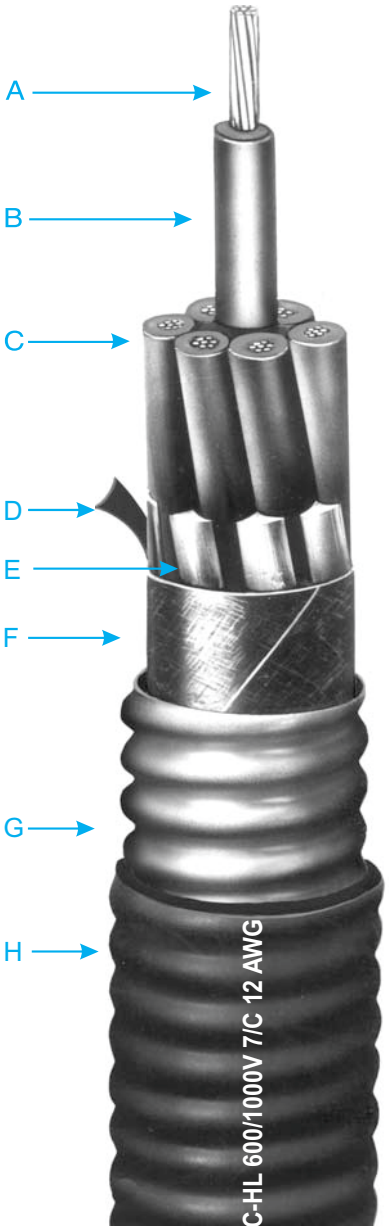
C-L-X® Type MC-HL (XHHW-2)

UL 600/1000V and CSA 600V Control Cable - Aluminum Sheath
Multiple Copper Conductors/90ºC Wet or Dry Rating
600/1000V Marine Shipboard Cable
For Cable Tray Use - Sunlight Resistant - For Direct Burial



A Bare, Stranded Copper Conductors
B X-Olene Insulation-Color Coded for Identification
C Stranded copper, green insulated grounding conductor
D Marker Tape
E Non-Hygroscopic Fillers, as necessary
F Binder Tape
G Impervious, Continuous, Corrugated, Aluminum C-L-X Sheath
H Black Okoseal Jacket

Insulation
X-Olene® is Okonite's trade name for its chemically cross-linked polyethylene, with high dielectric strength.

Color Coding
Conductors are color coded using base colors and tracers in accordance with the Conductor Identification Table on the back of this Data Sheet.

Assembly and Coverings
The individual conductors are cabled together with non-hygroscopic fillers and a binder tape overall. The C-L-X sheath exceeds the grounding conductor requirements of Table 250.122 of the NEC and UL1569.
The impervious, continuous, corrugated aluminum C-L-X sheath provides complete protection against moisture, liquids and gases and has excellent mechanical strength. For direct burial in the ground, embedment in concrete, or for areas subjected to corrosive atmospheres, the C-L-X sheath is protected with a low temperature black Okoseal® (PVC) jacket.

Applications
C-L-X Type MC cables with the impervious, continuous, corrugated aluminum sheath are recommended as an economical alternate to a wire in conduit system. In addition, the aluminum CLX sheath exceeds the equipment grounding requirements of NEC Section 250.118 and 250.122, and can be used as the equipment grounding conductor in non-HL areas.
They are authorized for use on services, feeders and branch circuits for power, lighting, control and signaling circuits in accordance with Articles 330 and 725 of the NEC.
C-L-X Type MC-HL cables may be installed indoors or outdoors, in wet or dry locations, as open runs of cable secured to supports spaced not more than six feet apart, in cable tray, as aerial cable on a messenger, in any approved raceway, direct burial, or encased in concrete. C-L-X Type MC-HL cables are also approved for Classes I, II , and III Division 1 and 2 and Class I, Zones 1 and 2 hazardous locations per NEC Articles 501, 502, and 503 and UL 2225; in Zone Class II Div 2, Class III Div 1 and Class III Div 2 per CEC.

Specifications
Conductors: Bare soft annealed copper, Class B stranding per ASTM B-8.
Insulation: X-Olene per ICEA S-73-532 and UL 44, Listed UL Type XHHW-2. Meets MIL-DTL-1377H, section 4.8.4.1.2, cold bend at -66°C and ASTM D746-04 brittle point at -40°C.
Conductor Identification: Base Colors and tracers.
Grounding Conductor: Green insulated stranded copper per ASTM B-8, Class B. Meets or exceeds requirements of NEC Table 250.122.
Assembly: Per UL 1569 with binder tape overall.
Sheath: Close fitting, impervious, continuous, corrugated aluminum C-L-X per UL 1569. Exceeds grounding conductor requirements of NEC Table 250.122.
Jacket: Black Okoseal (PVC) per UL requirements for Type MC-HL Cables. Meets ASTM D746-04 brittle point at -40°C.

Product Features
- UL Listed as Type MC-HL cable and Marine Shipboard Cable, E38916 (UL 1569) and E137931 (Ul1309).
- UL Listed for cable tray use, direct burial and sunlight resistant.
- UL 1309 listed (CWCMC) & UL classified in accord with IEEE 1580 as Marine Shipboard Cable rated 600/1000V.
- Passes the IEEE 383-1974 and IEEE 1202/FT4 vertical tray flame tests.
- Passes the 210,000 BTU/hr ICEA T-29-520 Vertical Tray Flame Test.
- Complete pre-packaged, factory-tested wiring system — color coded.
- 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.
- Impervious, continuous metallic sheath excludes moisture, gasses and liquids.
- Lower installed system cost than conduit or EMT systems.
- Provides excellent grounding safety.
- Excellent compression and impact resistance.
- Continuous long lengths.
- Installation temperature of -40°C or °F.
- Complies with NEC Articles 501, 502 and 503 for hazardous locations.
- UL and American Bureau of Shipping listed as CWCMC Type MC-HL.
- CSA C22.2 No. 123 Type RA90.
- CSA C22.2 No. 174 Type HL.
- CSA listed as FT4 and LTGG (-40ºC).
- CSA Type RA 90-HL complies with CEC Zone 1, Zone 2, Class II Div 2, Class III Div 1 and Class III Div 2 Hazardous Locations.

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Catalog Number	Conductor Size AWG	Number of Ungrounded	Green Insulated Grounding Conductor AWG	Core O.D. - Inches	Core O.D. - mm	C-L-X O.D. - Inches	C-L-X O.D. - mm	Jacket Thickness - mils	Jacket Thickness - mm	Approx. O.D. - Inches	Approx. O.D. - mm	Cross-Sectional Area (sq. in.)†	Approx. Net Weight lbs./1000'	Approx. Ship Weight lbs./1000'	90ºC Wet or Dry (1) NEC Ampacity	75ºC Wet NEC Ampacity*
▲546-31-3402	14(7X) (2.08mm²)	2	#14(7X)	0.30	7.6	0.49	12.4	50	1.27	0.60	15.2	0.28	163	202	15	15
▲546-31-3406		6		0.41	10.4	0.62	15.8			0.73	18.5	0.42	267	347	15	14
▲546-31-3408		8		0.49	12.4	0.71	18.0			0.82	20.8	0.53	321	401	15	14
▲546-31-3411		11		0.57	14.5	0.80	20.3			0.91	23.1	0.65	395	475	12	10
▲546-31-3418		18		0.69	17.5	0.93	23.6			1.04	26.4	0.85	554	634	12	10
▲546-31-3436		36		0.97	24.6	1.24	31.5			1.35	34.3	1.43	948	1038	10	8
▲546-31-3452	12(7X) (3.31mm²)	2	#12(7X)	0.34	8.6	0.53	13.5	50	1.27	0.64	16.3	0.32	200	239	20	20
▲546-31-3456		6		0.47	11.9	0.67	17.0			0.78	19.7	0.48	338	418	20	17
▲546-31-3458		8		0.56	14.2	0.80	20.3			0.91	23.1	0.65	426	506	20	17
▲546-31-3461		11		0.65	16.5	0.89	22.6			1.00	25.4	0.79	519	599	15	12
▲546-31-3468		18		0.78	19.8	1.02	25.9			1.13	28.7	1.00	739	819	15	12
▲546-31-3486		36		1.10	27.9	1.37	34.8			1.48	37.6	1.72	1302	1445	12	10
546-31-3502	10(7X) (5.26mm²)	2	#10(7X)	0.39	9.9	0.58	14.7	50	1.27	0.69	17.5	0.37	253	292	30	30
▲546-31-3506		6		0.54	13.7	0.75	19.1			0.86	21.8	0.58	451	531	28	24
▲546-31-3508		8		0.65	16.5	0.89	22.6			1.00	25.4	0.79	568	648	28	24
▲546-31-3511		11		0.75	19.1	0.97	24.6			1.08	27.4	0.92	704	784	20	17

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

▲ **Authorized Stock Item.** Available from our Customer Service Centers.

Copper or Bronze C-L-X - is available on special order.

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

Jackets - Optional jacket types available - consult local sales office.

(1) Ampacities are based on Table 310.16 of the National Electrical Code for XHHW-2 conductors rated 90ºC, in a multi-conductor cable, at an ambient temperature of 30ºC (86ºF). The 75ºC 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(B)(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.

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Conductor Color Coding Sequence

Ungrounded 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

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

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