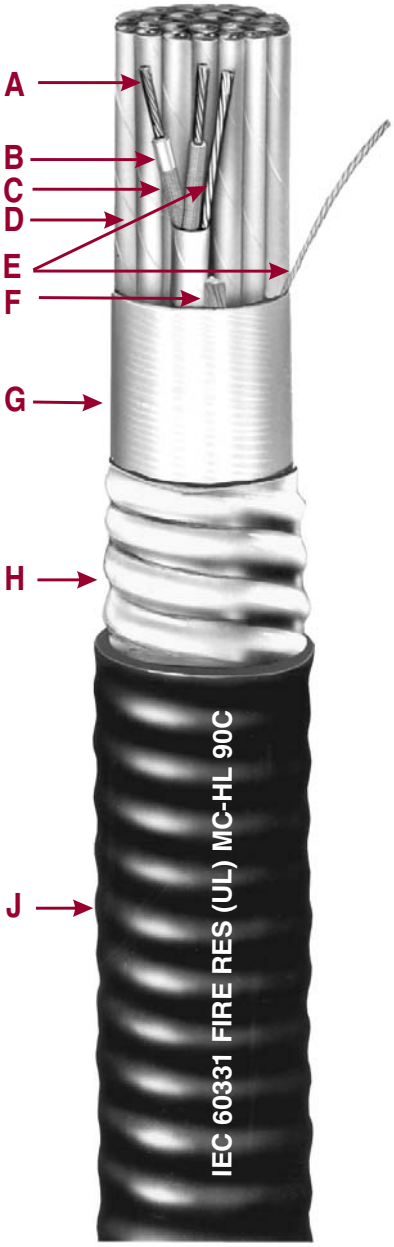
Okotherm® CIC SP-OS Fire Resistant

600V Instrumentation Cable Type MC-HL C-L-X®, Aluminum Sheath
Shielded Multiple Pair or Triad Nickel or Tin Coated Copper Conductors
90°C Wet or Dry Rating - 600/1000V Marine Shipboard Cable
For Cable Tray Use, Sunlight Resistant



A Nickel or Tin Coated Copper Conductors
B Okotherm (Silicone) Thermoset Insulation
C Fiberglass Braid - Coded per ICEA
D Twisted, Shielded Pairs/Triads
E Nickel or Tin Coated Copper Drain Wire
F Glass Fillers, as needed
G Aluminum Mylar Shield Tape
H Impervious, Continuous, Corrugated, Aluminum C-L-X Sheath
J Black Okoseal Jacket

Cable Description

Nickel or tin coated copper conductors, Okotherm CIC fire resistant thermoset silicone insulation, with FR tape if required, color or number coded fiber glass braid, cabled conductors, tin or nickel coated drain wire, aluminum-mylar shield tape, aluminum C-L-X® sheath, Okoseal® (PVC) jacket.

Conductors: Nickel or tin coated copper

Insulation: Okotherm Thermoset Silicone, with FR tape if required

Braid: Fiber Glass Braid

Color Code: ICEA S-73-532, Method 7

Group Shield: Aluminum-mylar tape overlapped to provide 100% coverage, and a 7-strand tin or nickel coated copper drain wire, two sizes smaller than the conductor. All group shields are completely isolated from each other.

Assembly: Pairs or triads assembled with left hand lay. Fiberglass fillers included where required to provide a round cable.

Cable Shield: Aluminum-mylar tape overlapped to provide 100% coverage and a 7-strand tin or nickel coated copper drain wire, same size as conductors.

Armor-C-L-X: Continuously Welded and Corrugated Aluminum

Outer Jacket: Black PVC

Applicable Industry Standards:

UL 1569, 1309 & 2225 ICEA S-73-532 (NEMA WC 57), ICEA S-95-658 (NEMA WC 70) ASTM B33 & B355

Flame Tests:

IEC 60331, ICEA T-29-520, IEEE 1202

Applications

Okotherm CIC 600 volt instrumentation cables are used in systems where, in the event of a fire, circuit integrity is required in order to maintain a process or to safely shut down the process. Fire resistance is determined by compliance to the IEC 60331 circuit integrity fire test. Okotherm CIC cables maintain circuit integrity based on qualification to IEC standard 60331, for all temperatures and times up to and including 2000°F for three hours. When exposed to a fire, the Okotherm CIC insulation becomes an electrically insulating ceramic-like ash that is capable of maintaining the operating voltage.

Okotherm CIC C-L-X Type MC-HL cables with the impervious, continuous aluminum corrugated sheath are recommended as an alternative to a wire conduit system. These cables may be installed indoors or outdoors, in wet or dry locations, as open runs of cable secured to supports not more than six feet apart, in cable tray, as an aerial cable on a messenger, in any approved raceway, direct burial, or encased in concrete. They are also approved for use in Class I & II, Division 1 and 2, Class III, Division 1 and 2 and Zones 1 & 2 hazardous locations per NEC Articles 501, 502, 503, and 505.

The isolated individual shields over each pair or triad, when properly grounded, prevent crosstalk or capacitive coupling between adjacent pairs or triads which occurs with ac signals, particularly the pulse type.

The overall shield eliminates most of the static interference from the electric field radiated by power cables and other electrical equipment.

Okotherm CIC 600 volt instrumentation cables should be considered on circuits designed for fire detection and suppression, alarms, communication, circuits requiring redundancy and personnel egress.

Product Features

- UL Listed as Type MC-HL cable E38916 and Marine Shipboard Cable E137931.
- UL Listed for cable tray use, direct burial (2/C 14 AWG and larger) and sunlight resistant.
- Passes the IEEE 383-1974 and IEEE 1202-1991 vertical tray flame tests.
- Passes the 210,000 BTU ICEA T-29-520 Vertical Tray Flame Test.
- Complete pre-packaged, factory-tested wiring system.
- Individual pairs or triads are numbered and color coded for simplified hook-up.
- C-L-X cables are quality control inspected to meet or exceed applicable UL standards.
- 90°C continuous operating temperature in all types of installations.
- 130°C emergency rating.
- 250°C short circuit rating.
- Good EMI shielding characteristics.
- Individual units are completely isolated for maximum noise rejection.
- Impervious, continuous metallic sheath excludes moisture, gases and liquids.
- Lower installed system cost than conduit or EMT systems.
- Provides excellent grounding safety.
- Excellent compression and impact resistance.
- Continuous long lengths.
- Minimum installation temperature of -40°C or °F.
- American Bureau of Shipping (ABS) listed as CWCMC Type MC-HL.
- Optional LSZH jacket available.
- Fire Resistant - Qualified to meet IEC 60331, -11 & -21, including temperature and time up to 2000°F for 3 hours, respectively.
- Fire Resistant - Qualified to meet the Hydrocarbon Pool Circuit Integrity Fire Test, utilizing the UL 1709 time-temperature curve, with minimum requirements of 65,000 BTU/h-ft^2 heat flux, 2000°F flame temperature, 30 minute test duration, and 15A load.

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Okotherm Insulation: 45 mils

Catalog Number	Conductor Size (AWG)	Number of Pairs	Number of Triads	C-L-X O.D. - inches	C-L-X O.D. - mm	Jacket Thickness-mils	Nominal Cable O.D. - inches	Nominal Cable O.D. - mm	Cross-Sectional Area † (sq in)	Approx Net Weight (lbs/1000')	Approx Ship Weight (lbs/1000')
#16 Tin Coated Copper Conductors, IEC Rating: 750°C for 90 minutes											
567-18-3402	16(7X)	2		0.93	23.6	50	1.04	26.4	0.85	317	386
567-18-3404		4		0.93	23.6	50	1.04	26.4	0.85	421	484
567-18-3408		8		1.19	30.3	50	1.30	33.1	1.33	691	772
567-18-3412		12		1.42	36.1	50	1.53	38.9	1.84	950	1073
567-18-3416		16		1.69	42.8	60	1.82	46.2	2.60	1257	1464
567-18-3424		24		2.01	51.1	60	2.14	54.5	3.61	1866	2107
567-18-3436		36		2.80	71.0	75	2.96	75.1	6.87	2901	3063
567-18-3804			4	1.11	28.1	50	1.22	30.9	1.16	541	638
567-18-3808			8	1.34	34.0	50	1.45	36.8	1.64	902	1046
567-18-3812			12	1.65	41.8	60	1.78	45.1	2.48	1309	1531
567-18-3816			16	2.10	53.4	60	2.23	56.7	3.91	1794	2027
567-18-3824			24	2.58	65.4	75	2.74	69.5	5.88	2860	2927
#14 Tin Coated Copper Conductors, IEC Rating: 750°C for 90 minutes											
567-18-3502	14(7X)	2		0.97	24.6	50	1.08	27.4	0.92	363	430
567-18-3504		4		1.06	27.0	50	1.17	29.8	1.08	521	593
567-18-3508		8		1.47	37.2	50	1.58	40.0	1.95	885	1013
567-18-3512		12		1.87	47.4	60	2.00	50.8	3.14	1319	1484
567-18-3516		16		2.06	52.3	60	2.19	55.6	3.76	1725	2207
567-18-3524		24		2.40	61.0	75	2.56	65.1	5.16	2470	2996
567-18-3536		36		2.80	71.0	75	2.96	75.1	6.87	3505	4124
567-17-3004			4	1.24	31.4	50	1.35	34.2	1.42	676	806
567-17-3008			8	1.60	40.7	60	1.73	44.0	2.36	1187	1440
567-17-3012			12	2.01	51.1	60	2.14	54.5	3.61	1790	2053
567-17-3016			16	2.32	58.9	60	2.48	63.0	4.83	2362	2709
567-17-3024			24	2.75	69.9	75	2.92	74.0	6.67	3371	3748

ELECTRICAL SPECIFICATIONS
Per UL Standard 44 and 2250

Conductor Resistance, nominal(1 Pr) ..ohms/1000 ft. @25°C
. . . . . T.Cu.....Ni. Cu
16 AWG . . . . . 4.44.....5.89
14 AWG . . . . . 2.77.....3.69
Insulation Test Voltage (spark test).....7500 Volts ac
Dielectric Test Voltage .....3000 V ac for 5 min.
Insulation Resistance Constant @60°F minimum
(natural material typical value). . . . . 4000 Megohms-1000 ft.
Loop Resistance, nominal (1 Pr).....ohms-1000 ft @25°C
. . . . . T.Cu.....Ni. Cu
16 AWG . . . . . 8.9.....11.8
14 AWG . . . . . 5.5.....7.4

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

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90°C Wet or Dry Rating - 600/100V Marine Shipboard Cable
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Okotherm Insulation: 45 mils

Catalog Number	Conductor Size (AWG)	Number of Pairs	Number of Triads	C-L-X O.D. - inches	C-L-X O.D. - mm	Jacket Thickness-mils	Nominal Cable O.D. - Inches	Nominal Cable O.D. - mm	Cross-Sectional Area † (sq in)	Approx Net Weight (lbs/1000')	Approx Ship Weight (lbs/1000')
#16 Nickel Coated Copper Conductors, IEC Rating: 2000°F for 3 hours											
567-19-3402	16(7X)	2		1.02	25.9	50	1.13	28.7	1.00	367	462
567-19-3404		4		1.02	25.9	50	1.13	28.7	1.00	515	608
567-19-3408		8		1.37	34.9	50	1.48	37.7	1.73	905	1031
567-19-3412		12		1.64	41.8	60	1.78	45.1	2.48	1300	1471
567-19-3416		16		1.86	47.2	60	2.00	50.8	3.14	1706	1977
567-19-3424		24		2.28	57.8	75	2.44	61.9	4.67	2558	2919
567-19-3436		36		2.89	73.4	75	3.05	77.5	7.32	3739	4298
567-19-3804			4	1.24	31.4	50	1.35	34.2	1.42	711	858
567-19-3808			8	1.51	38.5	60	1.65	41.8	2.13	1240	1430
567-19-3812			12	1.87	47.4	60	2.00	50.8	3.14	1814	2089
567-19-3816			16	2.32	58.9	60	2.48	63.0	4.83	2516	2689
567-19-3824			24	2.85	72.4	75	3.01	76.5	7.13	3638	3818
#14 Nickel Coated Copper Conductors, IEC Rating: 2000°F for 3 hours											
567-19-3502	14(7X)	2		1.06	26.9	50	1.17	29.7	1.08	397	472
567-19-3504		4		1.11	28.1	50	1.22	30.9	1.16	557	670
567-19-3508		8		1.47	37.2	60	1.58	40.0	1.95	939	1190
567-19-3512		12		1.96	49.7	60	2.09	53.0	3.42	1445	1731
567-19-3516		16		2.23	56.7	60	2.36	60.0	4.38	1882	2219
567-19-3524		24		2.62	66.6	75	2.79	70.7	6.09	2702	3085
567-19-3536		36		3.07	78.0	85	3.25	82.6	8.31	3919	4627
567-19-3904			4	1.34	34.0	50	1.45	36.8	1.64	730	875
567-19-3908			8	1.74	44.2	60	1.87	47.5	2.75	1297	1572
567-19-3912			12	2.19	55.6	60	2.32	59.0	4.23	1959	2447
567-19-3916			16	2.58	65.4	75	2.74	69.5	5.88	2604	3119
567-19-2924			24	3.07	78.0	75	3.25	82.6	8.31	3797	4373

ELECTRICAL SPECIFICATIONS
Per UL Standard 44 and 2250

Conductor Resistance, nominal(1 Pr) ..ohms/1000 ft. @25°C

	T.Cu	Ni. Cu
16 AWG	4.44	5.89
14 AWG	2.77	3.69

Insulation Test Voltage (spark test).....7500 Volts ac
Dielectric Test Voltage .....3000 V ac for 5 min.
Insulation Resistance Constant @60°F minimum
(natural material typical value). . . . . 4000 Megohms-1000 ft.
Loop Resistance, nominal (1 Pr).....ohms-1000 ft @25°C

	T.Cu	Ni. Cu
16 AWG	8.9	11.8
14 AWG	5.5	7.4

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

THE OKONITE COMPANY
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