

		<b>Technical Data-Sheet</b>	
		<b>Product: HDPE Bundle Duct 12 Way 7/3.5mm</b>	
		<b>Document No: TDS/ Bundle Duct /12 Way 7-3.5/1.6</b>	
		<b>Date: 18-09-2019</b>	<b>Number of Page: 03</b>

**Product: 12 WAY 7/3.5mm Inner Permanent Silicone Lubricated Bundle-Duct**

Test	Characteristic	Test Method	Acceptance Criteria
<b>Material Specifications</b>			
1	Ducts are manufactured with 100% Virgin HDPE		
2	Melt Flow Index	ISO 1133, @190°C & 5kg load	0.2 g/10 min to 1.4 g/10 min
3	Density	ISO 1183	0.940 -0.960g/cm <sup>3</sup>
<b>Physical and Mechanical properties: A) Micro-Duct</b>			
1	Visual Appearance	Afripipes	Ribbed inside & smooth outside surface, free from blisters, shrink hole, flaking, scratches & roughness.
2	Outer Diameter	5 measurements equidistant apart around circumference	7.0 ± 0.1 mm
3	Wall thickness	5 measurements equidistant apart around circumference	1.75 ± 0.1 mm
4	Melt Mass Flow Rate(After Processing)	DIN 8075	Change in MFR Value due to processing max ± 20%
5	Ovality	$\frac{(\text{max. OD} - \text{Min. OD})}{(\text{max. OD} + \text{Min. OD})} \times 200$ ASTM F 2160	< 3%
6	Standard Dimension ratio	SDR= Outer dia./Wall thickness	4
7	Pressurization	5 min @ 16 bar each Micro duct	No damage, No leaks.
8	Inner Clearance Test	IEC 60794-1-21 E23:IEC 60794-5-10	3.0mm steel ball shall pass freely through micro-duct.
9	Co-efficient of Friction	Telcordia GR-356, 750 mm Diameter, 450° loop, 5 kg tail mass.	μ < 0.06
10	Internal Creep compressive Test	The Micro-Duct must be tested under the conditions of Test temperature 80°C, Test tension Ó=4 N/mm <sup>2</sup> . (DIN 8075).	The minimum stress rupture life must be 170 hours. There should not be visible cracks and deformation.
11	Crush Test	IEC 60794-5-10 / IEC 60794-1-21, Method E3 A, 800 N load, 60 sec, 1 hour recovery time.	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test. (3.0mm Ball)
12	Tensile strength	IEC 60794-1-21, Method E1	There shall no damage after the test and the Shall pass inner clearance test. (3.0mm Ball)
13	Impact Test	IEC 60794-5-10 / IEC 60794-1-21, Method E4, 1 J Impact	There shouldn't be any crack or split when striker head dropped with 1 J energy and shall pass inner clearance test. The imprint of the striking surface on the microduct is not considered mechanical damage.
14	Heat Reversion	ISO 2505	110°C for 1 hrs (< 3%)
15	Colour	Visual inspection	As per customer specifications.
16	Printing	Visual inspection	As per customer specifications.

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Test	Characteristic	Test Method	Acceptance Criteria
<b>Physical and Mechanical properties: B) Bundled Ducts</b>			
1	Wall thickness (Sheathing)	5 measurements equidistant apart around circumference.	0.8 ± 0.1 mm
2	Kink	IEC 60794-5-10 / IEC 60794-1-21, Method E10	There shall not be any split or permanent damage & shall pass inner clearance test. (3.0mm Ball)
3	Crush Test	IEC 60794-5-10 / IEC 60794-1-21, Method E3 A, 1500 N load, 60 sec, 1 hour recovery time.	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test. (3.0mm Ball)
4	Impact Test	IEC 60794-5-10 / IEC 60794-1-21, Method E4, 3 J Impact	There shouldn't be any crack or split when striker head dropped with 1 J energy and shall pass inner clearance test. The imprint of the striking surface on the microduct is not considered mechanical damage.
5	Environmental Stress Crack Resistance (ESCR)	ASTM D 1693	No crack shall observe at 50±2°c for Min 1000 hours, when used 10% Igepal CO-630 solutions.
6	Colour & Sequence	Visual inspection.	As per customer specifications.
7	Printing	Visual inspection.	As per customer specifications.