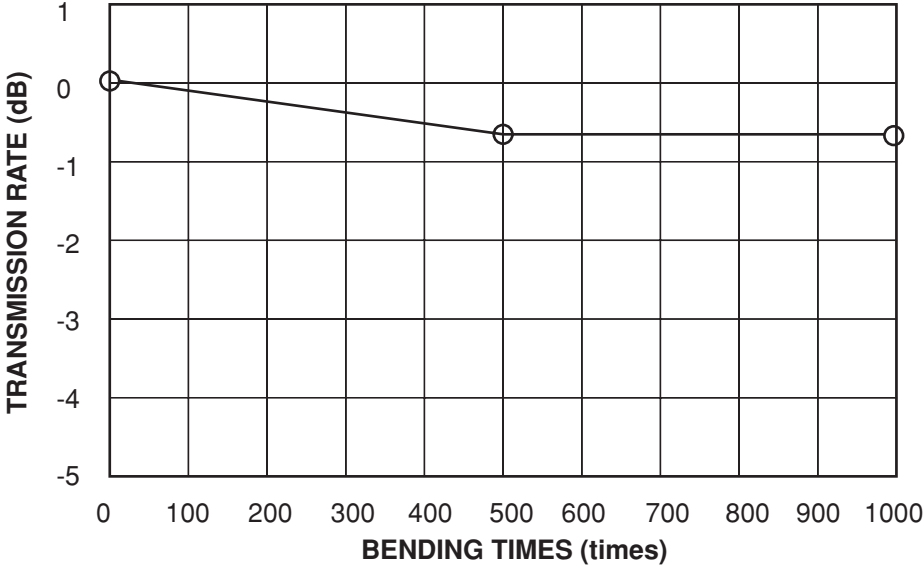
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CYCLIC BENDINGS



PRODUCT CODE: PGR-FB750

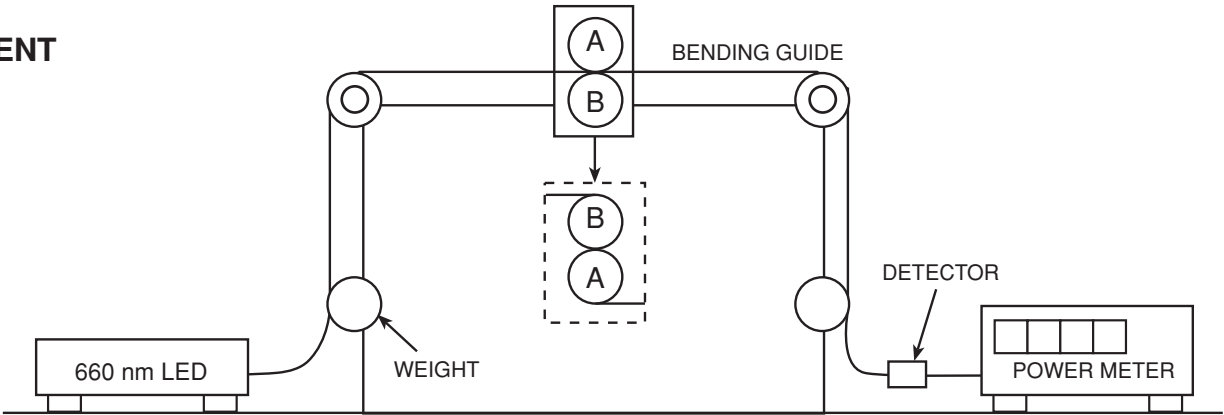
RESULT:



TEST CONDITION

- Bending Radius : 5 mm
- Bending Angle : 180° (one side)
- Weight : 1000 g x 2
- Sample Length : 3 m

EQUIPMENT



Transmission Rate (dB) = 10 x log $\frac{\text{Transmitted Light Power after Cyclic Bending } (\mu\text{m})}{\text{Transmitted Light Power before Cyclic Bending } (\mu\text{m})}$

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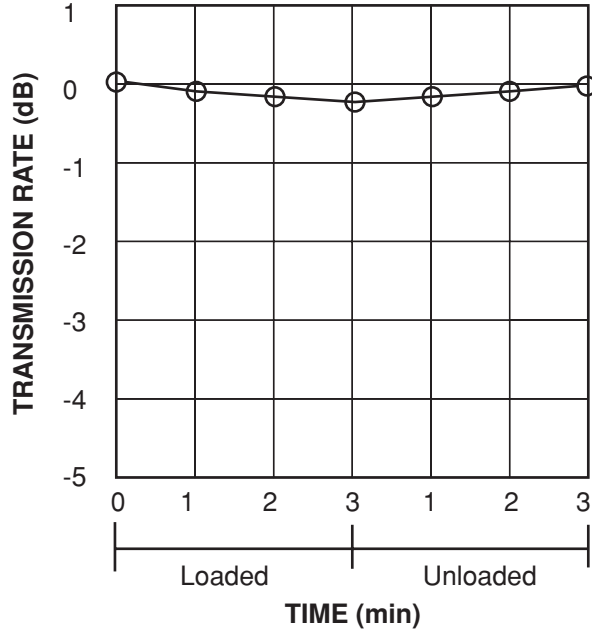
TECHNICAL DATA PACKAGE - INITIAL RELEASE: 20, SEPTEMBER 1995



ELONGATION

PRODUCT CODE: PGR-FB750

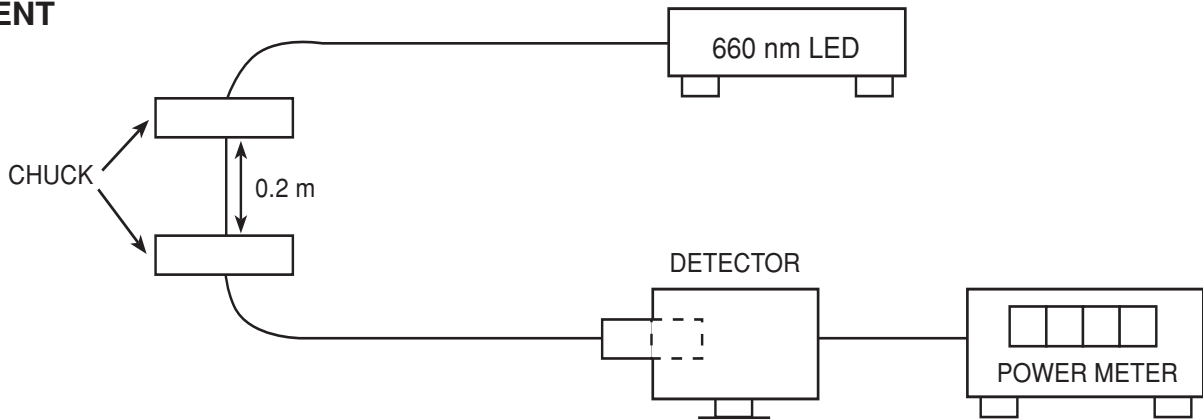
RESULT:



TEST CONDITION

Sample Length : 5 m
 Elongation Load : 10%

EQUIPMENT



$$\text{Transmission Rate (dB)} = 10 \times \log \frac{\text{Transmitted Light Power after Loaded } (\mu\text{m})}{\text{Transmitted Light Power before Loaded } (\mu\text{m})}$$

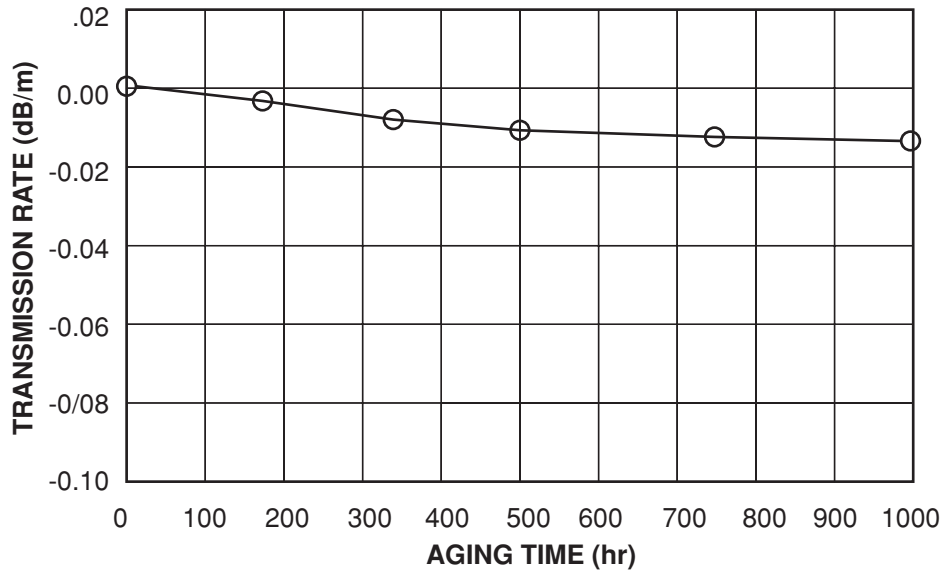
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DURABILITY TO LOW TEMPERATURE



PRODUCT CODE: PGR-FB750

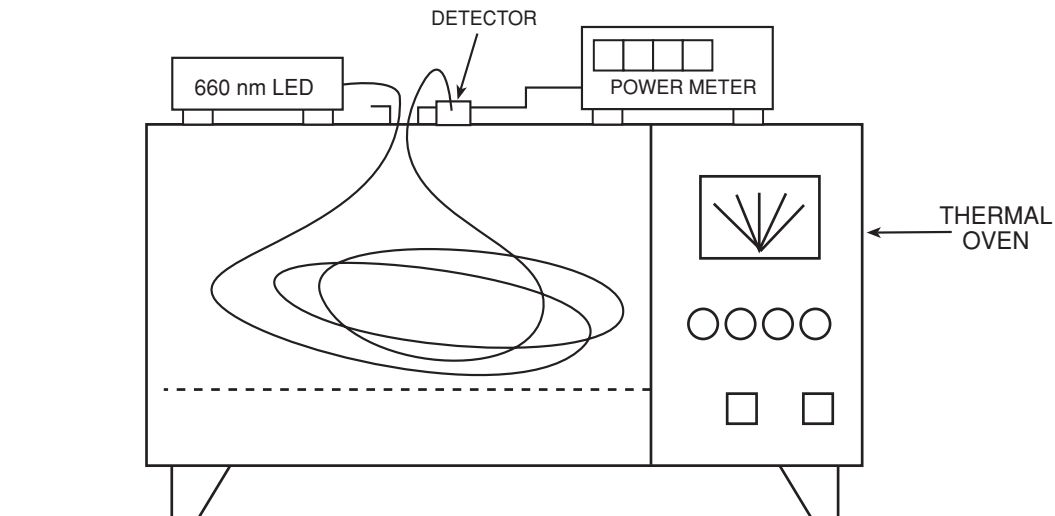
RESULT:



TEST CONDITION

Temperature : -40°C
Sample Length : 28 m

EQUIPMENT



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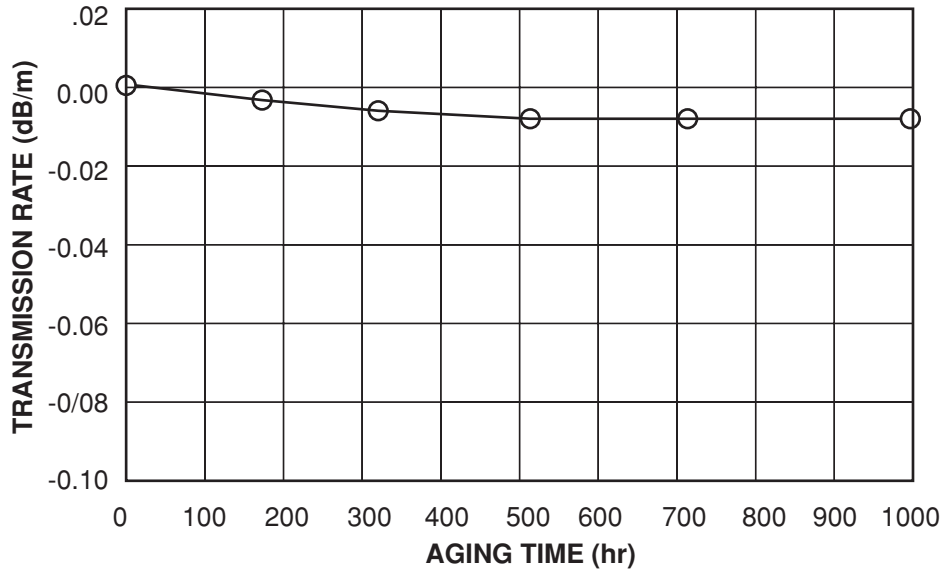
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DURABILITY TO HIGH TEMPERATURE

PRODUCT CODE: PGR-FB750

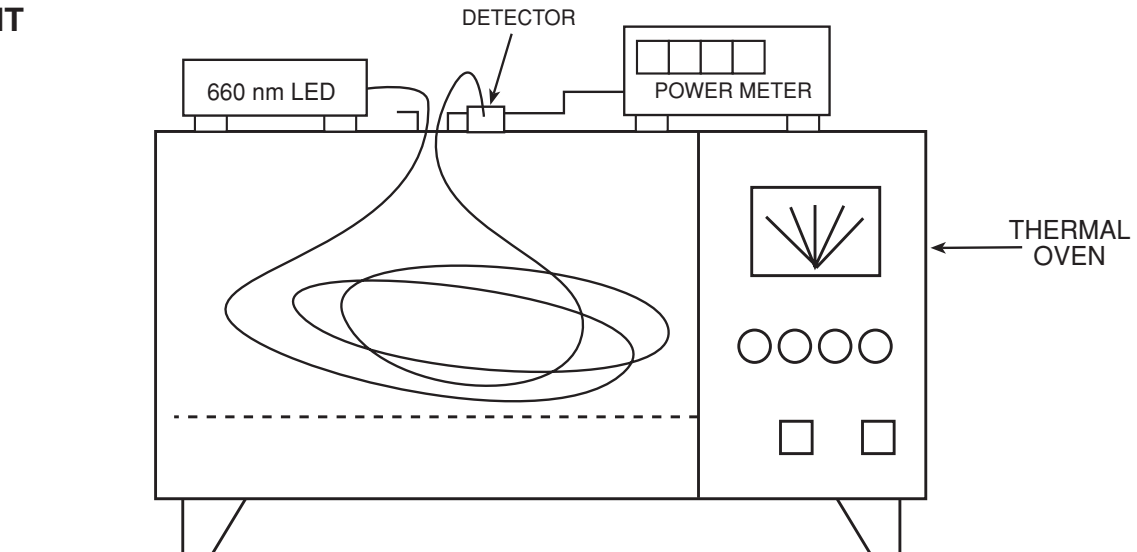
RESULT:



TEST CONDITION

Temperature : 70°C
Sample Length : 28 m

EQUIPMENT



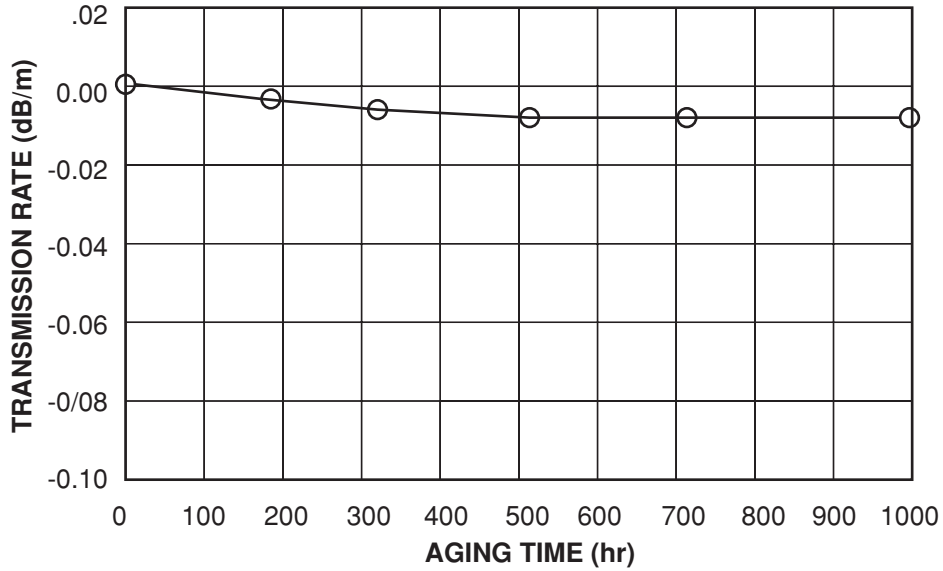
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DURABILITY TO HEATING WITH MOISTURE



PRODUCT CODE: PGR-FB750

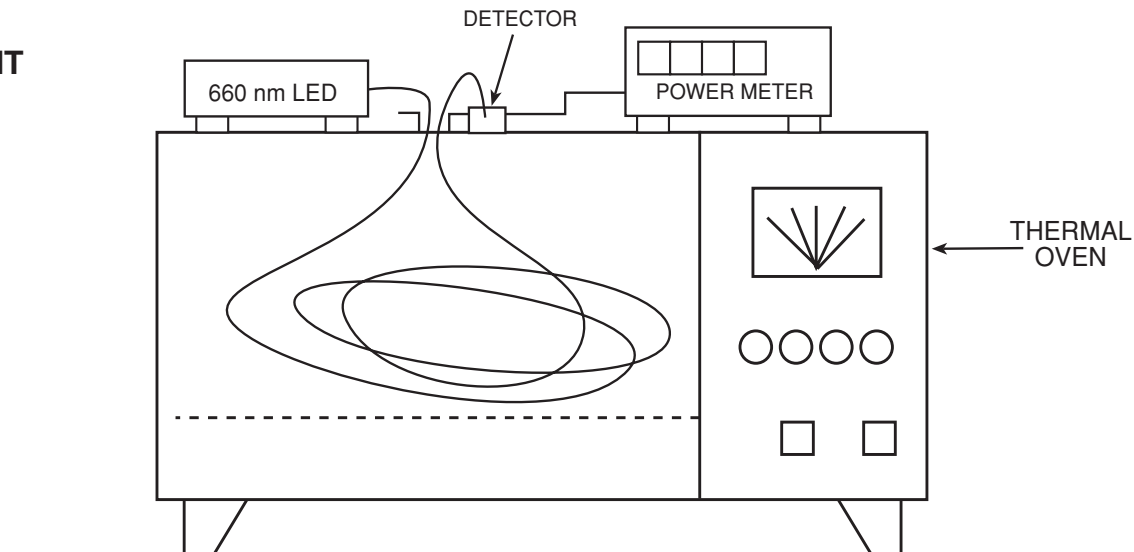
RESULT:



TEST CONDITION

Temperature : 60°C
Humidity : 90%RH
Sample Length : 28 m

EQUIPMENT



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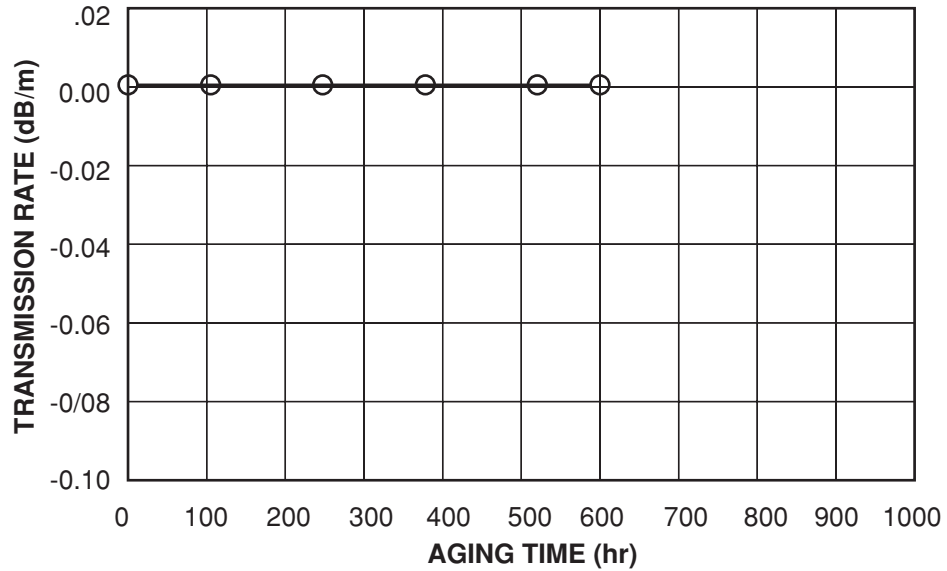
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WEATHERABILITY

PRODUCT CODE: PGR-FB750

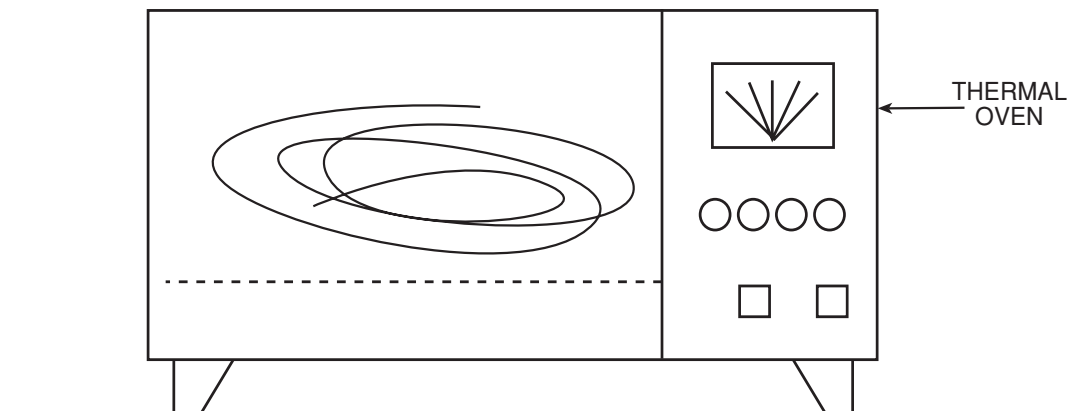
RESULT:



TEST CONDITION

Temperature : 63°C
Sample Length : 2.5 m
Dry Time / Shower Time : 100 min./20 min.

EQUIPMENT



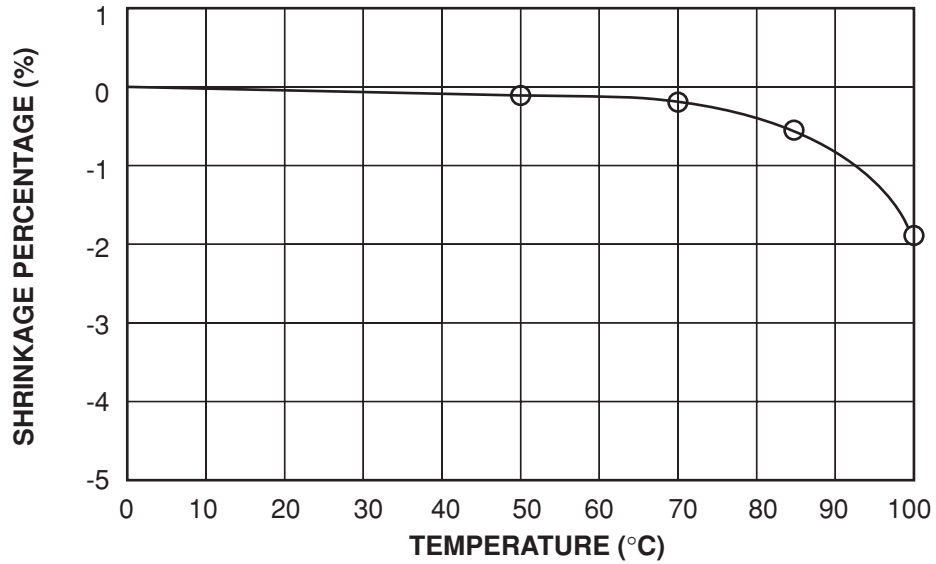
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HEAT SHRINKAGE



PRODUCT CODE: PGR-FB750

RESULT:



TEST CONDITION

Sample Length : 2 m
Treatment Time : 24 hr.

$$\text{Shrinkage Percentage (\%)} = \left(1 - \frac{\text{Shrunk Cord Length after 24 Hours}}{\text{Cord Length before Shrink}} \right) \times 100$$

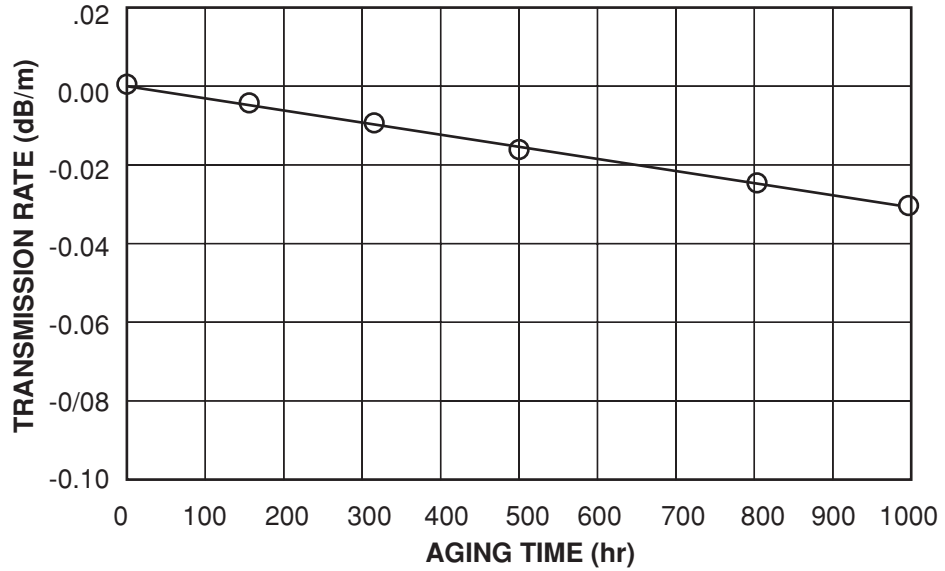
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CHEMICAL RESISTANCE: SODIUM HYDROXIDE (10 WT%)

PRODUCT CODE: PGR-FB750

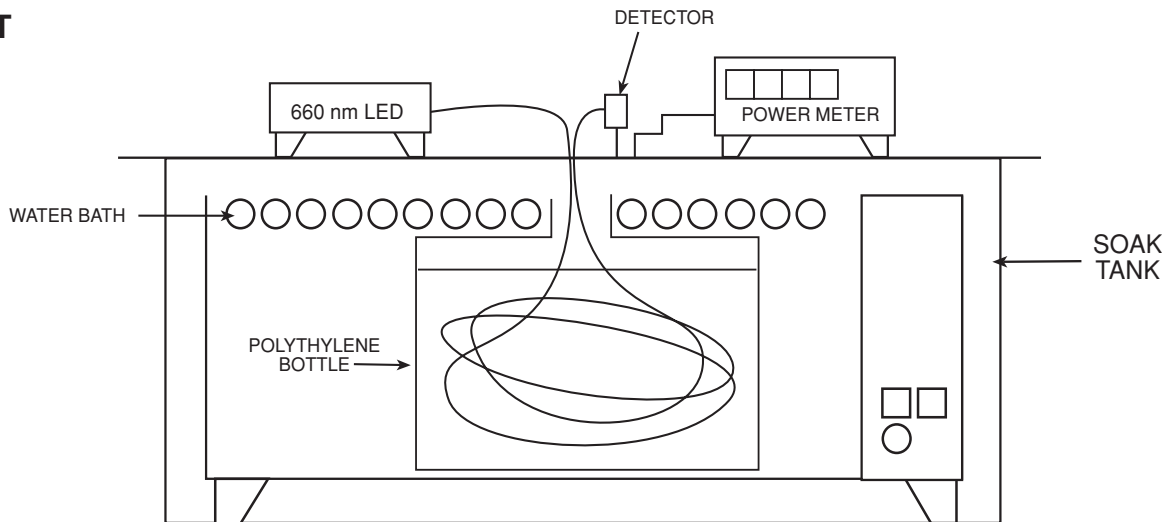
RESULT:



TEST CONDITION

Temperature : 50°C
Sample Length : 10 m

EQUIPMENT

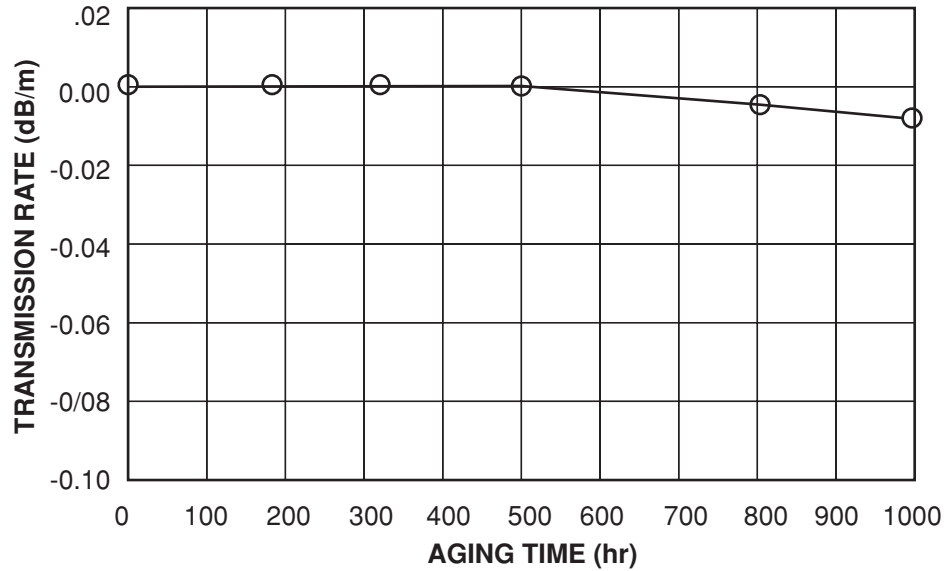


The typical data contained herein is for general reference only and are not expressed guarantees. The information is based on tests believed to be reliable but each user should conduct his own tests to determine the suitability of SUPERVISION optical fiber in his own particular applications. All information in this guide is subject to change without prior notice.

CHEMICAL RESISTANCE: SULFURIC ACID (34.6%)

PRODUCT CODE: PGR-FB750

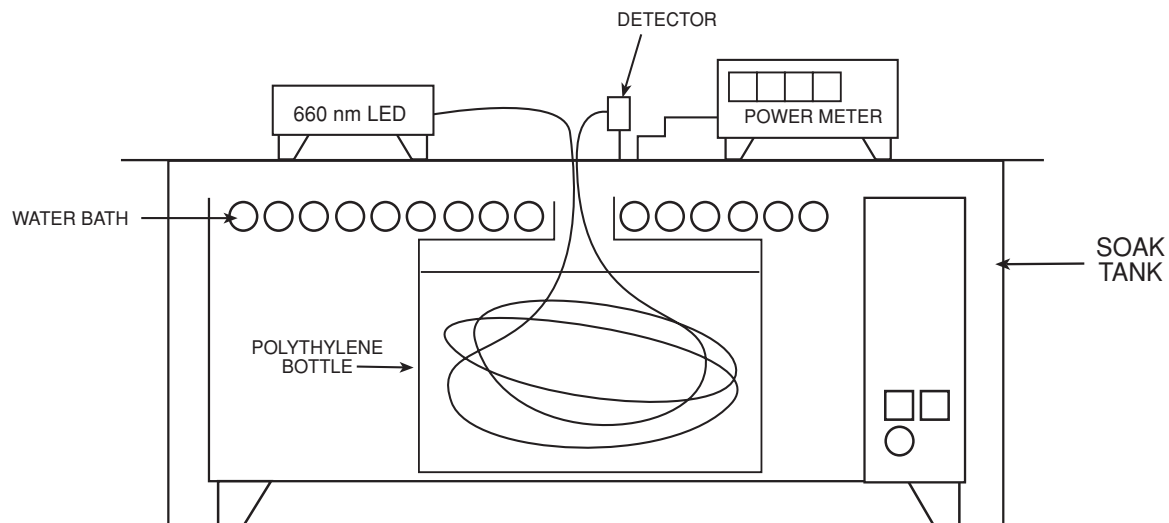
RESULT:



TEST CONDITION

Temperature : 50°C
 Sample Length : 10 m

EQUIPMENT



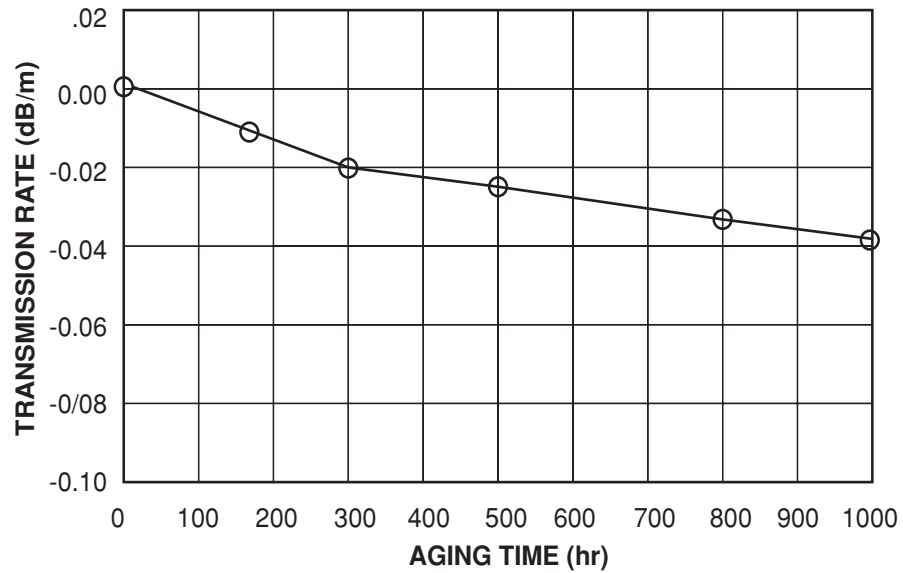
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CHEMICAL RESISTANCE: SEA WATER (5 WT%)

PRODUCT CODE: PGR-FB750

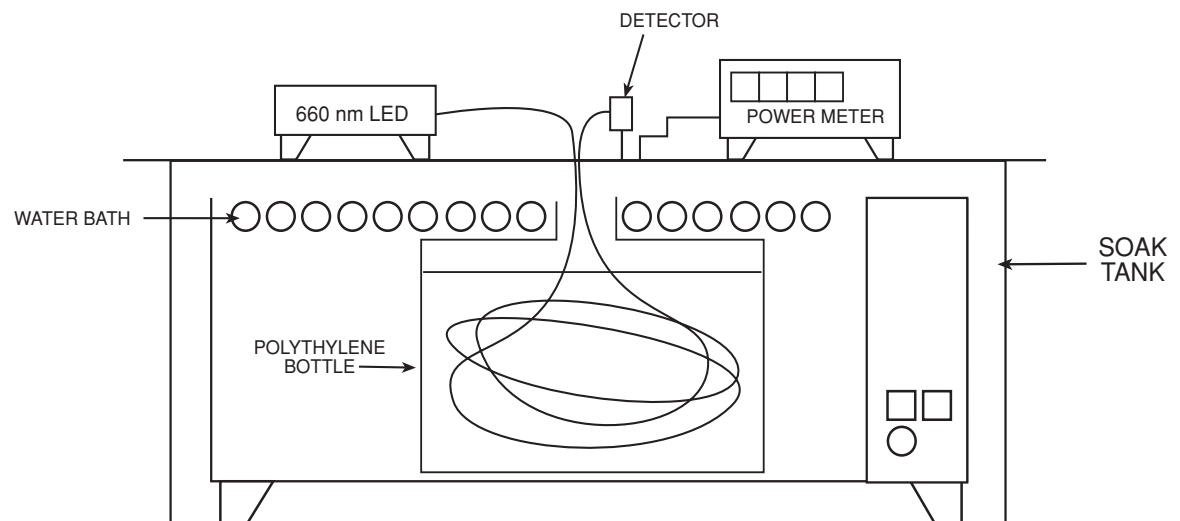
RESULT:



TEST CONDITION

Temperature : 50°C
Sample Length : 10 m

EQUIPMENT



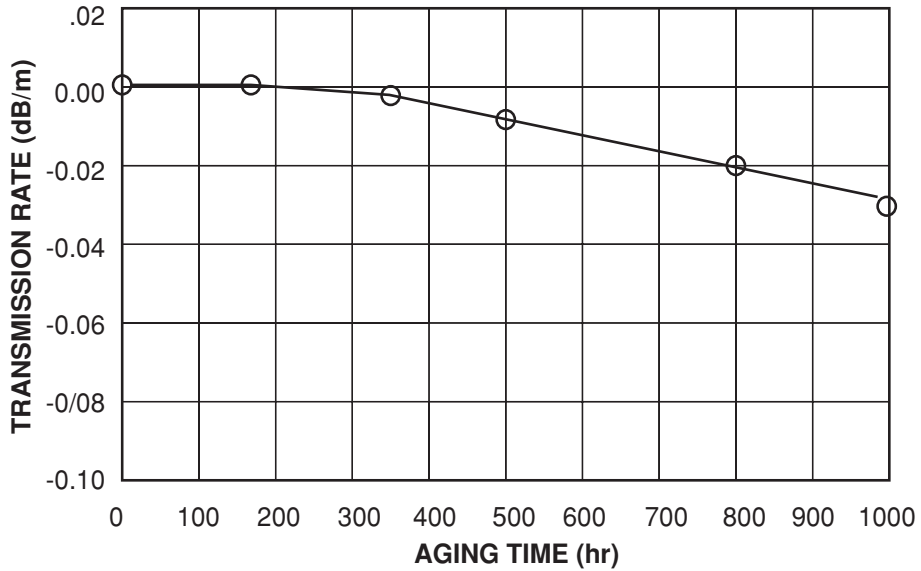
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CHEMICAL RESISTANCE: ENGINE OIL



PRODUCT CODE: PGR-FB750

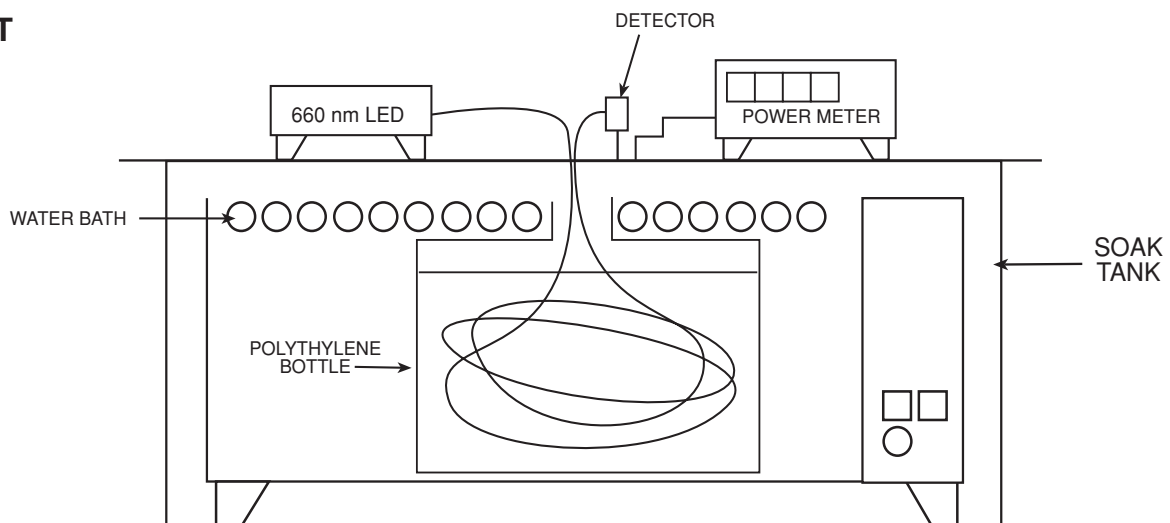
RESULT:



TEST CONDITION

Temperature : 50°C
Sample Length : 10 m

EQUIPMENT



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