RaDD Network Solutions, Inc.
1010 Centennial St., Green Bay, WI 54304
info@raddnetwork.com

SPECS AND TECHS: fibreDUCT™

DESCRIPTION QUALITY:

fibreDUCT™ is manufactured from virgin HDPE and has an ultra-slippery silicone co-extruded bore. This dramatically reduces the friction between the cable and the duct. This means lower pulling tensions, less cable damage, longer pulls, and quicker installation.

fibreDUCT™ is suitable for direct burial or used as a sub duct.

QUALITY APPLICATIONS:

m4a (Pty) Ltd, the manufacturer of fibreDUCT™, adheres to the highest quality standards. m4a (Pty) Ltd has been awarded ISO9001/2015 certifications.

fibreDUCT™ duct has a solid co-extruded super slippery bore in which silicone molecules are evenly and permanently bonded to the inner duct wall. They do not dry out or get displaced by the pressure between the duct and cable. The COF between a duct and cable depends on many factors such as hauling speed, type of cable sheath, and side wall pressure. However, in general, the COF of an fibreDUCT™ is about one third of that of a plain HDPE duct.

APPLICATIONS FEATURES AND BENEFITS:

- Can be installed in HDPE pipe and Sub-Duct.
- Certified for FTTx deployment.
- Can be installed in HDPE.
- Subdivided Conduit Overrides.
- Plow Installations.
- Trench Installations.
- Directional Bore.
- Micro Trench.
- Tray Installations.

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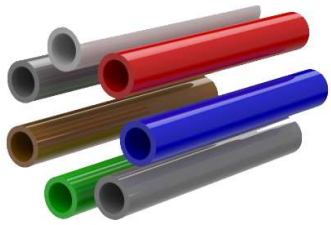
FEATURES AND BENEFITS:

- fibreDUCT™ can be easily integrated with our composite axsCHAMBER™ Range for perfect product compatible synergy.

CONSTRUCTION:	
Tubes:	The individual tubes are Co-extruded High-Density Polyethylene with a low coefficient of friction silicone layer.
Sheathing:	The sheathing is a High-Density Polyethylene with UV stabilization effective for 1 year of exposure.
Sequential Foot Markings:	Custom print available.
Longitudinal Ribs	Standard on most fibreDUCTs.
Pre-Installed Pull Tape	fibreDUCT™ can be installed with a factory pre-installed pull string or mule tape for pulling in fiber optic cable.

TUBE COLORS (TIA/EIA STANDARDS)					
BLUE	ORANGE	GREEN	BROWN	SLATE	WHITE
RED	BLACK	YELLOW	VIOLET	ROSE	AQUA

MICRO-DUCT



DUCT	NOMINAL OD (MM)	MINIMUM ID (MM)	WEIGHT (LB/FT)	BENDING 20D	REEL LENGTH	REEL SIZE
8 x 5mm	8mm±0.1mm	5mm±0.1mm	0.014	Ø160	15,000’	30”(W) x 48”(H)
10 x 8mm	10mm±0.1mm	8mm±0.1mm	0.018	Ø200	13,000’	30”(W) x 48”(H)
12.7 x 10mm	12.7mm±0.1mm	10mm±0.1mm	0.032	Ø254	10,000’	30”(W) x 48”(H)
14 x 10mm	14mm±0.1mm	10mm±0.1mm	0.05	Ø280	9,000’	30”(W) x 48”(H)
16 x 12mm	16mm±0.1mm	12mm±0.1mm	0.043	Ø320	7,000’	30”(W) x 48”(H)
18 x 14mm	18mm±0.1mm	14mm±0.1mm	0.066	Ø360	5,000’	30”(W) x 48”(H)

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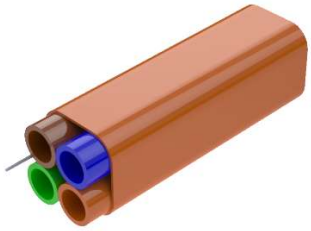
MULTI-DUCT

2-WAY TECHNICAL SPECIFICATIONS:

DUCT	NOMINAL OD(MM)	OVERSHEATH (MM)	WEIGHT (LB/FT)	AVAILABLE ACCESSORIES	BENDING 20D	REEL LENGTH	REEL SIZE
2-Way 8x5mm	18 - 10	1.25 / 1.5	0.02	Tracer Wire	Ø360 - Ø200	5,000’	30”(W) x 48”(H)
2-Way 10x8mm	22.5 - 12.5	1.25/ 1.5	0.018	Tracer Wire	Ø450 - Ø250	5,000’	30”(W) x 48”(H)
2-Way 12.7x10mm	27.9 – 15.2	1.25/ 1.5	0.022	Tracer Wire	Ø558 - Ø304	4,000’	30”(W) x 48”(H)
2-Way 14x10mm	31 – 16.5	1.25/ 1.5	0.049	Tracer Wire	Ø620 - Ø330	8,000’	30”(W) x 83”(H)
2-Way 16x12mm	34.5 – 18.5	1.25/ 1.5	0.057	Tracer Wire	Ø690 - Ø370	7,000’	30”(W) x 83”(H)
2-Way 18x14mm	38.5 – 20.5	1.25 / 1.5	0.065	Tracer Wire	Ø770 - Ø410	5,000’	30”(W) x 83”(H)

4-WAY TECHNICAL SPECIFICATIONS:



DUCT	NOMINAL OD(MM)	OVERSHEATH (MM)	WEIGHT (LB/FT)	AVAILABLE ACCESSORIES	BENDING 20D	REEL LENGTH	REEL SIZE
4-Way 8x5mm	18.5	1.25 / 1.5	0.02	Tracer Wire	Ø370	7,000’	30”(W) x 79”(H)
4-Way 10x8mm	22.5	1.25 / 1.5	0.018	Tracer Wire	Ø450	7,000’	30”(W) x 79”(H)
4-Way 12.7x10mm	27.9	1.25 / 1.5	0.022	Tracer Wire	Ø558	6,000’	30”(W) x 79”(H)
4-Way 14x10mm	30.5	1.25 / 1.5	0.049	Tracer Wire	Ø610	6,000’	30”(W) x 83”(H)
4-Way 16x12mm	34.5	1.25 / 1.5	0.057	Tracer Wire	Ø690	6,300’	43”(W) x 79”(H)
4-Way 18x14mm	38.5	1.25 / 1.5	0.065	Tracer Wire	Ø770	5,300’	43”(W) x 79”(H)

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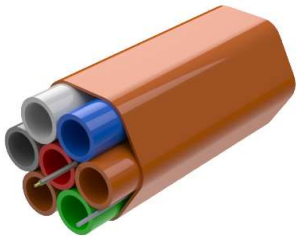
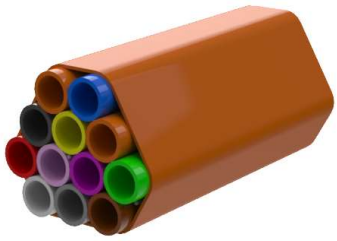
7-WAY TECHNICAL SPECIFICATIONS:



DUCT	NOMINAL OD (MM)	OVERSHEATH (MM)	WEIGHT (LB/FT)	AVAILABLE ACCESSORIES	BENDING 20D	REEL LENGTH	REEL SIZE
7-Way 8x5mm	24.4	1.25 / 1.5	0.02	Tracer Wire	Ø490	6,000’	30”(W) x 79”(H)
7-Way 10x8mm	30.5	1.25 / 1.5	0.018	Tracer Wire	Ø610	5,500’	30”(W) x 79”(H)
7-Way 12.7x10mm	38.5	1.25 / 1.5	0.022	Tracer Wire	Ø770	5,000’	30”(W) x 79”(H)
7-Way 14x10mm	42.5	1.25 / 1.5	0.049	Tracer Wire	Ø850	4,000’	30”(W) x 94”(H)
7-Way 16x12mm	48.5	1.25 / 1.5	0.057	Tracer Wire	Ø970	4,500’	43”(W) x 94”(H)
7-Way 18x14mm	54.5	1.25/ 1.5	0.065	Tracer Wire	Ø1090	3,800’	43”(W) x 94”(H)

12-WAY TECHNICAL SPECIFICATIONS:



DUCT	NOMINAL OD (MM)	OVERSHEATH (MM)	WEIGHT (LB/FT)	AVAILABLE ACCESSORIES	BENDING 20D	REEL LENGTH	REEL SIZE
12-Way 8x5mm	30.8	1.25 / 1.5	0.02	Tracer Wire	Ø616	4,000’	30”(W) x 79”(H)
12-Way 10x8mm	39	1.25 / 1.5	0.018	Tracer Wire	Ø780	3,000’	30”(W) x 79”(H)
12-Way 12.7x10mm	49.2	1.25 / 1.5	0.022	Tracer Wire	Ø984	3,000’	43”(W) x 94”(H)
12-Way 14x10mm	55	1.25 / 1.5	0.049	Tracer Wire	Ø1100	3,000’	43”(W) x 94”(H)
12-Way 16x12mm	63	1.25 / 1.5	0.057	Tracer Wire	Ø1260	2,000’	43”(W) x 94”(H)

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HYBRID MULTI-DUCT SPECIFICATIONS:

DUCT	NOMINAL OD (MM)	OVERSHEATH (MM)	WEIGHT (LB/FT)	AVAILABLE ACCESSORIES	BENDING 20D	REEL LENGTH	REEL SIZE
8-Way [1]18/14mm + [7]14/10mm	48	1.25 / 1.5	0.52	Tracer Wire	Ø960	3,000'	30"(W) x 79"(H)
9-Way [1]14/10mm + [8]8/5mm	33	1.25 / 1.5	0.094	Tracer Wire	Ø660	8,000'	30"(W) x 94"(H)

MECHANICAL & CHEMICAL TESTS AND COMPLIANCE CRITERIA			
Test Group	Standards Applied or Test Process	Raw Material Testing on Batches by Supplier	Performance Result
1. Melt Flow Rate (190°C, 2.16kg)	ASTM D1238	0.40g/10 Min	Compliance
2. Density	ASTM D1505	0.957g/cm^3	Compliance
3. Vicat Softening Point @ 10N, 50°C/hr	ASTM D1525	125°C	Compliance
4. Melting Point	ASTM D2117	133°C	Compliance
5. Tensile Strength @ Yield	ASTM D638	320kg/cm^2	Compliance
6. Tensile Strength @ Break	ASTM D638	400kg/cm^2	Compliance
7. Elongation @ Break	ASTM D638	1000%	Compliance
8. Stiffness	ASTM D747	10000kg/cm^2	Compliance
9. Flexural Modulus	ASTM D790	14000kg/cm^2	Compliance
10. Notched Izod Impact Strength	ASTM D256	15kg.cm/cm (Partial Break)	Compliance
11. Durometer Hardness	ASTM D2240	65 Shore D	Compliance
12. ESCR (Condition B, 25% Igepal)	ASTM D1693	400Hr F50	Compliance

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MECHANICAL & CHEMICAL TESTS AND COMPLIANCE CRITERIA			
Test Group	Standards Applied or Test Process	In-house Laboratory	Performance Result
1. Visual Inspections (QA Report)	Test Method: ISO9001 Standards	Per Drum	Compliance
2. Geometric Characteristics	Test Method: ASTM D2122	Per Drum	Compliance
3. Pressure Test	Test Method: 5 bars for 5 min (Leak Test)	Per Drum	Compliance
4. Duct Pressure Test	Test Method: IEC 60794-5-10	Per Drum	Compliance
5. Inner Clearance (Shuttle Test)	Test Method: IEC 60794-1-21 Method E23	Per Drum	Compliance
6. Determination of Ovality	Test Method: DIN 8074 & ASTM F2122	Per Drum	Compliance
7. Impact Resistance	Test Method: IEC 60794-1-2 Method E4	Scheduled Intervals	Compliance
8. Crush Resistance:	Test Method: IEC 60794-1-2 Method E3	Scheduled Intervals	Compliance
9. Tensile Performance:	Test Method: IEC 60794-1-2 Method E1	Scheduled Intervals	Compliance
10. Tensile Strength & Elongation	Test Method: ISO527	Scheduled Intervals	Compliance
11. Specific Density	Test Method: ISO 1183-2	Per raw material batch	Compliance
12. Mass Melt Flow Rate	Test Method: ISO 1133	Per raw material batch	Compliance
13. Hydrostatic Pressure Test	Test Method: SANS 1167-1 and 2	Scheduled Intervals	Compliance
14. Environmental Stress Cracking	Test Method: ISO 22088-3	Scheduled Intervals	Compliance
15. Chemical Resistance	Test Method: ISO175	Outsource	Compliance
16. Kink Resistance	Test Method: IEC 60794-1-21 Method E10	Scheduled Intervals	Compliance
17. Coefficient of Friction	Test Method: Bellcore	Scheduled Intervals	Compliance
18. Flexibility (Bend)	Test Method: IEC 60794-1-21 Method E6	Scheduled Intervals	Compliance