



Optical Fiber Super Micro  
Cable-  
Single Mode Cable  
(OMC--SM)

P1-000

**PBNICT.com**

info@pbnict.com

June 2023

### 1. General

#### 1.1. Scope

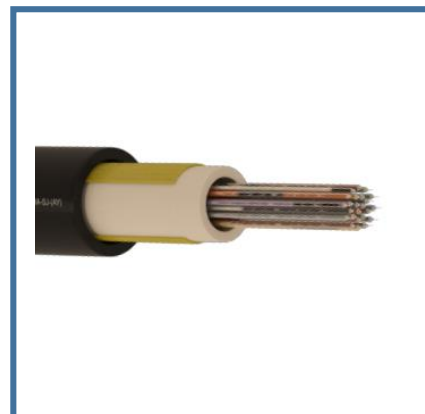
This specification covers the design and performance standards of the Optical Super Fiber Micro Cable (OMC) with single-mode fiber (G652 D). This Micro cable is multi loose tube and contains several loose tubes and fillers based on the cable application. In the following, the Optical, constructional, and mechanical properties of the cable are discussed. All properties are completely compatible with the last edition of TCI technical specifications.

#### 1.2. Cable description

PBN OMC -SM is an optical fiber super micro cable, suitable for pushing or blowing methods, constructed with single-mode fiber according to ITU/TIA G652D. The cable is of low-weight and small diameter, with easy and fast installation consequently, making it a great choice for WAN, LAN, and FTTx backbone systems.

#### 1.3. Features

- Micro cable
- Water-proof?
- UV-resistant
- Low-weight
- Single Jacket
- Single-mode fiber



## 2. Optical Fiber:

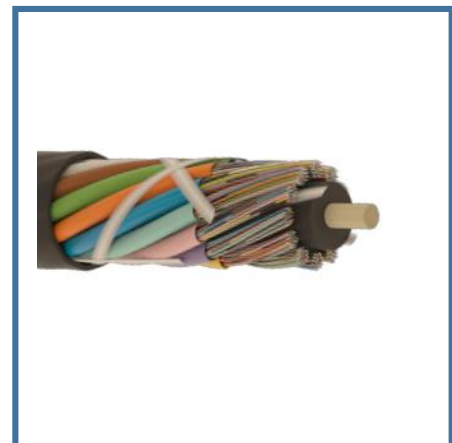
The fibers are single-mode fibers according to ITU-T G652D and contain the following parameters:

Optical characteristics		
Fiber attenuation:	@ 1310 nm	$\leq 0.34$ dB/Km
	@ 1550 nm	$\leq 0.22$ dB/km
	@ 1625 nm	$\leq 0.24$ dB/km
Effective area:		$\geq 72$ $\mu\text{m}^2$
Mode field diameter (MFD):	@ 1310 nm	$9.2 \pm 0.4$ $\mu\text{m}$
	@ 1550 nm	$10.4 \pm 0.8$ $\mu\text{m}$
Cable cut-off ( $\lambda_{cc}$ ):		$\leq 1260$ nm
PMD @ 1550 nm:		$\leq 0.2$ ps/ $\sqrt{\text{km}}$

Physical characteristics	
Core diameter	Typ 9 $\mu\text{m}$
Core non-circularity	$\leq 6\%$
Core-clad offset	$\leq 0.5$ $\mu\text{m}$
Clad diameter	$125 \pm 0.7$ $\mu\text{m}$
Clad non-circularity	$\leq 7\%$
Coating diameter	$245 \pm 5$ $\mu\text{m}$

## 3. Construction:

- Optical Fiber
- Waterproof Thixotropic Jelly
- Central Strength member
- loose tube
- Filler (if applicable)
- Aramid yarn
- Outer Jacket



### 3.1. Central Strength member

Fiber-reinforced polymer (FRP) with a minimum 1.6 μm diameter is used as a central strength member. The young modulus of FRP is 50,000 N/mm<sup>2</sup> and water absorption of a maximum of 0.1%. FRP may be coated with PE layers for compatibility of diameters.

### 3.2. Loose tube

The loose tube is made of Polybutene terephthalate (PBT) with a minimum thickness of 0.2 mm. Fibers are helically placed in the loose tube to be capable of expansion and contraction of fibers. In order to prevent water penetration, the loose tubes are filled with Thixotropic Jelly known as cold jell.

### 3.3. Cable Core

Loose tubes and fillers (if applicable) will be stranded over the central strength member. The fillers are PE rods which are used for the roundness of the cable core if needed. In the end, a binder yarn is wounded helically around them to keep the core straight.

### 3.4. Aramid Yarn

For the strength of the cable, the core is wrapped by aramid yarn. This helps the cable to be able to resist tension and tensile up to 650 N.

### 3.5. Outer Jacket:

UV-resistant black High-density polyethylene (HDPE) according to ASTM-1248 standard covers the whole cable as an outer jacket with a thickness of 0.5 mm.

## 4. PHYSICAL AND DIMENSIONAL PARAMETERS:

Number of cores	12 & 24
Configuration	(12 to 2 x12)
Number of Loose tubes	1
Installation Tensile (N)	250
Operation Tensile (N)	200
Outer diameter (mm)	2.8
Cable weight per meter (Kg/Km)	8

\*. The diameters, weights, and tensions are intended to be typical values.

Number of cores	12	23
Configuration	(1x12)	(2x12)
Number of Loose tubes	1	1
Number of fillers	0	0
Number of cores per use tube	12	24
Installation Tensile (N)	200	200
Operation Tensile (N)	250	250
Cable diameter (mm)	2.8	2.8
Cable weight per meter (Kg/Km)	8	8

## 5. TEST REPORTS:

ITEM	REFERENCE	CONDITION
TWIST / Torsion	EIA/TIA 455-85	2m, 2 cycles, $\pm 2\pi$
COMPRESSION / Crush	EIA/TIA 455-41	220 N/cm
FLEXING	EIA/TIA 455-104	25 cycles
IMPACT	EIA/TIA 455-25	2 Impact at 3 locations, 4.5 kg
LOW OR HIGH-TEMPERATURE BEND	EIA/TIA 455-37	-30°C, +60°C, 4 turns
TEMPERATURE CYCLING	IEC 60794-I-F1	10 cycles, -40°C to +85°C
Water penetration	FOTP-82	1m height, 1m length, 1 hour Retest: 1m height, 3m length, 24 hours