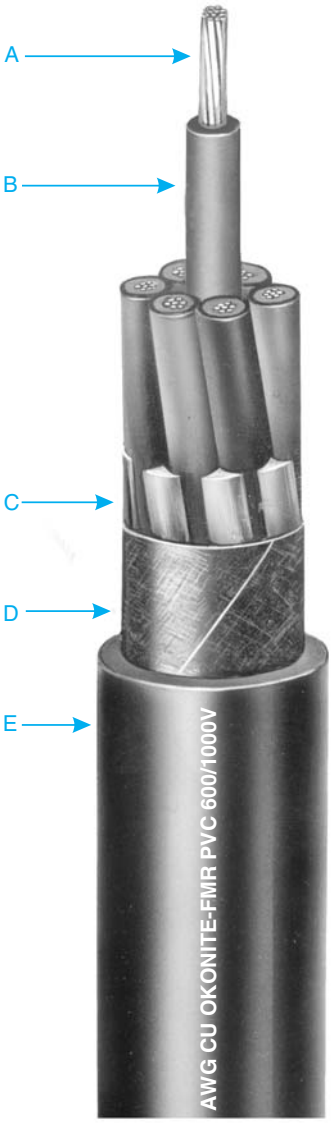
Okonite-FMR® Okoseal®

UL Type TC/TC-ER (XHH/XHHW-2) and cUL CIC-TC-ER
600/1000V Power & Control Tray Cable
Multiple Copper Conductors With or Without Grounding Conductor/90°C Wet or Dry
600/1000V Marine Shipboard Cable
For Cable Tray Use - Sunlight Resistant - For Direct Burial



A Stranded Copper Conductors
B Okonite-FMR Insulation
C Fillers, as necessary
D Binder Tape
E Okoseal Jacket — Black

Insulation

Okonite-FMR is Okonite's trade name for its heat, moisture, flame and chemical resistant, mechanically rugged ethylene-propylene insulating compound.

The properties of Okonite-FMR insulation substantially enhance the well known features of ethylene-propylene rubber insulations.

Overall Jacket

The Okoseal (PVC) jacket is mechanically rugged and has excellent resistance to most chemicals.

Applications

Okonite-FMR Okoseal Type TC-ER tray cable is permitted for use on power, lighting, control, and signal circuits; indoors or outdoors; in cable trays, raceways, direct burial in the ground, or where supported in outdoor locations by a messenger wire; for Class 1 circuits as permitted in Article 725 of the NEC; and in cable trays in Class I, Division 2 hazardous locations in industrial establishments where the conditions of maintenance and supervision assure that only qualified persons will service the installation. Cables marked TC-ER may also be used between a cable tray and the utilization equipment or device, when installed in accordance with NEC 336.10(7).

As Type Oko-Marine cable, it is suitable for use in marine shipboard and off-shore platform applications in accordance with API and ABS requirements.

Specifications

Conductors: Uncoated soft copper per ASTM B-3. Sizes smaller than #8 are compress stranded per ASTM B-8. Sizes #8 and larger are compact stranded per ASTM B-496.

Insulation: Okonite-FMR meets or exceeds requirements of UL 1581, ICEA S-73-532 (NEMA WC57) and ICEA S-95-658 NEMA WC70 Type II insulation.

Color Coding: Base colors and tracers as shown on reverse of Data Sheet and for sizes #8 AWG and larger black conductors with surface printing of numbers per ICEA S-73-532 NEMA/WC57 Method 4.

Grounding Conductor: Where indicated, bare stranded copper per ASTM B-8, or compact round per ASTM B-496, Class B & NEC Table 250.122.

Assembly: Conductors cabled in accordance with UL 1277 and 1309 using fillers, as necessary, with a cable tape overall.

Overall Jacket: Complies with UL 1277 and 1309. The Okoseal compound meets or exceeds the requirements of UL 1581.

UL Listed as Type TC or TC-ER cable with a sunlight resistant low temperature jacket and for direct burial and Type Oko-Marine cable.

Sizes 4 AWG and larger without a grounding conductor are Type TC only (not ER).

Product Features

Insulated conductors are UL rated XHH/XHHW-2, cUL rated RW75/RW90, VW-1, PR I, and -40°C.

90°C continuous rating in wet or dry locations

130°C emergency overload rating

250°C short circuit rating.

Okonite-FMR Okoseal Type TC-ER and Oko-Marine cables are quality control inspected to meet or exceed applicable industry standards.

Resistant to moisture and most chemical atmospheres.

Thermal stability at elevated temperatures.

Flexible, easy to install and terminate.

High dielectric strength.

Installation Temperature -40°C.

Applicable Standards

- UL listed for cable tray use, direct burial, in ducts, and sunlight resistant.
- Vertical Tray Flame Tests; IEEE 383-1974, FT4/IEEE 1202, UL 1277, Sizes 250 kcmil and larger meet ICEA T-29-520 (210,000 BTU/hr).
- OSHA Acceptable
- UL 1309-Oko-Marine
- UL certified to IEEE 1580 - Marine Shipboard Cable rated 600/1000V.
- ABS Type approved; API-RP-14F, IEEE 1202, 46 CFR 111.60.
- CSA C22.2 No. 239 Type CIC for sizes 4/0 AWG and smaller.
- CSA C22.2 No. 230 Type TC-ER for sizes 14 through 4/0 AWG.
- 1000V CSA Type CIC available for sizes 4/0 AWG and smaller.

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600/1000V Marine Shipboard Cable

For Cable Tray Use - Sunlight Resistant - for Direct Burial

Catalog Number	Conductor Size AWG/kcmil	Number of Conductors	Insulation Thickness (mils)	Grounding Conductor AWG	Jacket Thickness (mils)	Jacket Thickness (mm)	Approx. O.D. (in.)	Approx. O.D. (mm)	Cross-Sectional Area (sq. In.) †	Approx. Net Weight lbs./1000'	Approx. Ship Weight lbs./1000'	90°C Wet or Dry NEC Ampacity (1)	75°C Wet NEC Ampacity (1)
UL TYPE: TC-ER													
▲202-10-3203	14(7X)	3	30	—	45	1.14	0.40	10.2	0.13	104	127	15	15
▲202-10-3204		4		—	45	1.14	0.44	11.2	0.16	126	149	15	15
▲202-10-3205		5		—	45	1.14	0.48	12.2	0.18	151	174	15	15
▲202-10-3207		7		—	45	1.14	0.52	13.2	0.22	195	218	15	14
202-10-3209		9		—	60	1.52	0.63	16.0	0.32	260	292	15	14
▲202-10-3212		12		—	60	1.52	0.71	18.0	0.40	332	364	12	10
▲202-10-3219		19		—	60	1.52	0.82	20.8	0.54	480	519	12	10
▲202-10-3237		37		—	80	2.03	1.14	29.0	1.03	925	1005	10	8
▲202-10-3403	12(7X)	3	30	—	45	1.14	0.44	11.2	0.16	134	157	20	20
▲202-10-3443		3		12*	45	1.14	0.48	12.2	0.18	162	185	20	20
▲202-10-3404		4		—	45	1.14	0.48	12.2	0.19	167	190	20	20
▲202-10-3405		5		—	45	1.14	0.52	13.2	0.22	202	225	20	20
▲202-10-3407		7		—	60	1.52	0.60	15.2	0.29	281	305	20	17
▲202-10-3409		9		—	60	1.52	0.70	17.8	0.39	363	395	20	17
▲202-10-3412		12		—	60	1.52	0.78	19.8	0.49	446	485	15	12
▲202-10-3419		19		—	80	2.03	0.95	24.1	0.73	697	752	15	12
202-10-3437		37		—	80	2.03	1.26	32.0	1.27	1266	1266	12	10
▲202-10-3503	10(7X)	3	30	—	45	1.14	0.49	12.4	0.20	183	206	30	30
▲202-10-3543		3		10*	45	1.14	0.53	13.5	0.23	223	247	30	30
▲202-10-3504		4		—	60	1.52	0.57	14.5	0.26	243	267	30	28
202-10-4505		5		—	60	1.52	0.62	15.7	0.31	294	318	30	28
202-10-3505®		5		—	60	1.52	0.62	15.7	0.31	294	318	30	28
202-10-3507		7		—	60	1.52	0.67	17.0	0.37	384	416	28	24
202-10-3509		9		—	60	1.52	0.78	19.8	0.49	494	533	28	24
202-10-3512		12		—	80	2.03	0.92	23.4	0.68	669	724	20	17

Okonite's web site, www.okonite.com contains the most up to date information.

▲ **Authorized stock item** —Available from our Service Centers.

Equipment Grounding Conductor: Any conductor in these cables may be permanently re-identified during installation as the equipment grounding conductor in accordance with Section 250.119(B) of the NEC.

† Cross-sectional area for calculation of cable tray fill in accordance with Section 392.22 of the NEC.

® **Method 4 Color Code**

(1) Ampacities

Ampacities are based on Table 310.16 of the National Electrical Code for conductors rated 90°C, in a multi-conductor cable, at an ambient temperature of 30°C (86°F). The 75°C column is provided for additional information.

The ampacities shown apply to open runs of cable, installation in any approved raceway, direct burial in the earth, or as aerial cable on a messenger. Derating for more than three current carrying conductors within the cable is in accordance with NEC Section 310.15(C)(1).

The ampacities shown also apply to cables installed in cable tray in accordance with NEC Section 392.80.
Current limited to 15, 20 and 30 amps per Section 240.4(D) of the NEC for #14, #12 and #10 AWG, respectively.

Catalog Number	Conductor Size AWG/kcmil	UL TC TYPE	Number of Conductors	Insulation Thickness (mils)	Grounding Conductor AWG**	Jacket Thickness (mils)	Jacket Thickness (mm)	Approx. O.D. (in.)	Approx. O.D. (mm)	Cross-Sectional Area (sq. in.) †	Approx. Net Weight lbs./1000'	Approx. Ship Weight lbs./1000'	90°C Wet or Dry NEC Ampacity (1)	75°C Wet NEC Ampacity (1)
112-10-3842	8(7X)	TC-ER	3	45	—	60	1.52	0.64	16.3	0.32	273	305	55	50
▲ 112-10-3844			3		10*	60	1.52	0.70	17.8	0.38	349	388	55	50
112-10-3845			4		—	60	1.52	0.70	17.8	0.38	352	391	45	40
112-10-3847			4		10*	60	1.52	0.73	18.5	0.42	412	451	45	40
112-10-3852	6(7X)	TC-ER	3	45	—	60	1.52	0.72	18.3	0.41	382	421	75	65
▲ 112-10-3854			3		8*	60	1.52	0.76	19.3	0.45	437	469	75	65
112-10-3855			4		—	60	1.52	0.79	20.1	0.49	493	532	60	52
112-10-3857			4		8*	60	1.52	0.83	21.1	0.54	582	637	60	52
112-10-3862	4(7X)	TC	3	45	—	80	2.03	0.81	20.6	0.52	549	588	95	85
▲ 112-10-3864		TC-ER	3		8*	80	2.03	0.84	21.3	0.55	696	751	95	85
112-10-3865		TC	4		—	80	2.03	0.94	23.9	0.69	750	805	76	68
112-10-3867		TC-ER	4		8*	80	2.03	1.00	25.4	0.79	891	955	76	68
112-10-3872	2(7X)	TC	3	45	—	80	2.03	0.99	25.1	0.77	888	952	130	115
▲ 112-10-3874		TC-ER	3		6	80	2.03	0.99	25.1	0.77	941	1005	130	115
112-10-3875		TC	4		—	80	2.03	1.09	27.7	0.93	1133	1200	104	92
112-10-3877		TC-ER	4		6	80	2.03	1.12	28.4	0.99	1242	1322	104	92
112-10-3882	1(19X)	TC	3	55	—	80	2.03	1.10	27.9	0.95	1103	1170	145	130
112-10-3884		TC-ER	3		6	80	2.03	1.10	27.9	0.95	1180	1247	145	130
112-10-3885		TC	4		—	80	2.03	1.21	30.7	1.15	1434	1534	116	104
112-10-3887		TC-ER	4		6	80	2.03	1.21	30.7	1.15	1505	1605	116	104
112-10-3892	1/0(19X)	TC	3	55	—	80	2.03	1.18	30.0	1.09	1330	1410	170	150
▲ 112-10-3894		TC-ER	3		6	80	2.03	1.18	30.0	1.09	1410	1490	170	150
112-10-3895		TC	4		—	80	2.03	1.30	33.0	1.33	1741	1841	136	120
112-10-3897		TC-ER	4		6	80	2.03	1.23	31.2	1.19	1812	1912	136	120
112-10-3902	2/0(19X)	TC	3	55	—	80	2.03	1.27	32.3	1.27	1632	1732	195	175
▲ 112-10-3904		TC-ER	3		6	80	2.03	1.27	32.3	1.27	1711	1811	195	175
112-10-3905		TC	4		—	80	2.03	1.40	35.6	1.54	2114	2230	156	140
112-10-3907		TC-ER	4		6	80	2.03	1.40	35.6	1.54	2186	2302	156	140
112-10-3922	4/0(19X)	TC	3	55	—	80	2.03	1.48	39.4	—	2462	2605	260	230
▲ 112-10-3924		TC-ER	3		4	80	2.03	1.48	39.4	—	2576	2719	260	230
112-10-3925		TC	4		—	80	2.03	1.64	50.0	—	3206	3383	208	184
112-10-3927		TC-ER	4		4	80	2.03	1.64	50.0	—	3320	3497	208	184
112-10-3928	250(37X)	TC	3	65	—	80	2.03	1.62	44.7	—	2904	3047	290	255
112-10-3929		TC-ER	3		4	80	2.03	1.62	44.7	—	3029	3206	290	255
112-10-3930		TC	4		—	110	2.79	1.86	49.3	—	3893	4159	232	204
112-10-3931		TC-ER	4		4	110	2.79	1.86	49.3	—	4000	4265	232	204
112-10-3932	350(37X)	TC	3	65	—	110	2.79	1.89	50.3	—	3995	4261	350	310
▲ 112-10-3933		TC-ER	3		3	110	2.79	1.89	50.3	—	4164	4430	350	310
112-10-3934		TC	4		—	110	2.79	2.08	55.6	—	5243	5590	280	248
112-10-3935		TC-ER	4		3	110	2.79	2.08	55.6	—	5394	5741	280	248
112-10-3936	500(37X)	TC	3	65	—	110	2.79	2.14	57.4	—	5549	5939	430	380
▲ 112-10-3937		TC-ER	3		2	110	2.79	2.14	57.4	—	5743	6133	430	380
112-10-3938		TC	4		—	110	2.79	2.37	63.5	—	7237	7796	344	304
112-10-3939		TC-ER	4		2	110	2.79	2.37	63.5	—	7425	7984	344	304
112-10-3940	750(61X)	TC	3	80	—	110	2.79	2.58	68.6	—	8277	8904	535	475
112-10-3941		TC-ER	3		1	110	2.79	2.58	68.6	—	8515	9142	535	475
112-10-3942		TC	4		—	140	3.56	2.92	76.5	—	10942	11704	428	380
112-10-3943		TC-ER	4		1	140	3.56	2.92	76.5	—	11157	11919	428	380
112-10-3944	1000(61X)	TC	3	80	—	140	3.56	2.96	77.2	—	10953	11715	615	545
112-10-3945		TC-ER	3		1/0	140	3.56	2.96	77.2	—	11237	12000	615	545
112-10-3946		TC	4		—	140	3.56	3.28	85.6	—	14337	15270	492	436
112-10-3947		TC-ER	4		1/0	140	3.56	3.28	85.6	—	14632	15565	492	436

Note: Sizes 4 AWG & larger without a grounding conductor are type TC only (not ER rated).
*Ground size marked with asterisk are green insulated. **Grounds may be split.
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Conductor Color Coding Sequence
Sizes 14, 12 & 10 AWG

Conductor Number	Base Color	Tracer Color
1	Black	
2	Red	
3	Blue	
4	Orange	
5	Yellow	
6	Brown	
7	Red	Black
8	Blue	Black
9	Orange	Black
10	Yellow	Black
11	Brown	Black
12	Black	Red
13	Blue	Red
14	Orange	Red
15	Yellow	Red
16	Brown	Red
17	Black	Blue
18	Red	Blue
19	Orange	Blue
20	Yellow	Blue
21	Brown	Blue
22	Black	Orange
23	Red	Orange
24	Blue	Orange
25	Yellow	Orange
26	Brown	Orange
27	Black	Yellow
28	Red	Yellow
29	Blue	Yellow
30	Orange	Yellow
31	Brown	Yellow
32	Black	Brown
33	Red	Brown
34	Blue	Brown
35	Orange	Brown
36	Yellow	Brown
37	Black	

Color Coding per ICEA Method 1, E-2 (except 202-10-3505 - Method 4)
Sizes 8 AWG and larger:
Surface Printing of Numbers per ICEA Method 4

Special Order: Any or all of the following conductors may be added when specifically requested by the customer to meet their specific application requirements. These conductor codings comply with UL and NEC requirements.

Purpose	Base Color	Tracer Color
Equipment Grounding	Uninsulated Green	
	Green	1 or more continuous yellow stripes
Grounded	White	
	White	Black continuous stripe
	White	Red continuous stripe
	White	Blue continuous stripe
	White	Orange continuous stripe
	White	Brown continuous stripe
	White	Numeric Printing

THE OKONITE COMPANY
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