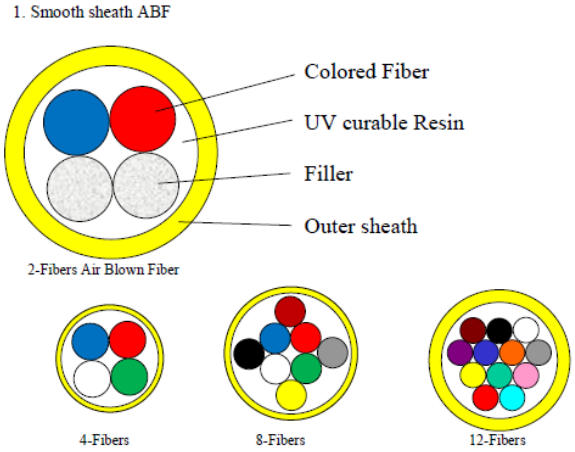
VOYGAR Super Mini Air blown Fibre Cable.

VOYGAR supplies various types of air blown cable. Its main product is central tube air blown cable and layer stranding air blow cable which has absolutely technical advantage in Korea and equivalent air blown performance as Europe products.

Cross-sectional Drawing of Cable



Features

Stable structure, good mechanical and temperature performance.
Designed with special grooves to advance blowing distance.
Lightweight and proper stiffness, repeat installation.
Designed with no gel, easy stripping and handling.
Better costs advantage compared to traditional product.
Complete accessories, less manpower, lower installation time.

Application

This specification covers the general requirements for smooth sheath ABF used for blowing installation.

Standards

Unless otherwise specified in this specification, all requirements shall be mainly in accordance with the following standard specifications.
Optical fibre.....ITU-T G.651、G.652、G.655、G.657　IEC 60793-2-10、IEC 60793-2-50
Optical Cable.....IEC 60794-1-2、IEC 60794-5

Diameter, Weight and Minimum Bending Radius

Fiber Count	2 fibers	4 fibers	8 fibers	12 fibers
Outer Diameter(mm)	1.2±0.2	1.2±0.2	1.4±0.2	1.6±0.2
Weight(g/m)	1.4	1.5	1.6	1.9
Min Bend radius(mm)	40	40	60	60

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Performance Specifications

Items	UNITS	SPECIFICATIONS	
		G.657.A1	G.657.A2
Attenuation	dB/km	≤0.40 at 1310nm ≤0.40 at 1383nm ≤0.30at 1550nm	
Chromatic Dispersion	ps/nm.km	≤3.5 at 1285nm ~ 1330nm ≤18 at 1550nm	
Zero Dispersion Wavelength	nm	1300 ~ 1324	
Zero Dispersion Slope	ps/nm2.km	≤0.092	
Cable PMD (PMDQ)	ps/√km	≤0.2 (20 section link)	
Cut-off Wavelength (lcc, Cabled fiber)	nm	≤1260	
Attenuation vs. Bending (15mm radius x 10turns)	dB	≤0.25 at 1550nm ≤1.0 at 1625nm	≤0.03 at 1550nm ≤0.1 at 1625nm
Attenuation vs. Bending (10mm radius x 1turn)	dB	≤0.75 at 1550nm ≤1.5 at 1625nm	≤0.1 at 1550nm ≤0.2 at 1625nm
Attenuation vs. Bending (7.5mm radius x 1turn)	dB	-	≤0.5 at 1550nm ≤1.0 at 1625nm
Mode Field Diameter	nm	8.9 ± 0.4 at 1310nm	8.6 ± 0.4 at 1310nm
Core/Cladding Concentricity Error	nm	≤0.5	
Cladding Diameter	nm	125 ± 0.7	
Cladding Non-circularity	%	≤1.0	
Coating Diameter	nm	245 ± 10	
Proof Test	Gpa	≥0.69	

ABF Construction

The construction of the sheath ABF in accordance with the following:

Items	DESCRIPTION			
Number of fibers	2	4	8	12
Coating Material	UV curable Acrylate Resin			
Outer sheath	HDPE			
Outer Diameter (Nominal)	1.2 ± 0.2 mm	1.2 ± 0.2 mm	1.4 ± 0.2 mm	1.6 ± 0.2 mm
Unit Color	Yellow, Orange, Blue			

Fibre Identifications

NO.	2	4	8	12
1	Red	Red	Red	Red
2	Blue	Blue	Blue	Blue
3	Filler	White	White	White
4	Filler	Green	Green	Green
5			Yellow	Yellow
6			Grey	Grey
7			Brown	Brown
8			Black	Black
9				Violet
10				Orange
11				Turquoise
12				Pink

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MECHANICAL / ENVIRONMENTAL PERFORMANCE

The mechanical and environmental performance of the smooth sheath ABF in accordance with the following.

Items	Test Method and Acceptance Criteria
Tensile Performance	**Test method:** IEC 60794-1-21: Method E1 -Fixed Mandrel Diameter: ≥60mm -Load Mandrel Diameter: ≥60mm -Tensile Load: 9.81 X W (W: mass of 1km of component in kg) -Unit Length: ≥10m -Rate of extension: ≥20mm/min -Duration Maximum Tension: 1 minute -Selection of fibers to be monitors: All fibers in the unit **Acceptance Criteria** -Fiber strain at Max. load: ≤ 0.6% -Change in Attenuation After test: ≤ 0.05dB -No significant damage to unit component
Crush	**Test method:** IEC 60794-1-21: Method E3 -Maximum Load: 100N -Unit Length: ≥ 30m -During of Maximum Load: 60 seconds -Selection of fibers to be monitors: All fibers in the unit **Acceptance Criteria** -Change in Attenuation during test: To be recorded -Change in Attenuation After test: ≤ 0.05dB -No significant damage to unit component
Repeated bending	**Test method**: IEC 60794-1-21: Method E6 -Bending diameter: 60mm -Number of cycles: 25 **Acceptance Criteria** -No significant damage to unit component
Torsion	**Test method**: IEC 60794-1-21: Method E7 -Test length: 300mm -Load: adequate to assure test sample is straight at start of test **Acceptance Criteria** -Change in Attenuation After test: ≤ 0.05dB -No significant damage to unit component
Kink	Test method: IEC 60794-1-21: Method E10 -Minimum diameter: 60mm **Acceptance Criteria** -No significant damage to unit component
Bend	**Test method**: IEC 60794-1-21 : Method E11 -Mandrel Diameter: = 60mm -Unit Sample Length: ≥30m -Selection of fibers to be monitors: All fibers in the unit -Number of cycles: 3 -Number of turns: 4 **Acceptance Criteria** -Change in Attenuation After test: ≤0.05dB -No significant damage to unit component
Temperature Cycle	**Test method**: IEC 60794-1-2 Method F1 -Length of unit to be tested: ≥1km -Temperature TA: = -40 °C

	-Temperature TB: = +60 °C -Dwell time : ≥24 hours -Number of Cycles: = 2 -Selection of fibers to be monitors: All fibers in the unit **Acceptance Criteria** -Attenuation variation during and after test: ≤0.15dB/km
Water immersion	**Test method**: IEC 60793-1-53 -Length of unit to be tested: ≥1km -Temperature of the water solution: +20°C ± 2.0°C -Water: Distilled, demineralized or de-ionized water (PH5.0~8.0) -Dwell time: ≥30 days **Acceptance Criteria** -Attenuation variation: ≤0.05dB/km

Blowing Test

Fiber Count	2 fibers	4 fibers	6 fibers	8 fibers	12 fibers
Test equipment	PLUMETTAZ：UM25, ERICSSON：F, CATWAY：FBT-1.1				
Standard duct	5.0/3.5 mm				
Pressure	7bar / 10bar				
Typical blowing distance	500m/1000m	500m/1000m	500m/1000m	500m/1000m	500m/800m
Blowing time	10 min /18min	10 min/18min	12 min/18min	13 min/18min	15min/20min

Environment Performance

Sheath Colour:

Test	Standard	Parameters	Test Results
Temperature Cycle	IEC60794-1-2-F1	+20°C, -40°C, +60°C, (3 cycles)	Absolute attenuation≤0.5dB/km, during test Additional attenuation ≤0.1dB/km, during and after test
Water Soak	IEC60794-5	1000 hours in water, 18℃～22℃	(Test after temp cycle) ≤0.07dB/km Change compared to start value
Damp Heat Cycle	IEC60068-2-38	25°C, 65°C, 25°C, 65°C, 25°C,-10°C, 25°C	Absolute attenuation ≤0.5dB/km,during test Additional attenuation ≤0.1dB/km, during and after test

Delivery Lengths:

Standard delivery lengths are 2km, 4km, 6km with a tolerance of -1%～+3%.

Ordering Information

PNs	Description
ACG65202	VOYGAR Super Mini Air blown fibre Cable SM 2core
ACG65204	VOYGAR Super Mini Air blown fibre Cable SM 4core
ACG65206	VOYGAR Super Mini Air blown fibre Cable SM 6core
ACG65208	VOYGAR Super Mini Air blown fibre Cable SM 8core
ACG65212	VOYGAR Super Mini Air blown fibre Cable SM 12core