Southwire® & OMNICABLE EMPOWERING DISTRIBUTION®

Halo-Flex™ TC-ER-HL Cable

HAZARDOUS LOCATION CABLES

Southwire Company, LLC is committed to providing our customers with solutions for every type of industrial environment, including those rugged environments found in heavy industrial and offshore markets. Many of these locations are considered hazardous by the National Electric Code (NEC) which defines a hazardous location as an area where a fire or explosion hazard may exist due to flammable gases, vapors, liquids, or combustible dust.

Our hazardous location cable collection consists of cables that are both rugged and durable, including Halo-Flex™ cable, Armor-X® cable, and Aluminum Interlocked Armor (AIA).

WHAT IS A HAZARDOUS LOCATION?

Explosion or fire hazards exist due to the presence of flammable gases, combustible liquid-produced vapors, combustible dusts, or ignitable fibers or flyings.

HOW ARE HAZARDOUS AREAS CLASSIFIED?

Based on the **likelihood** of an ignitable concentration of combustible material being present

WHAT ARE THE CLASSIFICATION SYSTEMS?

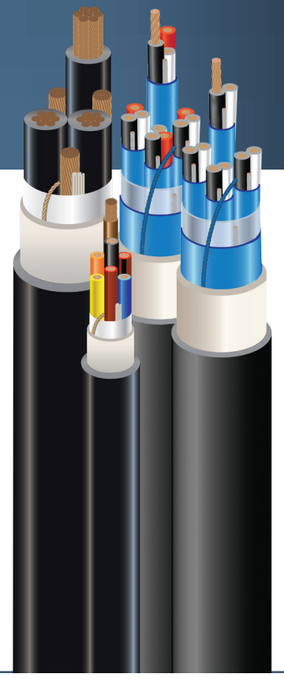
Two systems per NEC: The traditional **Division** system and the alternative **Zone** system

TYPICAL INDUSTRIAL APPLICATIONS WITH HAZARDOUS LOCATIONS:

1. Chemical industry for example fertilizer plants
2. Paint spraying booth or location for example for the automotive industry
3. Power generation plants
4. Gas manufacturing plants, gas turbines
5. Oil refineries, offshore drilling rigs, and oil extraction plants
6. Distilling
7. Pump station, sewerage or waste treatment plants, and recycling operations
8. Mining operation
9. Wood/pulp/paper mills
10. Pharmaceutical industry, food manufacturing, grain handling & storage

*For additional information on Hazardous Locations, see the Appendix

HALO-FLEX™ TC-ER-HL



Halo-Flex™ TC-ER-HL is an ideal, flexible power cabling solution

When installation deadlines are critical and superior electrical properties are desired, you need a **Class 1, Division 1 cable** product that is flexible and durable. Southwire has the solution – Halo-Flex™ TC-ER-HL, a new, innovative product for use in all hazardous locations. Available in power, instrumentation, and control 600 volt constructions, Halo-Flex™ TC-ER-HL features durable design properties. This makes the cable well-suited for the most demanding applications, including vertical installations. Halo-Flex™ TC-ER-HL may be installed in trays, duct, troughs, conduit, or direct burial applications.

Developed and tested at Southwire's D.B. Cofer Technology Center, one of the world's leading UL certified wire and cable research centers, Halo-Flex™ TC-ER-HL is an ideal, flexible power cabling solution for mining, oil and gas, and petrochemical applications.

Benefits of Halo-Flex™ Cable

Featuring many firsts in the market, Southwire's new Halo-Flex™ product line holds several advantages:

- This construction can be utilized in areas where armored products are typically used.
- Longer lengths can be achieved in production, as well as in installations where an armored construction may have restrictions depending on how they are installed.
- The use of flexible stranding gives our product increased flexibility.
- Our patented Southwire white binder layer formulation was developed to further increase flexibility.
- Halo-Flex™ Cable's thermoset jacket is made with patented SIM Technology for easier installation due to a lower coefficient of friction. Learn more at www.patentsw.com
- Passes -40°C cold impact and cold bend tests.
- UL approved product that is also MSHA, ABS, and RoHS-3 compliant.

600V PVC/NYLON SHIELDED PAIRS, CPE Jacket SPOS Halo-Flex™, TYPE TC-ER-HL

Stock Number	Cond. Size	Number of Pairs	Insul. Thickness	Jacket Thickness	Approx. OD	Approx. Weight	Min Bending Radius	DC Resistance @ 25°C
	AWG/kcmil	pair	mil	mil	inch	lb/1000ft	inch	Ω/1000ft
679953◊	16	1	20	45	0.409	120	5.0	4.18
679955◊	16	2	20	60	0.515	177	6.0	4.18
679957◊	16	4	20	60	0.655	306	8.0	4.18
679959◊	16	8	20	60	0.794	469	10.0	4.18
678168	16	12	20	80	0.980	671	12.0	4.18
678171*	16	24	20	80	1.288	1135	15.0	4.18

All dimensions are nomial and subject to normal manufacturing tolerances
◊Cable marked with this symbol is a standard stock item
*** TC-ER only. Not printed -HL**
† 1 pair is TC Only

600V PVC/NYLON SHIELDED TRIADS, CPE JACKET STOS Halo-Flex™, TYPE TC-ER-HL

Stock Number	Cond. Size	Number of Pairs	Insul. Thickness	Jacket Thickness	Approx. OD	Approx. Weight	Min Bending Radius	DC Resistance @ 25°C
	AWG/kcmil	pair	mil	mil	inch	lb/1000ft	inch	Ω/1000ft
679991◊	16	1	20	45	0.424	140	5.0	4.18
679995◊	16	4	20	60	0.782	395	9.0	4.18

All dimensions are nomial and subject to normal manufacturing tolerances
◊Cable marked with this symbol is a standard stock item

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Southwire®

Multi-Conductor 600- or 1000-Volt Cu (FR- XLPE) XHHW-2 CPE Control Cable Halo-Flex™ Type TC-ER-HL

Weights and Measurements

Stock Number	Cond. Size	Cond. Number	Diameter Over Conductor	Insul. Thickness	Jacket Thickness	Approx. OD	Copper Weight	Approx. Weight
	AWG	Conductors	inch	mil	mil	inch	lb/1000ft	lb/1000ft
679785	14	5	0.074	30	60	0.647	64	243
679789	14	6	0.074	30	60	0.647	77	260
679792	14	7	0.074	30	60	0.688	90	290
679804	12	5	0.092	30	60	0.71	102	306
679807	12	6	0.092	30	60	0.71	122	331
679810	12	7	0.092	30	60	0.758	143	371
679841	10	5	0.116	30	60	0.799	162	404
679844	10	6	0.116	30	60	0.799	194	442
679848	10	7	0.116	30	60	0.874	227	532

All dimensions are nomial and subject to normal manufacturing tolerances

Electrical and Engineering Data

Stock Number	Cond. Size	Cond. Number	DC Resistance	AC Resistance @ 90°C	Min Bending Radius	Allowable Ampacity At 60°C *	Allowable Ampacity 75°C *	Allowable Ampacity 90°C *
	AWG	Conductors	Ω/1000ft	Ω/1000ft	inch	Amp	Amp	Amp
679785	14	5	2.63	3.288	2.6	14	15	15
679789	14	6	2.63	3.288	2.6	14	15	15
679792	14	7	2.63	3.288	2.8	12	15	15
679804	12	5	1.66	2.075	3.0	16	20	20
679807	12	6	1.66	2.075	3.0	16	20	20
679810	12	7	1.66	2.075	3.0	14	20	20
679841	10	5	1.04	1.3	3.1	24	28	30
679844	10	6	1.04	1.3	3.1	24	28	30
679848	10	7	1.04	1.3	3.5	21	24	28

All dimensions are nomial and subject to normal manufacturing tolerances
† Ampacities are based on Table 310.16 of the NEC, 2020 Edition. Ampacities of insulated conductors rated up to and including 2000 Volts, based on ambient temperature of 30°C (86°F)

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3/C or 4/C 600- or 1000-Volt Cu (FR- XLPE) XHHW-2 CPE Control Cable Halo-Flex™ Type TC-ER-HL

Weights and Measurements

Stock Number	Cond. Size	Cond. Number	Diameter Over Conductor	Insul. Thickness	Ground	Jacket Thickness	Approx. OD	Copper Weight	Approx. Weight
	AWG	Conductors	inch	mil	No. X AWG	mil	inch	lb/1000ft	lb/1000ft
679778◊	14	3	0.077	30	3x18	45	0.505	38	162
679782◊	14	4	0.077	30	3x18	60	0.569	51	202
679797◊	12	3	0.094	30	3x16	60	0.58	61	220
679800◊	12	4	0.094	30	3x16	60	0.62	81	255
679834◊	10	3	0.118	30	3x14	60	0.632	97	287
679838◊	10	4	0.118	30	3x14	60	0.677	130	336

All dimensions are nomial and subject to normal manufacturing tolerances
◊Cable marked with this symbol is a standard stock item

Electrical and Engineering Data

Stock Number	Cond. Size	Cond. Number	Min Bending Radius	DC Resistance	AC Resistance @ 90° C	Allowable Ampacity @ 60° C	Allowable Ampacity @ 75° C	Allowable Ampacity @ 90° C
	AWG	Conductors	inch	Ω/1000ft	Ω/1000ft	Amp	Amp	Amp
679778	14	3	2.0	2.63	3.288	15	15	15
679782	14	4	2.3	2.63	3.288	15	15	15
679797	12	3	2.3	1.66	2.075	20	20	20
679800	12	4	2.5	1.66	2.075	16	20	20
679834	10	3	2.5	1.04	1.3	30	30	30
679838	10	4	3.0	1.04	1.3	24	28	30

All dimensions are nomial and subject to normal manufacturing tolerances
† Ampacities are based on Table 310.16 of the NEC, 2020 Edition. Ampacities of insulated conductors rated up to and including 2000 Volts, based on ambient temperature of 30°C (86°F)

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3/C 600- or 1000-Volt Cu (FR- XLPE) XHHW-2 CPE Power Cable Halo-Flex™ Type TC-ER-HL

Weights and Measurements

Stock Number	Cond. Size	Strand Count	Diameter Over Conductor	Insulation Thickness	Diameter Over Insulation	Ground	Jacket Thickness	Approx. OD	Copper Weight	Approx. Weight
	AWG/kcmil	No. of Strands	inches	mils	inches	No. x AWG	mils	inches	lb/1000ft	lb/1000ft
679916◊	8*	41	0.153	45	0.247	3 x 14	60	0.783	154.5	414
679919◊	6*	65	0.184	45	0.278	3 x 12	80	0.889	246	585
678561	4	112	0.235	45	0.329	3 x 12	80	.999	391	839
674799	2	168	0.315	45	0.409	3 x 10	80	1.171	621	1194
674802	1/0	259	0.385	55	0.501	3 x 10	80	1.37	987	1710
674806	2/0	324	0.420	55	0.536	3 x 10	80	1.446	1245	2025
674809	3/0	418	0.470	55	0.586	3 x 8	110	1.554	1560	2614
674813	4/0	532	0.535	55	0.645	3 x 8	110	1.741	1979	3114
678647	250	627	0.605	65	0.735	3 x 8	110	1.936	2339	3727
674816	350	855	0.670	65	0.800	3 x 6	110	2.076	3275	4999
678651	500	1221	0.858	65	.988	3 x 6	110	2.482	4678	6767
678654	750	1850	1.094	80	1.254	3 x 4	140	3.117	7017	10433

All dimensions are nomial and subject to normal manufacturing tolerances
◊ Cable marked with this symbol is a standard stock item
* indicates TC-ER-HL items

Electrical and Engineering Data

Stock Number	Cond. Size	Min Bending Radius	Max Pull Tension	DC Resistance @ 25° C	AC Resistance @ 90° C	Inductive Reactance @ 60Hz	Allowable Ampacity @ 60° C	Allowable Ampacity @ 75° C	Allowable Ampacity @ 90° C
	AWG/kcmil	inches	lbs.	Ω/1000ft	Ω/1000ft	Ω/1000ft	Amps	Amps	Amps
679916	8	3.1	396	0.652	0.815	0.033	40	50	55
679919	6	3.6	630	0.411	0.514	0.031	55	65	75
678561	4	4.0	1002	0.258	0.323	0.03	70	85	95
674799	2	5.9	1593	0.162	0.203	0.028	95	115	130
674802	1/0	7.0	2534	0.102	0.128	0.028	125	150	170
674806	2/0	7.2	3194	0.081	0.102	0.027	145	175	195
674809	3/0	7.7	4027	0.064	0.081	0.027	165	200	225
674813	4/0	9.0	5078	0.051	0.064	0.026	195	230	260
678647	250	10.0	6000	0.043	0.055	0.027	215	255	290
674816	350	12.1	8400	0.031	0.04	0.026	260	310	350
678651	500	15.0	12000	0.022	0.029	0.025	320	380	430
678654	750	19.0	18000	0.014	0.02	0.025	400	475	535

All dimensions are nomial and subject to normal manufacturing tolerances
† Ampacities are based on Table 310.16 of the NEC, 2020 Edition. Ampacities of insulated conductors rated up to and including 2000 Volts, based on ambient temperature of 30°C (86°F)

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Hazardous Location Definitions*

Hazardous Locations

Flammable gases, vapors produced from flammable liquid, vapors generated from combustible liquid, combustible dust, or easily ignitable fibers or flyings may be present in the air in quantities sufficient to produce fire or explosions under the below conditions:

Zone 0

1. Present continuously
2. Present for long periods of time

Class I, Zone 1

1. Are likely to exist under normal operating conditions
2. May exist frequently because of repair or maintenance operations or because of leakage
3. May exist due to equipment breakdown or faulty operation
4. Adjacent to a Zone 0 Location

Class I, Zone 2

1. Are NOT likely to exist under normal operating conditions
2. Are confined within closed containers of closed systems from which they can escape, only as a result of accidental rupture or breakdown of the containers or system, or as a result of the abnormal operation of the equipment with which the liquids or gases are handled, processed, or used
3. Are prevented by positive mechanical ventilation but which may become hazardous as a result of failure or abnormal operation of the ventilation equipment
4. Adjacent to a Zone 1 location

* Per NEC NFPA 70 (2020) Article 505

Location Classification

Hazardous Material	NEC Class	NEC Class	NEC Zone
Gas & Vapor	Class I	Division 1	Zone 0
			Zone 1
		Division 2	Zone 2
Dust	Class II	Division 1	Zone 0
			Zone 1
		Division 2	Zone 2
Fibers and Flyings	Class III	Division 1	Zone 0
			Zone 1
		Division 2	Zone 2

Ignitable Gas or Vapor Mixture	NEC Division System	NEC Zone System
Present CONTINUALLY or LASTS LONG PERIODS	Division 1	Zone 0
Present INTERMITTENTLY		Zone 1
NOT NORMALLY Present (Present ACCIDENTLY)	Division 2	Zone 2

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