

HDPE TUBE BUNDLE 12-WAYS 7/4mm With PE Outer Sheath 1.2mm

1. General Description

The product are composed by 12 ways 7/4mm inner micro ducts, with low friction performance. The outer sheath is HDPE material with a thinner colored sheath making the product suitable for direct bury.

2. Raw Materials

	Characteristic	Test Method	Acceptance Criteria
1	Bundles is manufactured with 100% virgin HDPE		
2	Melt Flow Index	ASTM D1238 190°C @ 2.16Kg Load	≤ 0.40 g/10min
3	Density	ASTM D792	0.940~0.958 g/cm3
4	Environmental stress crack resist (F50)	ISO 4599	Min. 96h

3. Inner micro duct

3-1 Dimension

	Outer diameter (mm)		Wal thickness (mm)		Inner diameter (mm)	Pressure
	Nominal	Tolerance	Nominal	Tolerance	Min.	(bar)
7/4mm	7.0	±0.1	1.5	±0.1	3.8	25

3-2 Marking

The inner micro duct marking include the following information and repeated every one meter:

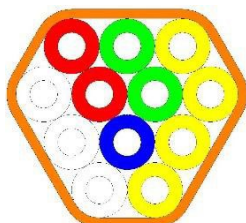
- Product spec.
- Coil number
- Manufactured date
- Length marking (e.g. =1234m)
- Other markings are available upon customer requests.

3-3 Mechanical Performance – Inner micro duct 7/4mm

Items	Standards	Test method	Performance
Inner diameter clearance	IEC 60794-5-10 Annex E	Pressure: 12 bar Max. sphere size: 85% of nom. ID	Pass through the micro duct
Tensile strength	IEC 60794-5-10 & 20	Rate of extension: 100mm/min	$\geq 465\text{N}$
Elongation	IEC 60794-5-10 & 20	Rate of extension: 100mm/min	$\geq 500\%$
Crush	IEC 60794-5-10 & 20	Sample length: 250mm Load: 700N Duration of Max. load: 1 min Recovery time: 1 hour	Under visual examination there is no damage to the micro duct, and inner diameter clearance test can be passed.
Impact	IEC 60794-5-10 & 20	Striking surface radius: 20mm Impact energy: 1.5 J Recovery time: 1 hour	Under visual examination there is no damage to the micro duct, and inner diameter clearance test can be passed.
Kink	IEC 60794-5-10 & 20	-	$\leq 10\times$ outer diameter
Min. Bend Radius	IEC 60794-5-10 & 20	Number of turns: 5 Number of cycles: 1 Mandrel diameter: 20 x outer diameter	Under visual examination there is no damage to the micro duct, and inner diameter clearance test can be passed.
Friction	Optowire	Mandrel diameter: 750mm Cable diameter: 2.8mm Load: 5.0Kg The sample duct is secured with 450° wrap around the mandrel. A 5.0kg weight shall be pulled at 500mm/min and travel 200mm.	≤ 0.1

4. Tube bundle

4-1 Configuration & Dimension



Sheath:	Orange color
Thickness of sheath:	1.2mm ± 0.2mm
Ripcord:	Available upon customer request
Tracing wire:	Available upon customer request

	Outer diameter (mm)	Wal thickness (mm)	
	Nominal	Nominal	Tolerance
Tube bundle	30.4*27.6	1.2	± 0.2

4-2 Mechanical Performance

Items	Standards	Test method	Perfomance
Inner diameter clearance	IEC 60794-5-10 Annex E	Pressure: 12 bar Max. sphere size: 85% of nom. ID	Pass through the each inner micro duct
Tensile strength at yield (sheathing)	IEC 60794-5-10 & 20	Rate of extension: 100mm/min	≥ 21.0Mpa
Elongation (Sheathing)	IEC 60794-5-10 & 20	Rate of extension: 100mm/min	≥ 500%
Crush	IEC 60794-5-10 & 20	Sample length: 250mm Load: 2000N Duration of Max. load: 1 min Recovery time: 1 hour	Under visual examination there is no damage to the tube bundle, and inner diameter clearance test can be passed.
Impact	IEC 60794-5-10 & 20	Striking surface radius: 200mm Impact energy: 5.0 J Recovery time: 1 hour	Under visual examination there is no damage to the tube bundle, and inner diameter clearance test can be passed.
Min. Bend Radius	IEC 60794-5-10 & 20	Number of turns: 3 Number of cycles: 1 Mandrel diameter: 24 x outer diameter	Under visual examination there is no damage to the micro duct, and inner diameter clearance test can be passed.

5. Packing

Optowire tube bundle are delivered on iron drum. The drums protected with black plastics foil and both end of the bundle are sealed with end cap to ensure that the inner micro duct will not be affected by water and dust.

6. Remarks

Completed packages of the HDPE micro duct on drum can be stored outdoor max. 6 months upon the date of production.

Storage temperature:	-40°C	~	+70°C
Installation temperature:	-30°C	~	+50°C
Operating temperature:	-40°C	~	+70°C