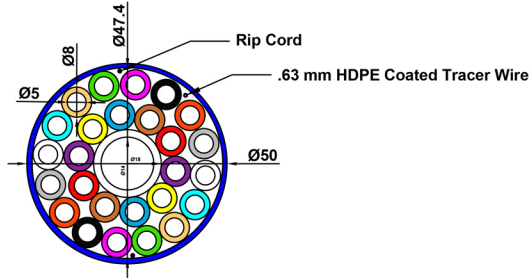


## HDPE Multiduct 26 x 8/5 + 1 x 18/14 mm



### Description

- 1) HDPE Multiduct 26 x 8/5 + 1 x 18/14 mm
- 2) Micro Ducts have Inner Longitudinal Ribs and Permanent Silicone Layer
- 3) Rip cord and 0.63 mm HDPE coated copper tracer wire

### MATERIAL SPECIFICATIONS

Characteristic	Test Method	Acceptance Criteria	Test Frequency
<b>Ducts are manufactured with 100% Virgin HDPE</b>			
Melt Flow Index	ASTM D 1238-10, ASTM F2160	< 0.55 g/10min	Per Batch
Density	ASTM D792-08, ASTM F2160	0.940 -0.955 g/cm <sup>3</sup>	Per Batch

### PHYSICAL AND MECHANICAL PROPERTIES (Micro duct : 12/8 mm Micro Duct)

Characteristic	Test Method	Acceptance Criteria	Test Frequency
Outer Diameter	ASTM D 2122 a) In-line control (X/Y laser) b) 5 measurements equidistant apart around circumference	12.0 ± 0.1 mm	a) 5 times/sec b) Per drum
Inner Diameter	ASTM D 2122 5 measurements equidistant apart around circumference	8.0 ± 0.1 mm	Per drum
Wall thickness	ASTM D 2122 5 measurements equidistant apart around circumference	2.0 ± 0.1 mm	Per drum
Ovality	ASTM D 2122 (Max. Outer Diameter – Min. Outer Diameter) /Average Outer Diameter	≤ 5%	Per drum
Standard Dimension Ratio	N/A SDR= Outer dia./Wall thickness	6.0	N/A
Pressurization	5 min @ 12 bar each micro duct	No damage, No leaks.	Per drum
Inner Clearance Test	IEC 60794-1-2 Method E23	6.4 mm steel ball shall pass freely through micro duct.	Per drum

## PHYSICAL AND MECHANICAL PROPERTIES *(Micro duct : 12/8 mm Micro Duct)*

Characteristic	Test Method	Acceptance Criteria	Test Frequency
<b>Crush</b>	IEC 60794-1-2 Method E3, 1500 N load, 60 sec, 1 hour recovery time.	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Tensile Strength at yield</b>	IEC 60794-1-2 Method E1, ASTM F 2160, ASTM D 638 (Type IV), speed 50mm/min	20 – 30 N/mm <sup>2</sup>	Per Batch
<b>Elongation at Break</b>	IEC 60794-1-2 Method E1, ASTM F 2160, ASTM D 638 (Type IV), speed 50mm/min	Min 400%	Per Batch
<b>Kink</b>	IEC 60794-1-2 Method E8	Duct bent between 2 parallel supports 20XOD apart	Per Batch
<b>Bend Test</b>	IEC 60794-1-2 Method E11A, 20 X OD	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Environmental Stress Crack Resistance</b>	ASTM D 1693	No crack shall be observed at 50±2°C for 96 hours, when used 10% Igepal solution	Per Batch
<b>Impact</b>	IEC 60794-1-2 Method E4, 5 J Impact, 10 mm anvil, recovery time 1 hour.	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Repeated Bending</b>	IEC 60794-1-2 Method E6, 15 x OD	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Passed
<b>Co-efficient of Friction</b>	Bell core, 750 mm Diameter, 450° loop, 5 kg tail mass	$\mu < 0.06$	Per Batch
<b>Heat Reversion</b>	ISO 2505	110°C for 1 hrs (< 3%)	Per Batch
<b>Colour</b>	Visual inspection	As per customer choice	Per drum
<b>Printing</b>	Visual inspection	As per customer choice	Per drum

## PHYSICAL AND MECHANICAL PROPERTIES *(Micro duct : 20/16 mm Micro Duct)*

Characteristic	Test Method	Acceptance Criteria	Test Frequency
<b>Outer Diameter</b>	ASTM D 2122 a) In-line control (X/Y laser) b) 5 measurements equidistant apart around circumference	20.0 ± 0.1 mm	a) 5 times/sec b) Per drum
<b>Inner Diameter</b>	ASTM D 2122 5 measurements equidistant apart around circumference	16.0 ± 0.1 mm	Per drum
<b>Wall thickness</b>	ASTM D 2122 5 measurements equidistant apart around circumference	2.0 ± 0.1 mm	Per drum

## PHYSICAL AND MECHANICAL PROPERTIES *(Micro duct : 20/16 mm Micro Duct)*

Characteristic	Test Method	Acceptance Criteria	Test Frequency
<b>Ovality</b>	ASTM D 2122 (Max. Outer Diameter – Min. Outer Diameter) /Average Outer Diameter	≤ 5%	Per drum
<b>Standard Dimension Ratio</b>	N/A SDR= Outer dia./Wall thickness	10.0	N/A
<b>Pressurization</b>	5 min @ 12 bar each micro duct	No damage, No leaks.	Per drum
<b>Inner Clearance Test</b>	IEC 60794-1-2 Method E23	12.80 mm steel ball shall pass freely through micro duct.	Per drum
<b>Crush</b>	IEC 60794-1-2 Method E3, 1200 N load, 60 sec, 1 hour recovery time.	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Tensile Strength at yield</b>	IEC 60794-1-2 Method E1, ASTM F 2160, ASTM D 638 (Type IV), speed 50mm/min	20 – 30 N/mm <sup>2</sup>	Per Batch
<b>Elongation at Break</b>	IEC 60794-1-2 Method E1, ASTM F 2160, ASTM D 638 (Type IV), speed 50mm/min	Min 400%	Per Batch
<b>Kink</b>	IEC 60794-1-2 Method E8	Duct bent between 2 parallel supports 20XOD apart	Per Batch
<b>Bend Test</b>	IEC 60794-1-2 Method E11A, 20 X OD	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Environmental Stress Crack Resistance</b>	ASTM D 1693	No crack shall be observed at 50±2°C for 96 hours, when used 10% Igepal solution	Per Batch
<b>Impact</b>	IEC 60794-1-2 Method E4, 5 J Impact, 10 mm anvil, recovery time 1 hour.	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Repeated Bending</b>	IEC 60794-1-2 Method E6, 15 x OD	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Passed
<b>Co-efficient of Friction</b>	Bell core, 750 mm Diameter, 450° loop, 5 kg tail mass	μ < 0.06	Per Batch
<b>Heat Reversion</b>	ISO 2505	110°C for 1 hrs (< 3%)	Per Batch
<b>Colour</b>	Visual inspection	As per customer choice	Per drum
<b>Printing</b>	Visual inspection	As per customer choice	Per drum

## PHYSICAL AND MECHANICAL PROPERTIES *(Bundled Ducts)*

Characteristic	Test Method	Acceptance Criteria	Test Frequency
<b>Wall thickness (Sheathing)</b>	ASTM D 2122, 6 measurements equidistant apart around circumference.	1.5 ± 0.1 mm	Per coil
<b>Pressurization</b>	5 min @ 12 bar each micro duct	No damage, No leaks.	Per coil
<b>Inner Clearance Test (per micro duct per coil)</b>	IEC 60794-1-2 Method E23	2.5 mm steel ball shall pass freely through micro duct	Per coil
<b>Kink</b>	IEC 60794-1-21 Method E10, 15 x OD	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Crush</b>	IEC 60794-1-2 Method E3, 2000 N load, 60 sec, 1 hour recovery time.	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Impact</b>	IEC 60794-1-2 Method E4, 15 J Impact, 10 mm anvil, recovery time 1 hour.	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Colour</b>	Visual inspection	As per customer choice	Per Coil
<b>Tensile Strength at yield</b>	IEC 60794-1-2 Method E1 ASTM F 2160, ASTM D 638 (Type IV), speed 50mm/min	20 – 30 N/mm <sup>2</sup>	Per Batch
<b>Elongation at Break</b>	IEC 60794-1-2 Method E1 ASTM F 2160, ASTM D 638 (Type IV), speed 50mm/min	Min 400%	Per Batch
<b>Bend Test</b>	IEC 60794-1-2 Method E11A, 20 X OD	No residual deformation > 15% of inner and outer diameter. Shall pass inner clearance test.	Per Batch
<b>Printing</b>	Visual inspection	As per customer choice	Per Coil