

P-4

FIRE RESISTANT CABLES

Low toxicity
and corrosivity

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FIRE RESISTANT CABLES WITH LOW TOXICITY AND CORROSIVITY

FTG10(O)M1-0.6/1 kV

Cables suitable to lend the performance requested for a determinate time period also when the flames developed by the fire in which are involved, they have modified, carbonized or destroyed the organic materials which in normality conditions, constitute the insulation, possible fillers and the sheath.

Where to use them:

undergrounds, schools, hotels, hospitals, theatres, discoteque, offices, cinemas, supermarkets, airport, railway stations and so on and so forth.

CONSTRUCTION

CEI 20-45

CEI EN 50200 e 50362

Conductor:

plain annealed copper class 5

Taping:

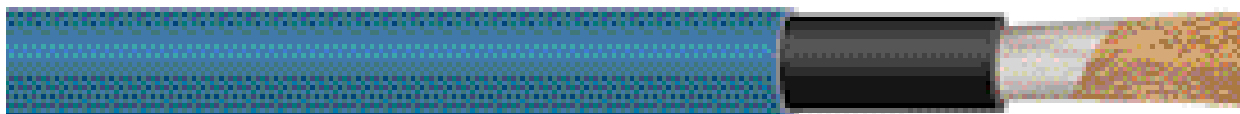
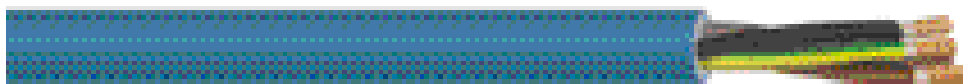
mica / glass tape

Insulation:

ethylene propylene rubber type G10

Sheath:

thermoplastic compound type M1



Conductors identification:

- 1 black
- 2 blue - brown
- 3 a) brown - black - grey
b) yellow/green - blue - brown
- 4 a) blue - brown - black - grey
b) yellow/green - brown - black - grey
- 5 yellow/green - blue - brown - black - grey
- 7 black with white numbering

Colour:

black	RAL 9000
brown	RAL 8003
blue	RAL 5015
yellow	RAL 1021
green	RAL 6018
grey	RAL 7001

Outer sheath colour:

blue

Marking on outer sheath:

marking for cables having the outer diameter the same or lower than 20 mm

TRATOS FTG100M1-0.6/1 kV 3X1.5 CEI 20-22 III CEI 20-45 PH90 year of production metric marking CE

marking for cables having outer diameter more than 20 mm

TRATOS FTG100M1-0.6/1 kV 4X25 CEI 20-22 III CEI 20-45 F2 year of production metric marking CE

TECHNICAL REFERENCES

CEI 20-45	Fire retardant elastomeric insulated cables, halogen free (LSOH) with rated voltage $U_0/U_{0.6/1}$ kV	CEI 20-67	Guide to use of 0.6/1 kV cables
CEI 11-17	Generation, transmission and distribution system of electric power - Cables installations	UNEL 35011	Power and signalling cables. System for designation
CEI 20-11	Technical characteristics and test requirements for insulation and sheath compounds of electric cables	UNEL 35012	Cables under fire conditions - Classification and marking
CEI 20-29	Conductors of insulated cables. Guide to the dimensional limits of circular conductors	UNEL 00722	Identification of cores in cables and flexible cords
CEI 20-35/1-1 EN 50265-2-1	Common test methods for cables under fire conditions - Test for resistance to vertical flame propagation for a single insulated conductor or cable. Part 2-1: procedures - 1kW pre-mixed flame	UNEL 35024/1	Elastomeric and thermoplastic insulated power cables for rated voltages not exceeding 1000 V a.c. / 1500 V d.c. Continuous current capacities for cables laid in air
CEI 20-37/2-1 EN 50267-2-1	Common test methods for cables under fire conditions - Test on gases evolved during combustion of materials from cables. Part 2-1: procedures - Determination of the amount of halogen acid gas	UNEL 35026	Elastomeric and thermoplastic insulated power cables for rated voltages not exceeding 1000 V a.c. / 1500 V d.c. Continuous current capacities for buried cables
CEI 20-22/3 EN 50266	Tests on electric cables under fire conditions - Part 3: Tests on bunched wires or cable	CEI 20-36/4-0 EN 50200	Method of test for resistance to fire unprotected small cables for use in emergency circuits
CEI 20-34/1-1 EN 60811	Insulating and sheathing materials of electric cables. Part 1: General application Section 1: Measurement of thickness and overall dimension - Test for determining the mechanical properties	CEI 20 EN 50334 CEI 20-37/4-0	Marking by inscription for the identification of cores of electric cables Common test methods for cables under fire conditions - Part 7: Determination of toxicity index of gases evolved during combustion of electric cables
CEI 20-36/5-0 EN 50362	Methods of test for resistance to fire of larger unprotected power and control cables for use in emergency circuits	EN 50268	Common test methods for cables under fire conditions - Measurement of smoke density of cables burning under defined conditions

Conductor maximum temperature

90°C on conductor

Maximum short circuit temperature for 5 second duration max

250°C on conductor

Minimum bending radius

14 x overall diameter

Maximum applicable pull force on metal conductor

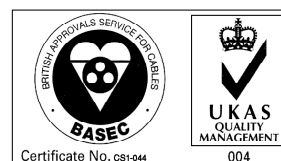
- 5 kg/mm² copper size during installation
- 1.5 kg/mm² copper size during service

Minimum installation temperature

0°C

QUALITY SYSTEM

Our Quality System management includes two certificates: Basec (UK) and Aenor (E), in accordance to ISO 9001/2000 covering the production, purchasing of raw materials design and final test including various documents typologies. Tratos Quality System management is under constant control by inspectors working for the certifying bodies.



Fire resistant cables with low toxicity and corrosivity.

FTG10(O)M1-0.6/1 kV

IMQ CA01.00147

Nominal section mm ²	Max. diameter cond. wires mm	Nominal conduct. diameter mm	Average insulation thickness mm	Indicative outer diameter mm	Indicative weight kg/km	Minimum bending radius mm	Current Rating (A)		Max. cond. resist. at 20°C 0hm/km
							30°C in air	30°C in pipe in air	

FTG10M1-0.6/1kV 1 Conductor

1.5	0.26	1.5	1.0	7.5	71	100	23	19	13.7
2.5	0.26	1.9	1.0	7.9	92	105	32	28	8.21
4	0.31	2.5	1.0	8.5	120	114	44	36	5.09
6	0.31	3.0	1.0	9.0	135	121	57	47	3.39
10	0.41	3.9	1.0	10.0	197	133	79	65	1.95
16	0.41	5.0	1.0	11.1	255	149	108	89	1.24
25	0.41	6.0	1.2	12.6	347	168	136	116	0.795
35	0.41	7.7	1.2	14.4	442	192	170	145	0.565
50	0.41	9.0	1.4	16.4	676	216	206	176	0.393
70	0.51	11.0	1.4	18.7	911	244	267	221	0.277
95	0.51	12.5	1.6	20.7	1204	276	327	270	0.21
120	0.51	14.5	1.6	23.0	1428	307	384	311	0.164
150	0.51	16.0	1.8	25.2	1760	334	445	354	0.132
185	0.51	17.7	2.0	27.4	2155	366	508	419	0.108
240	0.51	20.4	2.2	30.9	2588	412	609	488	0.0817

FTG10M1-0.6/1 kV 2 Conductors

1.5	0.26	1.5	1.0	12.0	193	160	25	21	13.7
2.5	0.26	1.9	1.0	12.8	214	171	37	31	8.21
4	0.31	2.5	1.0	14.0	345	187	48	39	5.09
6	0.31	3.0	1.0	15.3	449	202	64	50	3.39
10	0.41	3.9	1.0	17.2	524	230	87	70	1.95
16	0.41	5.0	1.0	19.7	665	261	114	90	1.24
25	0.41	6.0	1.2	22.9	911	292	150	120	0.795
35	0.41	7.7	1.2	26.7	1200	342	184	147	0.565
50	0.41	9.0	1.4	30.5	2082	381	226	176	0.393

FTG10M1-0.6/1 kV 3 Conductors (without yellow/green)

1.5	0.26	1.5	1.0	12.6	200	168	22	18.5	13.7
2.5	0.26	1.9	1.0	13.6	273	181	33	26	8.21
4	0.31	2.5	1.0	14.8	374	198	41	36	5.09
6	0.31	3.0	1.0	16.2	407	215	53	43	3.39
10	0.41	3.9	1.0	18.5	586	244	61	51	1.95
16	0.41	5.0	1.0	21.0	840	278	99	79	1.24
25	0.41	6.0	1.2	24.3	1137	310	126	104	0.795
35	0.41	7.7	1.2	28.6	1527	364	159	129	0.565
50	0.41	9.0	1.4	32.6	2464	406	193	155	0.393
70	0.51	11.0	1.4	37.4	3467	472	245	193	0.277
95	0.51	12.5	1.6	42.1	4602	520	300	235	0.210
120	0.51	14.5	1.6	46.8	5452	586	344	266	0.164
150	0.51	16.0	1.8	51.5	6737	633	401	301	0.132
185	0.51	17.7	2.0	56.5	8359	688	454	341	0.108
240	0.51	20.4	2.2	64.1	10827	775	540	397	0.0817

Note: the current carrying capacities of four-core were calculated for three active conductors.

Fire resistant cables with low toxicity and corrosivity.

IMQ CA01.00147

FTG10(O)M1-0.6/1 kV

Nominal section mm ²	Max. diameter cond. wires mm	Nominal conduct. diameter mm	Average insulation thickness mm	Indicative outer diameter mm	Indicative weight kg/km	Minimum bending radius mm	Current Rating (A)		Max. cond. resist. at 20°C 0hm/km
							30°C in air	30°C in pipe in air	

FTG100M1-0.6/1 kV 3 Conductors (with yellow/green)

1.5	0.26	1.5	1.0	12.6	200	168	24	20	13.7
2.5	0.26	1.9	1.0	13.6	273	181	34	28	8.21
4	0.31	2.5	1.0	14.8	374	198	50	41	5.09
6	0.31	3.0	1.0	16.2	407	215	62	50	3.39
10	0.41	3.9	1.0	18.5	586	244	87	70	1.95
16	0.41	5.0	1.0	21.0	840	278	114	90	1.24
25	0.41	6.0	1.2	24.3	1137	310	148	118	0.795
35	0.41	7.7	1.2	28.6	1527	364	186	147	0.565
50	0.41	9.0	1.4	32.6	2464	406	224	174	0.393
70	0.51	11.0	1.4	37.4	3467	472	290	222	0.277
95	0.51	12.5	1.6	42.1	4602	520	353	266	0.21
120	0.51	14.5	1.6	46.8	5452	586	411	306	0.164
150	0.51	16.0	1.8	51.5	6737	633	474	335	0.132
185	0.51	17.7	2.0	56.5	8359	688	522	375	0.108
240	0.51	20.4	2.2	64.1	10827	775	620	437	0.0817

FTG100M1-0.6/1 kV 4 Conductors (without yellow/green)

1.5	0.26	1.5	1.0	13.8	245	185	22	18.5	13.7
2.5	0.26	1.9	1.0	14.8	324	198	33	27	8.21
4	0.31	2.5	1.0	16.7	412	217	41	34	5.09
6	0.31	3.0	1.0	17.8	499	236	55	45	3.39
10	0.41	3.9	1.0	20.3	714	268	74	59	1.95
16	0.41	5.0	1.0	23.3	1038	308	99	79	1.24
25	0.41	6.0	1.2	27.1	1447	359	126	104	0.795
35+1x25	0.41	7.7/6.0	1.2/1.2	31.8	2283	422	157	127	0.565
50+1x25	0.41	9.0/6.0	1.4/1.2	36.3	2937	482	193	155	0.393
70+1x35	0.51	11.0/7.7	1.4/1.2	41.8	3859	555	247	195	0.277
95+1x50	0.51	12.5/9.0	1.6/1.4	46.8	4912	622	300	235	0.21
120+1x70	0.51	14.5/11.0	1.6/1.4	52.3	6387	695	344	266	0.164
150+1x95	0.51	16.0/12.5	1.8/1.6	57.5	7808	765	401	302	0.132
185+1x95	0.51	17.7/12.5	2.0/1.6	63.0	9452	838	457	342	0.108
240+1x150	0.51	20.4/16.0	2.2/1.8	71.5	12537	951	535	396	0.0817

FTG100M1-0.6/1 kV 4 Conductors (with yellow/green)

1.5	0.26	1.5	1.0	13.8	245	185	24	18.5	13.7
2.5	0.26	1.9	1.0	14.8	324	198	33	27	8.21
4	0.31	2.5	1.0	16.4	412	217	43	36	5.09
6	0.31	3.0	1.0	17.8	499	236	53	43	3.39
10	0.41	3.9	1.0	20.3	714	268	74	59	1.95
16	0.41	5.0	1.0	23.3	1038	308	101	81	1.24
25	0.41	6.0	1.2	27.1	1447	359	128	106	0.795
35+1x25	0.41	7.7/6.0	1.2/1.2	31.8	2283	422	157	127	0.565
50+1x25	0.41	9.0/6.0	1.4/1.2	36.3	2937	482	193	155	0.393
70+1x35	0.51	11.0/7.7	1.4/1.2	41.8	3859	555	247	195	0.277
95+1x50	0.51	12.5/9.0	1.6/1.4	46.8	4912	622	300	235	0.21
120+1x70	0.51	14.5/11.0	1.6/1.4	52.3	6387	695	348	270	0.164
150+1x95	0.51	16.0/12.5	1.8/1.6	57.5	7808	765	397	298	0.132
185+1x95	0.51	17.7/12.5	2.0/1.6	63.0	9452	838	456	343	0.108
240+1x150	0.51	20.4/16.0	2.2/1.8	71.5	12537	951	537	398	0.0817

Note: the current carrying capacities of four-core were calculated for three active conductors.

Fire resistant cables with low toxicity and corrosivity.

FTG10(O)M1-0.6/1 kV

IMQ CA01.00147

Nominal section mm ²	Max. diameter cond. wires mm	Nominal conduct. diameter mm	Average insulation thickness mm	Indicative outer diameter mm	Indicative weight kg/km	Minimum bending radius mm	Current Rating (A)		Max. cond. resist. at 20°C 0hm/km
							30°C in air	30°C in pipe in air	

FTG10M1-0.6/1 kV 5 Conductors (with yellow/green)

1.5	0.26	1.5	1.0	15.3	319	202	22	18.5	13.7
2.5	0.26	1.9	1.0	16.5	412	217	33	27	8.21
4	0.31	2.5	1.0	18.0	552	241	41	34	5.09
6	0.31	3.0	1.0	19.8	622	262	53	43	3.39
10	0.41	3.9	1.0	22.6	895	299	74	59	1.95
16	0.41	5.0	1.0	25.9	1324	343	99	79	1.24
25	0.41	6.0	1.2	30.1	2163	398	125	103	0.795
35	0.41	7.7	1.2	35.3	2247	468	157	127	0.565
50	0.41	9.0	1.4	40.3	3333	535	194	156	0.393

FTG10M1X-0.6/1 kV 2 Conductors helically wound

2x1x1.5	0.26	1.5	1.0	14.9	143	160	23	19	13.7
2x1x2.5	0.26	1.9	1.0	15.8	186	171	32	28	8.21
2x1x4	0.31	2.5	1.0	17.0	243	187	44	36	5.09
2x1x6	0.31	3.0	1.0	18.1	273	202	57	47	3.39
2x1x10	0.41	3.9	1.0	20.0	387	227	79	65	1.95
2x1x16	0.41	5.0	1.0	22.3	515	261	108	89	1.24
2x1x25	0.41	6.0	1.2	25.2	700	303	136	116	0.795
2x1x35	0.41	7.7	1.2	28.8	893	353	170	145	0.565
2x1x50	0.41	9.0	1.4	32.8	1365	404	206	176	0.393
2x1x70	0.51	11.0	1.4	37.4	1840	465	267	221	0.277
2x1x95	0.51	12.5	1.6	41.4	2432	521	327	270	0.21
2x1x120	0.51	14.5	1.6	46.0	2884	580	384	311	0.164
2x1x150	0.51	16.0	1.8	50.4	3555	639	445	354	0.132

FTG10M1X-0.6/1 kV 3 Conductors helically wound

3x1x1.5	0.26	1.5	1.0	16.0	215	168	22	18.5	13.7
3x1x2.5	0.26	1.9	1.0	16.9	278	181	33	26	8.21
3x1x4	0.31	2.5	1.0	18.3	363	198	41	36	5.09
3x1x6	0.31	3.0	1.0	19.4	409	215	53	43	3.39
3x1x10	0.41	3.9	1.0	21.4	596	244	79	65	1.95
3x1x16	0.41	5.0	1.0	23.9	773	278	108	89	1.24
3x1x25	0.41	6.0	1.2	27.1	1051	323	136	116	0.795
3x1x35	0.41	7.7	1.2	30.9	1339	378	170	145	0.565
3x1x50	0.41	9.0	1.4	35.2	2048	433	206	176	0.393
3x1x70	0.51	11.0	1.4	40.2	2760	496	267	221	0.277
3x1x95	0.51	12.5	1.6	44.5	3648	559	327	270	0.21
3x1x120	0.51	14.5	1.6	49.4	4326	622	384	311	0.164
3x1x150	0.51	16.0	1.8	54.2	5332	685	445	354	0.132
3x1x185	0.51	17.7	2.0	58.9	6529	751	508	419	0.108
3x1x240	0.51	20.4	2.2	66.4	7841	852	609	488	0.0817

Note: the current carrying capacities of four-core were calculated for three active conductors.

Fire resistant cables with low toxicity and corrosivity.

Control and signalling cables

IMQ CA01.00164

Nominal section mm ²	Max. diameter cond. wires mm	Nominal conduct. diameter mm	Average insulation thickness mm	Indicative outer diameter mm	Indicative weight kg/km	Minimum bending radius mm	Current Rating (A)		Max. cond. resist. at 20°C 0hm/km
							30°C in air	30°C in pipe in air	

FTG100M1-0.6/1 kV N Conductors (with yellow/green)

5G1.5	0.26	1.5	1.0	14.6	302	202	15	13	13.7
7G1.5	0.26	1.5	1.0	15.9	369	220	14	12.5	13.7
10G1.5	0.26	1.5	1.0	20.6	532	286	14	12.5	13.7
12G1.5	0.26	1.5	1.0	21.2	614	294	10	8.5	13.7
16G1.5	0.26	1.5	1.0	23.8	834	331	10	8.5	13.7
19G1.5	0.26	1.5	1.0	25.1	966	349	8	7	13.7
24G1.5	0.26	1.5	1.0	29.8	1134	415	8	7	13.7
5G2.5	0.26	1.9	1.0	15.7	415	217	23	19	8.21
7G2.5	0.26	1.9	1.0	17.1	570	237	16.5	14.5	8.21
10G2.5	0.26	1.9	1.0	22.2	729	308	16.5	14.5	8.21
12G2.5	0.26	1.9	1.0	22.9	799	318	14.5	13	8.21
16G2.5	0.26	1.9	1.0	25.7	990	357	14.5	13	8.21
19G2.5	0.26	1.9	1.0	27.3	1096	380	13	11.5	8.21
24G2.5	0.26	1.9	1.0	32.2	1424	448	13	11.5	8.21

Note: the current carrying capacities of four-core were calculated for three active conductors.

SPECIFICATIONS

CORRECTION COEFFICIENTS OF CURRENT CARRYING CAPACITY FOR AMBIENT TEMPERATURES DIFFERENT FROM THOSE HERE INDICATED FOR REFERENCE

Type of laying	Temperature (°C)											
	10	15	20	25	30	35	40	45	50	55	60	65
in air	1.15	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71	0.65

non directly exposed to sun light

POSITIONING OF PHASES SINGLE-CORE CABLES CONNECTED IN PARALLEL TO ENSURE THE CORRECT CURRENT DISPOSITION

Cables in trefoil setting

Number of triads in the same layer	2		3			4			
		T RS	T SR	T RS	T SR	T RS	T RS	T SR	T RS

Cables distanced vertically or horizontally

Number of triads in the same layer	2		4			
		RST	TSR	RST	TSR	RST

Note: this scheme has to be repeated for every layer

ELECTRICAL RESISTANCE AND REACTANCE

Resistance 90°C		
Nominal section mm ²	Flexible copper conductor, not tinned	
	d.c. Ohm/km	a.c. Ohm/km
1.5	16.95	16.95
2.5	10.17	10.17
4	6.31	6.31
6	4.2	4.2
10	2.43	2.43
16	1.54	1.54
25	0.99	0.99
35	0.71	0.71
50	0.49	0.5
70	0.34	0.35
95	0.26	0.27
120	0.2	0.21
150	0.16	0.17
185	0.13	0.14
240	0.102	0.104
300	0.081	0.085

Reactance a 50 Hz		
Nominal section mm ²	Flexible copper conductor, not tinned	
	One-pole Ohm/km	Multicore-pole Ohm/km
1.5	0.144	0.100
2.5	0.132	0.094
4	0.122	0.087
6	0.114	0.083
10	0.105	0.078
16	0.098	0.075
25	0.093	0.074
35	0.089	0.072
50	0.085	0.071
70	0.084	0.070
95	0.083	0.069
120	0.080	0.069
150	0.080	0.069
185	0.080	0.069
240	0.078	0.069
300	0.076	0.068

VOLTAGE DROP

For the calculation of the voltage drop in alternating current(a.c.) apply the following formula:

where:

$$V = \frac{Ct \cdot I \cdot L}{1000}$$

Ct (V/A/Km) = tab. factor [$K \cdot (R \cdot \cos \varphi + X \cdot \sin \varphi)$]
 I (A) = carrying current
 L (m) = line length
 R (/Km) = electrical resistance at max. working temperature
 X (/Km) = phase reactance
 $\cos \varphi$ = power factor
 K = 2 for monophasic lines
 K = 1.73 for three-phase lines

Note: the voltage drop values are valid also for the direct current (d.c.).

Coefficients (Ct) for calculating the voltage drop at a.c. of flexible cables with G10 insulation at 90°C

Nominal section mm ²	One-pole single-phase			One-pole three-phase			Multi-pole single-phase			Multi-pole three-phase		
	cos φ 0.8	cos φ 0.9	cos φ 1	cos φ 0.8	cos φ 0.9	cos φ 1	cos φ 0.8	cos φ 0.9	cos φ 1	cos φ 0.8	cos φ 0.9	cos φ 1
1.5	27.29	30.64	33.90	23.61	26.50	29.32	27.24	30.60	33.90	23.56	26.47	29.32
2.5	16.34	18.42	20.34	14.21	15.93	17.59	16.38	18.39	20.34	14.17	15.91	17.59
4	10.24	11.46	12.62	8.86	9.92	10.92	10.20	11.43	12.62	8.82	9.89	10.92
6	6.86	7.66	8.40	5.93	6.63	7.27	6.82	7.63	8.40	5.90	6.60	7.27
10	4.01	4.47	4.86	3.47	3.86	4.20	3.98	4.44	4.86	3.44	3.84	4.20
16	2.58	2.86	3.08	2.23	2.47	2.66	2.55	2.84	3.08	2.21	2.45	2.66
25	1.70	1.86	1.98	1.47	1.61	1.71	1.67	1.85	1.98	1.45	1.60	1.71
35	1.23	1.34	1.40	1.06	1.16	1.21	1.21	1.32	1.40	1.04	1.14	1.21
50	0.89	0.96	0.98	0.77	0.83	0.85	0.87	0.94	0.98	0.75	0.82	0.85
70	0.64	0.69	0.68	0.56	0.59	0.59	0.63	0.67	0.68	0.54	0.58	0.59
95	0.52	0.54	0.52	0.45	0.47	0.45	0.50	0.53	0.52	0.43	0.46	0.45
120	0.42	0.43	0.40	0.36	0.37	0.35	0.40	0.42	0.40	0.35	0.36	0.35
150	0.35	0.36	0.32	0.30	0.31	0.28	0.34	0.35	0.32	0.29	0.30	0.28
185	0.30	0.30	0.26	0.26	0.26	0.22	0.29	0.29	0.26	0.25	0.25	0.22
240	0.26	0.26	0.21	0.22	0.22	0.18	0.25	0.25	0.21	0.22	0.21	0.18
300	0.23	0.22	0.17	0.20	0.19	0.15	0.22	0.21	0.17	0.19	0.18	0.15

MAXIMUM SHORT CIRCUIT CURRENT

This formula can be used to verify the section of the selected conductor:

$$S = \frac{I_{cc} \cdot t}{C}$$

This formula can be used to calculate the maximum short circuit current:

$$I_{cc \max} = \frac{S \cdot C}{t}$$

where:

S = min. copper area conductor (mm²)
 I_{cc} = short circuit current (A)
 t = duration of short circuit (sec.)
 C = 143 (for G10 cables)

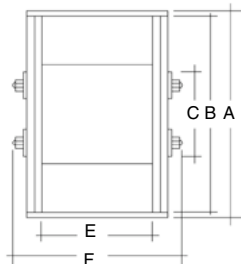
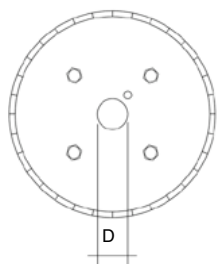
Values of current (C) as related to short circuit initial and final temperatures for copper conductors. Norm CEI 11-17

Starting temperature °C	Final temperature of short circuit °C					
	140	160	180	200	220	250
90	86	100	112	122	131	143
85	90	104	115	125	134	146
80	94	108	119	129	137	149
75	99	111	122	132	140	151
70	103	115	125	135	143	154
65	107	119	129	138	146	157
60	111	122	132	141	149	160
50	118	129	139	147	155	165
40	126	136	145	153	161	170
30	133	143	152	159	166	176

Note: the above formulas are valid for periods of max. 5 seconds. Please refer to Norm CEI 64-8 for exact calculations

PACKAGING

DRUMS DIMENSION



- A - Flange diameter including circumference batten
- B - Flange diameter without circumference batten
- C - Inner barrel diameter
- D - Axis hole
- E - Inner width
- F - External width

Drum type	A mm	B mm	C mm	D mm	E mm	F mm	Weight Kg	Volume m ³
BL 60	690	630	315	80	315	435	30	0.19
BL 70	770	710	355	80	400	515	35	0.28
BL 80	960	800	400	80	450	575	40	0.39
BL 90	960	900	450	80	450	575	50	0.45
BL 100	1.060	1.000	500	80	560	685	60	0.77
BL 120	1.310	1.250	630	80	630	760	100	1.27
BL 140	1.460	1.400	710	80	750	920	140	1.76
BL 160	1.660	1.600	900	80	900	1.070	250	2.80
BL 180	1.860	1.800	1.120	80	1.120	1.320	300	4.20
BL 200	2.060	2.000	1.250	125	1.120	1.320	400	5.20
BL 220	2.300	2.240	1.400	125	1.120	1.320	450	6.30
BL 250	2.510	2.450	1.500	125	1.120	1.320	500	8.20

DRUM CAPACITIES METERS

Cable diameter mm	Drum type								
	BL 60	BL 80	BL 100	BL 120	BL 160	BL 180	BL 200	BL 220	BL 250
6	1400	3590	—	—	—	—	—	—	—
8	800	2000	—	—	—	—	—	—	—
10	500	1290	—	—	—	—	—	—	—
12	350	850	1800	—	—	—	—	—	—
14	250	650	1350	—	—	—	—	—	—
16	208	500	1000	1800	—	—	—	—	—
18	164	400	800	1350	—	—	—	—	—
20	133	320	650	1100	—	—	—	—	—
22	110	267	550	900	2000	—	—	—	—
24	97	224	450	750	1600	—	—	—	—
26	—	—	379	650	1400	—	—	—	—
28	—	—	327	550	1200	—	—	—	—
30	—	—	285	475	1000	—	1850	—	—
32	—	—	250	450	900	1420	1650	—	—
34	—	—	222	400	800	1250	1450	—	—
36	—	—	198	350	700	1200	1290	—	—
38	—	—	—	300	650	990	1160	1575	—
40	—	—	—	260	575	890	1050	1420	—
42	—	—	—	240	500	800	950	1290	—
44	—	—	—	220	475	725	865	1175	1535
46	—	—	—	200	435	660	790	1075	1405
48	—	—	—	—	400	605	725	985	1290
50	—	—	—	—	370	555	670	910	1190
52	—	—	—	—	340	510	620	840	1100
54	—	—	—	—	320	470	575	780	1020
56	—	—	—	—	295	440	535	725	950
58	—	—	—	—	275	410	500	675	885
60	—	—	—	—	255	380	465	630	825
62	—	—	—	—	240	355	435	590	775
64	—	—	—	—	225	330	410	555	725
66	—	—	—	—	212	310	385	520	685
68	—	—	—	—	200	295	360	490	640

CENELEC HD 361/CEI 20-27

Norm reference

- H Harmonised cable
- A National approved cable
- N National cable

Rated voltage

- 01 100/100V < 300/300V
- 03 300/300V
- 05 300/500V
- 07 450/750V
- 1 600/1000V

Insulation and sheath

- B HEPR rubber
- B2 HEPR rubber
- E Polyethylene
- N Polychloroprene or equivalent
- N2 Special polychloroprene compound
- N5 Nitrilic rubber
- Q Polyurethan
- Q4 Polyamides
- S Silicon rubber
- T Textile braid
- V PVC standard
- V2 PVC compound t. 90°C
- V3 Low temperature PVC compound
- V5 Oil resisting PVC compound
- X XLPE

Metal sheath

- A2 Aluminium sheath, extruded or sealed, smooth
- A3 Aluminium sheath, extruded or sealed, corrugated
- A4 Aluminium sheath on single core
- A5 Aluminium tape sheath
- C Copper concentric conductor
- C2 Copper sheath
- C3 Corrugated copper sheath
- C4 Copper braid screen
- C7 Copper tape, wire or flat wire screen

Armour

- Z2 Steel wires armour
- Z3 Steel flat wires armour
- Z4 Steel tape armour
- Z5 Steel braid armour
- Y2 Aluminium wires armour
- Y6 Steel and copper wires armour or steel tape and copper wires armour

Conductor flexibility

- F Flexible conductor class 5 (Cenelec HD 22 sect. 6)
- H Very flexible conductor class 6
- K Flexible conductor class 5
- R Round stranded conductor class 2
- U Solid conductor class 1
- Z Special shaped and/or material conductor

CEI-UNEL 35011

Conductor flexibility

- A Aluminium conductor
- F Flexible conductor class 5
- FF Very flexible conductor class 6
- R Round stranded conductor class 2
- S Shaped stranded conductor class 2
- U Solid conductor class 1

Insulation

- E Polyethylene
- G7 HEPR rubber
- G10 Cross linked elastomeric compound halogen free and low smoke t. 90°C
- G20 Cross linked elastomeric compound halogen free and low smoke t. 90°C
- M9 Thermoplastica compound halogen free and low smoke t. 70°C
- R PVC compound t. 70°C T1 T2 standard
- R2 R2 high quality
- R3 PVC compound t. 105°
- R4 Polyamides compound
- R7 PVC compound t. 90°C TI3
- T One or more mica glass tapes or closed glass braid

Screens and concentric conductors

- C Concentric copper conductor
- H1 Tape, flat wire or copper wire screen
- H2 Copper braid screen
- H3 Double copper braid screen
- H4 Longitudinally and corrugated steel tape screen
- H5 Longitudinally aluminium coated tape

Non-metal sheathes

- E Polyethylene
- E4 Cross linked polyethylene sheath E4M
- G Rubber sheath
- K Polychloroprene sheath
- R4 Polyamide compound sheath
- M1 Thermoplastica compound halogen free and low smoke t. 70°C
- M2 Elastomeric compound halogen free and low smoke
- M3 Elastomeric compound halogen free and low smoke
- M4 Elastomeric compound halogen free and low smoke

Armour

- A Aluminium smooth sheath or metallic braid armour
- A1 Aluminium sheath
- F Steel wires armour
- H4 Corrugated steel tape armour
- N Steel tape armour
- Z Steel flat wire armour

Cable shape

- O Round
- D Flat
- X Helically wound

Tratos Cavi S.p.A. reserves the right to modify at any time technical dimensional and weight characteristics shown in this catalogue to improve the features of its products. However these will still be in accordance to the mentioned standards.

There is no responsibility of the manufacturer for damages to persons and property in case of improper use and/or neglecting the recommendations for using cables and norms contained in this catalogue.

TRATOS

