

What is KME

A major European industrial group which for more than a hundred years has been a leading force in the world of copper processing industry

World leader in semi-finished copper products

KME Group is the world's largest manufacturer of semi-finished copper and copper alloy products (excluding copper wire), with a share of 30% of the European market and 7% worldwide

Major production sites

The Group boasts 14 production sites strategically located in the 5 European countries with the largest semi-finished products markets, as well as in China.

A hundred years of history

KME Group has deep roots in the history of European industry: it was founded and first quoted on the stock markets in the 19th century.

Our product range includes a complete assortment of semi-finished copper and copper alloy products designed for use in numerous applications. We keep an open dialogue with our customers, so that we can work together to develop resourceful, economical solutions for all kinds of copper applications, old and new.



Roofing systems

KME offers copper as a basic material for architecture and building: surfaces and systems for roofing and facade cladding and for the draining of rainwater.



Copper Industrial Tubes

A high level of quality characterizes our copper tubes; their characteristics have been studied to meet the needs of various industrial applications: air conditioning and refrigeration systems, construction of boilers, making of high-frequency coaxial cables, fittings and the solar heating industry.



Brass and copper rods

KME has the widest range of brass and copper rods on the market, in every size and shape, for all fields of application, from architecture to the electrical industry.



Special products

We are able to create highly technological products: piping systems for the marine industry, tube bundles, mineral insulated cables, special extruded and drawn products in every size and shape, and finished machined parts based on the customer's design.



Plumbing systems

High performance copper tubes, both bare and covered, which are ideal for any plumbing and heating application in the building sector as well as for the distribution of medical gases in the healthcare industry.



Industrial Rolled products

KME manufactures rolled products made of copper, brass, bronze and other copper-based alloys in every shape and size and with different surface treatments in order to meet the requests from many industrial sectors.



Engineered products

KME is a worldwide leader in the supply of copper and special alloy components for the continuous casting of steel and non-ferrous metals, just as it is a qualified and professional partner in the designing of these systems.

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Characteristics

MICO® Mineral Insulated Cable is composed by:

- ETP solid (not stranded) copper cores, from 1 to 400 mm², melting point 1082°C
- Magnesium Oxide (MgO) as electrical insulation, due to its high performance at high temperature (melting point 2600°C)
- high quality DHP copper sheath, manufactured starting from tubes extruded and drawn only (not welded), melting point 1082°C
- LSF additional outer covering. Such flame retardant polyolefin is characterised by high performance in corrosion resistance and low smoke emission.

MICO® Cable range is divided into:

- Light duty cables (300/500 V) from 2 to 7 cores, from 1 to 4 mm² size
- Heavy Duty Cables (450/750 V) from 1 to 19 cores, 400 mm² maximum size for single core, 25 mm² maximum size up to 4 cores.

Production process held by KME foresee many steps of diameter reduction (both drawings and rollings) separated by high temperature annealing. Long lead time (average is 8 weeks) grants high quality cable at the end of the process: strong compression of MgO powder (density about 2 kg/cm³) allows very high values of insulation resistance (also if burned, 180° bended or flattened) and thermal conductivity. Therefore current ratings are higher than soft skin cables, especially at high temperature.

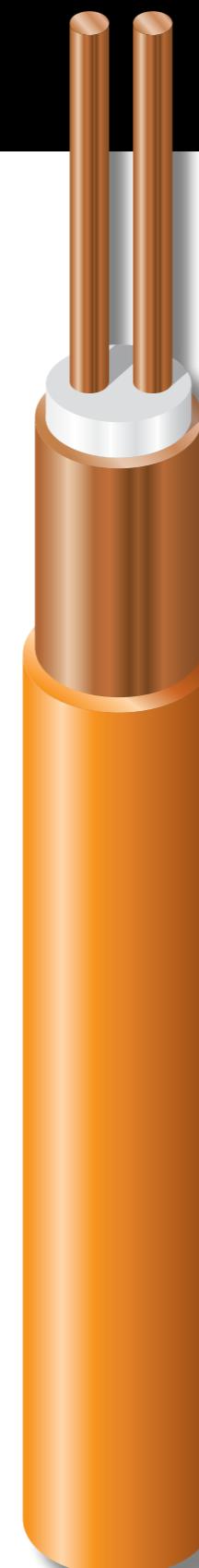
LIGHT DUTY CABLES

Mineral Insulated cables – Light duty cable (300/500 V) – is the best solution for electric circuits installed at sight, in historical or relevant buildings, both indoor and outdoor. Due to their small dimensions, they can be installed quickly and easily. Copper outer sheath, whose cross section is designed to be used as earth conductor, protects the cable from any mechanical stress like impacts, bending or flattening, giving at the same time a beautiful esthetical aspect to the cable. MICO® is not only a simple cable but, combining its use with the large range of copper and brass accessories, designed by KME, it can be considered as a complete wiring system.

HEAVY DUTY CABLES

The increasing of nominal voltage (450/750 V), due to higher thickness of copper outer sheath and Magnesium Oxide insulation, allows KME Mineral Insulated heavy duty cables to be installed in every critical environment, due to high humidity degree, or wherever the installation is dangerous due to possible mechanical damages. Wide manufacturing range, similar to soft skin wiring cable range, allow heavy duty cables design whenever big power is required.

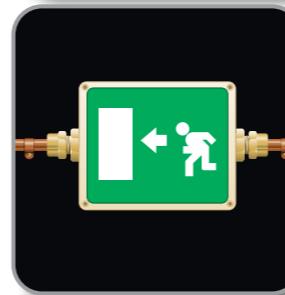
Mineral cables are more efficient than standard wiring cables, in terms of resistance to thermal effects: this means that core cross sections (and cable outer diameters as well) can be reduced, under the same conditions of current ratings.



Applications and advantages



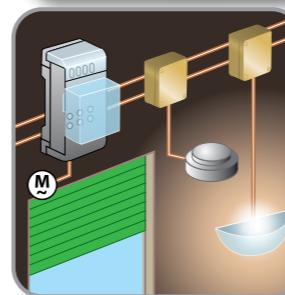
FIRE RESISTANCE – weaker situation is copper melting point (1082°C) MICO® is the safest cable, it can withstand to severe fire, water and mechanical tests as foreseen by British (LPCB), European and australian standards



EMERGENCY SYSTEMS – MICO® is the only cable to go on working also during a fire, so to supply (for at least 120 minutes, maximum time 3 hours) emergency lamps, acoustic alarms, sprinklers, automatic doors, elevators and so on



FIRE DETECTION – MICO® cables allow fire controller units to receive signals by fire detectors also during a fire. MICO® twisted cables (for signal transmission), in addition to MICO® light duty cables (for power supply), are able to match technical requirements by most popular fire detection systems



BUS SYSTEMS – world leaders like ABB or Schneider Electric already tested and approved MICO® as suitable cable for distribution in their bus systems, limiting MICO® specification in fire hazardous areas or in historical buildings, where standard bus cables need are not recommended

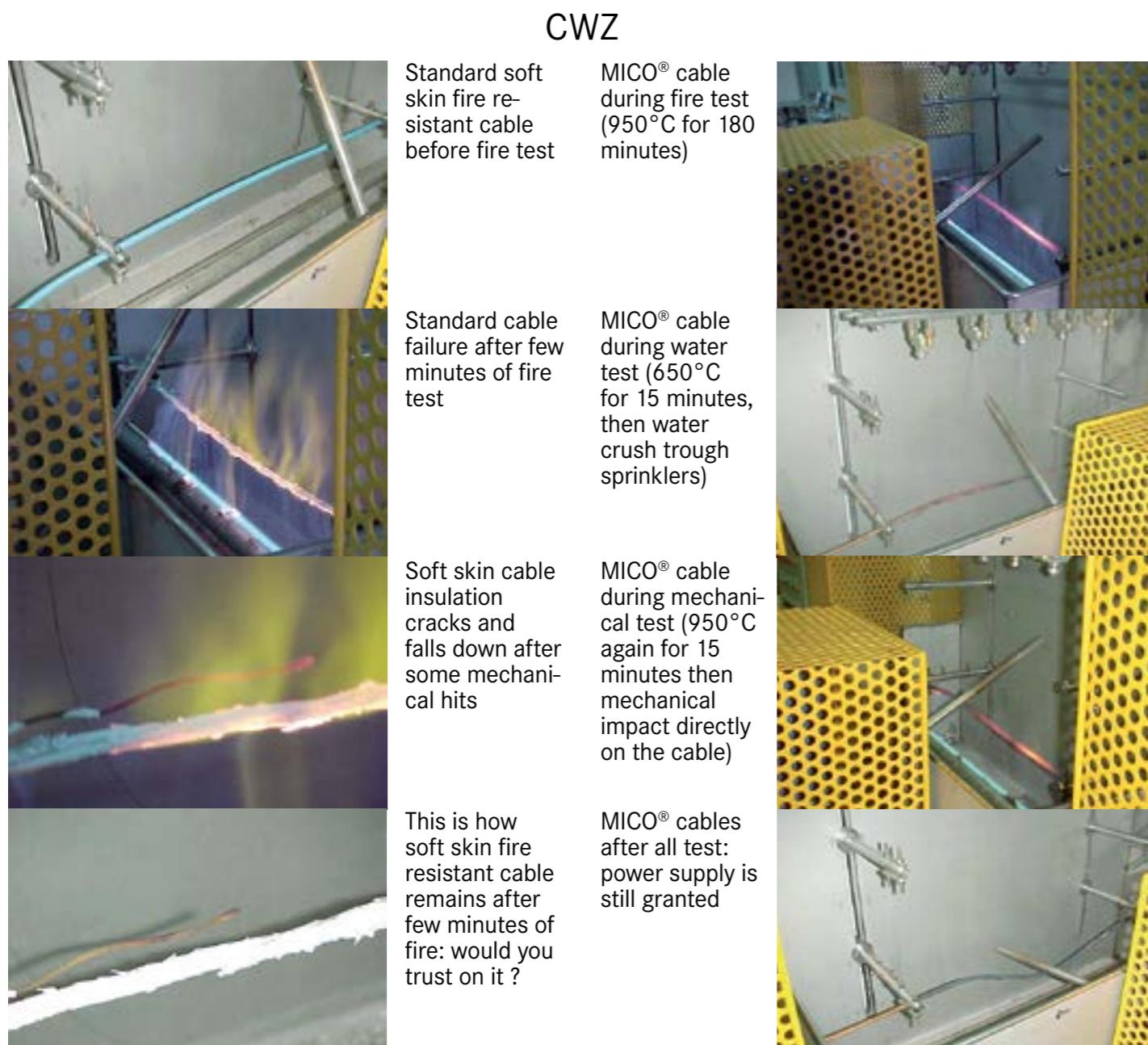
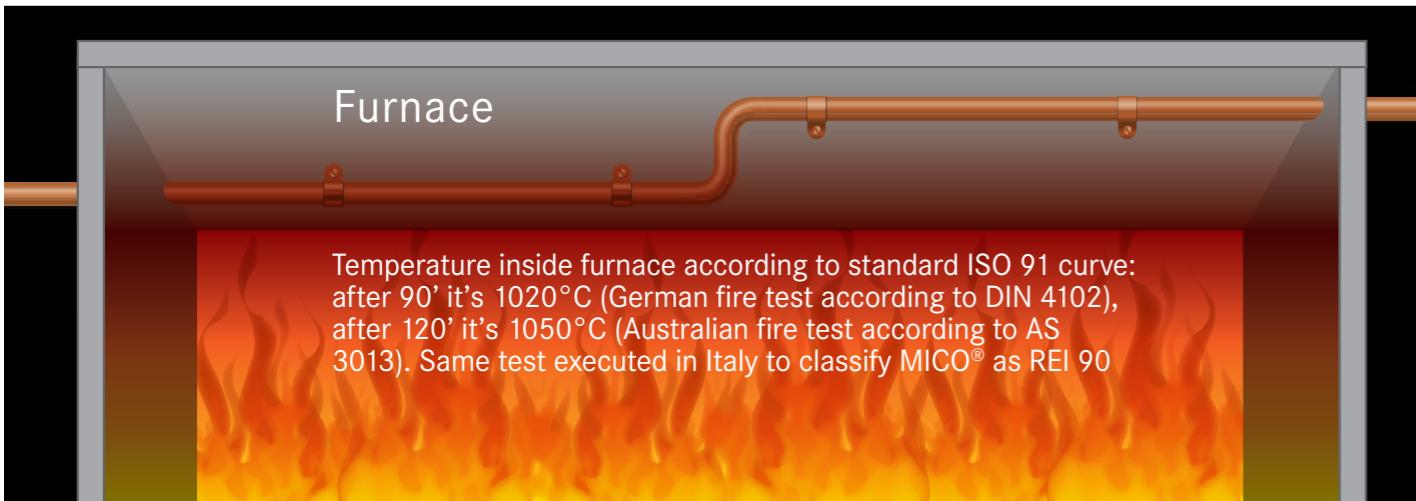


HISTORICAL BUILDINGS – standard electrical plant can deeply impact aesthetical aspect of old buildings: where integrity of original structure must be saved and hidden installation is not allowed (or its cost would be too much), MICO® is the perfect solution for an installation at sight. You can also trust on copper capacity of disappearing, day after day, if used on particular environment like stone, brick, wood.



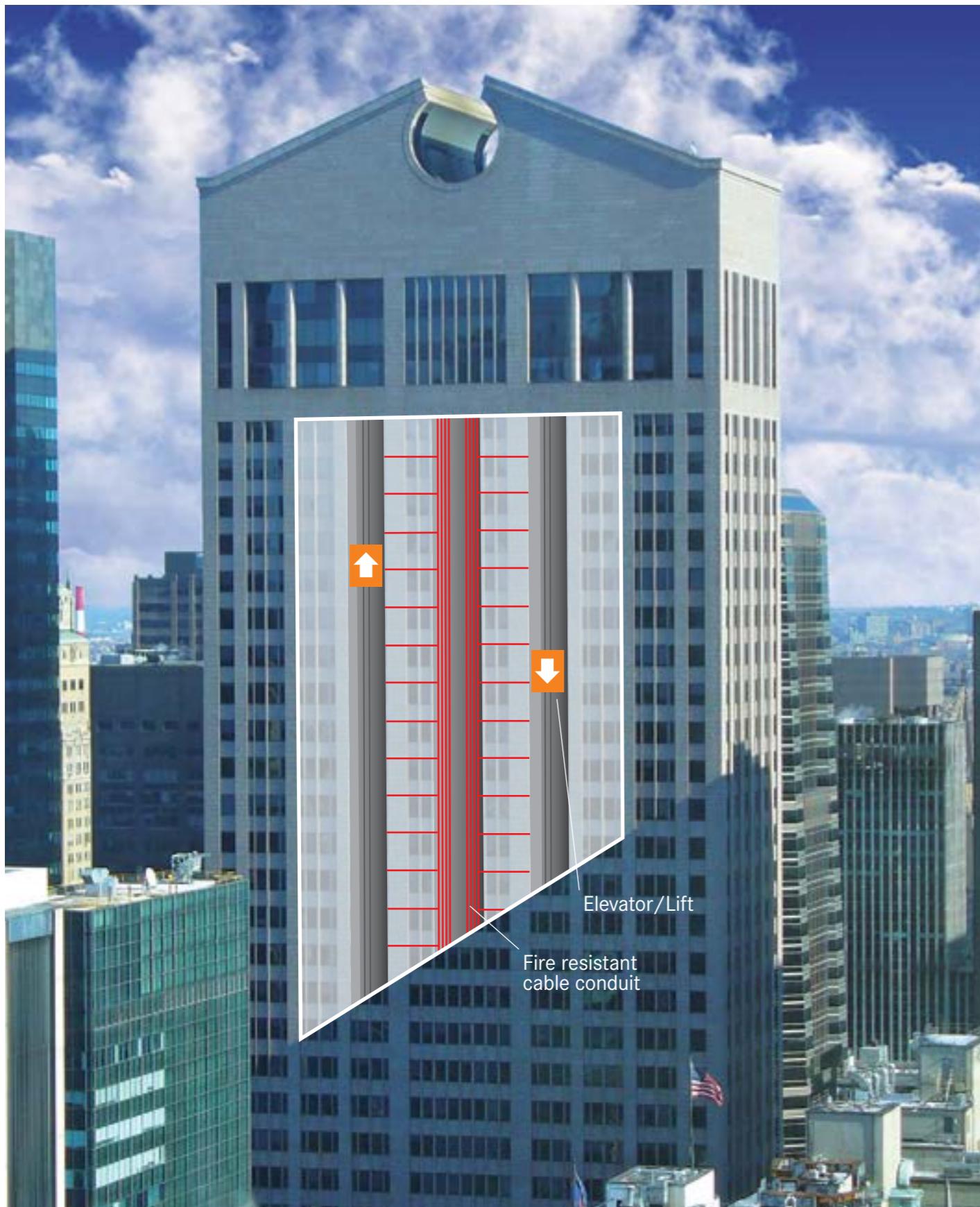
TUNNELS – emergency lights and fan coils are required to go on working also during a fire, to allow people using emergency exits. In order to save their life, MICO® is really able to withstand high temperatures during a car fire.

Fire resistance



Building applications

Emergency circuit - single core cables on fire proof cable conduit, to supply each level of building Elevator power supply



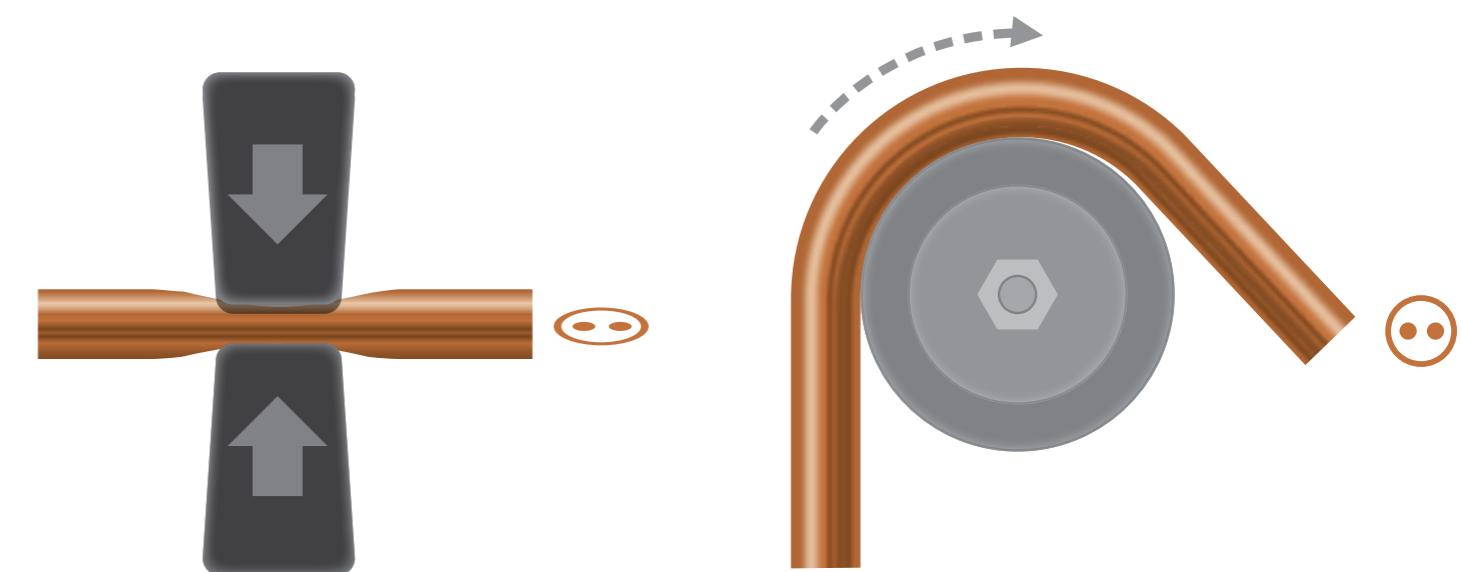
Industrial applications



Mechanical performance

Flattening test: cable cross section reduced by 50%, connected to power - no breakdown

Bending test: 180° bending on one side (bending radius = 6 times cable diameter), 180° bending on opposite side, then connected to power - no breakdown



CABLE TECHNICAL DATA													PLAIN SEALS					EARTH TAIL SEALS					CLIPS AND SADDLES				
CABLE TYPE	CORE N° x CORE SIZE (mm²)	BARE CABLE DIAMETER (mm)	LNF CABLE DIAMETER (mm)	CORE DIAMETER (mm)	CORE RESISTANCE (Ohm/km)	COPPER SHEATH SECTION (mm²)	COPPER SHEATH RESISTANCE (Ohm/km)	NOMINAL LENGTH (m)	TOLERANCE 5%	COIL DIAMETER (mm)	BARE CABLE WEIGHT (kg/m)	LNF CABLE WEIGHT (kg/m)	PLAIN SEALS KIT	PCS PER PACK	ISO BRASS GLANDS ATEx APPROVED	ISO THREAD DIMENSION	PCS PER PACK	EARTH TAIL SEALS KIT	PCS PER PACK	ISO BRASS GLANDS ATEx APPROVED	ISO THREAD DIMENSION	PCS PER PACK	SINGLE CLIPS (50 pcs/pack)	BARE SADDLES (50 PCS/PACK)	LNF SINGLE CLIPS (50 PCS/PACK)	LNF SADDLES (50 PCS/PACK)	EARTH BONDING CLAMPS (10 PCS/PACK)
LIGHT DUTY CABLES (300/500 V) - Multi core L cables																											
2L1	2 x 1	5.10	6.40	1.13	17.24	6.04	2.85	100	1900	1200	0.103	0.124	XG 2L1	10	RAD 2L1	M20	10	XGFT 2L1	10	RAD 2L1	M20	10	1N01	2N01	1P01	2P01	T01M
2L1.5	2 x 1.5	5.70	7.00	1.38	11.49	7.12	2.42	100	1500	1200	0.132	0.155	XG 2L1.5	10	RAD 2L1.5	M20	10	XGFT 2L1.5	10	RAD 2L1.5	M20	10	1N01	2N02	1P01	2P02	T02M
2L2.5	2 x 2.5	6.60	7.90	1.78	6.90	9.41	1.83	100	1100	1200	0.180	0.206	XG 2L2.5	10	RAD 2L2.5	M20	10	XGFT 2L2.5	10	RAD 2L2.5	M20	10	1N01	2N04	1P01	2P03	T03M
2L4	2 x 4	7.70	9.20	2.26	4.31	12.15	1.42	100	800	1200	0.249	0.280	XG 2L4	10	RAD 2L4	M20	10	XGFT 2L4	10	RAD 2L4	M20	10	1N03	2N05	1P03	2P04	T05M
3L1	3 x 1	5.80	7.10	1.13	17.24	7.56	2.28	100	1500	1200	0.131	0.154	XG 3L1	10	RAD 3L1	M20	10	XGFT 3L1	10	RAD 3L1	M20	10	1N01	2N03	1P01	2P02	T02M
3L1.5	3 x 1.5	6.40	7.70	1.38	11.49	8.93	1.93	100	1200	1200	0.166	0.192	XG 3L1.5	10	RAD 3L1.5	M20	10	XGFT 3L1.5	10	RAD 3L1.5	M20	10	1N01	2N04	1P01	2P03	T03M
3L2.5	3 x 2.5	7.30	8.80	1.78	6.90	10.68	1.61	100	900	1200	0.225	0.258	XG 3L2.5	10	RAD 3L2.5	M20	10	XGFT 3L2.5	10	RAD 3L2.5	M20	10	1N02	2N05	1P02	2P04	T04M
4L1	4 x 1	6.30	7.60	1.13	17.24	8.78	1.96	100	1300	1200	0.160	0.185	XG 4L1	10	RAD 4L1	M20	10	XGFT 4L1	10	RAD 4L1	M20	10	1N01	2N04	1P01	2P03	T03M
4L1.5	4 x 1.5	7.00	8.30	1.38	11.49	10.21	1.69	100	1000	1200	0.204	0.232	XG 4L1.5	10	RAD 4L1.5	M20	10	XGFT 4L1.5	10	RAD 4L1.5	M20	10	1N02	2N05	1P02	2P03	T04M
4L2.5	4 x 2.5	8.10	9.60	1.78	6.90	12.83	1.34	100	700	1200	0.272	0.308	XG 4L2.5	10	RAD 4L2.5	M20	10	XGFT 4L2.5	10	RAD 4L2.5	M20	10	1N03	2N06	1P04	2P05	T05M
7L1	7 x 1	7.60	9.10	1.13	17.24	11.57	1.49	800	1200	0.223	0.258	XJ 7L1	2	RAD 7L1	M25	2	XJFT 7L1	2	RAD 7L1	M25	2	1N03	2N05	1P03	2P04	T05M	
7L1.5	7 x 1.5	8.40	9.90	1.38	11.49	13.33	1.29	600	1200	0.289	0.326	XJ 7L1.5	2	RAD 7L1.5	M25	2	XJFT 7L1.5	2	RAD 7L1.5	M25	2	1N03	2N06	1P04	2P05	T05M	
7L2.5	7 x 2.5	9.70	11.20	1.78	6.90	17.42	0.99	500	1200	0.417	0.459	XJ 7L2.5	2	RAD 7L2.5	M25	2	XJFT 7L2.5	2	RAD 7L2.5	M25	2	1N05	2N07	1P05	2P06	T08M	
2T1	2 x 1	5.10	6.40	1.13	17.24	6.04	2.85	100	1900	1200	0.103	0.124	XG 2L1	10	RAD 2L1	M20	10	XGFT 2L1	10	RAD 2L1	M20	10	1N01	2N01	1P01	2P01	T01M
2T1.5	2 x 1.5	5.70	7.00	1.38	11.49	7.12	2.42	100	1500	1200	0.132	0.155	XG 2L1.5	10	RAD 2L1.5	M20	10	XGFT 2L1.5	10	RAD 2L1.5	M20	10	1N01	2N02	1P01	2P02	T02M
2T2.5	2 x 2.5	6.60	7.90	1.78	6.90	9.41	1.83	100	1100	1200	0.180	0.206	XG 2L2.5	10	RAD 2L2.5	M20	10	XGFT 2L2.5	10	RAD 2L2.5	M20	10	1N01	2N04	1P01	2P03	T03M
HEAVY DUTY CABLES (450/750 V) - Single core H cables																											
1H1.5	1 x 1.5	4.90	6.20	1.38	11.49	5.78	2.98	2030	1200	0.090	0.107	XG 1H1.5	10	RAD 1H1.5	M20	10	XGFT 1H1.5	10	RAD 1H1.5	M20	10	1N01	2N01	1P01	2P01	T01M	
1H2.5	1 x 2.5	5.30	6.60	1.78	6.90	6.44	2.68	1740	1200	0.111	0.128	XG 1H2.5	10	RAD 1H2.5	M20	10	XGFT 1H2.5	10	RAD 1H2.5	M20	10	1N01	2N01	1P01	2P01	T01M	
1H4	1 x 4	5.90	7.20	2.26	4.31	7.70	2.24	1420	1200	0.143	0.166	XG 1H4	10	RAD 1H4	M20	10	XGFT 1H4	10	RAD 1H4	M20	10	1N01	2N01	1P01	2P01	T02M	
1H6	1 x 6	6.40	7.70	2.76	2.87	8.93	1.93	1200	1200	0.176	0.202	XG 1H6	10	RAD 1H6	M20	10	XGFT 1H6	10	RAD 1H6	M20	10	1N01	2N04	1P01	2P03	T01U	
1H10	1 x 10	7.30	8.80	3.57	1.72	10.68	1.61	950	1200	0.235	0.268	XG 1H10	10	RAD 1H10	M20	10	XJFT 1H10	2	RADT 1H10	M25	2	1N02	2N05	1P02	2P04	T02U	
1H16	1 x 16	8.30	9.80	4.51	1.08	13.16	1.31	730	1200	0.319	0.356	XG 1H16	10	RAD 1H16	M20	10	XJFT 1H16	2	RADT 1H16	M25	2	1N03	2N06	1P04	2P05	T03U	
1H25	1 x 25	9.60	11.10	5.64	0.69	16.96	1.02	540	1200	0.443	0.485	XG 1H25	10	RAD 1H25	M20	10	XKFT 1H25	2	RADT 1H25	M32	2	1N05	2N07	1P05	2P06	T04U	
1H35	1 x 35	10.70	12.20	6.68	0.49	20.23	0.85	440	1600	0.581	0.627	XG 1H35	10	RAD 1H35	M20	10	XKFT 1H35	2	RADT 1H35	M32	2	1N06	2N08	1P06	2P07</		

Light duty multi-core cables (500 V): resistance, reactance & impedance

Cable type	Resistance R (Ω/km)			Reactance X (Ω/km)		Impedance Z (Ω/km)		
	30 °C	70 °C	105 °C			30 °C	70 °C	105 °C
2L1	18.811	21.656	24.145	0.088		18.811	21.656	24.145
2L1.5	12.575	14.477	16.141	0.083		12.576	14.477	16.141
2L2.5	7.701	8.866	9.885	0.079		7.702	8.866	9.885
2L4	4.479	5.157	5.749	0.075		4.480	5.157	5.749
3L1	18.811	21.656	24.145	0.091		18.811	21.656	24.145
3L1.5	12.575	14.477	16.141	0.086		12.576	14.477	16.141
3L2.5	7.701	8.866	9.885	0.079		7.702	8.866	9.885

Above indicated values are valid also for multi-core cables with 4 & 7 conductors

Heavy duty two-core cables (750 V): resistance, reactance & impedance

Cable type	Resistance R (Ω/km)			Reactance X (Ω/km)		Impedance Z (Ω/km)		
	30 °C	70 °C	105 °C			30 °C	70 °C	105 °C
2H1.5	12.575	14.477	16.141	0.101		12.576	14.478	16.142
2H2.5	7.701	8.886	9.885	0.094		7.702	8.866	9.885
2H4	4.791	5.516	6.150	0.088		4.792	5.516	6.150
2H6	3.200	3.685	4.109	0.083		3.201	3.686	4.110
2H10	1.902	2.190	2.441	0.079		1.904	2.191	2.442
2H16	1.195	1.376	1.534	0.075		1.198	1.378	1.536
2H25	0.756	0.870	0.970	0.073		0.759	0.873	0.973

Above indicated values are valid also for all the other types of multi-core cables (with 3, 4, 7, 12 & 19 conductors).

Single-core triplet cables: resistance, reactance & impedance

Cable type	Resistance R (Ω/km)			Reactance X (Ω/km)		Impedance Z (Ω/km)		
	30 °C	70 °C	105 °C			30 °C	70 °C	105 °C
1H1.5	12.576	14.478	16.142	0.139		12.577	14.478	16.142
1H2.5	7.702	8.866	9.885	0.128		7.703	8.867	9.886
1H4	4.792	5.516	6.15	0.120		4.793	5.518	8.650
1H6	3.202	3.686	4.109	0.112		3.204	3.687	4.111
1H10	1.903	2.190	2.442	0.104		1.906	2.193	2.444
1H16	1.196	1.377	1.535	0.098		1.200	1.380	1.538
1H25	0.757	0.871	0.971	0.093		0.763	0.876	0.975
1H35	0.546	0.628	0.700	0.089		0.554	0.635	0.706
1H50	0.404	0.465	0.518	0.085		0.413	0.473	0.525
1H70	0.281	0.323	0.360	0.083		0.293	0.333	0.369
1H95	0.204	0.234	0.260	0.080		0.219	0.247	0.272
1H120	0.163	0.186	0.207	0.078		0.180	0.202	0.221
1H150	0.133	0.152	0.169	0.077		0.154	0.170	0.185
1H185	0.109	0.123	0.137	0.076		0.133	0.145	0.157
1H240	0.086	0.096	0.106	0.076		0.115	0.123	0.131
1H300	0.076	0.084	0.092	0.075		0.107	0.113	0.119
1H400	0.075	0.063	0.069	0.075		0.095	0.099	0.103

Single-core cables laid side by side: resistance, reactance & impedance

Cable type	Resistance R (Ω/km)								
	30 °C			70 °C			105 °C		
	R	S	T	R	S	T	R	S	T
1H1.5	12.61	12.57	12.53	14.51	14.47	14.44	16.18	16.14	16.10
1H2.5	7.740	7.702	7.665	8.905	8.866	8.829	9.924	9.885	9.848
1H4	4.831	4.792	4.755	5.555	5.516	5.480	6.189	6.150	6.113
1H6	3.241	3.202	3.166	3.725	3.686	3.649	4.148	4.109	4.073
1H10	1.942	1.903	1.867	2.229	2.190	2.154	2.481	2.442	2.406
1H16	1.236	1.196	1.161	1.416	1.377	1.341	1.574	1.535	1.499
1H25	0.797	0.757	0.722	0.911	0.871	0.836	1.011	0.971	0.935
1H35	0.587	0.546	0.512	0.669	0.628	0.594	0.74	0.700	0.665
1H50	0.446	0.404	0.371	0.506	0.464	0.431	0.558	0.517	0.483
1H70	0.323	0.280	0.249	0.364	0.322	0.290	0.401	0.359	0.326
1H95	0.246	0.203	0.172	0.276	0.233	0.201	0.302	0.259	0.227
1H120	0.206	0.161	0.132	0.229	0.185	0.155	0.249	0.206	0.175
1H150	0.177	0.132	0.104	0.195	0.151	0.122	0.212	0.168	0.138
1H185	0.154	0.107	0.083	0.168	0.122	0.096	0.181	0.135	0.108
1H240	0.132	0.083	0.063	0.142	0.095	0.072	0.152	0.104	0.081
1H300	0.122	0.073	0.056	0.130	0.082	0.062	0.137	0.090	0.068
1H400	0.104	0.054	0.038	0.110	0.061	0.042	0.115	0.067	0.046



Cable type	Reactance X (Ω/km)			Impedance Z (Ω/km)					
				30 °C			70 °C		

Single-core cables laid at the distance of a diameter: resistance, reactance & impedance

Cable type	Resistance R (Ω/km)								
	30 °C			70 °C			105 °C		
	R	S	T	R	S	T	R	S	T
1H1.5	12.61	12.57	12.54	14.52	14.48	14.44	16.18	16.14	16.10
1H2.5	7.743	7.703	7.767	8.907	8.867	8.831	9.925	9.886	9.850
1H4	4.833	4.793	4.728	5.557	5.518	5.482	6.191	6.151	6.115
1H6	3.244	3.203	3.169	3.727	3.687	3.652	4.150	4.111	4.075
1H10	1.946	1.905	1.870	2.232	2.192	2.157	2.484	2.443	2.408
1H16	1.24	1.199	1.165	1.420	1.379	1.345	1.578	1.537	1.502
1H25	0.803	0.760	0.728	0.916	0.874	0.841	1.015	0.973	0.940
1H35	0.593	0.550	0.519	0.674	0.632	0.600	0.745	0.703	0.671
1H50	0.453	0.409	0.379	0.512	0.469	0.438	0.564	0.521	0.490
1H70	0.332	0.287	0.259	0.372	0.328	0.299	0.408	0.364	0.334
1H95	0.257	0.210	0.185	0.285	0.239	0.212	0.310	0.265	0.237
1H120	0.217	0.170	0.147	0.239	0.193	0.168	0.259	0.213	0.186
1H150	0.190	0.142	0.121	0.207	0.160	0.137	0.222	0.176	0.151
1H185	0.169	0.120	0.105	0.182	0.134	0.116	0.194	0.146	0.126
1H240	0.148	0.100	0.141	0.158	0.110	0.097	0.167	0.118	0.103
1H300	0.139	0.093	0.085	0.147	0.099	0.088	0.154	0.105	0.092
1H400	0.120	0.075	0.069	0.126	0.079	0.071	0.131	0.083	0.073



Voltage drop in single-core triplet cables

cable type	Voltage drop (mV/Am)					
	$\cos \varphi = 1$			$\cos \varphi = 0.8$		
	30 °C	70 °C	105 °C	30 °C	70 °C	105 °C
1H1.5	21.780	25.080	27.960	17.570	20.210	22.510
1H2.5	13.340	15.360	17.120	10.800	12.420	13.830
1H4	8.300	9.550	10.650	6.760	7.770	8.650
1H6	5.550	6.380	7.120	4.550	5.220	5.810
1H10	3.300	3.790	4.230	2.740	3.140	3.490
1H16	2.070	2.380	2.660	1.760	2.010	2.230
1H25	1.310	1.510	1.680	1.150	1.300	1.440
1H35	0.950	1.090	1.210	0.850	0.960	1.060
1H50	0.700	0.810	0.900	0.650	0.730	0.810
1H70	0.490	0.560	0.620	0.480	0.530	0.580
1H95	0.350	0.400	0.450	0.370	0.410	0.440
1H120	0.280	0.320	0.360	0.310	0.340	0.370
1H150	0.230	0.260	0.290	0.260	0.280	0.310
1H185	0.190	0.210	0.240	0.230	0.250	0.270
1H240	0.150	0.210	0.180	0.200	0.250	0.230
1H300	0.130	0.150	0.160	0.180	0.190	0.210
1H400	0.099	0.110	0.120	0.160	0.170	0.170

Cable type	Reactance X (Ω/km)			Impedance Z (Ω/km)								
				30 °C			70 °C			105 °C		
	R	S	T	R	S	T	R	S	T	R	S	T
1H1.5	0.203	0.182	0.205	12.61	12.57	12.54	14.52	14.48	14.44	16.18	16.14	16.10
1H2.5	0.192	0.171	0.194	7.745	7.705	7.670	8.907	8.867	8.831	9.927	9.888	9.852
1H4	0.183	0.163	0.186	4.837	4.796	4.762	5.560	5.520	5.485	6.194	6.154	6.118
1H6	0.175	0.156	0.179	3.248	3.207	3.174	3.731	3.691	3.656	4.154	4.114	4.079
1H10	0.167	0.148	0.171	1.953	1.911	1.878	2.239	2.197	2.164	2.489	2.448	2.414
1H16	0.160	0.141	0.165	1.250	1.207	1.177	1.429	1.386	1.355	1.586	1.543	1.511
1H25	0.154	0.136	0.161	0.817	0.772	0.746	0.928	0.884	0.856	1.026	0.983	0.954
1H35	0.150	0.132	0.157	0.611	0.566	0.543	0.690	0.645	0.620	0.760	0.716	0.689
1H50	0.145	0.129	0.154	0.475	0.429	0.410	0.532	0.486	0.465	0.583	0.537	0.514
1H70	0.140	0.126	0.152	0.360	0.313	0.301	0.398	0.351	0.336	0.431	0.385	0.367
1H95	0.136	0.123	0.150	0.289	0.244	0.239	0.315	0.269	0.260	0.339	0.292	0.281
1H120	0.133	0.121	0.149	0.253	0.209	0.209	0.273	0.228	0.224	0.291	0.245	0.238
1H150	0.129	0.120	0.147	0.227	0.185	0.190	0.243	0.199	0.201	0.257	0.213	0.211
1H185	0.123	0.199	0.147	0.205	0.168	0.179	0.218	0.178	0.187	0.194	0.146	0.126
1H240	0.116	0.117	0.145	0.183	0.153	0.168	0.194	0.160	0.173	0.203	0.166	0.178
1H300	0.112	0.115	0.143	0.172	0.146	0.162	0.182	0.151	0.166	0.190	0.156	0.170
1H400	0.108	0.115	0.142	0.155	0.135	0.152	0.163	0.139	0.160	0.170	0.142	0.159

cable type	Voltage drop (mV/Am)					
$\cos \varphi = 1$			$\cos \varphi = 0.8$			
30 °C	70 °C	105 °C	30 °C	70 °C	105 °C	

<tbl_r cells="7" ix="5" maxcspan="1" maxrspan="1" usedcols="7

Voltage drop in single-core cables laid at the distance of a diameter

cable type	Voltage drop (mV/Am)					
	cos φ = 1			cos φ = 0.8		
	30 °C	70 °C	105 °C	30 °C	70 °C	105 °C
1H1.5	21.790	25.080	27.960	17.630	20.270	22.570
1H2.5	13.340	15.360	17.130	10.870	12.480	13.890
1H4	8.300	9.560	10.660	6.830	7.830	8.710
1H6	5.550	6.390	7.120	4.620	5.290	5.870
1H10	3.300	3.800	4.240	2.810	3.210	3.560
1H16	2.060	2.390	2.670	1.830	2.080	2.290
1H25	1.320	1.520	1.690	1.210	1.370	1.510
1H35	0.960	1.100	1.220	0.920	1.030	1.130
1H50	0.720	0.820	0.910	0.720	0.800	0.880
1H70	0.510	0.580	0.640	0.550	0.610	0.660
1H95	0.380	0.430	0.470	0.440	0.480	0.520
1H120	0.310	0.350	0.380	0.380	0.420	0.440
1H150	0.260	0.290	0.320	0.340	0.370	0.390
1H185	0.230	0.250	0.270	0.310	0.330	0.350
1H240	0.200	0.210	0.220	0.280	0.300	0.310
1H300	0.180	0.190	0.200	0.270	0.280	0.290
1H400	0.150	0.160	0.170	0.240	0.250	0.260

Voltage drop in Light duty multi-core cables (500 V)

cable type	Voltage drop (mV/Am)					
	cos φ = 1			cos φ = 0.8		
	30 °C	70 °C	105 °C	30 °C	70 °C	105 °C
2L1	37.620	43.310	48.290	30.200	34.760	38.740
2L1.5	25.150	28.950	32.280	20.220	23.260	25.930
2L2.5	15.400	17.730	19.770	12.420	14.280	15.910
2L4	8.960	10.310	11.500	7.260	8.340	9.290
3L1	32.580	37.51	41.820	26.160	30.100	33.550
3L1.5	21.780	25.080	27.960	17.510	20.150	22.460
3L2.5	13.340	15.360	17.120	10.750	12.370	13.780

Above indicated values are valid also for multi-core cables with 4 & 7 conductors.

Voltage drop in Light duty multi-core cables (750 V)

cable type	Voltage drop (mV/Am)					
	cos φ = 1			cos φ = 0.8		
	30 °C	70 °C	105 °C	30 °C	70 °C	105 °C
2H1.5	25.150	28.950	32.280	20.240	23.280	25.950
2H2.5	15.400	17.730	19.770	12.430	14.300	15.930
2H4	9.580	11.030	12.300	7.770	8.930	9.940
2H6	6.401	7.370	8.220	5.220	6.000	6.670
2H10	3.800	4.380	4.880	3.140	3.600	4.000
2H16	2.390	2.750	3.070	2.000	2.290	2.540
2H25	1.510	1.740	1.940	1.300	1.480	1.640

Above indicated values are valid also for all the other types of multi-core cables (with 3, 4, 7, 12 & 19 conductors).

Table I/1

single-core H (750 V) M.I.C. bare, exposed to touch or covered with thermoplastic material (metal sheath maximum temperature 70°C). For bare cables we must multiply by 0.9. Cables sheaths are connected to the ends.

cable type	triplet cables in air	laid side by side cables in air		horizontal spaced cables in air		vertical spaced cables in air		laid cables in air, fixed on wall or ceiling		triplet cables in air, fixed on wall or ceiling	
		13-14		14		15-16 *		11			
		13-14	15-16 *	15-16 *	15-16 *	11A *	11A *	11A *	11A *		
1H1.5	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	
1H2.5	22	26	26	26	32	26	28	25	23	21	
1H4	30	36	34	36	43	36	37	34	31	28	
1H6	40	47	45	47	56	47	49	45	41	37	
1H10	51	60	57	60	71	60	62	57	52	48	
1H16	69	82	77	82	95	82	84	77	70	65	
1H25	92	109	102	109	125	109	110	102	92	86	
1H35	120	142	132	142	162	142	142	133	120	112	
1H50	147	174	161	174	197	174	173	163	147	137	
1H70	182	215	198	215	242	215	213	202	181	169	
1H95	223	264	241	264	294	264	259	247	221	207	
1H120	267	317	289	317	351	317	309	296	264	249	
1H150	308	364	331	364	402	364	353	340	303	286	
1H185	352	416	377	416	454	416	400	388	346	327	
1H240	399	472	426	472	507	472	446	440	392	371	
	466	552	496	552	565	552	497	514	457	434	

Table II/1

multi-core H (750 V) e L (500 V) M.I.C. bare, exposed to touch or covered with thermoplastic material (metal sheath maximum temperature 70°C). For bare cables we must multiply by 0.9.

nominal conductor cross section	cable in air, spaced from wall or ceiling or on platform			cable in air, fixed on wall or ceiling	
	3-14-15-16 *			11-11A *	
	mm ²	2 cables	3 cables	2 cables	3 cables
500 V					
1.5	25	21	23	19	
2.5	33	28	31	26	
4	44	37	40	35	
750 V					
1.5	26	22	25	21	
2.5	37	30			

Table I/2

single-core H (450/750 V) M.I.C. bare, not exposed to touch (metal sheath maximum temperature 105°C). - Correction factor for bundle is not required.										
cable type	triplet cables in air	laid side by side cables in air		horizontal spaced cables in air		vertical spaced cables in air		laid cables in air, fixed on wall or ceiling		triplet cables in air, fixed on wall or ceiling
	13-14 15-16 *	13-14 15-16 *		14 15-16 *		14 15-16 *		11 11A *		11 11A *
	3 cables	2 cables	3 cables	2 cables	3 cables	2 cables	3 cables	2 cables	3 cables	3 cables
1H1.5	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
	28	33	32	33	40	33	35	31	30	26
1H2.5	38	45	43	45	54	45	47	42	41	35
1H4	50	60	56	60	70	60	61	55	53	47
1H6	64	76	71	76	89	76	78	70	67	59
1H10	87	104	96	104	120	104	105	96	91	81
1H16	115	137	127	137	157	137	137	127	119	107
1H25	150	179	164	179	204	179	178	166	154	140
1H35	184	220	200	220	248	220	216	203	187	171
1H50	228	272	247	272	304	272	266	251	230	212
1H70	279	333	300	333	370	333	323	307	280	260
1H95	335	400	359	400	441	400	385	369	334	312
1H120	385	460	411	460	505	460	441	424	383	359
1H150	441	526	469	526	565	526	498	485	435	410
1H185	500	596	530	596	629	596	557	550	492	465
1H240	584	697	617	697	704	697	624	643	572	544

Table II/2

multi-core H (750 V) e L (500 V) M.I.C. bare, not exposed to touch (metal sheath maximum temperature 105°C). Correction factor for bundle is not required				
nominal conductor cross section	cable in air, spaced from wall or ceiling or on platform		cable in air, fixed on wall or ceiling	
	3-14-15-16 *		11-11A *	
	2 cables	3 cables	2 cables	3 cables
serie	(A)	(A)	(A)	(A)
500 V				
1.5	31	26	28	24
2.5	41	35	38	33
4	54	46	51	44
750 V				
1.5	33	26	32	26
2.5	45	35	42	35
4	60	47	55	47
6	76	59	70	59
10	104	81	96	81
16	137	107	127	107
25	179	140	166	140

* Installation methods taken from 3rd edition of CEI 64-8/5 norm, table 52 C

Table III Correction factor k_1 for room temperature different from 30°C

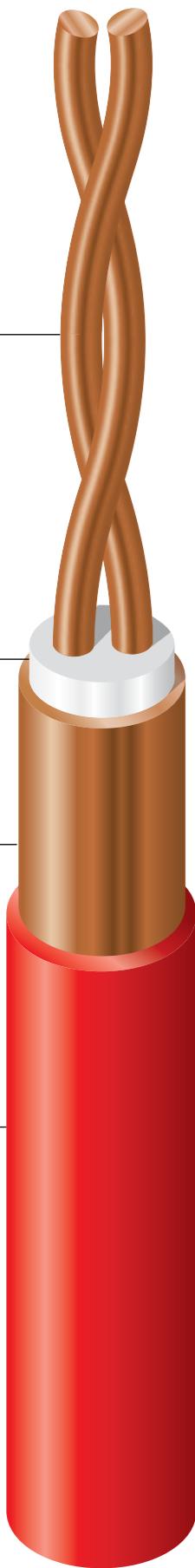
room temperature	bare cable or covered by thermoplastic material exposed to touch	bare cable not exposed to touch
	°C	70 °C
10	1.26	1.14
15	1.20	1.11
20	1.14	1.07
25	1.07	1.04
35	0.93	0.96
40	0.85	0.92
45	0.76	0.88
50	0.67	0.84
55	0.57	0.80
60	0.45	0.75
65	-	0.70
70	-	0.65
75	-	0.60
80	-	0.54
85	-	0.47
90	-	0.40
95	-	0.32

Nominal copper sheath resistance

Rated Voltage	Cross-Section mm ²	Nominal copper sheath resistance (Ω/km)						
		1 cond	2 cond	3 cond	4 cond	7 cond	12 cond	19 cond
500 V	1	2.855	2.279	1.964	1.491			
	1.5	2.422	1.931	1.689	1.293			
	2.5	1.833	1.614	1.344	0.990			
	4	1.419						
750 V	1.5	2.981	1.381	1.266	1.093	0.832	0.541	0.414
	2.5	2.677	1.184	1.068	0.934	0.697	0.458	
	4	2.238	0.979	0.892	0.753			
	6	1.931	0.824	0.746	0.645			
	10	1.614	0.645	0.569	0.502			
	16	1.310	0.505	0.453	0.388			
	25	1.016	0.397	0.364	0.308			
	35	0.852						
	50	0.697						
	70	0.558						
	95	0.470						
	120	0.405						

Mineral insulated cable TWISTED - code:2T1.5

Complete Installation



- Building management systems
- Fire detection systems
- Closed circuit television
- Fire telephone systems
- Data networks

Dimensional characteristics

Manufactured following the requirements of BS 6207	
1	Numbers of conductors 2 x 1.5 mm ²
2	Insulation (MgO)
3	Diameter over copper sheath (5.7 mm)
4	Red LSF additional sheath (7.2 mm)
In 100 mtrs coils	

1

2

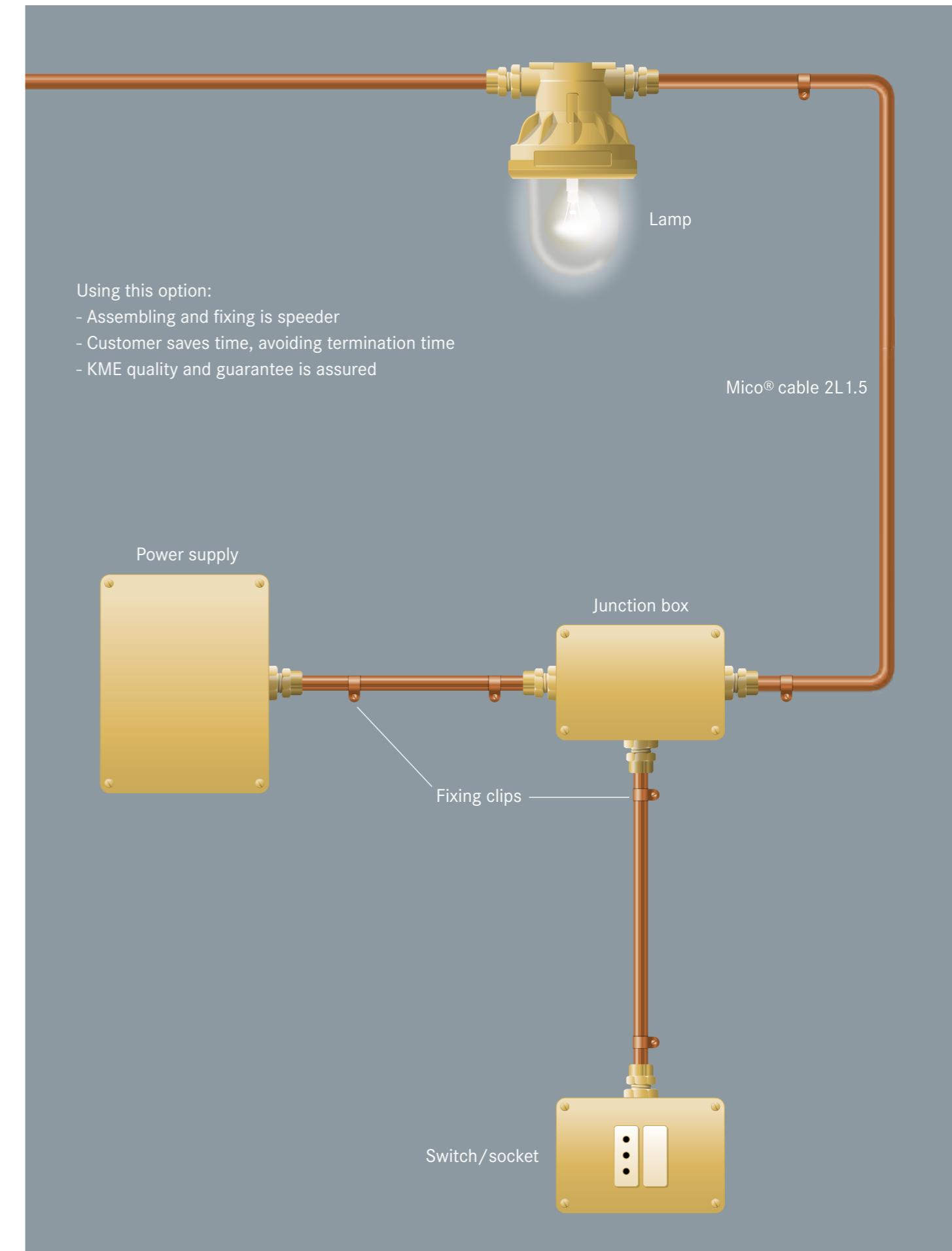
3

4

Electric characteristics

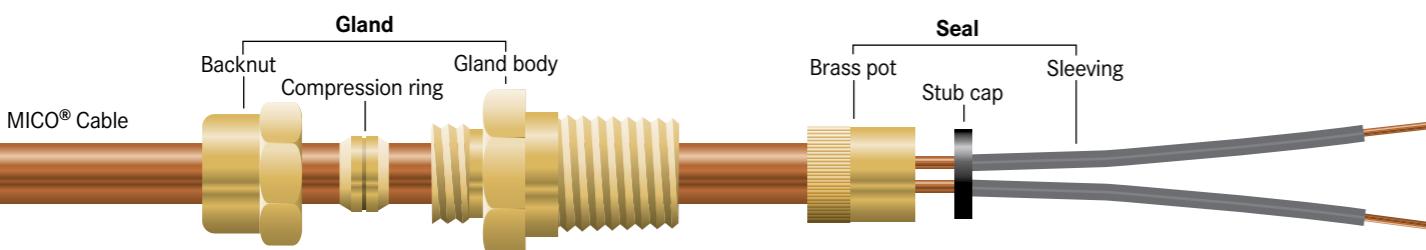
Voltage rating	500 V
Conductors resistance (max.)	12.1 ohm/km
Nominal sheath resistance (screen)	2.7 ohm/km
Nominal capacitance conductor to conductor	164.5 pF/m
Nominal capacitance one conductor to sheath at 1 kHz	243.5 pF/m
Nominal capacitance between conductors and copper sheath at 1 kHz	384.4 pF/m
Nominal inductance (loop) at 10 MHz	436.0 µH/m
Attenuation at 1 MHz	- 19.0 dB/km
Attenuation at 10 MHz	- 52.0 dB/km
Nominal characteristic impedance	50 ohm

On request KME is able to produce twisted cables 2T1 and 2T2.5 and also shielded MI cables with double insulation



Mineral cables termination

Plain seals



It's original MICO® termination type, characterised by minimum volume and minimum cost and execution time. Since it doesn't foresee the connection of outer copper sheath, inside the junction box, to the earth system, it's frequently used in public lighting to connect to double insulated lights and, for industrial applications in ATEX area, within brass RAD ISO glands.

Ex II 2G Ex eb IIC Gb Ex db IIC Gb

Ex II 2D Ex tb IIIC Db IP65

Tamb -20 °C ÷ +70 °C

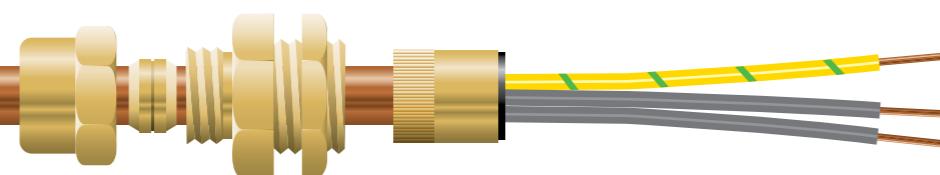
Service Temperature: -20 °C ÷ +250 °C.

Earth tail seals

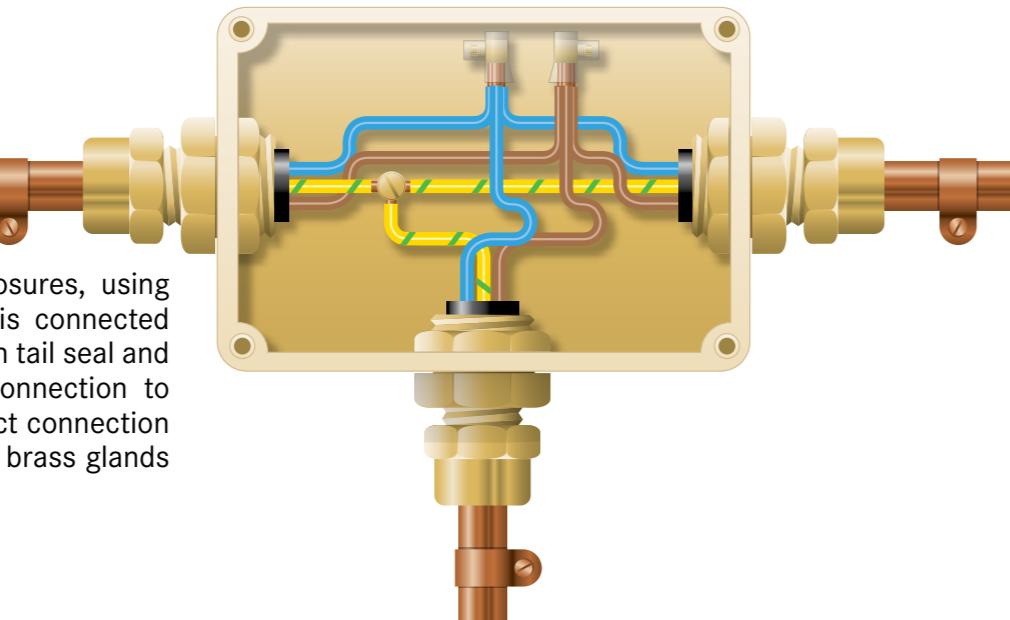
Copper outer sheath can be directly connected to earth system inside junction box by an annealed wire, already welded on brass pot.

Also metallic junction box is connected as well by mechanical connection to outer sheath by brass glands, tightened through a locknut. Earth tail seals can so avoid an unpleasant outer earth connection.

A correct execution of earth connection is extremely important for MICO® system, more than all other standard cables, since MICO® is the only cable to be installed at sight, exposed directly to touch also under 2.5 m of height, due to its structural mechanical resistance.

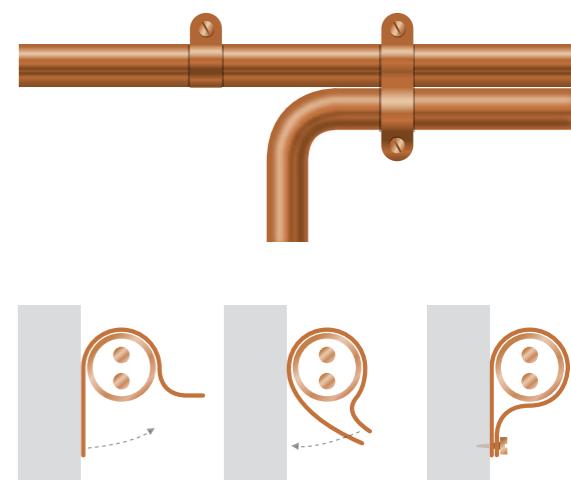


Typical connection

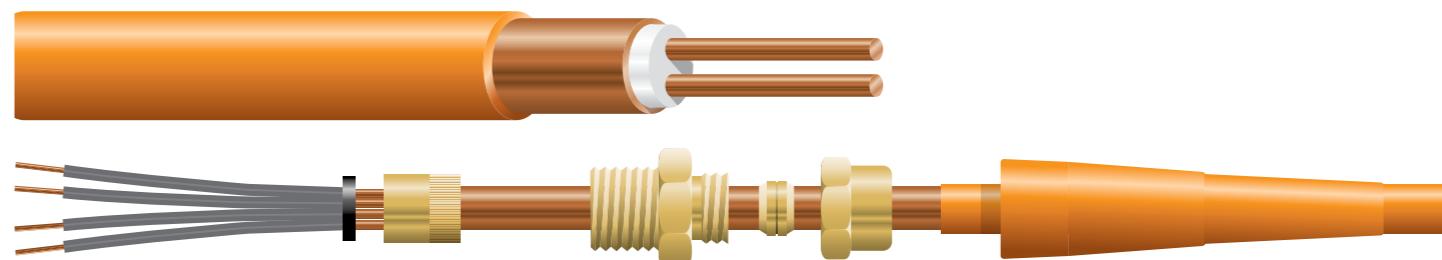


Inside Junction boxes or enclosures, using standard hubs, MICO system is connected to standard wiring system. Earth tail seal and brass gland (by mechanical connection to metal enclosures) assure perfect connection to earth/ground system. MICO brass glands are IP65 waterproof approved.

Fixing systems



LSF sheathed Mineral cables



Polyolefin extruded protection on the cable, available in red, orange, white and black colour, is required when:

- There are aggressive substances and therefore there's danger for corrosion. Typical LSF cables usage is in chemical, pharmaceuticals and oil industries.
- Specific colour must identify the circuit type, like, for instance, LSF red to identify all cables part of fire detection systems
- Specific LSF colour is considered as the best solution for cable camouflage.



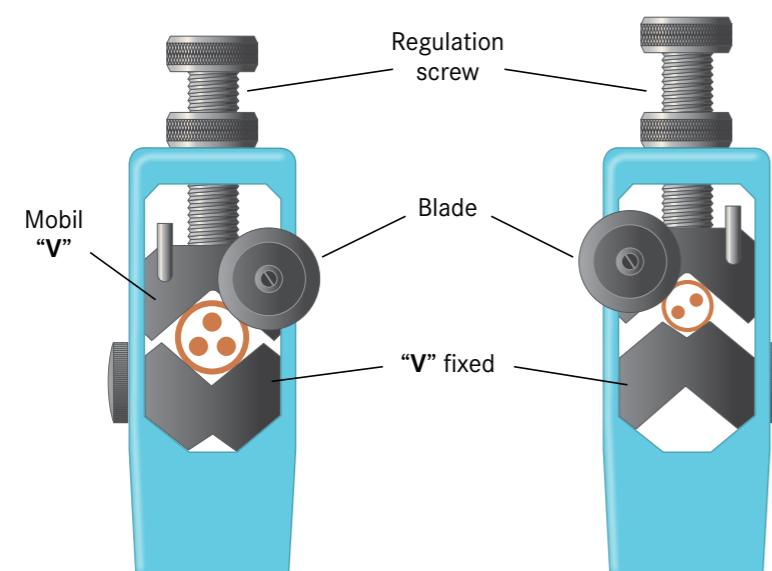
Installation

For the correct and complete installation procedure and execution of the terminations procedure carefully follow what reported extensively in the full document "**Instructions - Mineral Insulated Cable (MICO®) and their Terminations**" available in full on the website www.kme.com or by e-mail at mic@kme.com. This document shows all KME accessories required and detailed procedures to fully execute transportation, installation and termination of Mineral Insulated Cable (MICO®), accompanied by technical data, tips and detailed illustrations about.

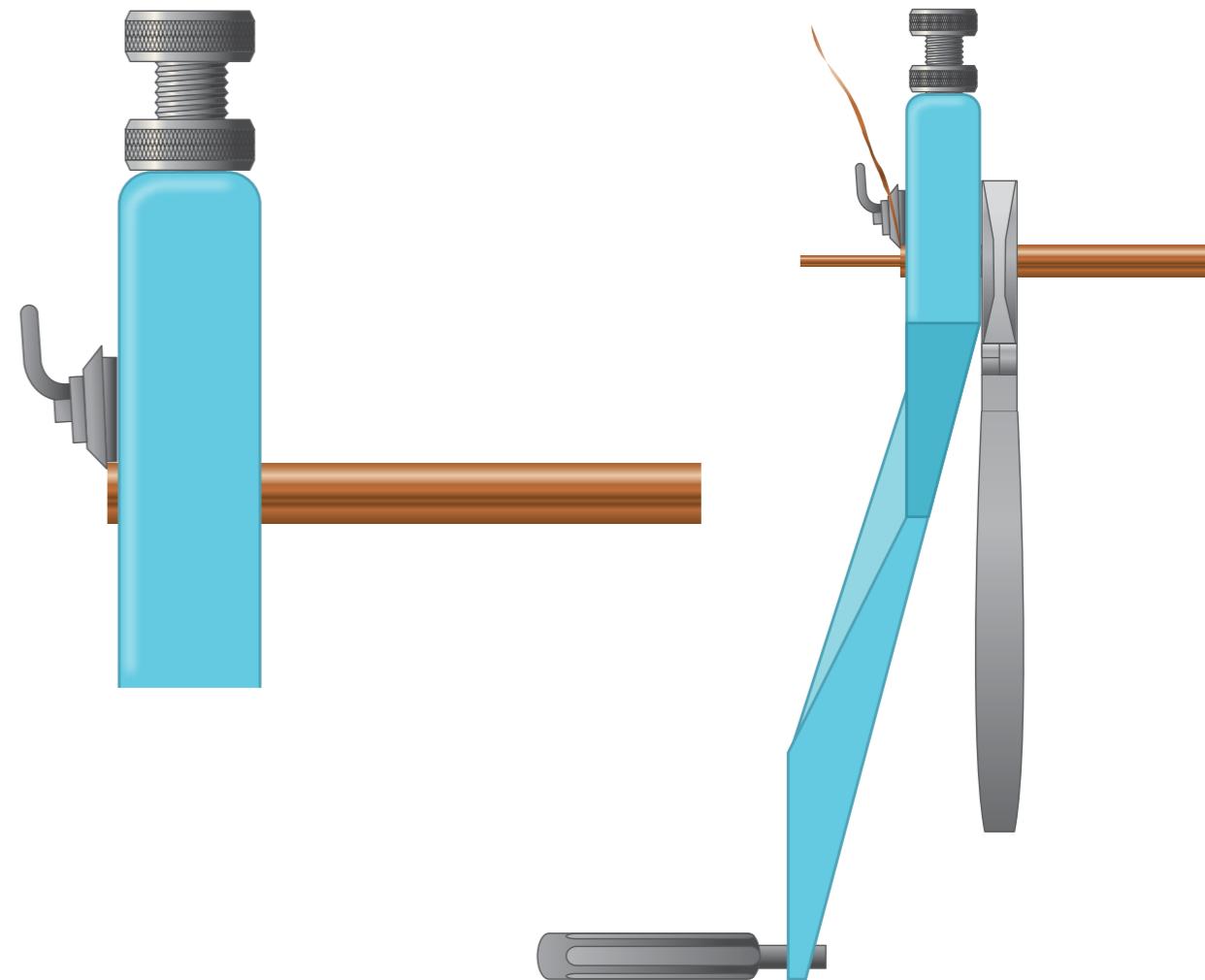
- The mineral insulated cable is normally supplied in a self-supporting coil having an inner diameter of 500, 1200 and 1450 mm, depending on the outer diameter of the cable. To properly carry out the coils is possible to build a simple unwinder, using a metal profile or of wooden boards such as used for the support of common cables.
- Before fixing, the cable it must be straightened by hand or by using a straightener or a tube bender; the final straightening can be performed using a block of wood and a hammer, or with a rubber hammer; a metal hammer should never be used directly on the cable sheath to avoid compromising the mechanical and electrical characteristics of the sheath.
- When the temperature of the sheath of a cable MICO®, taking account of the ambient temperature and the increase in temperature due to the current, does not exceed 70°C, one can choose between the bare cable and the cable coated in LSF; for temperatures of the sheath more than 105°C, one must choose the bare wire; for continuous operating temperatures of above 250°C must be take account what described about the GF sealant.
- The MICO® cables can operate at temperatures above -200°C, without be susceptible to adverse effects; on the other hand, cracks can occur on the additional coating in LSF at temperatures below -20°C without affect the functionality of the cable. This is why you should not run the installation of coated cable with extra cover in LSF at temperatures below -20°C.

Termination execution

Cut the end of the cable by a small saw; place the stripper on the cable and tighten it: the blade must be in contact with the copper outer sheath and the V shaped clamp must be tightened on the cable by its screw, so to let the tool spin round with the cable without stopping it.



Start rotating the tool pushing it towards the inner part of the cable; avoid the rolling up of the copper shaving on the conductors, fixing it on the suitable hook.
When you have stripped enough copper sheath, you can insert the pliers to cause the drop of the copper shaving.



Clean the conductors and insert the gland components (body, double cone and press cone).
Only for use in explosion-proof applications, glands and seals shall be ATEX (or IECEx) marked. For applications in potentially explosive areas (zone 1 and zone 21) use only RAD ISO or RAD GAS fittings marked as follows:

Ex II 2G Ex eb IIC Gb Ex db IIC Gb

Ex II 2D Ex tb IIIC Db IP65

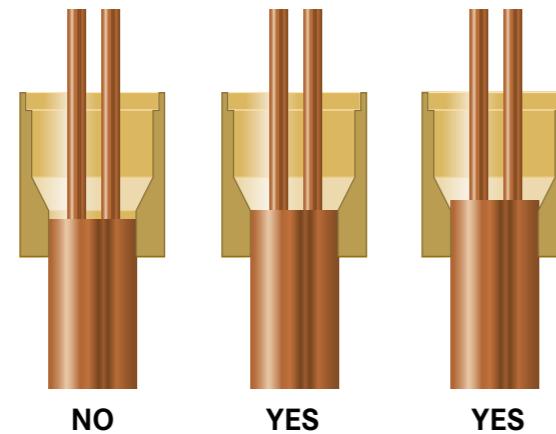
Tamb -20 °C ÷ +70 °C

Service Temperature: -20 °C ÷ +250 °C.

In case that the fitting/housing coupling is subjected to vibrations it is necessary, in order not to cause breakage of the cable, to make a compensation bend in the vicinity of the housing. In case of ATEX applications the fitting/housing coupling shall guarantee at least 5 threads and the minimum housing thickness must be greater than or equal to 10 mm, moreover, the lock nut (see last figure) is not present in these coupling.

The seal is guaranteed by the full tightening of the metal double cone through the cone press and is entrusted to the care of the installer.

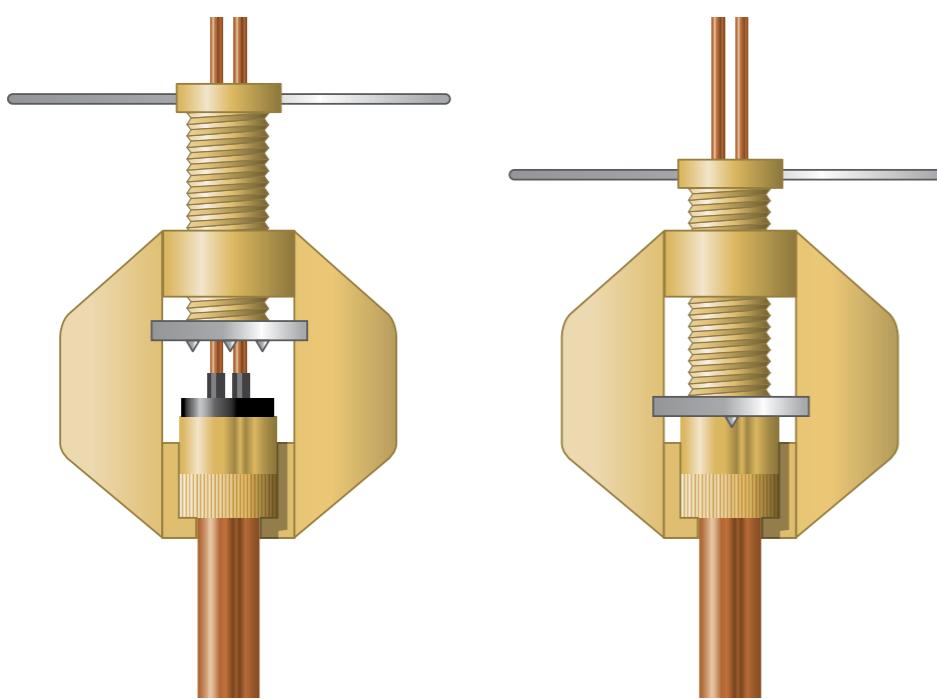
Screw the self threaded brass pot on the cable sheath, placing the inner part of the hole on the copper sheath.



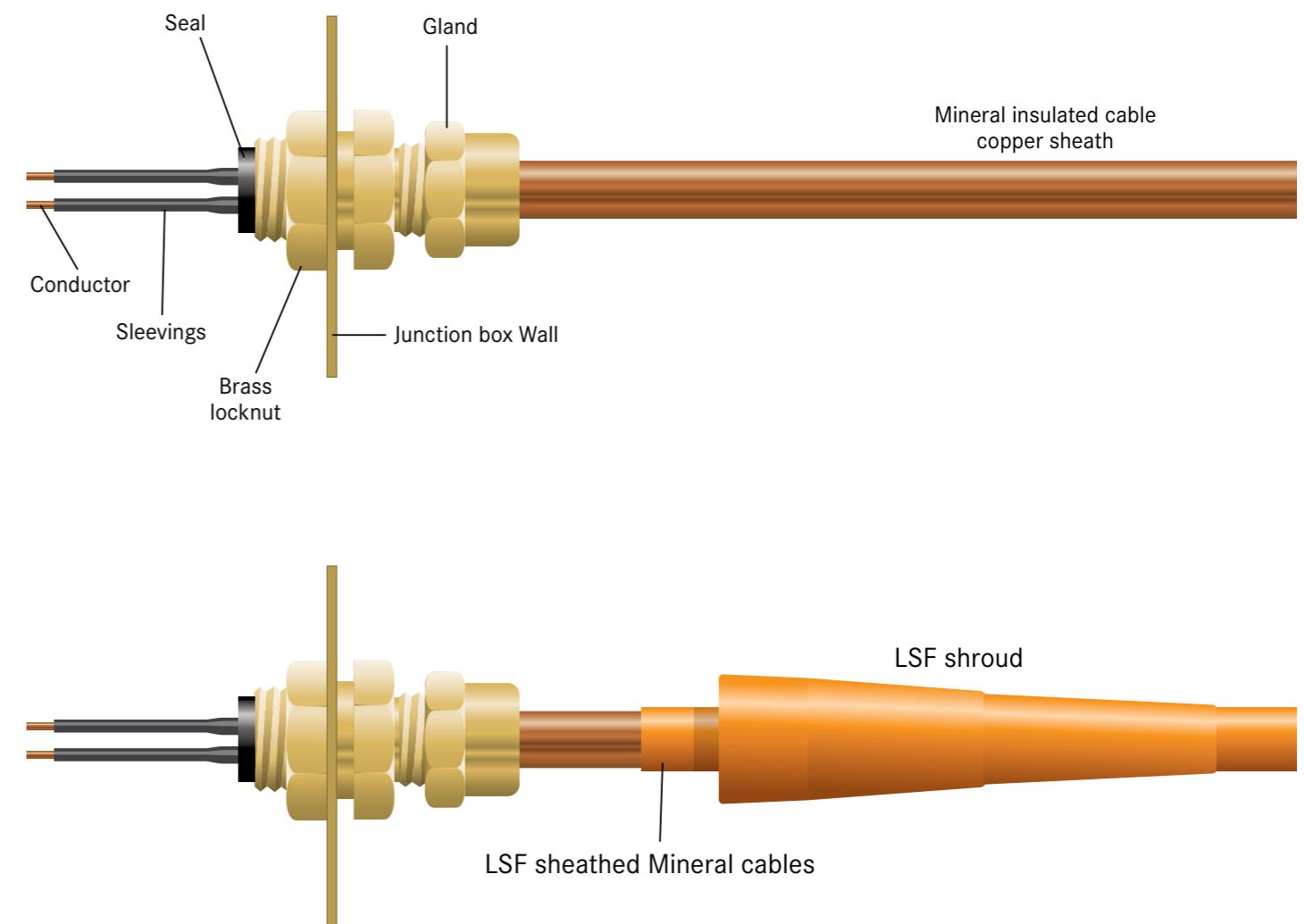
Remove from the brass pot the Magnesium Oxide shattered during previous operation.

Check with a Megger, at 500 Vcc, that cable insulation resistance is higher than $100 \text{ M}\Omega$; then pour the sealant inside the brass pot.

After pulling the conductors by a pliers, place the stub cap as close as possible to the brass pot, then start crimping using the suitable tool.



Cut some lengths of sleeving and, after removing eventual exceeding sealant, place them on the stub cap.



To make a termination, you need the following components (in addition to the cable, of course): seal, gland, sealant, eventual LSF shroud (if cable is LSF required), and the following tools: stripper, spare blades, crimping tool.

Check MICO® cables general brochure for tools dimension or technical manual for MICO® cables installation.

Junction boxes

In order to complete MICO® system range, KME produces also 2 ranges of valuable metal junction boxes: in sandblasted brass and in copper. The first one is manufactured after melting, the second through assembly and welding of semi-finished products coming from KME divisions standard production.

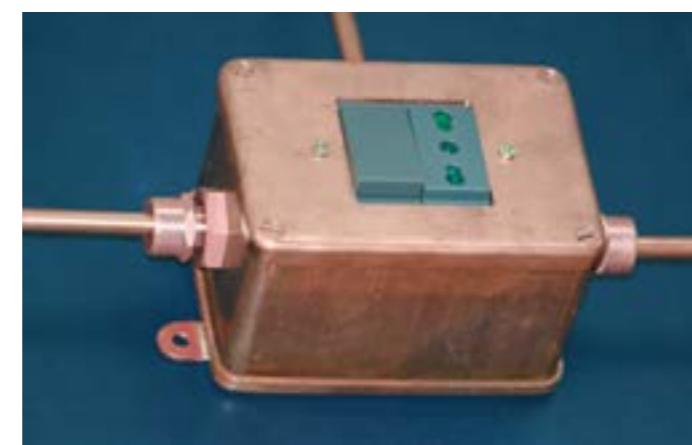
Production dimensions for junction boxes are:

83 x 117 x 63 mm (small type) in our stock both for brass and copper; **132 x 191 x 72 mm (large type)** in stock only for brass. Copper junction boxes can be manufactured according to any desired dimension by the Customer. All junction boxes can be supplied with a holed panel, so to install behind it all series of mounting frames and relative switches and sockets.

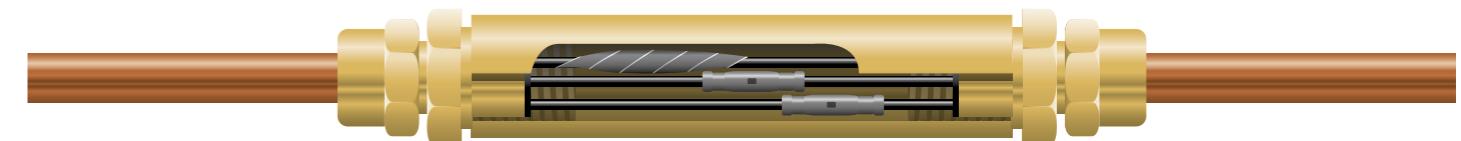
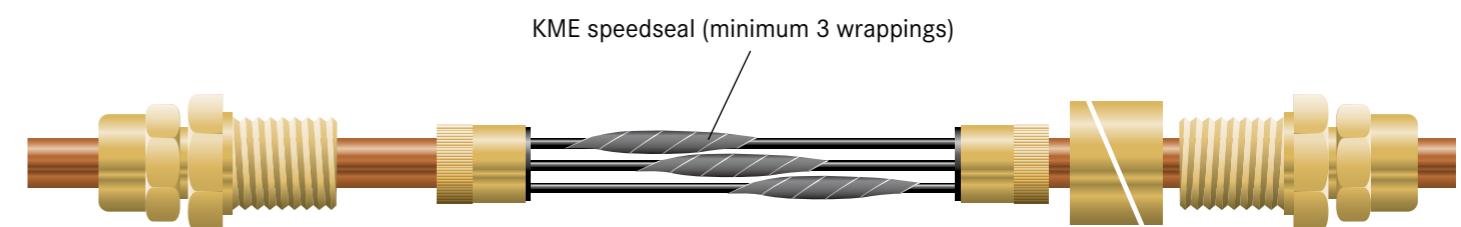
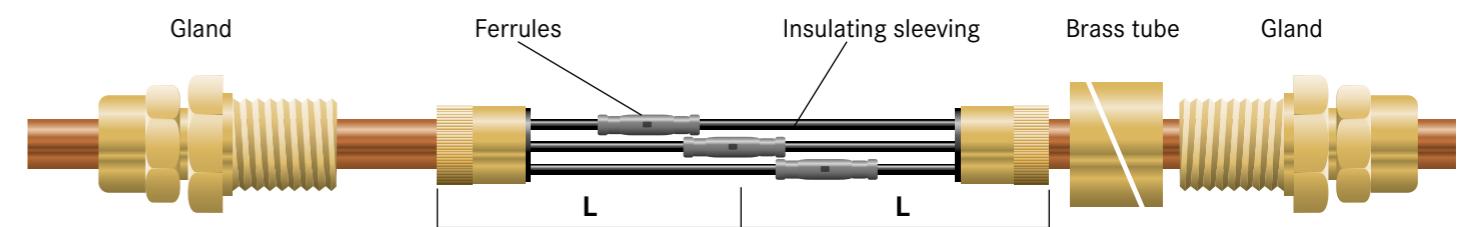
BRASS line



COPPER line



Waterproof straight through joint



cable type	L	cable type	L	cable type	L
2L1	50	2H1.5	50	3H25	100
2L1.5	50	2H2.5	50	4H1.5	50
2L2.5	50	2H4	50	4H2.5	50
2L4	50	2H6	50	4H4	70
3L1	50	2H10	70	4H6	70
3L1.5	50	2H16	70	4H10	70
3L2.5	50	2H25	80	4H16	80
4L1	50	3H1.5	50	4H25	100
4L1.5	50	3H2.5	50	7H1.5	70
4L2.5	50	3H4	50	7H2.5	70
7L1	70	3H6	70	12H1.5	70
7L1.5	70	3H10	70	12H2.5	80
7L2.5	70	3H16	70	19H1.5	100

Applications Industrial area

Emergency and safety circuits



Approvals



MICO® fire resistant cable is approved according:
IEC 60331 - 3 hours - 750°C
LPCB 6387 - 3 hours 950°C + mechanical and water test
AS/NZS 3113 - 2 hours up to 1050°C + mechanical tests

KME glands ATEX approved

Ex II 2G Ex eb IIC Gb Ex db IIC Gb
Ex II 2D Ex tb IIIC Db IP65
Tamb -20 °C ÷ +70 °C

Service Temperature: -20 °C ÷ +250 °C.



Certificate No 427a to
BS 6387:2013 (C,W,Z)
EN 60702-1: 2002

Mineral Insulated Heating Cables



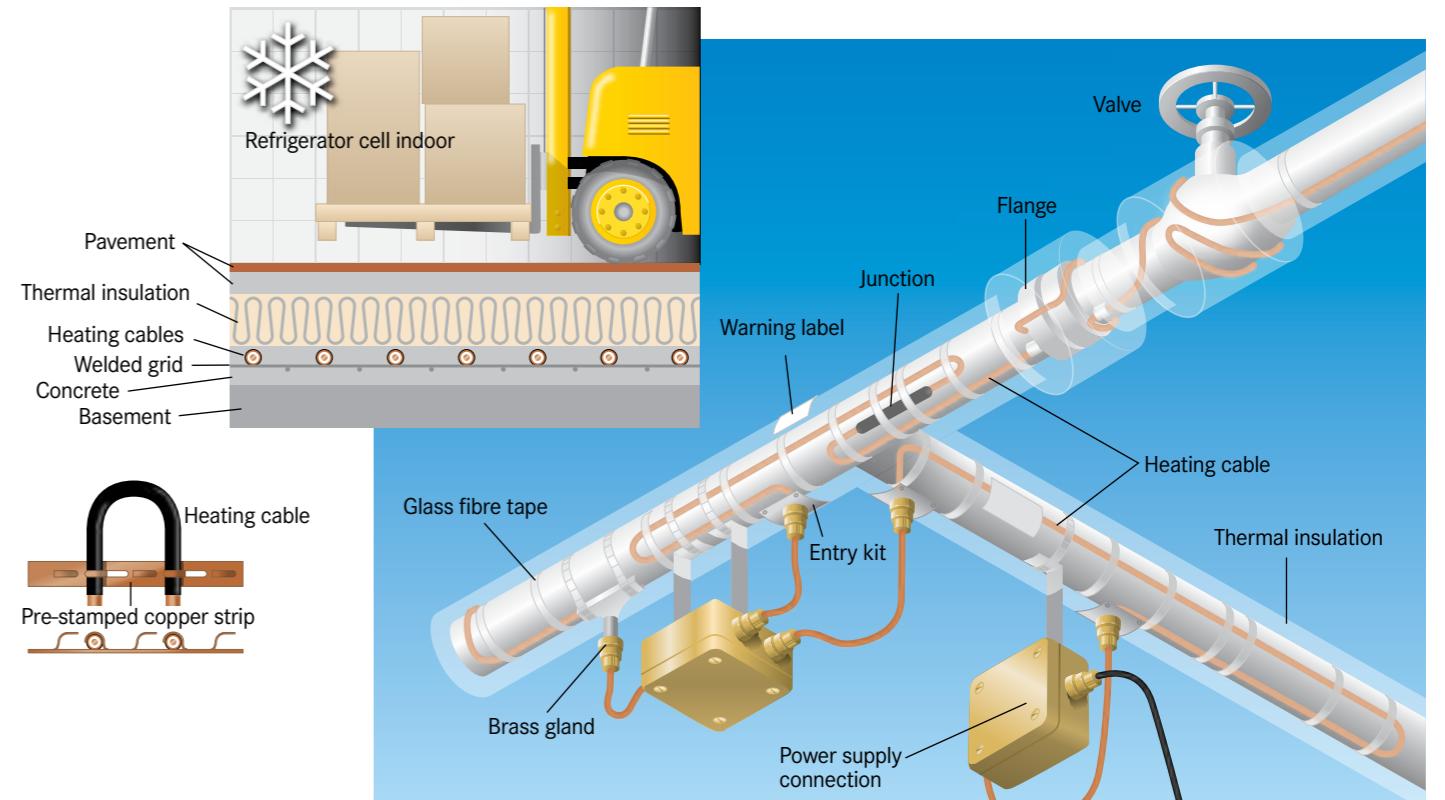
Industrial applications

Frost protection or heating of an industrial process can be easily achieved by electric heat tracing. Mineral insulated heating cables becomes the best choice when:

- required specific power and/or process temperature is high
- metal cable systems are preferred due to environmental characteristics of installation site
- specific installation method requires circular or small diameter cables
- long cuts are required.

KME Italy, starting from usual project data, is able to offer power calculation, select the right cable type and, if required, supply complete heating units, ready to be connected to power supply.

Low temperatures inside refrigerator cells can slowly destroy basement of the building: to avoid this, it's extremely important to foresee an efficient and everlasting heating system, to compensate thermal losses through the insulation. Characteristics of Mineral insulated heating systems match exactly with over described specifics.

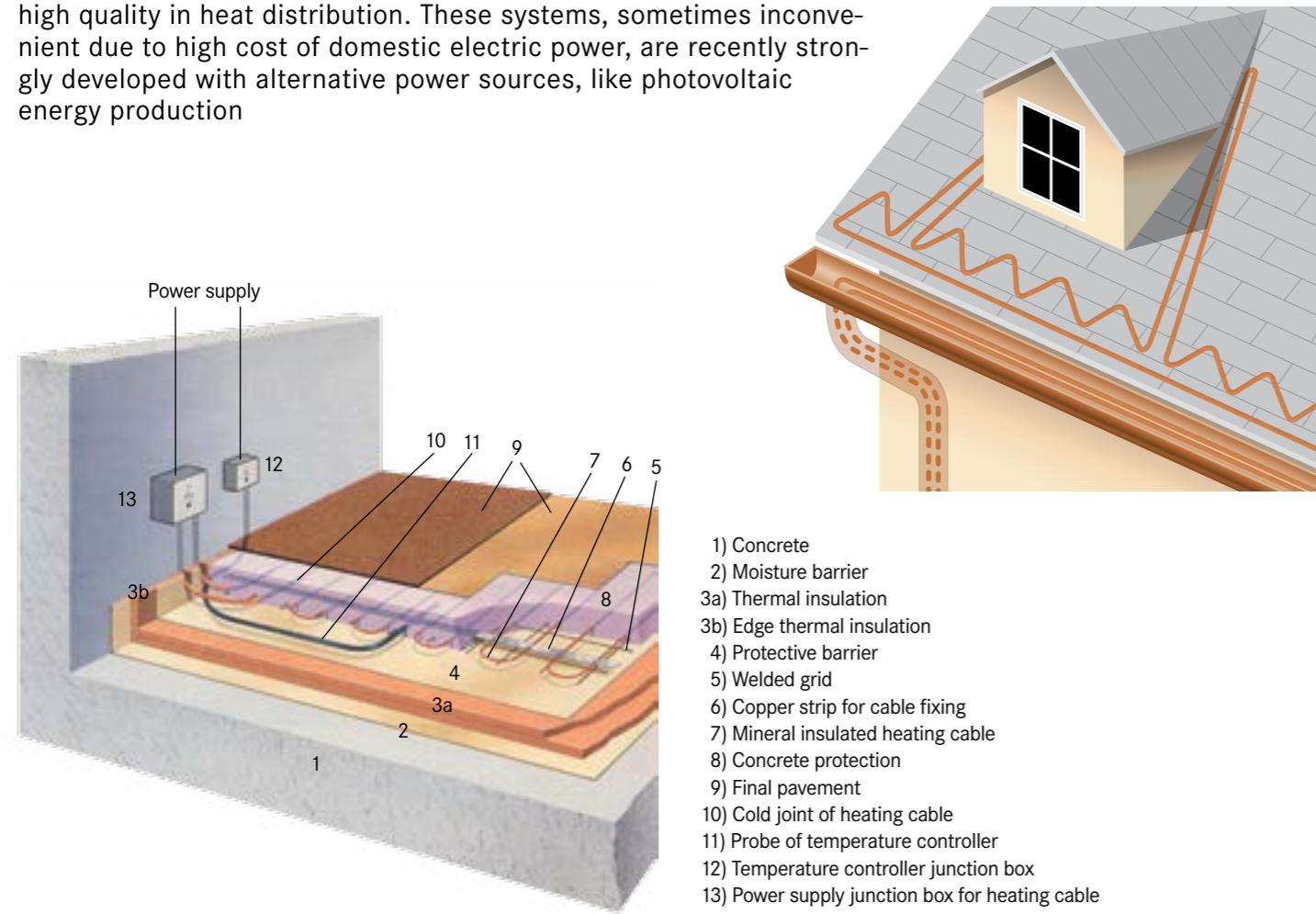


OUTER SHEATH IN COPPER NICKEL AND CORE IN KUMANAL (K) OR COPPER (C)			
Cable type	Resistance Ω/km at 20° C	Ø outer sheath mm	Ø core mm
KN 1600	1.600	3.2	0.57
KN 1000	1.000	3.4	0.72
KN 630	630	3.7	0.91
KN 400	400	4.0	1.14
KN 250	250	4.4	1.45
KN 160	160	4.9	1.81
<hr/>			
CN 63	63	3.2	0.59
CN 40	40	3.4	0.74
CN 25	25	3.7	0.94
CN 17	17	4.6	1.13
CN 11	11	4.9	1.38
CN 7	7	5.3	1.78
CN 4	4	5.9	2.25

OUTER SHEATH IN INCONEL 600 OR SS. NICKEL-CHROME CORE				
Cable type	Cable type	Resistance Ω/km at 20° C	Ø outer sheath mm	Ø core mm
TINC 10K	TI 10K	10.000	3.2	0.38
TINC 6300	TI 6300	6.300	3.2	0.48
TINC 4000	TI 4000	4.000	3.2	0.61
TINC 2500	TI 2500	2.500	3.4	0.77
TINC 1600	TI 1600	1.600	3.6	0.96
TINC 1000	TI 1000	1.000	3.9	1.21
TINC 630	TI 630	630	4.3	1.49
TINC 400	TI 400	400	4.7	1.87
TINC 250	TI 250	250	5.3	2.37
TINC 160	TI 160	160	6.5	3.03

Building applications

Road ramps, both for vehicles or persons, outdoor surfaces, helicopters landing areas, hothouses and football grounds: heating in these areas are made by mineral insulated units, buried in concrete or deep in the ground (5 - 10 cm depth, step 15 - 20 cm) in order to achieve an homogeneous thermal distribution. If the system is workmanlike installed, it's safe, eternal, easy to be managed and controlled; nevertheless, in case of breaking, it cannot create anyway same big damages like traditional hot water systems. Underfloor heating of the buildings guarantees excellent comfort, due high quality in heat distribution. These systems, sometimes inconvenient due to high cost of domestic electric power, are recently strongly developed with alternative power sources, like photovoltaic energy production

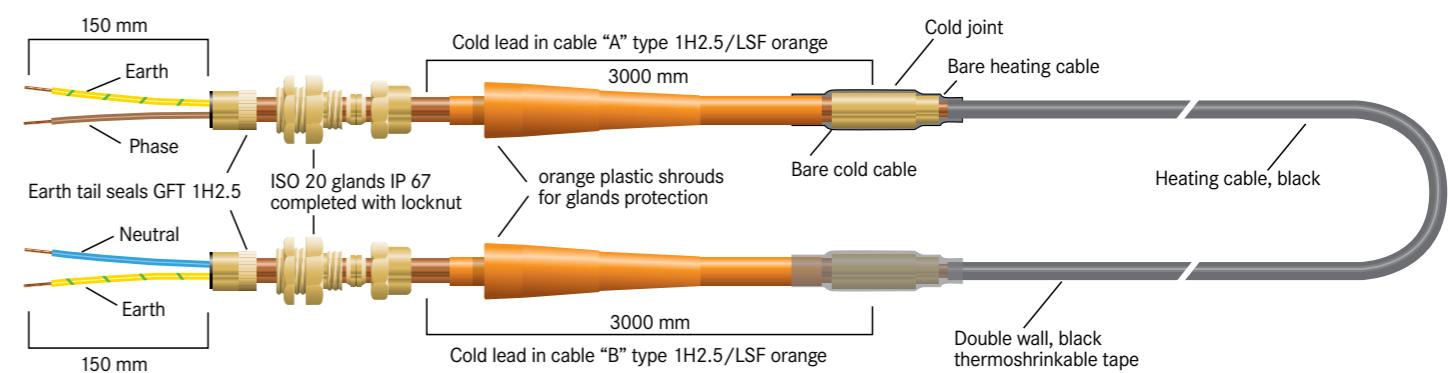


OUTER SHEATH IN COPPER			
Cable type	Resistance Ω/km at 20°C	Ø outer sheath mm	Ø core mm
KC 2700	2.700	2.7	0.44
KC 2000	2.000	2.8	0.51
KC 1600	1.600	3.5	0.57
KC 1250	1.250	2.8	0.65
KC 800	800	3.5	0.81
KC 630	630	4.0	0.91
KC 450	450	4.0	1.08
KC 315	315	4.3	1.29
KC 220	220	4.5	1.54
KC 140	140	4.9	1.93
KC 100	100	5.2	2.28
CC 88	88	2.7	0.5
CC 63	63	3.2	0.59
CC 40	40	3.4	0.74
CC 25	25	3.7	0.94
CC 17	17	4.6	1.13
CC 11	11	4.9	1.38
CC 7	7	5.3	1.78
CC 4	4	5.9	2.26

OUTER SHEATH IN COPPER AND HDPE			
Tipo cavo	Resistance Ω/km a 20°C	Ø outer sheath mm	Ø core mm
KC 2700/HDPE	2.700	4.3	0.44
KC 2000/HDPE	2.000	4.4	0.51
KC 1600/HDPE	1.600	5.1	0.57
KC 1250/HDPE	1.250	4.4	0.65
KC 800/HDPE	800	5.1	0.81
KC 630/HDPE	630	5.6	0.91
KC 450/HDPE	450	5.6	1.08
KC 315/HDPE	315	5.9	1.29
KC 220/HDPE	220	6.1	1.54
KC 140/HDPE	140	6.5	1.93
KC 100/HDPE	100	6.8	2.28
CC 88/HDPE	88	4.3	0.5
CC 63/HDPE	63	4.8	0.59
CC 40/HDPE	40	5.0	0.74
CC 25/HDPE	25	5.3	0.94
CC 17/HDPE	17	6.2	1.13
CC 11/HDPE	11	6.5	1.38
CC 7/HDPE	7	6.9	1.78
CC 4/HDPE	4	7.5	2.26

CORE TYPE	SHEATH TYPE	MAX OPERATING TEMPERATURE	CABLE CODE
Copper (C)	Copper (C) + Polyethylene (HDPE)	110°C	CC / HDPE
Kumanal (K)	Copper (C) + Polyethylene (HDPE)	110°C	KC / HDPE
Copper (C)	Copper (C)	250°C	CC
Kumanal (K)	Copper (C)	250°C	KC
Copper (C)	Copper Nickel (CN)	400°C	CN
Kumanal (K)	Copper Nickel (CN)	400°C	KN
Nickel/Chrome 80/20 (T)	AISI 321 (I)	600°C	TI
Nickel/Chrome 80/20 (T)	Inconel 600 (INC)	800°C	TINC

COLD LEAD IN FOR POWER SUPPLY CONNECTION				Cross section size	Ø copper outer sheath	Ø HDPE outer sheath	Ø core
Cold cable type				mm²	mm	mm	mm
COPPER	COPPER + HDPE	COPPER NICKEL	AISI 321				
1H2.5	1H2.5 / HDPE	1H2.5 CN	1H2.5 CI	2.5	5.30	6.60	1.78
1H6	1H6 / HDPE	1H6 CN	1H6 CI	6	6.40	7.70	2.76
1H10	1H10 / HDPE	1H10 CN		10	7.30	8.80	3.57
1H16	1H16 / HDPE	1H16 CN		16	8.30	9.80	4.51
1H25	1H25 / HDPE	1H25 CN		25	9.60	11.10	5.64



HEATING CABLE	COLD CABLE "A" and "B"			V	W	Sheath temperature (°C)	Snow melting (3 cm/hour)			Frost protection or de-icing				
	Type	m	Type	m	Seal	Gland	Permanent Start up	Permanent Start up	Surface size	W/m²	Step	Surface size	W/m²	Step
CC40/HDPE	215	1H2.5/LSFA	3	GFT	RN 1/2"	229	5.830	35	32 m²	180	15 cm	41 m²	142	19 cm
							6.540	37						
2CC17/HDPE	200	2H2.5/LSFA	3	GFT	RN 1/2"	230	7.200	32	36 m²	200	18 cm	51 m²	140	25 cm
							8.150	35						
CC63/HDPE	163	1H2.5/LSFA	3	GFT	RN 1/2"	230	4.800	39	25 m²	192	14 cm	35 m²	137	20 cm
							5.480	42						
CC88/HDPE	142	1H2.5/LSFA	3	GFT	RN 1/2"	230	3.900	42	20 m²	195	15 cm	28 m²	139	20 cm
							4.500	46						
CC88/HDPE	125	1H2.5/LSFA	3	GFT	RN 1/2"	230	4.300	47	25 m²	175	20 cm	31 m²	138	25 cm
							5.100	52						
KC220/HDPE	80	1H2.5/LSFA	3	GFT	RN 1/2"	230	3.000	36	15 m²	200	19 cm	21 m²	142	26 cm
							3.000	36						
KC450/HDPE	60	1H2.5/LSFA	3	GFT	RN 1/2"	230	1.950	35	10 m²	195	17 cm	14 m²	139	23 cm
							1.950	35						
KC630/HDPE	45	1H2.5/LSFA	3	GFT	RN 1/2"	230	1.870	42	9 m²	205	20 cm	12 m²	155	27 cm
							1.870	42						
KC1600/HDPE	33	1H2.5/LSFA	3	GFT	RN 1/2"	230	1.000	38	5 m²	200	15 cm	7 m²	142	20 cm
							1.000	38						

NOTES: 1) brass glands RAD ISO 20 are IP67 waterproof and dust protected and are completed by suitable locknut
2) cold lead in cold cables are completed by protection shrouds type CO1, orange coloured
3) start up powers were calculated basing upon a start up temperature of +5°C

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