

ISOMIL®

MINERAL INSULATED
HEATING CABLES



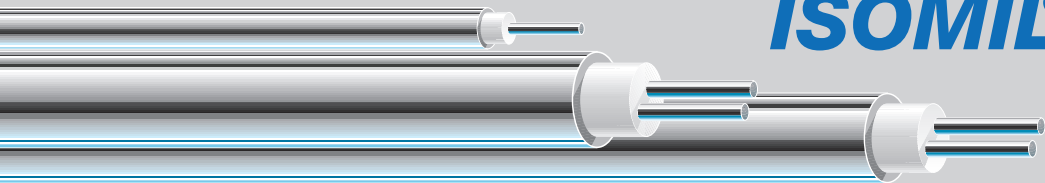
MIL GmbH

World-wide increasing precision, reliability, and safety requirements in Temperature, Control and Measurement Engineering can no longer be satisfied by conventional cables causing a rising need for mineral insulated lines. Applications cover everything from the simple building of furnaces to the production of nuclear power plants.

Our product catalogue will guide you through a selection of state-of-the-art mineral insulated thermocouples and heating cables. We can offer thereby 35 years of experience.

The close collaboration with leading customers - world-wide - is the guarantor for a broadly varied offer, with a maximum flexibility and highest reliability. Our head office is in the city of Hanau, Germany. From here we service our national and international customers.

The MiL GmbH is both a manufacturer and a service provider. We offer to our customers everything from professional consultation to custom-made products.



The MIL GmbH 2

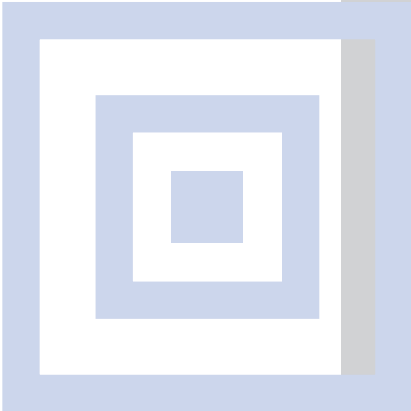
MI Sheathed Heating Cable

300 V Double Conductor 4

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Standard MI Sheathed Heating Cable at 800 V 10



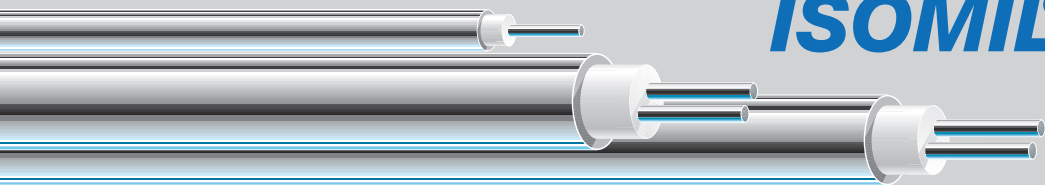
MI Sheathed Heating Cable

300 V Double Conductor

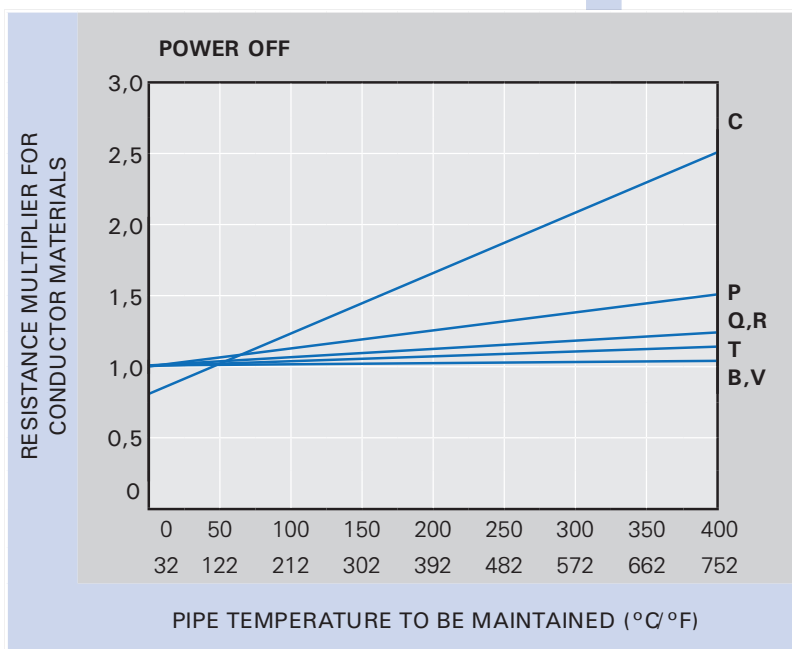
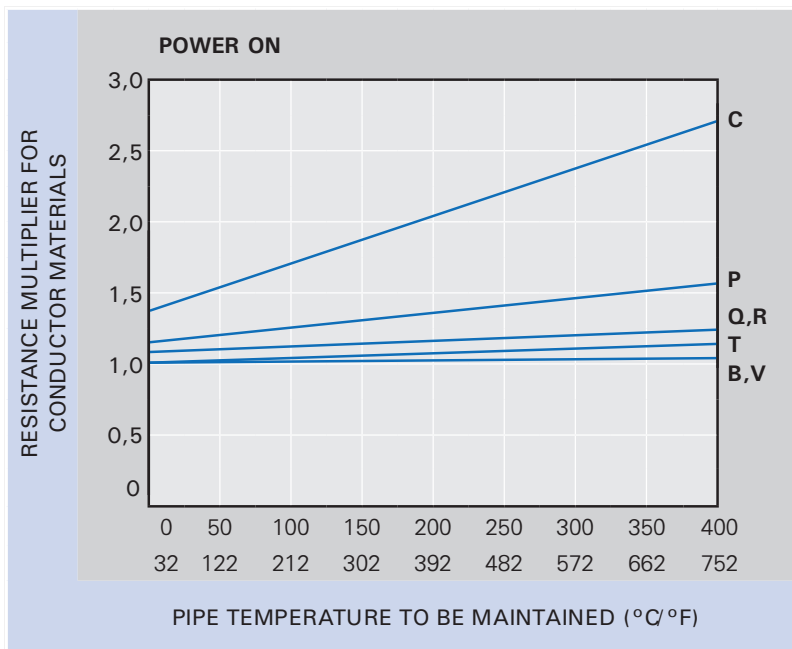
Cable Reference	Resistance	Diameter	Production Lengths
	Ohm/m @ 20°C	(mm)	(m)
36,10 – 2V2S38	36,089	3,80	90,00
29,52 – 2V2S38	29,527	3,80	90,00
24,60 – 2V2S38	24,606	3,80	90,00
19,68 – 2V2S38	19,685	3,80	90,00
16,40 – 2V2S38	16,404	3,80	90,00
13,12 – 2V2S38	13,123	3,80	430,00
9,02 – 2V2S38	9,022	3,80	430,00
8,20 – 2V2S38	8,202	3,80	430,00
6,56 – 2V2S40	6,562	4,00	400,00
5,57 – 2V2S40	5,577	4,00	400,00
4,60 – 2V2S40	4,593	4,00	400,00
3,28 – 2CN2S40	3,281	4,00	400,00
2,30 – 2CN2S40	2,297	4,00	400,00
1,97 – 2CN2S45	1,968	4,50	330,00
1,64 – 2CN2S45	1,640	4,00	330,00
1,31 – 2CN2S45	1,312	4,00	330,00
0,98 – 2CN2S45	0,984	4,00	330,00
0,82 – 2CN2S40	0,820	4,00	330,00
0,66 – 2CN2S40	0,656	4,00	330,00
0,49 – 2CN2S40	0,492	4,00	330,00
0,41 – 2CN2S40	0,410	4,00	330,00
0,32 – 2CN2S40	0,328	4,00	330,00
0,28 – 2CN2S48	0,279	4,50	330,00
0,23 – 2CN2S48	0,230	4,80	290,00
0,16 – 2C2S43	0,164	4,30	360,00
0,13 – 12C2S48	0,131	4,80	290,00
0,11 – 2C2S48	0,115	4,80	290,00
0,09 – 82C2S45	0,098	4,50	330,00

Description	
Max. Voltage Rating	300 V
Number of Conductors	2
Resistance	36089 = 36,089 Ohm/m @ 20 C
Sheath Material	A = AISI 321, S = AISI 316L, Q = AISI 310, L = Alloy 600, Z = Alloy 825
Conductor Material	V = Nichrome, C = Copper, T = Alloy 180, P = Alloy 30 Q = Alloy 60, B = Constantan, R = Alloy 90





Resistance Correction Factor



Note

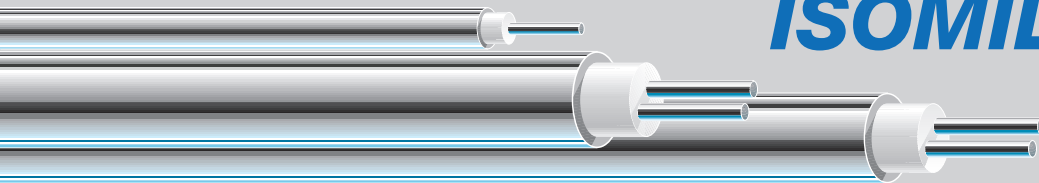
- 1) Tolerance on conductor resistance is $\pm 10\%$ for all 300 volt 2/C cables.
- 2) The maximum recommended loading is 200 watts per metre for all 300 volt 2/C cables.
- 3) For pipe tracing, the maximum recommended watts per metre of cable may be reduced to the pipe to maintain or process temperature.
- 4) Minimum bend radius is 5 times nominal cable diameter.

**MI Sheathed
Heating Cable**

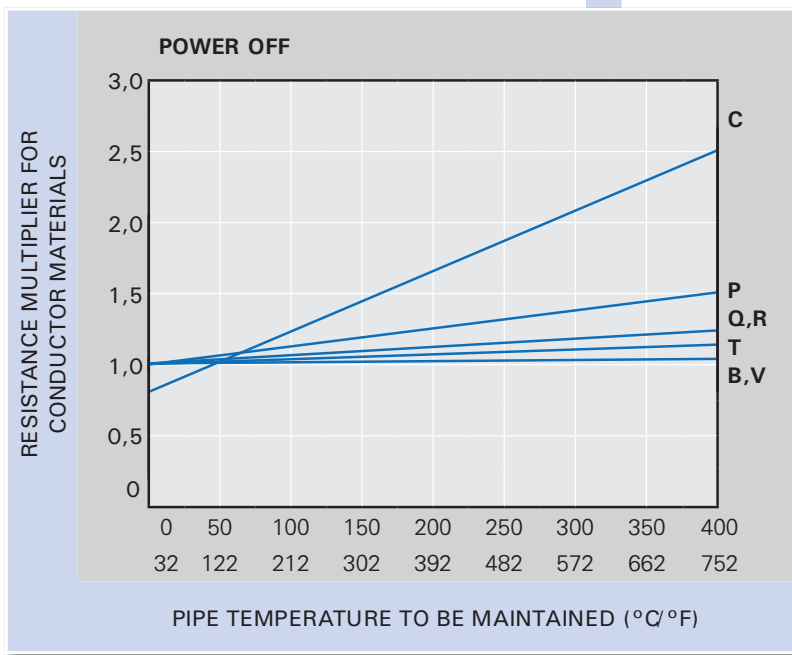
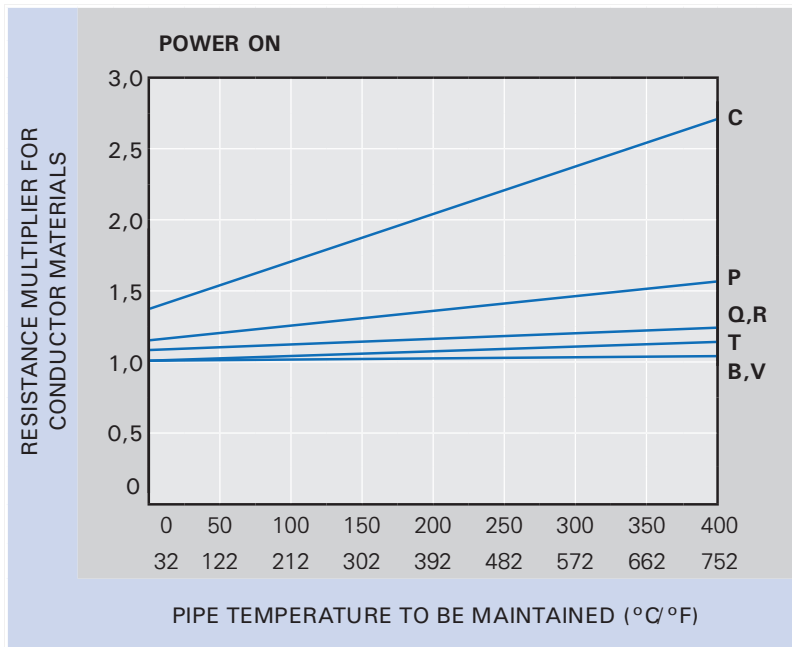
600 V Single Conductor

Cable Reference	Resistance	Diameter	Production Lengths
	Ohm/m @ 20°C	(mm)	(m)
6,56V2S40	6,562	4,00	130,00
5,24V2S40	5,249	4,00	130,00
4,265V2S40	4,265	4,00	130,00
3,28V2S40	3,281	4,00	400,00
2,789V2S40	2,789	4,00	400,00
2,297V2S40	2,297	4,00	400,00
1,64V2S40	1,640	4,00	400,00
1,247V2S40	1,247	4,00	400,00
0,984CN2S40	0,984	4,00	400,00
0,82CN2S40	0,820	4,00	400,00
0,658CN2S40	0,656	4,00	400,00
0,558CN2S40	0,558	4,00	400,00
0,492CN2S40	0,492	4,00	400,00
0,328CN2S40	0,328	4,00	400,00
0,262CN2S40	0,262	4,00	400,00
0,131CN2S40	0,131	4,00	400,00
0,118CN2S40	0,118	4,00	400,00
0,043C2S45	0,043	4,50	300,00
0,033C2S40	0,033	4,00	400,00
0,021C2S40	0,021	4,00	400,00
0,013C2S50	0,013	5,00	250,00
0,008C2S58	0,008	5,80	200,00
0,0055C2S50	0,005	5,00	250,00
0,002C2S72	0,002	7,20	130,00

Beschreibung	
Max. Betriebsspannung	600 V
Anzahl der Innenleiter	1
Widerstand	06562 = 6,56200 Ohm/m @ 20 C
Mantelmaterial	A = 1.4541, S = 1.4404, Q = 1.4845, L = Alloy 600, Z = Alloy 825
Innenleiternmaterial	V = Nichrome, C = Kupfer, T = Alloy 180, P = Alloy 30 Q = Alloy 60, B = Konstantan, R = Alloy 90



Resistance Correction Factor



Note

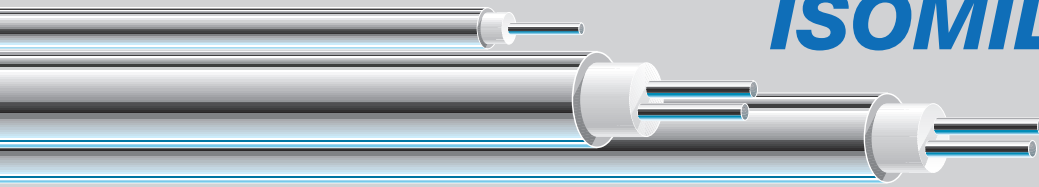
- 1) Tolerance on conductor resistance is $\pm 10\%$ for all 600 Volt 1/C cables.
- 2) The maximum recommended loading is 210 watts per metre for all 600 volt 1/C cables.
- 3) For pipe tracing, the maximum recommended watts per metre of cable may be reduced to the pipe to maintain or process temperature.
- 4) Minimum bend radius is 5 times nominal cable diameter.

MI Sheathed Heating Cable

400 V Single Conductor

Cable Reference	Resistance	Diameter	Production Lengths
	Ohm/m @ 20°C	(mm)	(m)
2,5V2A34	2,500	3,40	500,00
1,6V2A36	1,600	3,60	450,00
1,0V2A39	1,000	3,90	400,00
0,63V2A43	0,630	4,30	330,00
0,40V2A47	0,400	4,70	275,00
0,25V2A53	0,250	5,30	217,00
1,6CN2A32	1,600	3,20	600,00
1,0CN2A34	1,000	3,40	540,00
0,63CN2A37	0,630	3,70	450,00
0,40CN2A40	0,400	4,00	390,00
0,25CN2A44	0,250	4,40	390,00
0,16CN2A49	0,160	4,90	260,00
0,063C2A32	0,063	3,20	590,00
0,025C2A37	0,025	3,70	440,00
0,017C2A46	0,017	4,60	280,00
0,011C2A49	0,011	4,90	250,00
0,007C2A49	0,007	4,90	250,00
0,007C2A53	0,007	5,30	215,00
0,004C2A59	0,004	5,90	180,00

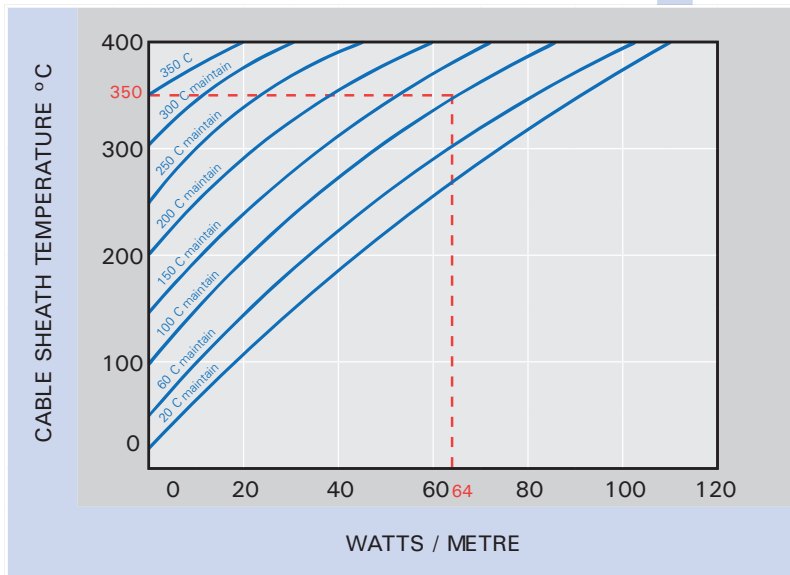




Description	
Max. Voltage Rating	Up to 300 V / 500 V
Sheath Material	AISI 321; Other sheath materials available upon request
Conductor Material	V = Nichrome, CN = Copper-Nickel, C = Copper

Sheath Material	Maximum Cable Sheath Temp. (°C)
Stainless Steel	400

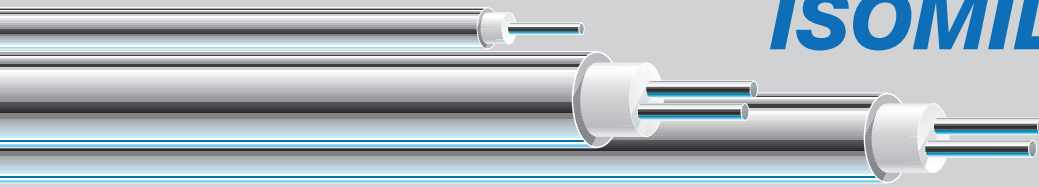
Maximum Operation Temperatures	Follow Ratings A, B & C below to obtain sheath temperature guidelines from the graph, for ordinary area applications.
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Rating Factor Table	
Cable Reference	Rating Factor
1,6CN2A32	1.000
1,0CN2A34	0.941
0,63CN2A37	0.865
0,40CN2A40	0.800
0,25CN2A44	0.727
0,16CN2A49	0.653
0,063C2A32	1.000
0,040C2A34	0.941
0,025C2A37	0.865
0,017C2A46	0.696
0,011C2A49	0.653
0,007C2A49	0.653
0,007C2A53	0.604
0,004C2A59	0.542

Rating A	By design, identify cable reference to be used and calculate watts/metre rating of cable /element e.g. 0,40CN2A40; 80 W/m.
Rating B	Refer to rating factor table and multiply watts /metre rating of cable /element by rating factor to obtain adjusted watts/metre value. (80 W/m x 0.800 = 64.00 W/m)
Rating C	Using adjusted value, enter graph on watts /metre axis and obtain cable sheath temperature for application maintain temperature. Cable sheath temperature = 350 C for 100 C maintain – see graph.





Standard MI Sheathed Heating Cable at 800 V

Cable Reference	Resistance	Diameter	Production Lengths
	Ohm/m @ 20°C	(mm)	(m)
10V2A32	10,00	3,20	200,00
6,3V2A32	6,30	3,20	200,00
4,0V2A32	4,00	3,20	600,00
2,5V2A36	2,50	3,60	470,00
1,6V2A38	1,60	3,80	420,00
1,0V2A41	1,00	4,10	360,00
0,63V2A45	0,63	4,50	300,00
0,40V2A50	0,40	5,00	250,00
0,25V2A56	0,25	5,60	200,00
0,16V2A65	0,16	6,50	150,00

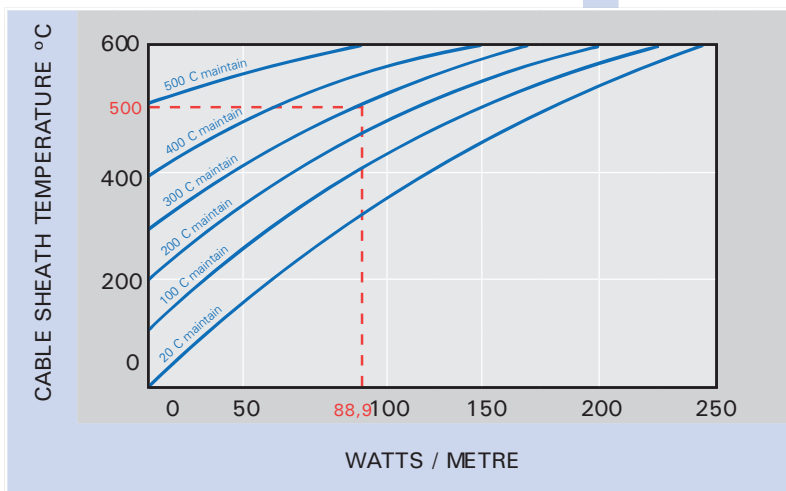
Description	
Max. Voltage Rating	800 V
Sheath Material	A = AISI 321, S = AISI 316L, Q = AISI310, L = Alloy 600, Z = Alloy 825
Conductor Material	Nichrome

Maximum Operation Temperatures	Follow Ratings A, B & C below to obtain sheath temperature guidelines from the graph, for ordinary area applications.
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To ensure a sufficient level of dielectric strength between conductor and sheath, the insulation layer thickness was selected as ≥ 1.0 mm for all types in the standard program including the cold cable. It follows that all cables can be operated up to 800 V.

Note

1) Tolerance on conductor resistance is $\pm 10\%$ for all 800 volt cables.



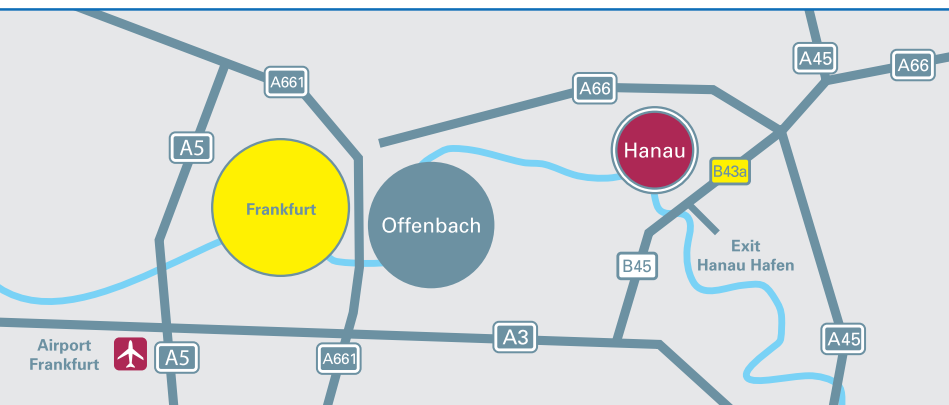
Rating Factor Table	
Cable Reference	Rating Factor
10V2A32	1.000
6,3V2A32	1.000
4,0V2A32	1.000
2,5V2A36	0.889
1,6V2A38	0.842
1,0V2A41	0.780
0,63V2A45	0.711
0,40V2A50	0.640
0,25V2A56	0.571
0,16V2A65	0.492

Rating A	By design, identify cable reference to be used and calculate watts / metre rating of cable / element e.g. 2,5V2A36; 100 W / m.
Rating B	Refer to rating factor table and multiply watts / metre rating of cable / element by rating factor to obtain adjusted watts / metre value. (100 W / m \times 0.889 = 88.9 W / m)
Rating C	Using adjusted value, enter graph on watts / metre axis and obtain cable sheath temperature for application maintain temperature. Cable sheath temperature = 500 C for 300 C maintain – see graph.



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HOW TO FIND US

A3 Frankfurt

Direction: München / Würzburg / Hanau
Next: Direction B45 Hanau
Next: Direction B43a Fulda
Exit: Hanau - Hafen

A45 Giessen

Direction: Hanauer Kreuz
(Motorway intersection Hanau)
Next: Direction B43a Dieburg
Exit: Hanau - Hafen

Now

Turn right, direction Hanau - Hafen.
Then left, direction Industriegebiet (Industrial area)
Hafenstraße.
Next right, Ehrichstraße 10, Industriepark Gebäude 4
(Industrial park, Building No. 4) on the left.