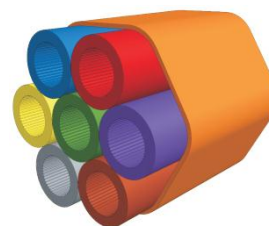
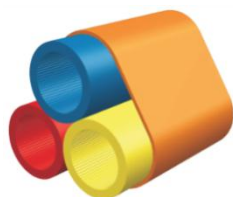


## MICRODUCT NESDUCT DB N X 7/3,5 MM



Application	Microduct / duct bundle for direct buried installation or installation in existing protective pipes or cable shafts.	
Construction	Material	The individual ducts are made of HDPE.
	Colour coding	The ducts are colour-coded according to customer specifications, FIN 2012, ANSI/TIA, IEC or other.
	Trace wire	Trace wires are available when needed.
	Outer sheath	The duct bundles are sheathed with a common HDPE sheath. The nominal sheath thickness is $1,0 \pm 0,1$ mm. Sheath marking is printed on one meter intervals.

Nominal dimensions of bare duct without outer sheath				
Duct type	Diameter [mm]		Weight [kg/km]	Tensile strength
	OD	ID		
7/3,5 mm	$7,0 \pm 0,1$	$3,5 \pm 0,1$	27,5	270 N

Nominal dimensions of ducts and duct bundles with outer sheath						
Configuration		Diameter [mm]			Weight [kg/km]	Tensile strength
Count	Grouping	Duct OD	Duct ID	Total OD		
1	1 x 7/3,5 mm	$7,0 \pm 0,1$	$3,5 \pm 0,1$	9,0	52	500 N
2	2 x 7/3,5 mm	$7,0 \pm 0,1$	$3,5 \pm 0,1$	16,0	93	910 N
4	4 x 7/3,5 mm	$7,0 \pm 0,1$	$3,5 \pm 0,1$	19,0	162	1580 N
7	7 x 7/3,5 mm	$7,0 \pm 0,1$	$3,5 \pm 0,1$	23,0	258	2520 N
12	12 x 7/3,5 mm	$7,0 \pm 0,1$	$3,5 \pm 0,1$	30,0	415	4060 N

Temperature ranges		
Temperature range	Installation	-15 - +40 °C
	Transport, storage and operation	-45 - +60 °C

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Mechanical characteristics			
Characteristics	Test Methods	Descriptions	Requirements
Tensile strength (*)	IEC 60794-1-21, method E1	Test length >1 m Duration 10 min	Load = 9,81 x W [N] W = mass of 1 km [kg/km]
Bending (cold) (*)	IEC 60794-1-21, method E11B	Temperature -15 °C Cycles 10	Mandrel diameter 30 x OD
Repeated bending (*)	IEC 60794-1-21, method E6	Load 20 N Cycles 35 Time per cycle ~2 s	Bending diameter 30 x OD
Impact (*)	IEC 60794-1-21, method E4	Anvil diameter 50 mm Surface radius 300 mm Recovery time 1 hour	Impact energy 15 J
Torsion (*)	IEC 60794-1-21, method E7	Test length 1 m Load 20 N Cycles 5	Number of turns ±1 (360° in both directions)
Kink (*)	IEC 60794-1-21, method E10	Temperature 20 °C	Loop diameter 20 x OD
Crush (*)	IEC 60794-1-21, method E3	Duration 15 min Recovery time 1 hour	Load (plate/plate) 2000 N
Pressure withstand (**)	IEC 60794-1-22, method F13	Test length 1 m Temperature 20 °C Duration 30 min	Pressure (water) 25 bar

Acceptance criteria:

(\*) After the test, under visual examination, without magnification, there shall be no damage and the tested sample shall pass the inner clearance test (\*\*\*). If a recovery time is defined, the inner clearance test is done after the recovery time.

(\*\*) Under visual examination, without magnification, there shall be no damage to the tested microduct.

(\*\*\*) Inner clearance test is done by passing a metal sphere through the tested section of microduct or microduct assembly. The minimum diameter of the sphere is 85% of the nominal microduct bore diameter (ID). The test is passed if the sphere passes through the microduct.

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