Specifications for Plastic Optical Fiber

Flame-retardant Grade < UL VW-1, 90ºC >

TCF-1000

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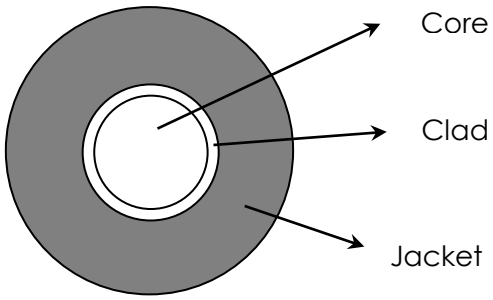
Issued by : Asahi Kasei Corporation
Plastic Optical Fiber
Marketing & Development Gr

1, STRUCTURE

ITEM	UNIT	Specifications
Core Material		PMMA
Clad Material		Fluorinated Polymer
Core reflective index		1.49
Reflective index Profile		Step index
Core Diameter	μm	970±60
Fiber Diameter	μm	1000 ± 60
NA		0.5
Jacket Material		Halogen-free Flame-retardant PE
Jacket Diameter	μm	2200 ± 70
Jacket Color		Black
Marking		[*RU* AWM STYLE 5538 VW-1 90°C E116331 ASAHIKASEI E-MATERIALS CORPORATION]
Marking Color		Blue
Approx. weight	g/m	5.1



2, PROPERTIES

ITEM	UNIT	Specifications	
Storage Temperature Range	°C	-55 ~ 90	*1
Application Temperature Range	°C	-55 ~ 90	*1
Operating Temperature in a Moist Atmosphere(85% RH)	°C	90	*1
Attenuation (23 °C 50%)	dB/km	≤ 160	*2
Attenuation (Operating Temperature)	dB/km	≤ 190	*2
Tensile Strength at 5% Elongation	N	≥ 70	*3
Tensile Strength at Break Point	N	≥ 90	*3
Elongation at Break Point	%	≥ 90	*3
Minimum Bending Radius	mm	25	*4
Repeated Bending Endurance	Times	≥ 2000	*5
Impact Endurance	N・m	≥ 0.6	*6

Sample conditions
Temperature: T = 23°C
Humidity: RH = 50%
Storage time: t = 200h

*1 : After 1000h, Attenuation Increase shall be ≤10% of the specification m4Y2fAht
*2 : Monochromatic light at 650nm, LNA = 0.15, 20-2m Cut-back Method
*3 : Interval between grippers = 100 mm, Tensile Speed = 100mm/min
*4 : L = 2m, 90 degree bending at the middle of fiber
Light Source : LED (Peak Wavelength = 657nm)
Transmission Rate ≥ 90%
*5 : Method JIS C6861 (R 15mm ±90degree Tension 500g)
Attenuation increase ≤1dB
*6 : Method JIS C6861
Attenuation increase ≤1dB

3, RoHS certification

The product does not contain RoHS 2 hazardous substances, Cadmium, Lead, Mercury, Chromium (VI), PBB, PBDE, DIBP, DEHP, DBP and BBP intentionally.

Precautions in Handling and Use

Restricted applications

DO NOT USE Plastic Optical Fiber FOR ANY APPLICATION WHICH IS INTENDED TO COME INTO DIRECT CONTACT WITH THE HUMAN BODY OR DIRECT CONTACT WITH FOOD. Consult Asahi KASEI before considering Plastic Optical Fiber for any non-invasive medical device applications; invasive applications cannot be considered.

Installation and operating environment

Plastic Optical Fiber is not structurally or materially designed to bear large external loads. Do not place or drop heavy objects on Plastic Optical Fiber, or hang objects from Plastic Optical Fiber. Improper installation or service environment may seriously degrade its light transmission capability. The design of any system or instrument in which Plastic Optical Fiber is to play an essential role must provide effective control of its installation and operating environment (temperature, humidity, freedom from exposure to solvents, chemicals, ultraviolet light, etc.) and appropriate back-up in case of light transmission loss.

Laboratory tests and experience have shown all of the following to require particular care, in both installation and service.

* Do not squeeze, pinch, or compress Plastic Optical Fiber with tools, fixtures, or securing devices.
* Do not bring into direct contact with any chemicals that might degrade the Plastic Optical Fiber.
* Do not bring into direct contact with any tubes, cables, or other rubber or plastic objects containing plasticizer (DOP, etc.), stabilizer, or other additive that might migrate into the Plastic Optical Fiber and cause discoloration or reduced photoconductivity.
* Do not apply or permit contact with any adhesive containing a solvent, monomer, or other component that might adversely affect the physical or optical properties of Plastic Optical Fiber.
* Do not use any alcohol or organic solvent in cleaning or wiping Plastic Optical Fiber, as it may cause cracking or hazing.
* Do not expose Plastic Optical Fiber to ultraviolet or radioactive rays, which may cause deterioration and loss of photoconductivity.

Heat exposure

Plastic Optical Fiber softens at approximately 100°C, decomposes and emits flammable gas at approximately 200°C, and above 200°C may ignite and burn. Any lamp or other light source assembly must include a cooling device to keep Plastic Optical Fiber below 80°C, and particularly in conjunction with the use of a condenser lens, the end surface of Plastic Optical Fiber must be kept free of dirt and other contaminants, which may cause elevated Plastic Optical Fiber surface temperature, decomposition, and fire.

Storage

Store Plastic Optical Fiber indoors, in a place free from direct sunlight, water and excessive humidity, to protect its properties and performance.

Disposal

Plastic Optical Fiber contains fluorine and vinyl chloride resins, and will emit hydrogen fluoride, hydrogen chloride or other toxic gases during incineration. Dispose of Plastic Optical Fiber either by land-fill burial or by incineration in a facility capable of removing and disposing of such gases, in strict accordance with national and local laws and regulations.

♦ The information is accurate to the best knowledge of Asahi Kasei as of the date of its publication, and may be changed when new knowledge or information is acquired.