

POLYETHYLENE INSULATED, JELLY FILLED, MOISTURE BARRIER SHEATHED AERIAL TELECOMMUNICATION CABLE WITH SUSPENSION STRAND

Type: VMOHBUK-TL

1. GENERAL

This specification covers foam-skin polyethylene insulated pair twisted, petroleum jelly filled telecommunication cable. The cable is provided with a moisture barrier sheath (Al-screen + PE-sheath) and suspension strand in a figure-8 cross section. The cable is designed in accordance with the Finnish Standard SFS 5740.

2. CONSTRUCTION

A.	Conductor	Solid, plain, annealed copper wire. Nominal diameter	0.5 mm 0.6 mm 0.8 mm
B.	Insulation	Foam-skin (foamed polyethylene with skin of solid polyethylene), coloured. The base polyethylene compound used meets the requirements of EN 50290-2-23, grade C. Nominal thickness of insulation is such that the completed cable meets the electrical requirements specified	
C.	Twisting	Two insulated conductors are twisted together to form a pair. Colour scheme according to table No 1	
D.	Lay-up	Cables ≤100 pairs Required number of ten pair units is stranded together. Lay-up according to tables No 2 and 3. Cables >100 pairs Required number of 50 pair units, each containing five assembled 10 pair units, are stranded together. Lay-up according to tables No 2, 3 and 4.	
E.	Petroleum jelly filling	The interstices of the cable core are filled with petroleum jelly along the whole cable core. Drop point of petroleum jelly	≥ 70 °C

- F. Wrapping Nonwoven fibre, paper, plastic or swellable tape laid on with overlap.
- G. Suspension strand Seven stranded galvanized steel wires.
Nominal diameter of wire and min breaking load according to table No 5.
- H. Moisture barrier sheath (screen + PE sheath) Single coated aluminium/polyethylene-tape, applied longitudinally with overlap and well adhered to the outer black polyethylene sheath.
One or two tinned copper wires, 0.8 mm, are laid longitudinally under the screening tape as drain wire.
Nominal thickness of aluminium according to table No 5. The screened cable core and the suspension strand are laid parallel and sheathed with black polyethylene to a figure-8-cross section.
The polyethylene compound meets the requirements of EN 50290-2-24, grade LLD.
Minimum thickness of sheath according to table No 5, where also dimensions and weights are given.
- H. Sheath marking On the sheath is VMOHBUK-TL, dimension, Nexans GS, year of manufacturing and meter marking printed with ink.

Table No 1 - Colour scheme

Pair No	Colour of PE-insulation	Conductor a	Conductor b
1	BLUE	WHITE	WHITE
2	ORANGE	WHITE	WHITE
3	GREEN	WHITE	WHITE
4	BROWN	WHITE	WHITE
5	GREY	WHITE	WHITE
6	BLUE	BLACK	BLACK
7	ORANGE	BLACK	BLACK
8	GREEN	BLACK	BLACK
9	BROWN	BLACK	BLACK
10	GREY	BLACK	BLACK

Table No 2 – Lay-up and identification of 10-pair units

10-pair 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 3 - Lay up of cables or units with ≤ 100 pairs

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

*) Also 50 pair unit in cable with 200 pairs

Table No 4 – Lay up of cable with 200 pairs

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

Table No 5 – Dimensions and weights

Cable	Nominal thickness of aluminium screen / number of drain wires	Nominal dimension and minimum breaking load of suspension strand		Minimum thickness of PE-sheath (cable)	Minimum thickness of PE-sheath (suspension strand)	Nominal outer dimensions	Net weight per 100m appr
VMOHBUK-TL	mm	mm	N	mm	mm	mm	Kg
5x2x0.5	0.15 / 1	7x1.2	11 700	1.4	1.4	10x20	17
10x2x0.5	0.15 / 1	7x1.2	11 700	1.4	1.4	11x21	22
20x2x0.5	0.15 / 1	7x1.2	11 700	1.4	1.4	15x25	31
30x2x0.5	0.15 / 1	7x1.2	11 700	1.4	1.4	17x27	38
50x2x0.5	0.15 / 2	7x1.2	11 700	1.6	1.6	20x32	54
100x2x0.5	0.20 / 2	7x1.6	20 800	1.6	1.6	27x41	100
200x2x0.5	0.20 / 2	7x1.6	20 800	2.0	2.0	40x55	190
5x2x0.6	0.15 / 1	7x1.2	11 700	1.4	1.4	11x21	19
10x2x0.6	0.15 / 1	7x1.2	11 700	1.4	1.4	13x23	25
20x2x0.6	0.15 / 1	7x1.2	11 700	1.4	1.4	17x27	38
30x2x0.6	0.15 / 1	7x1.2	11 700	1.6	1.4	19x29	47
50x2x0.6	0.15 / 2	7x1.2	11 700	1.6	1.4	23x34	70
100x2x0.6	0.20 / 2	7x1.6	20 800	1.6	1.4	32x46	140
5x2x0.8	0.15 / 1	7x1.2	11 700	1.4	1.4	13x23	25
10x2x0.8	0.15 / 1	7x1.2	11 700	1.4	1.4	16x26	36
20x2x0.8	0.15 / 1	7x1.2	11 700	1.6	1.6	21x31	57
30x2x0.8	0.15 / 2	7x1.6	11 700	1.6	1.6	25x38	85
50x2x0.8	0.20 / 2	7x1.6	20 800	1.8	1.8	31x45	130

3. ELECTRICAL DATA AT 20 °C

Conductor resistance (single conductor):				
Conductor 0.5 mm	Average	≤92	Ω/km	
	Max	96	Ω/km	
Conductor 0.6 mm	Average	≤64	Ω/km	
	Max	67	Ω/km	
Conductor 0.8 mm	Average	≤35.5	Ω/km	
	Max	37	Ω/km	
Insulation resistance	min	2 000	MΩkm	
Mutual capacitance at 800 Hz				
	Average	≤40	nF/km	
	Max	45	nF/km	
Capacitance unbalance at 800 Hz, pair-pair				
	Max	160	pF/500m	
	95%	≤100	pF/500m	
Dielectric strength:				
	Conductor-conductor	60 sec	1	kV DC
	Conductor-screen	60 sec	3	kV DC
ELFEXT				
	Single value	Min	42	dB@km
	Powersum	Min	38	dB@km
NEXT				
	Single value	Min	48	dB
	Powersum	Min	44	dB
Characteristic impedance				
		Nominal	125	Ω
Attenuation at 1 MHz:				
	Conductor 0.5 mm	Max	16	dB/km
	Conductor 0.6 mm	Max	13	dB/km
	Conductor 0.8 mm	Max	10	dB/km