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# HES HACILAR ELEKTRİK SANAYİ VE TİC.A.Ş.

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## Technical Specification

<b>Revision/Date:</b> 01/03.15	<b>By :</b> N.KARAAĞAÇ	<b>Date :</b> 23 March 2015
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Cable Type : Loose Tube, Outdoor Armored F/O Cable

### PHYSICAL DESCRIPTION

- 216 fibers armored outdoor fiber optic cable,
- Thixotropic jelly filled loose tubes,
- Loose tubes and filler (if any) are SZ stranded around the non- metallic central strength member (FRP),
- Jelly filled core,
- Aramid yarn as strength elements,
- Corrugated steel armor,
- Outer jacket is made of medium density polyethylene,
- Ripcords are inserted for easy jackets removal.

Fiber Type	SM G652 D
Central strength member	All-dielectric FRP
Tube material	PBT ( Polybutylene Terephthalate)
Color of loose tubes	Red, Yellow, Green , Blue, Violet, Brown, Black, Orange, Pink, Gray, Aqua, Natural
Color of fibers in per tube	Red, Yellow, Green , Blue, Violet, Brown, Black, Orange, Pink, Gray, Aqua, Natural
Tube filling compound	Thixotropic jelly
Core filling compound	Jelly
Tape wrap	-
Strength elements	Aramid yarns
Ripcord	Aramid cord
Identification tape marking	As a customer request
Inner jacket	-
Armor	Corrugated steel tape
Outer jacket	<b>Orange MDPE</b> , thickness nominal 1.0±0.2 mm.
Surface marking	As a customer request

Fiber Count	Number of Tube	Number of Filler	Number of fiber in per tube	Central Strength Member OD (mm)	Central strength member coated OD (mm)	Tube Outer/Inner Diameter (mm)	Cable Diameter (mm)	Cable Weigth (kg/km)
216	18	-	12	2.0	N/A	1.9/1.3*	15.0(max)	225*

\*:Tolerance is ±5%



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<b>Mechanical and Environmental Properties</b>			
<b>Physical tests</b>	<b>Conditions</b>	<b>Requirement</b>	<b>Standard</b>
Tensile Strength	3300 N (during Installation) 900 N (during Operation)	Maximum fiber strain: %0.33	IEC 60794-1-E1
Impact Resistance	30 Nm , 3 impacts , 300mm	No fiber break	IEC 60794-1-E4
Crush Resistance	4000 N/10cm	No fiber break	IEC 60794-1-E3
Temperature Cycling	-40 to +70 °C	Maximum loss:0.05 dB	IEC 60794-1-F1
Bend Radius (during installation)	20x cable diameter	Maximum loss:0.05 dB	IEC 60794-1-E11
Bend Radius (during Service)	10x cable diameter	Maximum loss:0.05 dB	IEC 60794-1-E11
Repeating Bending	20xcable diameter	Maximum loss:0.05 dB	IEC 60794-1-E6
Water Penetration	1 m length in 24 hour	No water leak	IEC 60794-1-F5
Operation Temperature	-40 to +70 °C		
Storage and Transportation Temperature	-40 to +70 °C		
Installation Temperature	-20 to +60 °C		
Reel Marking	As a customer request		
Metal Plate at drum	As a customer request		

<b>STANDARD SM FIBER ITU-T G 652 D</b>	
<b>PROPERTIES</b>	<b>SPECIFIED VALUES</b>
Attenuation (max.)	0.36 dB/km (1310 nm) 0.22 dB/km (1550 nm)
MFD	9.2±0.4 µm(1310 nm) 10.3±0.5 µm(1550 nm)
Chromatic Dispersion (max)	3.5 ps/(nmxkm)(1310 nm ) 17 ps/(nmxkm)(1550 nm )
Cladding diameter	125±0.7µm
Core Concentricity error (max)	0.6 µm
Zero dispersion wavelength	1300nm≤ ≤1324nm
Cladding non-circularity (max)	%1
Coating diameter	250±10 µm
Cut Off Wavelength	≤ 1260nm
Proof Test	8.4 N
Proof Test strain	%1.00

**NOTE (If any):**



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*216 fibers Cable Cross Section*

