

POLYETHYLENE INSULATED, SCREENED TELECOMMUNICATION CABLE WITH HALOGEN FREE, FLAME RETARDANT SHEATH FOR INDOOR USE

TYPE: MHS LSZH

I GENERAL

This specification covers solid polyethylene insulated, pair twisted, screened tele-communication cable with halogen free, flame retardant sheath for indoor use. The cable is designed in accordance with the Finnish Standard SFS 5739.

II CONSTRUCTION

A	Conductor	Solid, tinned, annealed copper wire. Nominal diameter	0.5	mm
B	Insulation	Solid polyethylene, coloured. The polyethylene compound meets the requirements of EN 50290-2-23, table 1, grade L/MD. Nominal thickness	0.20	mm
C	Twisting	Two insulated conductors are twisted to form a pair. Colour scheme according to table No 1. <u>Cable 1x4x0.5 only:</u> Four insulated conductors are twisted to form a star quad. Colour scheme: white - transparent - blue - orange.		
D	Lay-up	<u>Cable 3 and 5 pairs:</u> Required number of twisted pairs is assembled to form the cable core. <u>Cable 10-100 pairs:</u> Required number of assembled 10-pair units is stranded together to form the cable core. <u>Cable 200 pairs:</u> Four 50- pair units each containing five 10-pair units are stranded together to form the cable core. Lay up and unit identification according to tables No 2, 3 and 4.		
E	Wrapping	Plastic tape helically or longitudinally applied with overlap.		

F	Screening	<p>An aluminium/polyester tape is longitudinally applied with overlap and with the aluminium inwards.</p> <p>Nominal thickness of aluminium</p> <p>Under and in contact with the screening tape one solid tinned annealed copper wire, 0.5 mm, is laid as drain wire.</p>	0.009	mm
G	Sheath	<p>Halogen free, flame retardant plastic compound, grey (RAL 7035).</p> <p>The plastic compound meets the requirements of EN 50290-2-27, table 1.</p> <p>Under the sheath a yarn is laid longitudinally as rip cord.</p> <p>Nominal thickness of sheath according to table No 5, where also outer diameters and weights are given.</p>		
H	Sheath marking	<p>On the sheath is MHS LSZH, dimension, Nexans, year of manufacturing and meter marking printed with ink.</p>		

Table No 1 – Colour scheme

Pair No	Colour of PE-insulation Conductor a	Conductor b
1	blue	white/blue
2	orange	white/orange
3	green	white/green
4	brown	white/brown
5	grey	white/grey
6	blue	black/blue
7	orange	black/orange
8	green	black/green
9	brown	black/brown
10	grey	black/grey

Table No 3 – Lay-up and identification of 10-pair units

10-pair unit No	Pair No in each unit (See table No 1)	Colour of 10-pair unit identification tape
1	1-10	blue
2	1-10	orange
3	1-10	green
4	1-10	brown
5	1-10	grey
6	1-10	white/blue
7	1-10	white/orange
8	1-10	white/green
9	1-10	white/brown
10	1-10	white/grey

Table No 2 – Lay-up of cable or unit with ≤ 100 pairs

Number of pairs in the cable or unit	Number of 10-pair units in centre and layer	10-pair unit No (see table No 2)
3	Centre 3 pairs	Pairs No 1-3
5	Centre 5 pairs	Pairs No 1-5
10	Centre 1 10-pair unit	Unit No 1
20		Unit No 1-2
30	Centre 2 10 pair units	Unit No 1-3
50		Unit No 1-5
100	Centre 3 10-pair units	Unit No 1-3
	Centre 5 10-pair units	Unit No 4-10
	Centre 3 10-pair units	
	Layer 7 10-pair units	

Table No 4 – Lay-up of cable with 200 pairs

Number of pairs in the cable or unit	Number of 50- or 100-pair units in centre and layer	Number on the 50- or 100-pair unit identification tape
200	Centre 4 50-pair units	1-4

Table No 5 – Dimensions and weights

Cable	Minimum sheath thickness mm	Nominal outer diameter mm	Net weight per 100 m appr kg
1x4x0,5	0.8	5.0	3.0
3x2x0,5	0.8	5.5	3.5
5x2x0,5	0.8	6.5	5.0
10x2x0,5	0.8	8.5	8.0
20x2x0,5	0.8	11.0	14
30x2x0,5	0.9	12.5	19
50x2x0,5	0.9	15.0	30
100x2x0,5	1.0	20.0	54
200x2x0,5	1.3	27	105

III PHYSICAL
DATA

Temperature

During installation	min	-15	°C
	max	+50	°C
During operation	min	-15	°C
	max	+70	°C

Flame propagation

The cable meets the requirements according to IEC 60332-1

IV ELECTRICAL DATA AT 20°C

Conductor resistance (single conductor)	av	≤92	Ω/km
	max	96	Ω/km
Resistance unbalance	max	2	%
Insulation resistance	min	10 000	MΩkm
Pair capacitance at 800 Hz	av	≤60	nF/km
	max	65	nF/km
Capacitance unbalance at 800 Hz, pair-pair	max	250	pF/500m
100%	max	150	pF/500m
95%	max	500	pF/500m
1x4x0.5			
Characteristic impedance at 1.0 MHz	nom	100	Ω
Attenuation at 1.0 MHz	max	26	dB/km
Near-end crosstalk (NEXT) at 1 MHz (powersum)	min	37	dB

V THICKNESS TOLERANCES FOR INSULATION

The average radial thickness at any section shall be not less than 90 % of the nominal thickness.

The minimum radial thickness at any point shall be not less than 75 % of the nominal thickness.