

LifeGuard™

Low Smoke Zero Halogen Cable



HWC
HOUSTON WIRE & CABLE COMPANY

HWC

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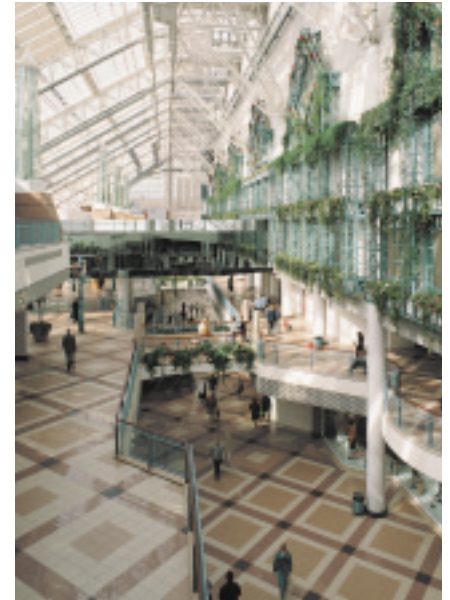
Welcome to the future of electrical wire and cable - LifeGuard™ Low Smoke Zero Halogen cable* by Houston Wire & Cable Company (HWC). This exciting new product will change the way you think about cable construction, equipment protection and safety.

LifeGuard™ cable is made using Low-Smoke Zero-Halogen compounds that provide many advantages over standard constructions of cable. Highly engineered polymers developed after years of research have produced a new generation of cable that has excellent electrical and mechanical characteristics, superior flame-resistance, low smoke production and reduced toxicity.

These cables are ideal for use in environments where high performance, reliability, and protection of life and equipment are required. Applications for LifeGuard™ cable are virtually endless. The advantages of this product make it an ideal candidate for use in a broad range of applications including:

- Utility: power generation, co-generation and merchant power
- Industrial Plants: petrochemical, pulp and paper, pharmaceutical, and waste water treatment
- Data Centers: computer rooms, switching centers and central offices
- Highly Populated Facilities: multi-story buildings, schools, hotels, hospitals, sports centers, airports, and mass transit stations

Read on to see for yourself why HWC's LifeGuard™ cable is truly the cable of the future.



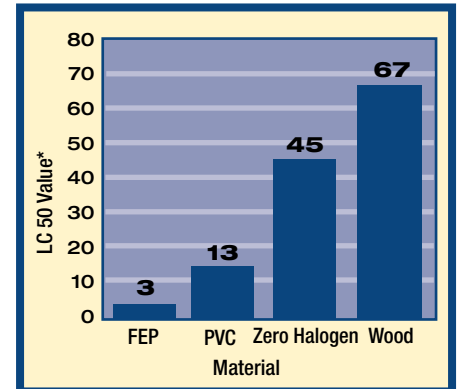
FEATURE	ADVANTAGE	BENEFIT
Zero Halogen content	<p>When burned - Very low smoke production</p> <p>Low toxicity</p> <p>Non-corrosive</p>	<p>Reduced vision impairing smoke</p> <p>No harm to individuals from halogenated acid gases</p> <p>No harm to equipment and computers from halogenated acid gases</p>
Highly flame-retardant	No thermoplastic drip	Burns to an ash and will not propagate flame
Excellent electrical properties	<p>Low dielectric constant</p> <p>Good thermal endurance</p>	<p>Good electrical insulator</p> <p>Dependable long-term performance</p>
Excellent mechanical properties	<p>Good moisture and fluid resistance</p> <p>Flexible</p> <p>Superior cut-through, crush and abrasion resistance</p> <p>Slick finish - low coefficient of friction</p>	<p>Can be used in a broad range of demanding applications</p> <p>Easy to bend and install</p> <p>Good for use in harsh environments</p> <p>Easy to pull</p>

What are Halogens and why are they dangerous?

Halogens are a group of highly reactive elements including fluorine, chlorine, bromine, iodine and astatine. When products containing halogens are burned, they can produce very dangerous gases. Public awareness of these dangers began years ago after several tragic fires claimed the lives of victims who inhaled these deadly halogenated fumes.

Highly publicized cable fires, including those at the Beverley Hills Supper Club, London's Kings Cross Underground Station and Germany's Düsseldorf Airport have led to important changes that significantly limit where cables containing halogens may be used. Many organizations, local authorities and governments have undertaken broad initiatives to eliminate the production of halogenated material. In Asia, the United Kingdom and many European communities, the use of wire and cable containing halogens is highly regulated, and in some areas completely prohibited.

Toxicity of Materials



*University of Pittsburgh Toxicity Test
LC 50 Value - Lethal concentration of a material in air that kills 50% of test animals
0 = Worst 100 = Best

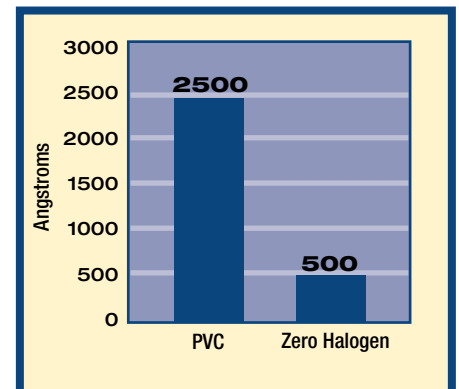


Why is zero Halogen cable better?

Two halogens – chlorine and fluorine, are found in many compounds that are used for insulating and jacketing electrical wire and cable. Many common materials like PVC, CPE, Hypalon®, Neoprene®, FEP and PTFE Teflon® contain significant amounts of these halogens. PVC for example, contains 29% chlorine by weight, CPE 19% chlorine by weight, and Teflon® 76% fluorine by weight.

Halogenated compounds are normally very stable. When they burn, however, the halogens separate and become highly reactive - forming very toxic, extremely dangerous, highly corrosive gases that can significantly damage organic, inorganic and metallic materials. The hydrogen chloride gas produced from burning PVC for example, is very similar to “mustard” gas.

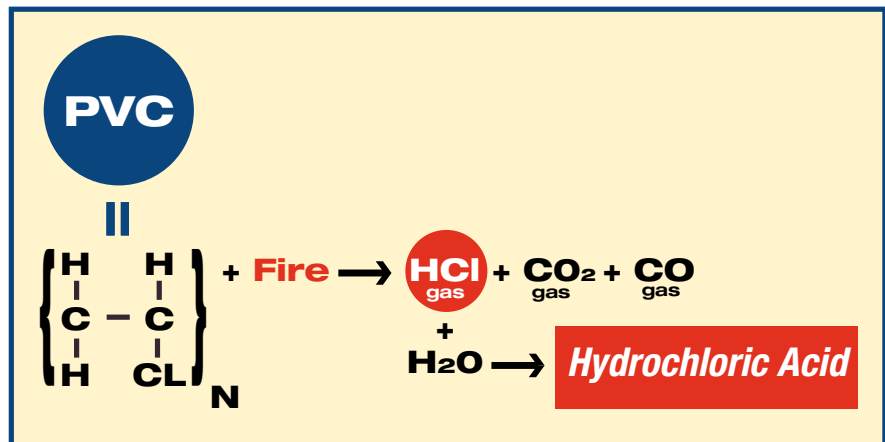
Corrosion Index





These halogenated gases are dangerous because when they come in contact with water – even minute amounts, they immediately form acids. The chlorine from PVC makes hydrochloric acid, and the fluorine from Teflon® makes hydrofluoric acid. These acids are among the strongest and most corrosive that exist. The water source that the gasses use to form these acids can be found almost anywhere – moisture in the eyes, throat and lungs of individuals with whom it comes in contact, as well as fire sprinkler systems and humidity in the air.

Decomposition of PVC Under Combustion

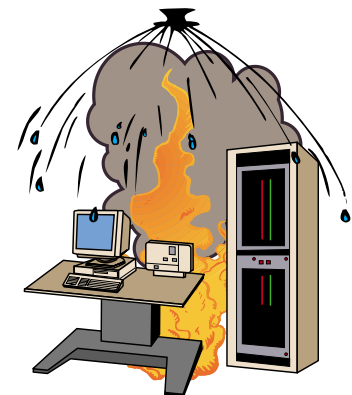
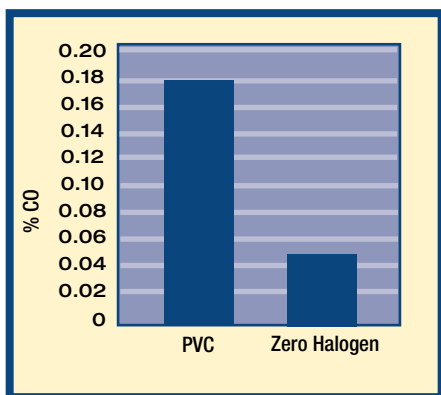




Fires involving the combustion of halogenated materials can be devastating. Inhalation of dangerous fumes can cause serious harm or even death to humans, and "acid rain" and acid fumes quickly destroy expensive industrial and computer equipment.

Cables containing halogens also produce significantly higher levels of carbon monoxide (CO) gas during combustion. Emission levels of this dangerous gas are reduced by as much as 360% in non-halogenated cable constructions.

**Gas Analysis
 Carbon Monoxide
 (CO)%**



Acid rain on computers

Low Smoke = Increased Safety

When halogenated material burns it produces thousands of tiny particles consisting of gas, soot and chemical residue. This combination of byproducts is seen as smoke. Cable manufactured with non-halogenated material produces far less residue when burned. Less residue means less smoke.

LifeGuard™ cable jackets contain no halogens, so should it ever be exposed to flame, far less vision impairing smoke will be produced.



No Fire



Smoke from Non-Halogenated Fire*



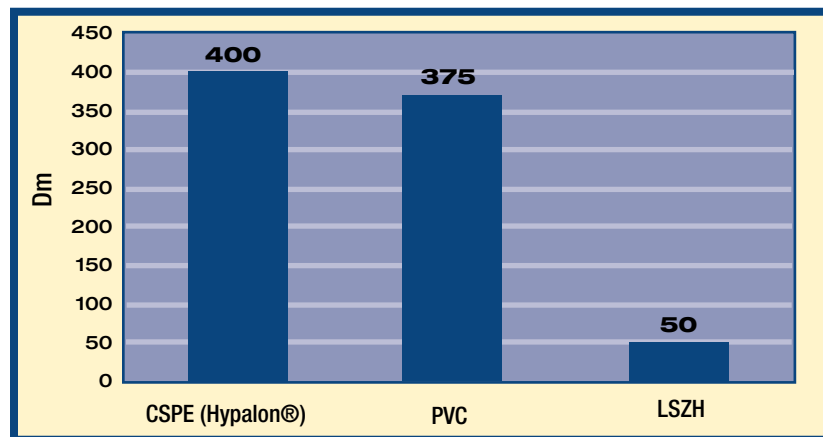
Smoke from Halogenated Fire*

Clearly - it's easy to see the LifeGuard™ advantage.

The Future

HWC's LifeGuard™ cable represents the latest innovation in cable design and technology. It provides significant advantages over traditional constructions of cable, and adds a new dimension of functionality, value and safety that has until now been largely unavailable. LifeGuard™ cable is the product of the future and we have it in stock and ready for immediate shipment.

Smoke Comparisons ASTM E662 Flaming Mode



HWC provides you with tomorrow's cable - today!

Cable Index

Cable Description	Insulation	Jacket	Specification
Power Cable			
Single Conductor Power and Control		LS-ZH	HW020
Thermocouple Extension Cable			
600 Volt Type TC			
EX, JX, KX, TX			
Single Pair - Shielded	XLP	LS-ZH	HW115
Instrumentation Cable			
600 Volt Type TC			
Single & Multiple Pairs I/S & O/S	XLP	LS-ZH	HW120
Single & Multiple Triads I/S & O/S	XLP	LS-ZH	HW121
Tray Cable			
600 Volt, Control & Power			
Control Cable	XLP, XHHW-2	LS-ZH	HW170
Control Cable - Shielded	XLP, XHHW-2	LS-ZH	HW171
Power Cable	XLP, XHHW-2	LS-ZH	HW172
Substation Control Cable - Shielded	XLP, XHHW-2	LS-ZH	HW173
Substation Power Cable - Shielded	XLP, XHHW-2	LS-ZH	HW174
Medium Voltage Cable			
Single Conductor Power Cable			
5KV/8KV Shielded 133% or 100%	EPR	LS-ZH	HW220
8KV Shielded 133%	EPR	LS-ZH	HW221
15KV Shielded 133%	EPR	LS-ZH	HW222
Armored Cable			
Impervious Continuously			
Welded Armour			
600 Volt Control Cable/MC-HL	XLP, XHHW-2	LS-ZH	HW320
600 Volt Power Cable/MC-HL	XLP, XHHW-2	LS-ZH	HW321

POWER CABLE

- 600 Volt UL 90°C
- RHH or RHW/LS
- Low Smoke Zero Halogen Insulation/Jacket
- Tinned Copper Conductor



HW020 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen cable is for use in harsh environments in a broad range of commercial, industrial and utility applications where reliability and maximum performance is required. It is highly flame-retardant, produces very small amounts of smoke when burned and contains no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ is NEC listed as RHH or RHW/LS and approved for installation in conduit, duct, cable tray when CT rated; or other approved raceways. It is rated for use at 75°C in wet locations, 90°C in dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions

Product Features:

- Cable tray rated on sizes 1/0 AWG and larger
- Sunlight-resistant
- Tinned conductor provides ease of termination and added protection in caustic environments
- Very low smoke production when burned
- Produces zero halogens during fire – less toxic and corrosive
- Environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductor:

Tin coated soft annealed copper per ASTM B-33, Class K, G or I flexible stranding per ASTM B-8

Jacket:

Thermoset, sunlight-resistant and flame-retardant Low Smoke Zero Halogen polyolefin per ICEA S-95-658, UL Standard 44 and UL Standard 1685

Flame Tests:

- 8 AWG - 750 MCM, IEEE 1202 70,000 BTU/hr flame test, UL VW-1
- 10 AWG - 14 AWG, UL VW-1

Additional Standards:

- NEMA WC-70
- UL Standard 1685 on sizes 8 AWG and larger for Type LS-Limited Smoke

Catalog No.	Size AWG/kcmil	Number of Strands	LS-ZH Insulation/Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW020 01401	14	41	45	.16	27
HW020 01201	12	65	45	.18	36
HW020 01001	10	49	45	.20	50
HW020 00801	8	49	60	.27	82
HW020 00601	6	63	60	.33	117
HW020 00401	4	105	60	.39	178
HW020 00201	2	161	60	.45	260
HW020 10101	1/0	266	80	.58	423
HW020 20101	2/0	342	80	.63	538
HW020 40101	4/0	532	80	.74	759
HW020 35001	350	882	95	.95	1302
HW020 50001	500	1225	95	1.09	1831
HW020 75001	750	1862	110	1.33	2752

**THERMOCOUPLE EXTENSION
CABLE - EX,JX,KX,TX**

- 600 Volt UL Type TC-LS, 90°C
- Single Pair
- Overall Shield
- XLP Insulation
- Low Smoke Zero Halogen Jacket
- Solid Alloy Conductor



HW115 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in thermocouple extension applications where protection from electrostatic interference is required. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed as Type TC-LS and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class 1, Division 2 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Overall shield provides protection from electrostatic interference
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

Annealed, solid thermocouple extension grade alloys calibrated to standard limits of error per ANSI-MC96.1

Insulation:

Cross-linked polyethylene (XLP) per UL Standard 44, color-coded per ANSI-MC96.1

Overall Shield:

Aluminum-polymer tape providing 100% coverage with a flexible 7 strand tinned copper drain wire

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277 A ripcord is applied longitudinally under the jacket to facilitate stripping

Flame Tests:

UL Standard 1581 70,000 BTU/hr flame test

Additional Standards:

- UL Standard 1685
- NEC Type TC per articles 336, 392, and 501.4 (b) and Class 1 circuits per NEC article 725

Catalog No.	ANSI Type	Size AWG	Number of Pairs	Insulation Thickness/Mils	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW115 1601E	EX	16	1	30	45	.32	57
HW115 1601J	JX	16	1	30	45	.32	57
HW115 1601K	KX	16	1	30	45	.32	57
HW115 1601T	TX	16	1	30	45	.32	57

INSTRUMENTATION CABLE

- 600 Volt UL Type TC-LS, 90°C
- Single & Multiple Pairs
- Individual and Overall Shield
- XLP Insulation
- Low Smoke Zero Halogen Jacket
- Tinned Copper Conductors

HW120 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in instrumentation and process control applications where protection from electrostatic interference is required. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed as Type TC-LS and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class 1, Division 2 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Tinned conductors provide ease of termination and added protection in caustic environments
- Superior electrostatic interference protection from individual and overall shields
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

7 strand tin coated, soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8

Insulation:

Cross-linked polyethylene (XLP) per UL Standard 44

Individual Shield:

Aluminum-polymer tape providing 100% coverage with a flexible 7 strand tinned copper drain wire

Overall Shield:

Aluminum-polymer tape providing 100% coverage with a flexible 7 strand tinned copper drain wire

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277
A ripcord is applied longitudinally under the jacket to facilitate stripping



Flame Tests:

UL Standard 1581 70,000 BTU/hr flame test

Color Code:

ICEA Method 9: black and white twisted pairs with numbers

Additional Standards:

- UL Standard 1685
- NEC Type TC per articles 336, 392, and 501.4 (b) and Class 1 circuits per NEC article 725

Catalog No.	Size AWG	Number of Pairs	Insulation Thickness/Mils	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW120 01601	16	1	30	60	.33	59
HW120 01602	16	2	30	60	.58	136
HW120 01604	16	4	30	60	.67	216
HW120 01608	16	8	30	60	.90	397
HW120 01612	16	12	30	80	1.04	530
HW120 01624	16	24	30	80	1.40	960

INSTRUMENTATION CABLE

- 600 Volt UL Type TC-LS, 90°C
- Single & Multiple Triads
- Individual and Overall Shield
- XLP Insulation
- Low Smoke Zero Halogen Jacket
- Tinned Copper Conductors

HW121 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in instrumentation and process control applications where protection from electrostatic interference is required. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed as Type TC-LS and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class 1, Division 2 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Tinned conductors provide ease of termination and added protection in caustic environments
- Superior electrostatic interference protection from individual and overall shields
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash - does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

7 strand tin coated, soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8

Insulation:

Cross-linked polyethylene (XLP) per UL Standard 44

Individual Shield:

Aluminum-polymer tape providing 100% coverage with a flexible 7 strand tinned copper drain wire

Overall Shield:

Aluminum-polymer tape providing 100% coverage with a flexible 7 strand tinned copper drain wire

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277. A ripcord is applied longitudinally under the jacket to facilitate stripping.



Flame Tests:

UL Standard 1581 70,000 BTU/hr flame test

Color Code:

ICEA Method 1: black, white and red twisted triads with numbers

Additional Standards:

- UL Standard 1685
- NEC Type TC per articles 336, 392, and 501.4 (b) and Class 1 circuits per NEC article 725

Catalog No.	Size AWG	Number of Triads	Insulation Thickness/Mils	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW121 1601T	16	1	30	60	.35	67
HW121 01602	16	2	30	60	.64	170
HW121 01604	16	4	30	60	.74	268
HW121 01606	16	6	30	60	.93	422

TRAY CABLE CONTROL CABLE

- 600 Volt UL Type TC-LS, 90°C
- XLP XHHW-2 Insulation
- Low Smoke Zero Halogen Jacket
- Tinned Copper Conductors



HW170 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in power, control and lighting circuits in a broad range of commercial and industrial applications. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed as Type TC-LS and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class 1, Division 2 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Tinned conductors provide ease of termination and added protection in caustic environments
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

Tin coated soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8

Insulation:

Cross-linked polyethylene (XLP) per UL Standard 44 for Type XHHW-2 conductors

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277
A ripcord is applied longitudinally under the jacket to facilitate stripping

Flame Tests:

UL Standard 1581 70,000 BTU/hr flame test

Color Code:

ICEA Method 1, Table E-1 or E-2

Additional Standards:

All data subject to change without notice.

* Some cable insulations may contain trace amounts of halogens.

Catalog No.	Size AWG	Number of Conductors	Number of Strands	Insulation Thickness/Mils	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW170 01002	10	2	7	30	45	.45	119
HW170 01003	10	3	7	30	45	.48	162
HW170 01004	10	4	7	30	60	.52	207
HW170 01005	10	5	7	30	60	.58	272
HW170 01007	10	7	7	30	60	.65	358
HW170 01009	10	9	7	30	60	.77	459
HW170 01012	10	12	7	30	60	.91	628
HW170 01019	10	19	7	30	60	1.05	935
HW170 01202	12	2	7	30	45	.40	87
HW170 01203	12	3	7	30	45	.42	117
HW170 01204	12	4	7	30	45	.46	147
HW170 01205	12	5	7	30	60	.50	178
HW170 01207	12	7	7	30	60	.58	253
HW170 01209	12	9	7	30	60	.68	360
HW170 01212	12	12	7	30	60	.76	409
HW170 01219	12	19	7	30	60	.93	651
HW170 01225	12	25	7	30	60	1.01	894
HW170 01230	12	30	7	30	60	1.18	1040
HW170 01237	12	37	7	30	60	1.27	1256
HW170 01402	14	2	7	30	45	.36	66
HW170 01403	14	3	7	30	45	.38	86
HW170 01404	14	4	7	30	45	.42	108
HW170 01405	14	5	7	30	45	.45	130
HW170 01407	14	7	7	30	60	.49	169
HW170 01409	14	9	7	30	60	.62	238
HW170 01412	14	12	7	30	60	.69	298
HW170 01419	14	19	7	30	60	.80	438
HW170 01425	14	25	7	30	60	.96	631
HW170 01430	14	30	7	30	60	1.04	721
HW170 01437	14	37	7	30	60	1.13	867

**TRAY CABLE - SHIELDED
CONTROL CABLE**

- 600 Volt UL Type TC-LS, 90°C
- Overall Shield
- XLP Insulation
- Low Smoke Zero Halogen Jacket
- Tinned Copper Conductors



HW171 Specifications

- UL Standard 1685
- NEC Type TC per articles 336, 392, and 501.4 (b) and Class 1 circuits per NEC article 725

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in power, control and lighting circuits in a broad range of commercial and industrial applications where shielding from ambient electrical interference is required. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed as Type TC-LS and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class I and II, Division 2 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Tinned conductors provide ease of termination and added protection in caustic environments
- Overall shield provides protection from electrostatic interference
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

Tin coated soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8

Insulation:

Cross-linked polyethylene (XLP) per UL Standard 44

Overall Shield:

Aluminum-polymer tape providing 100% coverage with a flexible 7 strand tinned copper drain wire

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277 A ripcord is applied longitudinally under the jacket to facilitate stripping

Flame Tests:

UL Standard 1581 70,000 BTU/hr flame test

Color Code:

ICEA Method 1, Table E-1 or Table E-2

Additional Standards:

- UL Standard 1685
- NEC Type TC per articles 336, 392, and 501.4 (b) and Class 1 circuits per NEC article 725

Catalog No.	Size AWG	Number of Conductors	Insulation Thickness/Mils	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW171 01602	16	2	30	45	.33	59
HW171 01603	16	3	30	45	.35	67
HW171 01604	16	4	30	45	.38	92
HW171 01605	16	5	30	45	.42	109
HW171 01607	16	7	30	45	.45	135
HW171 01609	16	9	30	45	.56	188
HW171 01612	16	12	30	45	.62	232
HW171 01615	16	15	30	60	.69	281
HW171 01619	16	19	30	60	.72	322

TRAY CABLE - POWER CABLE

- 600 Volt UL Type TC-LS, 90°C
- XLP XHHW-2 Insulation
- Low Smoke Zero Halogen Jacket
- Tinned Copper Conductors



HW172 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in power, control and lighting circuits in a broad range of commercial and industrial applications. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed as Type TC-LS and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class I and II, Division 2 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Tinned conductors provide ease of termination and added protection in caustic environments
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

Tin coated soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8

Insulation:

Cross-linked polyethylene (XLP) per UL Standard 44 for Type XHHW-2 conductors

Grounding Conductor:

Tin coated soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8 sized in accordance with UL Standard 1277

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277. A ripcord is applied longitudinally under the jacket to facilitate stripping

Flame Test:

UL Standard 1581 70,000 BTU/hr flame test

Color Code:

ICEA Method 4

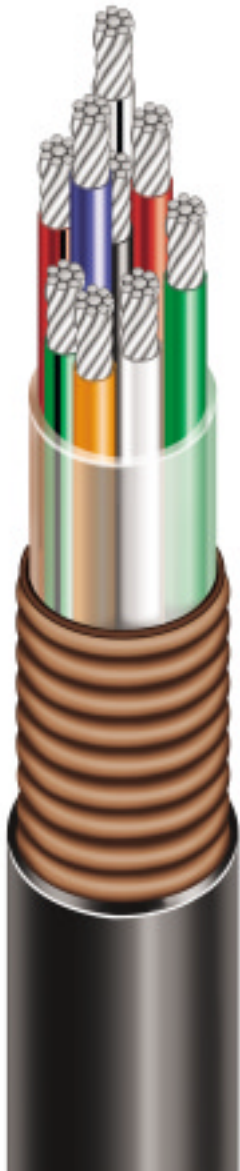
Additional Standards

- UL Standard 1685
- NEC Type TC per articles 336, 392, and 501.4 (b) and Class 1 circuits per NEC article 725

Catalog No.	Size AWG/kcmil	Number of Conductors	Number of Strands	Insulation Thickness/Mils	Ground Wire Size AWG	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW172 00803	8	3	7	45		60	.63	238
HW172 0803G	8	3	7	45	10	60	.63	267
HW172 00804	8	4	7	45		60	.70	305
HW172 0804G	8	4	7	45	10	60	.70	339
HW172 00603	6	3	7	45		60	.71	390
HW172 0603G	6	3	7	45	8	60	.71	437
HW172 00604	6	4	7	45		60	.78	497
HW172 0604G	6	4	7	45	8	60	.78	495
HW172 00408	4	3	7	45		80	.81	564
HW172 0408G	4	3	7	45	8	80	.81	612
HW172 00404	4	4	7	45		80	.94	763
HW172 0404G	4	4	7	45	8	80	.94	814
HW172 0203G	2	3	7	45	6	80	.98	867
HW172 0204G	2	4	7	45	6	80	1.08	1087
HW172 1003G	1/0	3	19	55	6	80	1.20	1390
HW172 2003G	2/0	3	19	55	6	80	1.30	1676
HW172 4003G	4/0	3	19	55	4	80	1.53	2523
HW172 4004G	4/0	4	19	55	4	110	1.79	3630
HW172 2503G	250	3	37	65	4	110	1.78	3296
HW172 2504G	250	4	37	65	3	110	1.90	4210
HW172 3503G	350	3	37	65	3	110	2.00	3643
HW172 3504G	350	4	37	65	3	110	2.21	4743
HW172 5003G	500	3	37	65	2	110	2.29	6116
HW172 5004G	500	4	37	65	2	110	2.54	7881
HW172 7503G	750	3	61	80	2/0	140	2.81	9101

TRAY CABLE - SUBSTATION CONTROL CABLE

- 600 Volt UL Type TC-LS, 90°C
- Corrugated 5 Mil Copper Tape Shield
- XLP XHHW-2 Insulation
- Low Smoke Zero Halogen Jacket
- Tinned Copper Conductors



HW173 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in power, control and lighting circuits in a broad range of utility substation applications where shielding from ambient electrical interference is required. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed as Type TC-LS and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class I and II, Division 2 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Tinned conductors provide ease of termination and added protection in caustic environments
- Superior electrostatic interference protection from copper tape shield
- Superior conductor protection from copper tape shield
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

Tin coated soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8

Insulation:

Cross-linked polyethylene (XLP) per UL Standard 44 for Type XHHW-2 conductors

Overall Shield:

Longitudinally applied 5 mil corrugated copper tape shield

Grounding Conductor:

Tin coated soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8 sized in accordance with UL Standard 1277

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277. A ripcord is applied longitudinally under the jacket to facilitate stripping

Flame Test:

UL Standard 1581 70,000 BTU/hr flame test

Color Code:

ICEA Method 1, Table E-1

Additional Standards:

- UL Standard 1685
- NEC Type TC per articles 336, 392, and 501.4 (b) and Class 1 circuits per NEC article 725

Catalog No.	Size AWG	Number of Conductors	Insulation Thickness/Mils	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW173 01004	10	4	30	45	.62	265
HW173 01007	10	7	30	60	.72	408
HW173 01012	10	12	30	80	.96	695
HW173 01019	10	19	30	80	1.12	1015
HW173 01204	12	4	30	45	.52	182
HW173 01207	12	7	30	45	.65	296
HW173 01212	12	12	30	60	.82	463
HW173 01219	12	19	30	80	.99	718
HW173 01404	14	4	30	45	.48	144
HW173 01407	14	7	30	45	.60	231
HW173 01412	14	12	30	60	.75	348
HW173 01419	14	19	30	80	.90	534

**TRAY CABLE - SUBSTATION
POWER CABLE**

- 600 Volt UL Type TC-LS, 90°C
- Corrugated 5 Mil Copper Tape Shield
- XLP XHHW-2 Insulation
- Low Smoke Zero Halogen Jacket
- Tinned Copper Conductors



HW174 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in power, control and lighting circuits in a broad range of utility substation applications where shielding from ambient electrical interference is required. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed as Type TC-LS and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class I and II, Division 2 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Tinned conductors provide ease of termination and added protection in caustic environments
- Superior electrostatic interference protection from copper tape shield
- Superior conductor protection from copper tape shield
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash - does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

Tin coated soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8

Insulation:

Cross-linked polyethylene (XLP) per UL Standard 44 for Type XHHW-2 conductors

Overall Shield:

Longitudinally applied 5 mil corrugated copper tape shield

Grounding Conductor:

Soft annealed copper per ASTM B-3, Class B stranding per ASTM B-8 sized in accordance with UL Standard 1277

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277. A ripcord is applied longitudinally under the jacket to facilitate stripping

Flame Test:

UL Standard 1581 70,000 BTU/hr flame test

Color Code:

ICEA Method 1, Table E-1

Additional Standards:

- UL Standard 1685
- NEC Type TC per articles 336, 392, and 501.4 (b) and Class 1 circuits per NEC article 725

Catalog No.	Size AWG/kcmil	Number of Conductors	Insulation Thickness/Mils	Jacket Thickness/Mils	Ground Wire Size AWG	Overall Diameter Inch	Net Weight Lbs/Mft
HW174 00804	8	4	45	60		.76	422
HW174 0804G	8	4	45	60	10	.76	475
HW174 00604	6	4	45	60		.89	511
HW174 0604G	6	4	45	60	8	.89	577
HW174 00404	4	4	45	60		1.01	750
HW174 0404G	4	4	45	60	8	1.01	808
HW174 00204	2	4	45	80		1.15	890
HW174 0204G	2	4	45	80	6	1.15	960
HW174 1004G	1/0	4	55	80	6	1.46	2057
HW174 2004G	2/0	4	55	80	6	1.56	2464
HW174 4004G	4/0	4	55	110	4	1.80	3640
HW174 2503G	250	3	65	110	4	1.75	3265
HW174 3503G	350	3	65	110	3	2.01	3653
HW174 5003G	500	3	65	110	2	2.30	6126

POWER CABLE

- 5KV/8KV UL Type MV-105-LS, 105°C
- Single Conductor, Shielded
- EPR Insulation
- Low Smoke Zero Halogen Jacket
- 5KV 133%, 8KV 100% Insulation Level
- Copper Conductor

HW220 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen cable is for use in power circuits in chemical plants, refineries, steel mills, industrial plants, commercial buildings, utility substations and generating stations. It may be installed in open air, conduit, duct, cable tray when CT rated, or direct buried in earth, in wet and dry locations. It is highly flame-retardant, produces very small amounts of smoke when burned and contains no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

It is UL approved for use at 105°C for continuous operation, 140°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Cable tray rated on sizes 1/0 AWG and larger
- Sunlight-resistant
- Approved for direct burial
- Very low smoke production when burned
- Produces zero halogens during fire – less toxic and corrosive
- Environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductor:

Compressed soft annealed copper per ASTM B-3, Class B stranding per ASTM B-8, with a semi-conducting conductor shield

Insulation:

Ethylene propylene rubber (EPR) per ICEA S-97-682 Type III with a semi-conducting insulation shield

Shield:

Uncoated copper tape with a 25% overlap per ICEA S-97-682

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1072 and ICEA T-33-655-1994 Section 5-4

Flame Tests:

- CT listed sizes 1/0AWG and larger
- IEEE 383 70,000 BTU/hr flame test
 - IEEE 1202 70,000 BTU/hr flame test

Additional Standards:

- UL 1685
- AEIC C5-8



Catalog No.	Size AWG/kcmil	Number of Strands	Insulation Thickness/Mils	Insulation Diameter inch	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW220 00601	6	7	115	.43	60	.63	286
HW220 00401	4	7	115	.50	60	.71	350
HW220 00201	2	7	115	.56	60	.77	460
HW220 00101	1	19	115	.60	60	.81	565
HW220 10101	1/0	19	115	.64	60	.84	620
HW220 20101	2/0	19	115	.68	80	.93	755
HW220 30101	3/0	19	115	.73	60	.99	890
HW220 40101	4/0	19	115	.79	80	1.04	1055
HW220 25001	250	37	115	.85	80	1.09	1205
HW220 35001	350	37	115	.95	80	1.20	1570
HW220 50001	500	37	115	1.08	80	1.34	2115
HW220 75001	750	61	115	1.27	80	1.53	2995
HW220 10001	1000	61	115	1.42	80	1.68	3870

POWER CABLE

- 8KV UL Type MV-105-LS, 105°C
- Single Conductor, Shielded
- EPR Insulation
- Low Smoke Zero Halogen Jacket
- 133% Insulation Level
- Copper Conductor

HW221 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen cable is for use in power circuits in chemical plants, refineries, steel mills, industrial plants, commercial buildings, utility substations and generating stations. It may be installed in open air, conduit, duct, cable tray when CT rated, or direct buried in earth, in wet and dry locations. It is highly flame-retardant, produces very small amounts of smoke when burned and contains no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

It is UL approved for use at 105°C for continuous operation, 140°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Cable tray rated on sizes 1/0 AWG and larger
- Sunlight-resistant
- Approved for direct burial
- Very low smoke production when burned
- Produces zero halogens during fire – less toxic and corrosive
- Environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductor:

Compressed soft annealed copper per ASTM B-3, Class B stranding per ASTM B-8, with a semi-conducting conductor shield

Insulation:

Ethylene propylene rubber (EPR) per ICEA S-97-682 Type III with a semi-conducting insulation shield

Shield:

Uncoated copper tape with a 25% overlap per ICEA S-97-682

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1072 and ICEA T-33-655-1994 Section 5-4

Flame Tests:

- CT listed sizes 1/0AWG and larger
- IEEE 383 70,000 BTU/hr flame test
 - IEEE 1202 70,000 BTU/hr flame test

Additional Standards:

- UL 1685
- AEIC C5-8



Catalog No.	Size AWG/kcmil	Number of Strands	Insulation Thickness/Mils	Insulation Diameter inch	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW221 00201	2	7	140	.813	60	.81	512
HW221 10101	1/0	19	140	.920	80	.93	711
HW221 20101	2/0	19	140	.960	80	.98	822
HW221 40101	4/0	19	140	1.065	80	1.09	1136
HW221 35001	350	37	140	1.225	80	1.25	1669
HW221 50001	500	37	140	1.350	80	1.39	2211

POWER CABLE

- 15KV UL Type MV-105-LS, 105°C
- Single Conductor, Shielded
- EPR Insulation
- Low Smoke Zero Halogen Jacket
- 133% Insulation Level
- Copper Conductor

HW222 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen cable is for use in power circuits in chemical plants, refineries, steel mills, industrial plants, commercial buildings, utility substations and generating stations. It may be installed in open air, conduit, duct, cable tray when CT rated, or direct buried in earth, in wet and dry locations. It is highly flame-retardant, produces very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

It is UL approved for use at 105°C for continuous operation, 140°C for emergency overload conditions, and 250°C for short circuit conditions.

Product Features:

- Cable tray rated on sizes 1/0 AWG and larger
- Sunlight-resistant
- Approved for direct burial
- Very low smoke production when burned
- Produces zero halogens during fire – less toxic and corrosive
- Environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash – does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductor:

Compressed soft annealed copper per ASTM B-3, Class B stranding per ASTM B-8, with a semi-conducting conductor shield.

Insulation:

Ethylene propylene rubber (EPR) per ICEA S-97-682 Type III with a semi-conducting insulation shield

Shield:

Uncoated copper tape with a 25% overlap per ICEA S-97-682

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1072 and ICEA T-33-655-1994 Section 5-4

Flame Tests:

- CT listed sizes 1/0AWG and larger
- IEEE 383 70,000 BTU/hr flame test
 - IEEE 1202 70,000 BTU/hr flame test

Additional Standards:

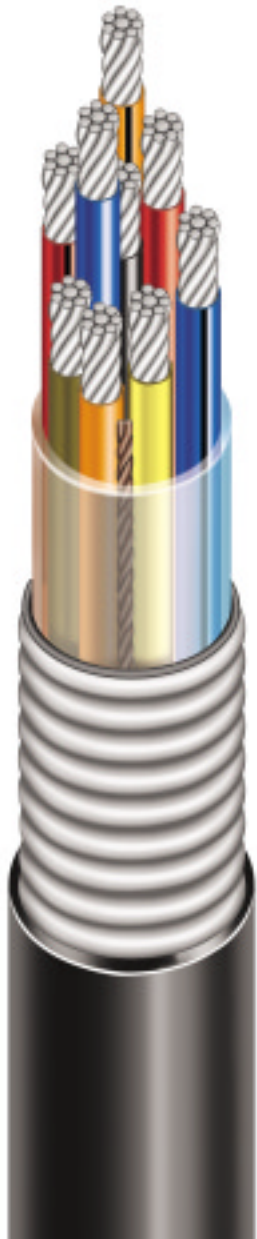
- UL 1685
- AEIC C5-8



Catalog No.	Size AWG/kcmil	Number of Strands	Insulation Thickness/Mils	Insulation Diameter/Inch	Jacket Thickness/Mils	Overall Diameter Inch	Net Weight Lbs/Mft
HW222 00201	2	7	220	.77	80	1.02	685
HW222 00101	1	19	220	.81	80	1.06	760
HW222 10101	1/0	19	220	.85	80	1.10	840
HW222 20101	2/0	19	220	.89	80	1.14	955
HW222 30101	3/0	19	220	.95	80	1.19	1115
HW222 40101	4/0	19	220	1.00	80	1.25	1275
HW222 25001	250	37	220	1.06	80	1.33	1465
HW222 35001	350	37	220	1.16	80	1.43	1840
HW222 50001	500	37	220	1.29	80	1.56	2395
HW222 75001	750	61	220	1.48	110	1.81	3415
HW222 10001	1000	61	220	1.63	110	1.98	4435

**IMPERVIOUS CONTINUOUSLY
WELDED ARMOR
CONTROL CABLE**

- 600 Volt UL Type MC-HL, CT Use, 90°
- Low Smoke Zero Halogen Jacket
- Tinned Copper Conductors



HW320 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in power, control and lighting circuits in a broad range of commercial and industrial applications. The impervious armor provides maximum conductor protection and prevents the entrance of water, gas and corrosive elements into the electrical core. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed, Type MC-LS per UL Standard 2225 and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class 1, Division 1 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions.

Impervious continuously welded corrugated aluminum armor is recommended as an economical alternative to wire in conduit systems.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Tinned conductors provide ease of termination and added protection in caustic environments
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash - does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

Tin coated soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8

Insulation:

Cross-linked polyethylene (XLP) per ICEA S-95-658 and UL Standard 44 for Type XHHW-2 conductors

Grounding Conductor:

Soft annealed copper per ASTM B-3, Class B stranding per ASTM B-8 sized in accordance with UL Standard 1227

Armor:

Impervious continuously welded and corrugated aluminum

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277.

Flame Tests:

IEEE 1202 70,000 BTU/hr flame test
IEEE 383 70,000 BTU/hr flame test
ICEA T-29-520 210,000 BTU/hr flame test

Color Code:

ICEA Method 1, Table E-2

Additional Standards:

- UL 1685
- NEMA WC70

Catalog No.	Size AWG	No. of Conductors	No. of Strands	Insulation Thickness/Mils	Grd. Wire Size	Armor Dia./ In.	Jacket Thickness/Mils	Overall Dia./ In.	Net Weight Lbs/Mft
HW320 01402	14	2	7	30	14	.52	60	.64	180
HW320 01403	14	3	7	30	14	.56	60	.68	210
HW320 01404	14	4	7	30	14	.60	60	.72	241
HW320 01407	14	7	7	30	14	.64	60	.76	278
HW320 01409	14	9	7	30	14	.74	60	.86	337
HW320 01412	14	12	7	30	14	.83	60	.95	412
HW320 01419	14	19	7	30	14	.91	60	1.03	557
HW320 01437	14	37	7	30	14	1.30	60	1.42	987
HW320 01202	12	2	7	30	12	.56	60	.68	215
HW320 01203	12	3	7	30	12	.60	60	.72	255
HW320 01204	12	4	7	30	12	.64	60	.76	296
HW320 01207	12	7	7	30	12	.69	60	.81	350
HW320 01209	12	9	7	30	12	.83	60	.95	435
HW320 01212	12	12	7	30	12	.88	60	.98	513
HW320 01219	12	19	7	30	12	1.06	60	1.16	730
HW320 01237	12	37	7	30	12	1.42	60	1.52	1315
HW320 01002	10	2	7	30	10	.61	60	.71	258
HW320 01003	10	3	7	30	10	.65	60	.75	310
HW320 01004	10	4	7	30	10	.70	60	.80	356
HW320 01007	10	7	7	30	10	.79	60	.89	450
HW320 01009	10	9	7	30	10	.88	60	.98	555
HW320 01012	10	12	7	30	10	1.06	60	1.12	700

**IMPERVIOUS CONTINUOUSLY
WELDED ARMOR
POWER CABLE**

- 600 Volt UL Type MC-LS, CT Use, 90°
- Low Smoke Zero Halogen Jacket
- Tinned Copper Conductors



HW321 Specifications

Application:

LifeGuard™ Low Smoke Zero Halogen* cable is for use in power, control and lighting circuits in a broad range of commercial and industrial applications. The impervious armor provides maximum conductor protection and prevents the entrance of water, gas and corrosive elements into the electrical core. LifeGuard™ cable jackets are highly flame-retardant, produce very small amounts of smoke when burned and contain no halogens. LifeGuard™ cable is ideal for applications where a high degree of safety and equipment protection is required.

LifeGuard™ cable is UL listed, Type MC-LS per UL Standard 2225 and approved for installation indoors or outdoors, aerially, in conduits, ducts, cable trays and direct burial in circuits not exceeding 600 volts. It may be installed in temperatures as low as -30°C and used in NEC Class 1, Division 1 hazardous locations. It is UL approved for continuous operation at 90°C in wet and dry locations, 130°C for emergency overload conditions, and 250°C for short circuit conditions.

Impervious continuously welded and corrugated aluminum armor is recommended as an economical alternative to wire in conduit systems.

Product Features:

- Tray rated
- Sunlight-resistant
- Approved for direct burial
- Tinned conductors provide ease of termination and added protection in caustic environments
- Very low smoke production when burned
- LifeGuard™ jacket produces zero halogens during fire – less toxic and corrosive
- LifeGuard™ jacket is environmentally safe – lead, sulfur and halogen free
- Highly chemical-resistant
- Very flame-retardant
- Burns to an ash - does not exhibit thermoplastic drip
- Excellent compression and impact resistance
- Superior tensile strength and abrasion resistance
- Flexible jacket with low coefficient of friction

Conductors:

Tin coated soft annealed copper per ASTM B-33, Class B stranding per ASTM B-8.

Insulation:

Cross-linked polyethylene (XLP) per ICEA S-95-658 and UL Standard 44 for Type XHHW-2 conductors

Grounding Conductor:

Soft annealed copper per ASTM B-3, Class B stranding per ASTM B-8 sized in accordance with UL Standard 1227

Armor:

Impervious continuously welded and corrugated aluminum

Jacket:

Sunlight-resistant and flame-retardant, Low Smoke Zero Halogen polyolefin per UL Standard 1277.

Flame Tests:

IEEE 1202 70,000 BTU/hr flame test
IEEE 383 70,000 BTU/hr flame test
ICEA T-29-520 210,000 BTU/hr flame test

Color Code:

ICEA Method 4

Additional Standards:

- UL 1685
- NEMA WC70

Catalog No.	Size AWG	No. of Conductors	No. of Strands	Insulation Thickness/Mils	Grd. Wire Size	Armor Dia./ In.	Jacket Thickness/Mils	Overall Dia./ In.	Net Weight Lbs/Mft
HW321 00803	8	3	7	45	10	.78	60	.90	437
HW321 00804	8	4	7	45	10	.83	60	.95	507
HW321 00603	6	3	7	45	8	.87	60	.99	585
HW321 00604	6	4	7	45	8	.91	60	1.03	683
HW321 00403	4	3	7	45	8	.91	60	1.03	747
HW321 00404	4	4	7	45	8	1.05	60	1.17	919
HW321 00203	2	3	7	45	6	1.30	60	1.42	1377
HW321 00204	2	4	7	45	6	1.30	60	1.42	1356
HW321 00103	1	3	19	55	6	1.30	60	1.42	1330
HW321 00104	1	4	19	55	6	1.43	60	1.55	1642
HW321 10103	1/0	3	19	55	6	1.35	60	1.47	1566
HW321 10104	1/0	4	19	55	6	1.47	60	1.59	1950
HW321 20103	2/0	3	19	55	6	1.47	60	1.59	1930
HW321 20104	2/0	4	19	55	4	1.59	70	1.73	2420
HW321 40103	4/0	3	19	55	6	1.67	70	1.81	2782
HW321 40104	4/0	4	19	55	4	1.87	70	2.01	3548
HW321 25003	250	3	37	65	3	1.87	70	2.01	3269
HW321 25004	250	4	37	65	4	2.04	70	2.18	4116
HW321 35003	350	3	37	65	3	2.04	70	2.18	4376
HW321 35004	350	4	37	65	3	2.29	85	2.46	5633
HW321 50003	500	3	37	65	2	2.43	85	2.60	6041
HW321 50004	500	4	37	65	2	2.67	85	2.84	7891
HW321 75003	750	3	61	80	1	2.93	85	3.10	8906
HW321 75004	750	4	61	80	1	3.22	95	3.41	11530

Comparative Jacket Compound Properties* Relative Performance Data

PROPERTIES	JACKET COMPOUND MATERIALS					
	LS-ZH	(FR-PVC)	(PE)	(GPE)	NEOPRENE®	HYPALON® (CSPE)
MECHANICAL						
Compression Resistance	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
Tensile Strength	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
Elongation	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
Abrasion Resistance	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	GOOD	GOOD
Flexibility	GOOD	GOOD	FAIR	FAIR	EXCELLENT	EXCELLENT
ENVIRONMENTAL						
Acetone	GOOD	POOR	GOOD	FAIR	POOR	FAIR
Acid,Nitric	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
Alcohol, Wood	GOOD	FAIR	GOOD	GOOD	FAIR	GOOD
Creosote	GOOD	POOR	GOOD	FAIR	FAIR	FAIR
Ethyl Acetate	GOOD	POOR	GOOD	FAIR	POOR	FAIR
Gasoline	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	POOR	POOR
Oil, Fuel	EXCELLENT	GOOD	FAIR	EXCELLENT	GOOD	GOOD
Potassium Hydroxide	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	GOOD	EXCELLENT
Sunlight Resistance	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
Water (fresh & salt)	EXCEPTIONAL	GOOD	EXCEPTIONAL	EXCELLENT	POOR	EXCELLENT
FLAME						
Flame Resistance	EXCELLENT	GOOD	POOR	EXCELLENT	EXCELLENT	EXCELLENT
Smoke Test	EXCELLENT	POOR	GOOD	GOOD	GOOD	POOR
SAFETY						
Corrosivity	LOW	HIGH	LOW	M-HIGH	HIGH	HIGH
Toxicity	LOW	HIGH	HIGH	M-HIGH	M-HIGH	M-HIGH
Sulfur/Antimony	NONE	HIGH	NONE	HIGH	HIGH	HIGH
Lead	NONE	M-HIGH	NONE	LOW	HIGH	HIGH
Halogen	NONE	HIGH	NONE	M-HIGH	HIGH	HIGH
RELEVANT TEMPERATURES						
Minimum Installation Temp. (C)	(-30)	(-10)	(-40)	(-40)	(-20)	(-20)
Maximum Operating Temp. (C)	90	90	75	90	90	90
Dimensional Stability Under Heat	GOOD	GOOD	FAIR	GOOD	EXCELLENT	EXCELLENT
OTHER						
Oxygen Index (ASTM2863)	39%	26%	17%	28%	35%	33%
Colorable	YES	YES	YES	NO	NO	LIMITED



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