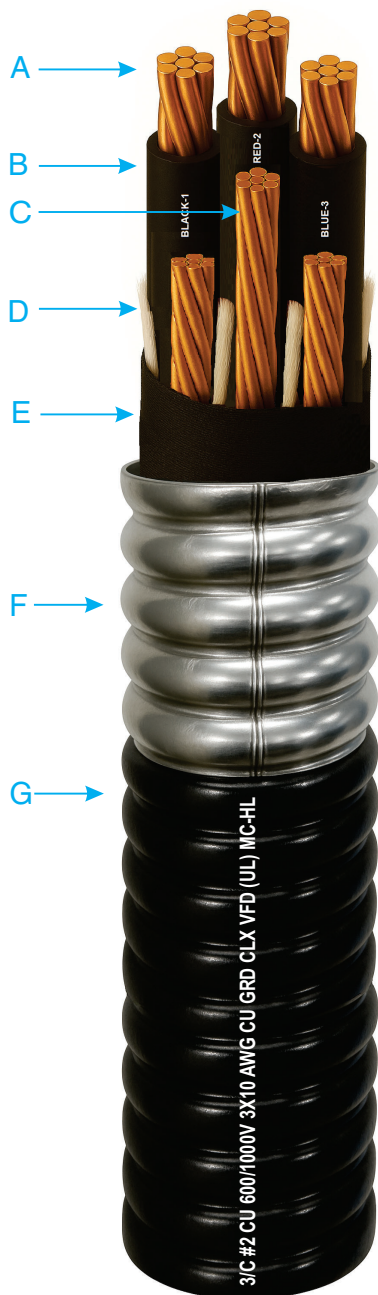


## C-L-X<sup>®</sup> Type MC-HL (XHHW-2)



**UL 600/1000V and CSA 600V Power MC-HL Cable - Aluminum Sheath**  
**3/C VFD & 4/C Copper Conductors/90°C 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 Bare, Stranded Copper Grounding Conductor(s)
- D Non-Hygroscopic Fillers, as necessary
- E Binder Tape
- F Impervious, Continuous, Welded Corrugated, Aluminum C-L-X Sheath
- G Black Okoseal Jacket

### Insulation

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

### 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 UL 1569. A bare stranded copper grounding conductor(s), located in the outer interstices, is provided for grounding. The impervious, continuous, welded, 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<sup>®</sup> (PVC) jacket.

### Applications

C-L-X Type MC-HL 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 Article 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, 503 and 505; in Zone 1, Zone 2, Class II Div 2, Class III Div 1 and Class III Div 2 per CEC.

### Specifications

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

**Insulation:** X-Olene per ICEA S-95-658/ NEMA WC70 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 brittle point at -76°C.

**Conductor Identification:** Control Sizes (#9 AWG and smaller), color-coded insulation. Power Sizes (#8 AWG and larger) base color with numeric plus color printed (e.g., 1-BLACK).

**Grounding Conductor(s):** One or three bare soft copper per ASTM B-3. Stranded in accordance with UL 1581. Meets or exceeds requirements of NEC Table 250.122.

**Sheath:** Close fitting, impervious, continuous, welded, corrugated aluminum C-L-X per UL 1569. Exceeds grounding conductor requirements of NEC Table 250.122.

**Jacket:** Black Okoseal (PVC) per UL1569. Meets ASTM D746 brittle point at -40°C.

### Product Features

- UL Listed as Type MC-HL cable per UL 2225 (E38916).
- UL Listed for cable tray use, direct burial and sunlight resistant.
- UL 1309 (CLXM-CWCMC) listed & UL classified in accord with IEEE 1580 as Marine Shipboard Cable rated 600/1000 Volts.
- Passes the IEEE 383-1974 and IEEE 1202 Vertical Tray Flame Test.
- Passes the 210,000 BTU ICEAT-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, gases 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.
- American Bureau of Shipping Type approved as CWCMC Type MC-HL.
- Three-phase conductors, along with three symmetrical grounding conductors with the CLX sheath, provide a superior low-resistance return path for VFD and other modern AC drive/motor applications in accordance with ICEA S-138-738.
- CSA C22.2 No. 123 Type RA90.
- CSA C22.2 No. 174 Type HL.
- CSA listed as FT4 and LTGG (-40°C).
- CSA Type RA90 HL complies with CEC Zone 1, Zone 2, Class II Div 2, Class III Div 1 and Class III Div 2 Hazardous Locations.

# C-L-X<sup>®</sup> Type MC-HL (XHHW-2)

UL 600/1000V and CSA 600V Power MC-HL Cable - Aluminum Sheath  
 3/C VFD & 4/C Copper Conductors/90°C Wet or Dry Rating  
**600/1000V Marine Shipboard Cable**  
**For Cable Tray Use - Sunlight Resistant - For Direct Burial**



## Product Data Section 4: Sheet 1

Catalog Number	Conductor Size AWG	Number of Conductors	Insulation Thickness - mils	Grounding Conductor(s) 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'	90°C Wet or Dry NEC Ampacity*	75°C Wet NEC Ampacity*
▲ 546-31-3403	14(7X)	3	30	3#18	0.33	8.4	0.53	13.5	50	1.27	0.64	16.3	0.32	160	190	15	15
▲ 546-31-3404	(2.08mm <sup>2</sup> )	4	30	3#18	0.37	9.3	0.58	14.7	50	1.27	0.69	17.5	0.37	222	261	15	15
▲ 546-31-3453	12(7X)	3	30	3#16	0.37	9.3	0.58	14.7	50	1.27	0.69	17.5	0.37	239	278	20	20
▲ 546-31-3454	(3.31mm <sup>2</sup> )	4	30	3#16	0.45	11.4	0.67	16.9	50	1.27	0.78	19.7	0.47	286	320	20	20
▲ 546-31-3503	10(7X)	3	30	3#14	0.41	10.4	0.62	15.8	50	1.27	0.73	18.6	0.42	300	380	30	30
▲ 546-31-3504	(5.26mm <sup>2</sup> )	4	30	3#14	0.45	11.4	0.67	16.9	50	1.27	0.78	19.7	0.47	348	428	30	28
▲ 571-31-3190	8(7X)	3	45	3#14	0.50	12.7	0.71	18.0	50	1.27	0.81	20.6	0.52	385	420	55	50
▲ 571-31-3263	(8.36mm <sup>2</sup> )	4	45	10	0.58	14.7	0.80	20.3	50	1.27	0.90	22.9	0.64	465	495	44	40
▲ 571-31-3191	6(7X)	3	45	3#12	0.58	14.7	0.80	20.3	50	1.27	0.90	22.9	0.64	525	595	75	65
▲ 571-31-3270	(13.3mm <sup>2</sup> )	4	45	8	0.66	16.8	0.89	22.5	50	1.27	0.99	25.1	0.77	630	685	60	52
▲ 571-31-3200	4(7X)	3	45	3#12	0.68	17.3	0.89	22.5	50	1.27	0.99	25.1	0.77	704	820	95	85
▲ 571-31-3272	(21.2mm <sup>2</sup> )	4	45	8	0.77	19.6	0.97	24.7	50	1.27	1.08	27.5	0.92	845	930	76	68
▲ 571-31-3204	2(7X)	3	45	3#10	0.80	20.3	1.02	25.9	50	1.27	1.13	28.7	1.00	995	1050	130	115
▲ 571-31-3276	(33.6mm <sup>2</sup> )	4	45	6	0.92	23.4	1.15	29.2	50	1.27	1.26	32.0	1.25	1245	1370	104	92
571-31-3208	1(19X)	3	55	3#10	0.92	23.4	1.15	29.2	50	1.27	1.26	32.0	1.25	1100	1181	145	130
571-31-3280	(42.4mm <sup>2</sup> )	4	55	6	1.04	26.4	1.29	32.8	50	1.27	1.40	35.6	1.54	1500	1620	116	104
▲ 571-31-3213	1/0(19X)	3	55	3#10	1.00	25.5	1.24	31.4	50	1.27	1.34	34.0	1.41	1470	1560	170	150
571-31-3285	(53.5mm <sup>2</sup> )	4	55	6	1.12	28.4	1.37	34.9	50	1.27	1.48	37.6	1.72	1830	1975	136	120
▲ 571-31-3216	2/0(19X)	3	55	3#10	1.09	27.7	1.34	34.0	50	1.27	1.44	36.6	1.63	1770	2020	195	175
▲ 571-31-3289	(67.4mm <sup>2</sup> )	4	55	6	1.23	31.2	1.51	38.5	60	1.52	1.64	41.7	2.11	2310	2545	156	140
▲ 571-31-3218	3/0(19X)	3	55	3#8	1.19	30.2	1.47	37.3	50	1.27	1.58	40.1	1.96	2180	2404	225	200
571-31-3291	(85.1mm <sup>2</sup> )	4	55	6	1.35	34.3	1.64	41.7	60	1.52	1.78	45.2	2.49	2752	2939	180	160
▲ 571-31-3224	4/0(19X)	3	55	3#8	1.33	33.8	1.60	40.6	60	1.52	1.73	44.0	2.35	2675	2880	260	230
▲ 571-31-3296	(107mm <sup>2</sup> )	4	55	4	1.49	37.8	1.78	45.2	60	1.52	1.91	48.6	2.86	3430	3710	208	184
▲ 571-31-3228	250(37X)	3	65	3#8	1.48	37.6	1.74	44.2	60	1.52	1.87	47.5	2.75	3140	3420	290	255
571-31-3300	(127mm <sup>2</sup> )	4	65	4	1.64	41.6	1.96	49.7	60	1.52	2.09	53.0	3.43	4070	4330	232	204
▲ 571-31-3236	350(37X)	3	65	3#7	1.66	42.2	1.96	49.7	60	1.52	2.09	53.0	3.43	4210	4300	350	310
▲ 571-31-3308	(177mm <sup>2</sup> )	4	65	3	1.89	48.0	2.19	55.6	75	1.90	2.35	59.8	4.34	5440	6000	280	248
▲ 571-31-3244	500(37X)	3	65	3#6	1.94	59.3	2.28	57.9	75	1.90	2.44	62.0	4.67	5930	6420	430	380
▲ 571-31-3316	(253mm <sup>2</sup> )	4	65	2	2.14	54.4	2.49	63.2	75	1.90	2.65	67.4	5.52	7570	8120	344	304
▲ 571-31-3248	750(61X)	3	80	3#5	2.37	60.2	2.75	69.8	75	1.90	2.92	74.1	6.69	8700	9400	535	475
571-31-3320	(380mm <sup>2</sup> )	4	80	1	2.61	66.2	3.03	76.9	85	2.16	3.21	81.6	8.09	11250	12190	428	380
571-31-3252	1000(61X)	3	80	1/0	2.79	70.8	3.27	83.1	85	2.16	3.46	87.9	9.40	11597	12747	615	545
571-31-3324	(507mm <sup>2</sup> )	4	80	1/0	3.07	78.0	3.63	92.1	85	2.16	3.81	96.8	11.40	15110	17510	492	436

Okonite's web site, [www.okonite.com](http://www.okonite.com) contains the most up to date information.

# C-L-X<sup>®</sup> Type MC-HL (XHHW-2)

UL 600/1000V and CSA 600V Power MC-HL Cable - Aluminum Sheath

3/C VFD & 4/C Copper Conductors/90°C Wet or Dry Rating

600/1000V Marine Shipboard Cable

For Cable Tray Use - Sunlight Resistant - For Direct Burial



## Product Data Section 4: Sheet 1

600/1000V Composite Power and Control Cable - Aluminum Sheath  
Okoseal Jacket: 50 mils (1.27mm)

Catalog Number	Power Conductors Number X Size	Insulation Thickness - mils	Control Conductors Number X Size	Insulating Thickness - mils	Grounding Conductor AWG	C-L-X O.D. - Inches	C-L-X O.D. - mm	Cable O.D. - Inches	Cable 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*
▲ 546-31-3984	3X10	30	4X12	30	10	0.75	19.0	0.86	21.9	0.58	425	460	30	30
▲ 571-31-3657	3X8	45	4X12	30	10	0.89	22.6	0.99	25.1	0.77	530	585	55	50
▲ 571-31-3667	3X6	45	4X12	30	8	0.93	23.6	1.03	26.2	0.83	655	720	75	65
▲ 571-31-3677	3X4	45	4X12	30	8	0.97	24.7	1.08	27.5	0.92	810	895	95	85

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

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

### Jackets

Optional jacket types available - consult local sales office.

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

### (1) Ampacities

Ampacities are based on Table 310.16 of the National Electrical Code for XHHW-2 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 cables is in accordance with NEC Section 310.15(C)(1).

The ampacities shown also apply to cable installed in cable tray in accordance with NEC Section 392.80

\*Current limited to 15, 20 and 30 amps per Section 240.4(D)(3) of the NEC for #14, #12 and #10 AWG, respectively.

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## Product Data Section 4: Sheet 1

Conductor Number	Base Color
1	Black
2	Red
3	Blue
4	Orange

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

**Sizes 14, 12 & 10 AWG:**

Color Coding per ICEA Method 1, E-2 color sequence.

**Sizes 8 AWG and larger:**

Surface Printing of Numbers and color descriptions per ICEA Method 3, E-2 color sequence.