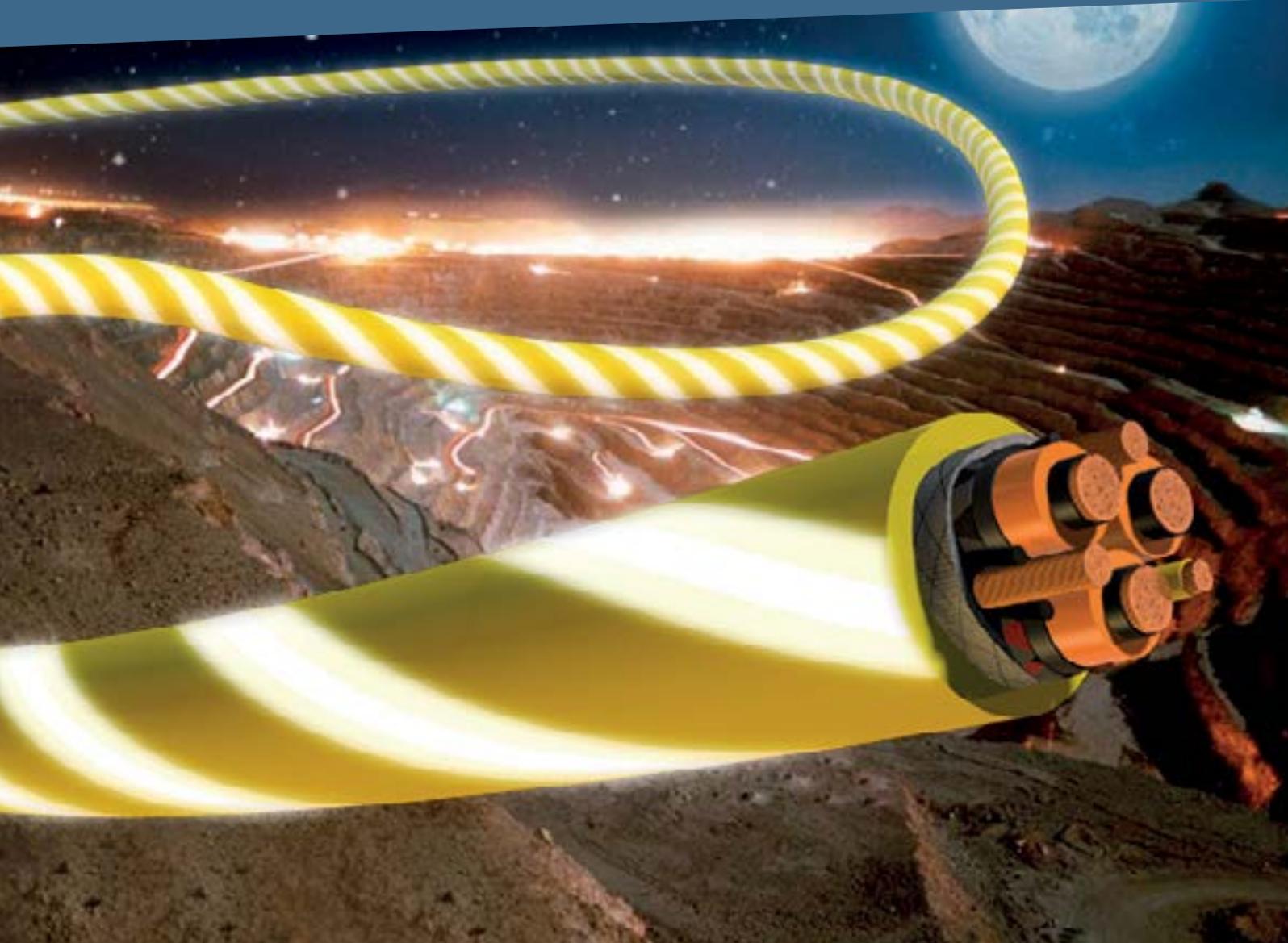


# MINING



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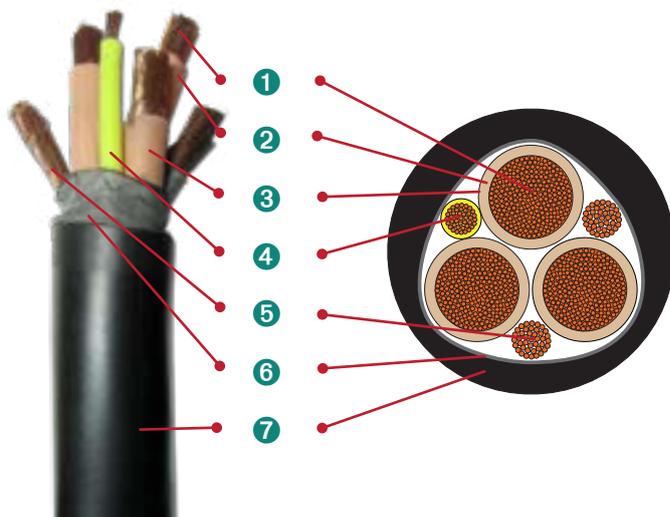
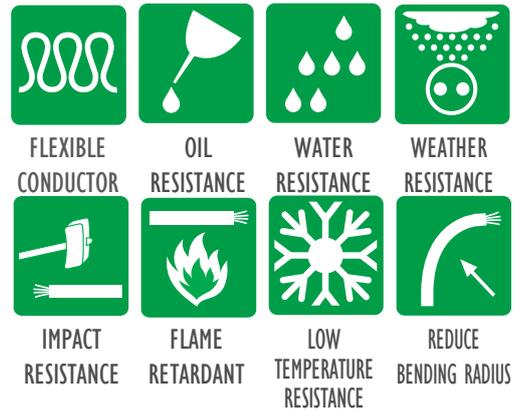
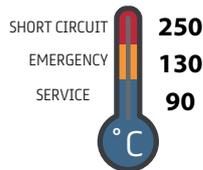
*Codelco División Andina 2016*



## Mining Cables

### G-GC

Three Round Extra-flexible Copper Conductor, EPR Insulation, Two grounds conductors, Ground Check Conductor, Hypalon™ Jacket. 2 kV



- 1 CONDUCTOR:** Stranded extra-flexible soft copper conductors.
- 2 INSULATION:** Ethylene Propylene Rubber (EPR) allows the conductor to operate at 90°C, 130°C at emergency and 250°C in case of a short circuit. Single-color compounds with surface printing of color designation (black, white and red).
- 3 INSULATION SHIELD:** Nylon Tape helicoidally applied over each phase.
- 4 GROUND CHECK CONDUCTOR:** Extra flexible soft bare copper conductor, yellow HDPE insulation.
- 5 GROUNDING CONDUCTORS:** Two Extra flexible soft bare copper conductor.
- 6 TEXTILE FIBER REINFORCEMENT:** Open braid yarn applied over the core assemble for reinforcement.
- 7 JACKET:** Black Color sulfonated chlorine Polyethylene (Hypalon™). Other colors or materials are available on demand.

PRINT: General Cable G-GC 3x [conductor size] + 2x [grounding conductor size] +1x [ground check conductor size] AWG Cu 2 kV HECHO EN CHILE

## APPLICATIONS

Heavy duty portable trailing cable, suitable for use with mobile mining equipment such as continuous miners, drills, cutters, loading machines, conveyors, pumps and AC shuttle cars. The type G - GC is for application on a three phase AC circuit, where grounding conductors and ground check control cable are required. For use in circuit not exceeding 2,000 V, maximum conductor temperature of 90°C

## TECHNICAL FEATURES

Service Maximum Voltage: 2 kV.

Service Maximum Temperature: 90 °C, dry or wet.

Emergency Temperature: 130 °C.

Short Circuit Temperature: 250 °C.

The large number of soft copper threads included in its design, gives to the conductor the extra flexibility required for its application.

The EPR gives to the cable very good electrical and mechanical properties plus flexibility and a good performance on wet locations, assuring a long operational life.

Ground Check Control Cable allows permanent ground conductors monitor, giving great security to the equipment operators. Combining textile fiber reinforcement with the Hypalon™ Jacket allows operate cable in heavy duty conditions.

Thermosetting elastomer Jacket formulated for heavy or extra heavy duty, highly resistant to cutting, abrasion, chemicals, sunlight and flame.

## MANUFACTURE STANDARD AND TEST SPECIFICATIONS

Manufacture, design, test methods and their frequency are based on ICEA S75-381 and following General Cable/Cocesa's Quality Assurance Procedures, certified by ISO 9001.

## PACKAGING

Non-returnable wooden reels. Put-ups: 300 m.

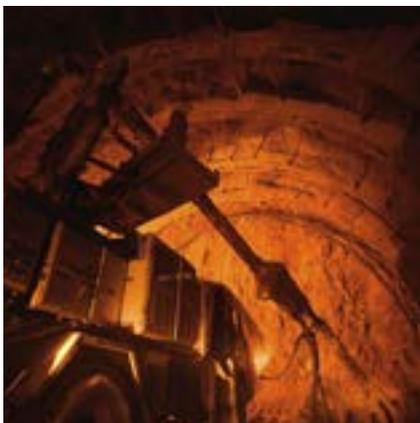
## INSTALLATION

Conductor design and raw materials used makes possible to install the cable directly on the land soil, in outdoor locations, under severe environmental conditions, commonly present at mining fields.

## OPTIONS

LSOH TPU Jacket.

Ground Check Control Cable could be made with a major size or would be substitute by another extra flexible soft bare copper conductor (In this case is a "G" type cable).



## DIMENSIONS, RANGE AND ELECTRICAL VALUES

### G-GC 2000 V

Conductor Size AWG/kcmil			Nominal Area mm <sup>2</sup>	Conductor Diameter approx. mm	Nominal Insulation Thickness mm	Nominal Overall Diameter mm	Total Weight approx. kg/km	Maximum Resistance 20 °C CC Ω/km	Minimum Bending Radius approx. mm	Ampacity A
Cond.	Ground	Ground Check								
8	10	8	8,37	4,5	1,52	24,6	963	2,14	148	59
6	10	8	13,3	5,5	1,52	26,7	1.153	1,35	160	79
4	8	8	21,2	6,8	1,52	30,2	1.613	0,846	181	104
2	7	8	33,6	8,7	1,52	34,0	2.192	0,531	204	138
1	6	8	42,4	9,8	2,03	38,4	2.765	0,423	230	161
1/0	5	8	53,5	11,0	2,03	41,9	3.351	0,335	251	186
2/0	4	8	67,4	12,7	2,03	44,5	3.949	0,266	267	215
3/0	3	8	85	13,9	2,03	48,0	4.738	0,211	288	249
4/0	2	8	107	15,8	2,03	51,8	5.779	0,167	311	287
250	2	8	127	16,8	2,41	60,7	7.307	0,141	364	320
350	1/0	8	177	20,2	2,41	68,1	8.634	0,101	409	394
500	2/0	8	253	23,9	2,41	77,0	12.523	0,0708	462	487

The ampacities values are estimated for 90°C conductor temperature and 40°C ambient temperature.

For another temperatures or when one or more layers of cable are wound on a reel, you have to apply the correction factors indicated below:

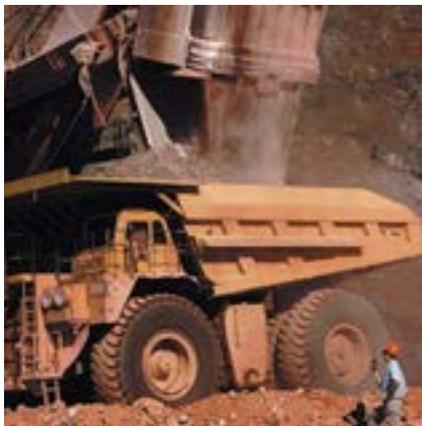
Temperature Derating Factors

Temp. °C	10	20	30	40	50
Factor	1,26	1,18	1,10	1,00	0,90

Layer Corrections Factors

Layers N°	1	2	3	4
Factor	0,85	0,65	0,45	0,35

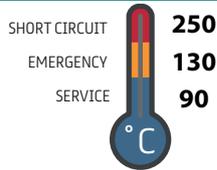
The data listed above is approximate and subject to normal manufacturing tolerances.



## Mining Cables

### MP-GC

Three compacted copper conductors, XLPE insulation, Two grounds conductors, ground check conductor, PVC Jacket. 15 kV and 25 kV



LEAD FREE



WATER RESISTANCE



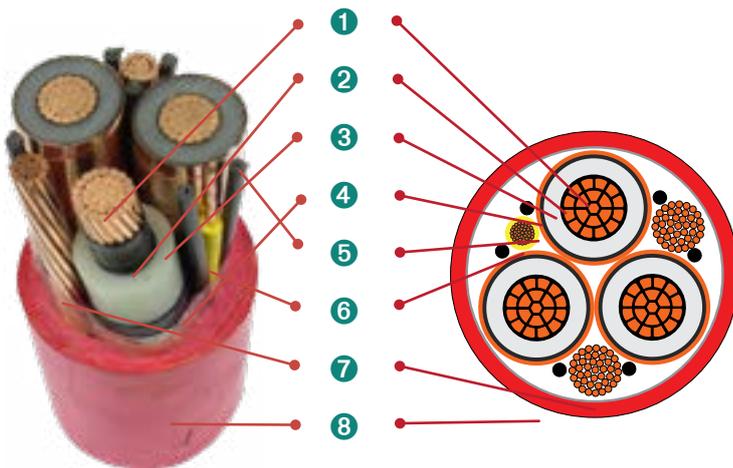
WEATHER RESISTANCE



IMPACT RESISTANCE



FLAME RETARDANT



- 1 CONDUCTOR: Three compacted round stranded copper conductor by ASTM B496 or ASTM B835 standards.
- 2 EXTRUDED STRAND SHIELD: Extruded thermosetting semi-conducting stress control layer over the conductor.
- 3 INSULATION: Cross-Linked Polyethylene Tree Retardant (XLPE-TR) insulation
- 4 INSULATION SHIELD: Extruded thermosetting semi-conducting layer over insulation.
- 5 METALLIC SHIELD: Overlapped annealed copper tape.
- 6 GROUND CHECK CONDUCTOR: Round stranded copper conductor, class B, 8 AWG, insulated with yellow color thermoplastic compound for 600 V.
- 7 GROUNDING CONDUCTORS: Round stranded copper conductor, class B.
- 8 JACKET: Extruded thermoplastic black color PVC. Other colors available on demand.

PRINT: General Cable MP-GC 3x [conductor size] + 2x [grounding conductor size] + 1x [ground check conductor size] AWG Cu [voltage level] [insulation level] XLPE-TR/PVC 90C + YEAR + HECHO EN CHILE

## APPLICATIONS

For power circuit feeders and medium voltage distribution in permanent installations in open pit mines. For indoor and outdoor use.

## MANUFACTURE STANDARD AND TEST SPECIFICATIONS

Manufacture, design, test methods and their frequency are based on ICEA S75-381 and following General Cable/Cocesa's Quality assurance Procedures, certified by ISO 9001.

## TECHNICAL FEATURES

Service Maximum Voltage: 15-25 kV, according to the cable.  
 Service Maximum Temperature: 90 °C, dry or wet.  
 Emergency Temperature: 130 °C.  
 Short Circuit Temperature: 250 °C.

Flame retardant Jacket, moisture resistant and chemical products.

OPTIMAL : MP-GC cables are designed to comply with the requirement of non-propagation of fire according to IEC 60332-3-24 Category C.

## PACKAGING

Non-returnable wooden reels.

## INSTALLATION

Conductor design and raw materials used makes possible to operate the cable in wet or dry locations, buried ducts, in perforations made in the rock, directly buried or aerial installations.

## OPTIONS

The jacket can be manufactured with EVA, replacing the PVC, which gives this cable a low smoke emission of halogen-free (LSOH) in case of fire. This cable can also be built with an isolation level of 133%

## DIMENSIONS, RANGE AND ELECTRICAL VALUES

MP-GC 15 kV 100% INSULATION LEVEL

Conductor Size AWG/kcmil			Conductor Nominal Area mm <sup>2</sup>	Conductor Diameter approx. mm	Nominal Insulation Thickness mm	Nominal Jacket Thickness mm	Nominal Overall Diameter mm	Total Weight approx. kg/km	Maximum Resistance 20 °C CC Ω/km	Capacitance μF/km	Ampacity A		
Cond.	Ground Cond.	Ground Check Cond.									Duct Buried (1)	Directly Buried (1)	Air based (2)
2	6	8	33,6	6,9	4,45	3,56	50,6	3.711	0,531	0,17	150	185	165
1	5	8	42,4	7,7	4,45	3,56	52,4	4.146	0,423	0,18	170	210	185
1/0	4	8	53,5	8,7	4,45	3,56	54,6	4.710	0,335	0,19	195	240	215
2/0	3	8	67,4	9,7	4,45	3,56	56,9	5.373	0,266	0,20	220	270	245
3/0	2	8	85	10,9	4,45	3,56	60,0	6.243	0,211	0,22	250	305	285
4/0	1	8	107	12,2	4,45	3,56	63,1	7.267	0,167	0,24	285	350	325
250	1/0	8	127	13,2	4,45	3,56	65,2	8.167	0,141	0,25	310	380	360
350	2/0	8	177	15,5	4,45	3,56	71,3	10.428	0,101	0,28	375	460	435
500	4/0	8	253	18,6	4,45	4,32	80,5	14.231	0,0708	0,33	450	550	535

MP-GC 25 kV 100% DE NIVEL DE AISLACIÓN

Conductor Size AWG/kcmil			Conductor Nominal Area mm <sup>2</sup>	Conductor Diameter approx. mm	Nominal Insulation Thickness mm	Nominal Jacket Thickness mm	Nominal Overall Diameter mm	Total Weight approx. kg/km	Maximum Resistance 20 °C CC Ω/km	Capacitance μF/km	Ampacity		
Cond.	Ground Cond.	Ground Check Cond.									Duct Buried (1)	Directly Buried (1)	Air based (2)
1	5	8	42,4	7,7	6,60	3,56	62,1	5.157	0,423	0,14	170	210	185
1/0	4	8	53,5	8,7	6,60	3,56	64,4	5.758	0,335	0,15	195	240	215
2/0	3	8	67,4	9,7	6,60	3,56	66,6	6.470	0,266	0,16	220	270	245
3/0	2	8	85	10,9	6,60	3,56	69,7	7.389	0,211	0,17	250	305	285
4/0	1	8	107	12,2	6,60	3,56	73,8	8.187	0,167	0,18	285	350	325
250	1/0	8	127	13,2	6,60	4,32	77,4	9.376	0,141	0,19	310	380	360
350	2/0	8	177	15,5	6,60	4,32	82,7	11.502	0,101	0,21	375	460	435
500	4/0	8	253	18,6	6,60	4,32	90,2	14.958	0,0708	0,24	450	550	535

(1) Ambient Temp. 20 °C. (2) Ambient Temp. 40 °C..

The ampacities listed are estimated for 90°C conductor temperature and 40°C ambient temperature. For another temperatures you have to apply the correction factors indicated below:

### Temperature Derating Factors

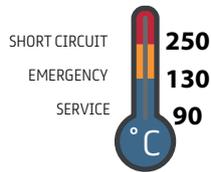
Temp. °C	10	20	30	40	50
Factor	1,26	1,18	1,10	1,00	0,90

The data listed above is approximate and subject to normal manufacturing tolerances.

Mining Cables

**NSSHÖU**

Extra-flexible Copper Conductor, EPR insulation and Hypalon™ Jacket. 0,6/1 kV



FLEXIBLE  
CONDUCTOR



OIL  
RESISTANCE



WATER  
RESISTANCE



WEATHER  
RESISTANCE



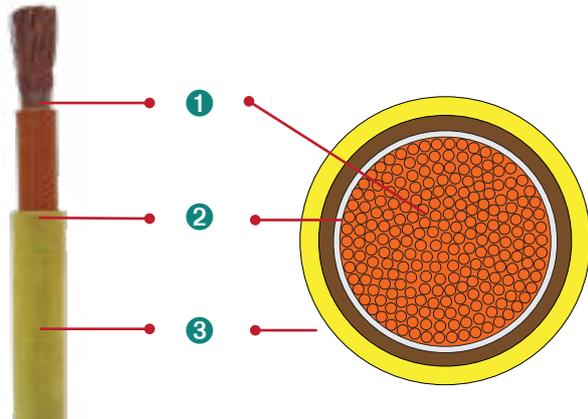
IMPACT  
RESISTANCE



FLAME  
RETARDANT



REDUCE  
BENDING  
RADIUS



- 1 CONDUCTOR: Stranded extra-flexible soft copper cable, class 5, by IEC 60228 standard.
- 2 INSULATION: Ethylene Propylene Rubber (EPR)
- 3 JACKET: Yellow sulfonated chlorine Polyethylene (Hypalon™). Other colors or materials are available on demand.

PRINT: General Cable NSSHOU [size] Cu 0,6/1 kV EPR/CSPE 90C HECHO EN CHILE

**APPLICATIONS**

Extra Heavy duty portable trailing cable, where high mechanical strength and great flexibility are required. They are suitable for underground or open-pit mining facilities and in industries for fixed or portable installations.

**MANUFACTURE STANDARD AND TEST SPECIFICATIONS**

Manufacture, design, test methods and their frequency are based on VDE 250 p812 and following General Cable/Cocesa's Quality assurance Procedures, certified by ISO 9001.

**TECHNICAL FEATURES**

Service Maximum Voltage: 1kV.  
Service Temperature: -40 °C to 90 °C, dry or wet.  
Emergency Temperature: 130 °C.  
Short Circuit Temperature: 250 °C.

Flexibility: Stranded extra-flexible soft copper cable, class 5.  
Jacket is highly resistant to tear, cutting, abrasion. Have good resistance to oils, chemicals, solvents, ozone and moisture.

**PACKAGING**

Non-returnable wooden reels. Nominal Lengths: 300 m.

**INSTALLATION**

They are suitable for use on the surface in open pit mines in dry, wet or wet environments, both in indoor and outdoor installations.

## DIMENSIONS, RANGE AND ELECTRICAL VALUES

### NSSHÖU – 1 CONDUCTOR

Conductor Size mm <sup>2</sup>	Conductor Diameter approx mm	Nominal insulation Thickness mm	Nominal Jacket Thickness mm	Nominal Overall Diameter mm	Total Weight approx. kg/km	Maximum Resistance . a 20 °C CC Ω/km	Ampacity A
120	14,3	1,8	2,5	25,1	1421	0,161	352
150	16,0	2,0	2,5	27,4	1739	0,129	404
185	17,5	2,2	3,0	30,7	2145	0,106	461
240	20,0	2,4	3,0	33,9	2753	0,0801	547
300	22,6	2,6	3,5	38,3	3457	0,0641	633

The ampacities listed are estimated for 90°C conductor temperature and 40°C ambient temperature. For another temperatures or when one or more layers of cable are wound on a reel, you have to apply the correction factors indicated below:

Temperature Derating Factors

Temp. °C	10	20	30	40	50
Factor	1,26	1,18	1,10	1,00	0,90

Layer Corrections Factors

Layers N°	1	2	3	4
Factor	0,85	0,65	0,45	0,35

The data listed above is approximate and subject to normal manufacturing tolerances.

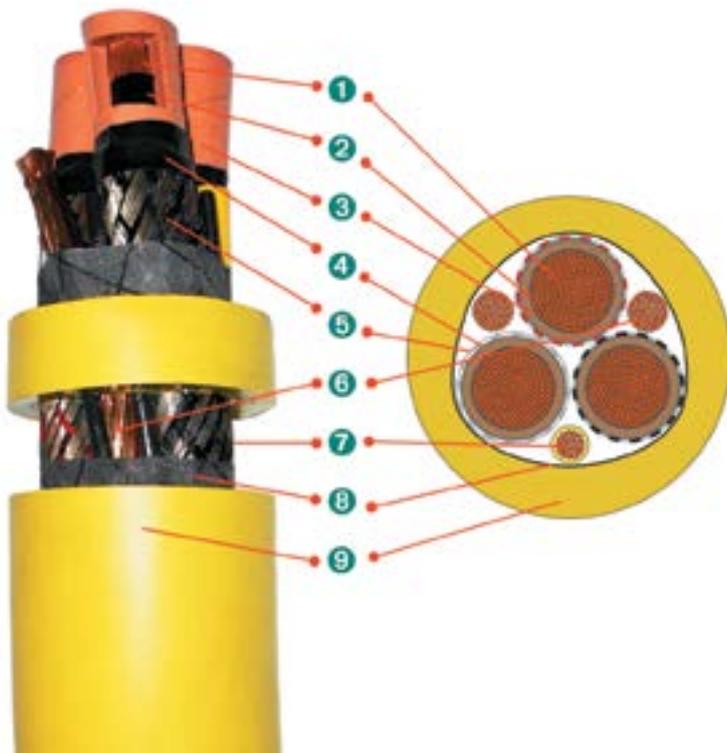
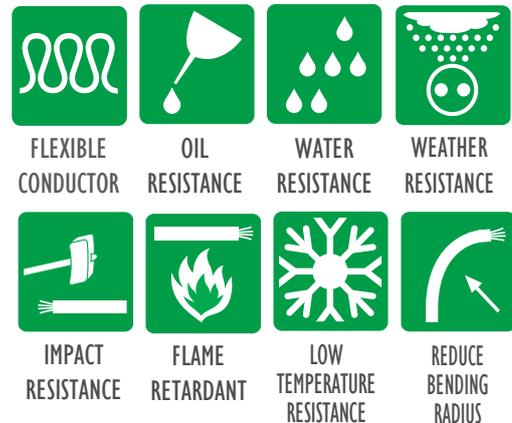
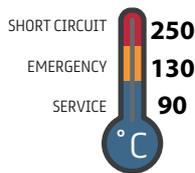
## Mining Cables

### SHD

### SHD-GC

SHD: Three stranded extra-flexible soft copper conductor, EPR insulation, Three bare grounds and Hypalon™ Jacket. 2 kV, 5 kV, 8 kV, 15 kV and 25 kV

SHD-GC: Three stranded extra-flexible soft copper conductor, EPR insulation, Two bare grounds, ground check conductors and Hypalon™ jacket. 2 kV, 5 kV, 8 kV, 15 kV and 25 kV



- 1 CONDUCTOR:** Stranded soft copper cable extra-flexible, class I.
- 2 CONDUCTOR SHIELD:** Conductors shall be covered with a semiconductor overlapped layer.
- 3 INSULATION:** Ethylene Propylene Rubber (EPR).
- 4 INSULATION SHIELD:** Each insulated phase conductor shall be covered with a overlapped semiconducting tape.
- 5 METALLIC SHIELD:** Tinned copper/textile fibers braid is applied. The textile fibers in the shield braid is colored black, white and red for easy circuit identification. The shielding braid shall provide a 60% of minimum coverage.
- 6 GROUNDING CONDUCTORS:** Extra-flexible soft bare copper conductor.
- 7 GROUND CHECK CONDUCTOR:** Extra flexible soft bare copper conductor, yellow HDPE insulation.
- 8 TEXTILE FIBER REINFORCEMENT:** Each cable shall have an open braid yarn applied over the core assembly, for reinforcement and to control adhesion and movement between the insulated conductors and the outer jacket.
- 9 JACKET:** Sulfonated chlorine Polyethylene (Hypalon™). Other colors or materials are available on demand.

## PRINT:

SHD: GENERAL CABLE SHD 3x [conductor size] +3x [grounding conductor size] AWG [voltage level] kV MADE IN CHILE

SHD-GC: GENERAL CABLE SHD-GC 3x [conductor size] + 2x [grounding conductor size] + 1x [ground check conductor size] AWG [voltage level] kV HECHO EN CHILE

## APPLICATIONS

For heavy duty medium voltage power applications on heavy mobile mining equipment, where delivery of a heavy power is required, such as shovels, dredger, drilling rigs, other off-track equipment, and for power feeders in underground mines in circuits not exceeding the rated voltage.

The cable is designed to operate continuously at a conductor temperature of 90° C maximum. The SHD - GC cable is for applications on three phase AC circuit where grounding conductor and ground check control cable are required.

## MANUFACTURE STANDARD AND TEST SPECIFICATIONS

Manufacture, design, test methods and their frequency are based on ICEA S75-381 and following General Cable/Cocesa's Quality assurance Procedures, certified by ISO 9001.

## TECHNICAL FEATURES

Service Maximum Voltage: 2-5-8-10-15-25 kV.

Service Maximum Temperature: 90 °C, dry or wet.

Emergency Temperature: 130 °C.

Short Circuit Temperature: 250 °C.

The large number of soft copper threads included in its design, gives to the conductor the extra flexibility required for its application.

The EPR gives to the cable very good electrical and mechanical properties plus flexibility and a good performance on wet locations, assuring a long operational life.

Ground Check Control Cable allows permanent ground conductors monitor, giving great security to the equipment operators.

Combining textile fiber reinforcement with the Hypalon™ Jacket allows operate cable in heavy duty conditions.

Thermosetting elastomer Jacket formulated for heavy or extra heavy duty is highly resistant to tear, cutting, abrasion, oils, chemicals, solvents, UV radiation, ozone and moisture.

## PACKAGING

Non-returnable wooden reels. Nominal Lengths: 300 m.

## INSTALLATION

Conductor design and raw materials used, allows the cable to be installed directly on rough mining fields, both in underground mines and outdoors in open pit mines, not requiring any previous preparation.

## OPTIONS

- Halogen free TPU compound (LSOH).
- Ground check control cable can be made with a size greater than the standard.

## DIMENSIONS, RANGE AND ELECTRICAL VALUES

SHD and SHD-GC 2 kV

Conductor Size						Nominal Insulation Thickness	Nominal Jacket Thickness	Nominal Overall Diameter	Total Weight approx.		Minimum Bending Radius	Maximum Resistance 20 °C CC Ω/km	Ampacity (1) A
Conductor			Ground		Ground Check				SHD	SHD-GC			
AWG kcmil	Nominal Size mm <sup>2</sup>	Diameter approx. mm	SHD AWG	SHD-GC AWG	SHD-GC AWG	mm	mm	mm	kg/km	kg/km	mm	Ω/km	A
4	21,2	6,0	8	8	6	1,78	3,9	35,6	2.090	2.260	214	0,862	122
2	33,6	7,7	8	6	6	1,78	4,3	40,4	2.871	3.006	242	0,544	159
1	42,4	8,7	7	5	6	2,03	4,8	44,7	3.501	3.618	268	0,429	184
1/0	53,5	9,4	6	4	6	2,03	4,8	47,2	4.110	4.192	283	0,344	211
2/0	67,4	10,7	5	3	6	2,03	5,2	50,8	4.862	4.885	305	0,273	243
3/0	85,0	11,7	4	2	6	2,03	5,2	54,1	5.779	5.745	325	0,217	279
4/0	107	12,9	3	1	6	2,03	5,6	58,7	7.044	6.923	352	0,172	321
250	127	13,8	2	1/0	6	2,41	5,6	63,8	8.261	8.038	383	0,146	355
350	177	17,4	1	2/0	6	2,41	6,0	71,4	10.548	10.177	428	0,105	435
500	253	20,8	2/0	4/0	6	2,41	6,7	81,0	14.499	13.750	486	0,0735	536

SHD and SHD-GC 5 kV

Conductor Size						Nominal Insulation Thickness	Nominal Jacket Thickness	Nominal Overall Diameter	Total Weight approx.		Minimum Bending Radius	Maximum Resistance 20 °C CC Ω/km	Ampacity (1) A
Conductor			Ground		Ground Check				SHD	SHD-GC			
AWG kcmil	Nominal Size mm <sup>2</sup>	Diameter approx. mm	SHD AWG	SHD-GC AWG	SHD-GC AWG	mm	mm	mm	kg/km	kg/km	mm	Ω/km	A
4	21,2	6,0	8	8	6	2,79	4,7	42,7	2.825	2.727	256	0,862	122
2	33,6	7,7	8	6	6	2,79	5,2	47,5	3.667	3.517	285	0,544	159
1	42,4	8,7	7	5	6	2,79	5,2	49,5	4.160	3.973	297	0,429	184
1/0	53,5	9,4	6	4	6	2,79	5,6	52,8	4.847	4.617	317	0,344	211
2/0	67,4	10,7	5	3	6	2,79	5,6	55,9	5.636	5.340	335	0,273	243
3/0	85,0	11,7	4	2	6	2,79	6,0	59,9	6.642	6.286	359	0,217	279
4/0	107	12,9	3	1	6	2,79	6,0	63,5	7.766	7.318	381	0,172	321
250	127	13,8	2	1/0	6	3,05	6,4	68,3	9.126	8.572	410	0,146	359
350	177	17,4	1	2/0	6	3,05	6,7	74,9	11.467	10.770	449	0,105	435
500	253	20,8	2/0	4/0	6	3,05	7,1	84,1	15.469	14.419	505	0,0735	536

SHD y SHD-GC 8 kV

Conductor Size						Nominal Insulation Thickness	Nominal Jacket Thickness	Nominal Overall Diameter	Total Weight approx.		Minimum Bending Radius	Maximum Resistance 20 °C CC Ω/km	Ampacity A
Conductor			Ground		Ground Check				SHD	SHD-GC			
AWG kcmil	Nominal Size mm <sup>2</sup>	Diameter approx. mm	SHD AWG	SHD-GC AWG	SHD-GC AWG	mm	mm	mm	kg/km	kg/km	mm	Ω/km	A
4	21,2	6,0	8	8	6	3,81	5,21	49,3	3.414	3.291	394	0,862	122
2	33,6	7,7	8	6	6	3,81	5,59	53,8	4.269	4.091	430	0,544	159
1	42,4	8,7	7	5	6	3,81	5,59	56,1	4.815	4.595	449	0,429	184
1/0	53,5	9,4	6	4	6	3,81	5,59	58,9	5.466	5.204	471	0,344	211
2/0	67,4	10,7	5	3	6	3,81	5,97	62,5	6.347	6.016	500	0,273	243
3/0	85,0	11,7	4	2	6	3,81	6,35	66,5	7.387	6.991	532	0,217	279
4/0	107	12,9	3	1	6	3,81	6,35	69,9	8.512	8.016	559	0,172	321
250	127	13,8	2	1/0	6	3,81	6,35	73,4	9.696	9.101	587	0,146	359
350	177	17,4	1	2/0	6	3,81	7,11	81,3	12.289	11.539	650	0,105	435
500	253	20,8	2/0	4/0	6	3,81	7,49	90,4	16.307	15.193	723	0,0735	536

## DIMENSIONS, RANGE AND ELECTRICAL VALUES

SHD and SHD-GC 15 kV

Conductor Size						Nominal Insulation Thickness	Nominal Jacket Thickness	Nominal Overall Diameter	Total Weight approx.		Minimum Bending Radius	Maximum Resistance 20 °C CC Ω/km	Ampacity (1) A
Conductor			Ground		Ground Check				SHD	SHD-GC			
AWG kcmil	Nominal Size mm <sup>2</sup>	Diameter approx. mm	SHD AWG	SHD-GC AWG	SHD-GC AWG	mm	mm	mm	kg/km	kg/km	mm		
2	33,6	7,7	8	6	6	5,33	5,97	61,2	5.251	5.098	490	0,544	164
1	42,4	8,7	7	5	6	5,33	5,97	64,0	5.913	5.723	512	0,429	187
1/0	53,5	9,4	6	4	6	5,33	6,35	67,1	6.667	6.438	537	0,344	215
2/0	67,4	10,7	5	3	6	5,33	6,35	69,3	7.404	7.115	554	0,273	246
3/0	85,0	11,7	4	2	6	5,33	6,73	73,7	8.584	8.240	590	0,217	283
4/0	107	12,9	3	1	6	5,33	6,73	77,5	9.840	9.410	620	0,172	325

SHD and SHD-GC 25 kV

Conductor Size						Nominal Insulation Thickness	Nominal Jacket Thickness	Nominal Overall Diameter	Total Weight approx.		Minimum Bending Radius	Maximum Resistance 20 °C CC Ω/km	Ampacity (1) A
Conductor			Ground		Ground Check				SHD	SHD-GC			
AWG kcmil	Nominal Size mm <sup>2</sup>	Diameter approx. mm	SHD AWG	SHD-GC AWG	SHD-GC AWG	mm	mm	mm	kg/km	kg/km	mm		
1	42,4	8,7	7	5	6	7,49	6,73	74,9	7.496	7.248	599	0,429	191
1/0	53,5	9,4	6	4	6	7,49	6,73	77,5	8.229	7.940	620	0,344	218
2/0	67,4	10,7	5	3	6	7,49	7,11	81,3	9.299	8.939	650	0,273	249
3/0	85,0	11,7	4	2	6	7,49	7,11	84,6	10.375	9.955	677	0,217	286
4/0	107	12,9	3	1	6	7,49	7,49	88,9	11.811	11.298	711	0,172	327

(1) The ampacities listed are estimated for 90°C conductor temperature and 40°C ambient temperature. For another temperatures or when one or more layers of cable are wound on a reel, you have to apply the correction factors indicated below:

Temperature Derating Factors

Temp. °C	10	20	30	40	50
Factor	1,26	1,18	1,10	1,00	0,90

Layer Corrections Factors

Layers N°	1	2	3	4
Factor	0,85	0,65	0,45	0,35

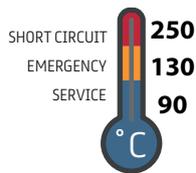
The data listed above is approximate and subject to normal manufacturing tolerances.



## Mining Cables

### W

Extraflexible Heavy duty portable feeder multiconductor cord, EPR insulation and Thermosetting elastomer Jacket. 2 kV



FLEXIBLE  
CONDUCTOR



OIL  
RESISTANCE



WATER  
RESISTANCE



WEATHER  
RESISTANCE



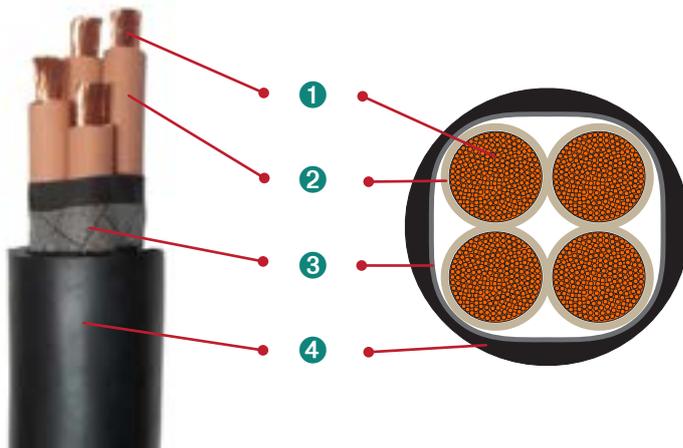
IMPACT  
RESISTANCE



FLAME  
RETARDANT



REDUCE  
BENDING  
RADIUS



- 1 CONDUCTOR: 2, 3 or 4 Stranded extra-flexible soft copper cable, class i, with a plastic tape over the set.
- 2 INSULATION: Ethylene Propylene Rubber (EPR).
- 3 TEXTILE FIBER REINFORCEMENT: Open braid yarn applied over the core assembly, for reinforcement and to control adhesion and movement between the insulated conductors and the outer jacket.
- 4 JACKET: Black Thermosetting elastomer formulated for heavy or extra heavy duty. Other colors or materials are available on demand.

PRINT: GENERAL CABLE W [Conductor N°] x [size] 2 kV HECHO EN CHILE

## APPLICATIONS

Heavy duty portable feeder flexible cord used in connections of mobile machinery, where tough mechanical stress is demanded, such as outstanding tensile, tear and pulling strength, also high impact resistance.

The conductor is connected in circuits up to 2kV 100% IL, and where no bare ground cable is required or desired.

## MANUFACTURE STANDARD AND TEST SPECIFICATIONS

Manufacture, design, test methods and their frequency are based on ICEA S75-381 and following General Cable/Cocesa's Quality assurance Procedures, certified by ISO 9001

## TECHNICAL FEATURES

Service Maximum Voltage: 2kV.  
 Service Maximum Temperature: 90 °C.  
 Emergency Temperature: 130 °C.

Short Circuit Temperature: 250 °C.  
 Jacket has highly resistant to cutting, abrasion, chemicals, sunlight and flame. It has excellent resistance to heat, moisture and oil commonly present at mining operations.

## PACKAGING

Non-returnable wooden reels. Put-ups: 300 m.

## INSTALLATION

Due to its special design and raw materials used, it can be installed directly on the land soil and outdoor locations in the most aggressive conditions found at mining fields.

## OPTIONS

- Halogen Free (LSOH) TPU Jacket.

## DIMENSIONS, RANGE AND ELECTRICAL VALUES

W 2 CONDUCTORS 2000 V.

Conductor Size AWG/kcmil	Nominal Area mm <sup>2</sup>	Conductor Diameter approx mm	Nominal Thickness Insulation mm	Nominal Overall Diameter mm	Total Weight approx. kg/km	Minimum Bending Radius mm	Ampacity A
8	8,37	4,5	1,52	20,6	637	124	72
6	13,3	5,5	1,52	23,6	867	142	95
4	21,2	6,8	1,52	27,4	1.213	164	127
2	33,6	8,7	1,52	32,3	1.748	194	167
1	42,4	9,8	2,03	36,6	2.237	220	191
1/0	53,5	10,9	2,03	38,6	2.573	232	217
2/0	67,4	12,7	2,03	41,9	3.080	251	250
3/0	85	13,9	2,03	45,0	3.662	270	286
4/0	107	15,8	2,03	48,8	4.389	293	328
250	127	16,8	2,41	53,3	5.046	320	363
350	177	20,2	2,41	59,9	6.601	359	436
500	253	23,9	2,41	68,6	8.957	412	524

W 3 CONDUCTORS 2000 V.

Conductor Size AWG/kcmil	Nominal Area mm <sup>2</sup>	Conductor Diameter approx mm	Nominal Thickness Insulation mm	Nominal Overall Diameter mm	Total Weight approx. kg/km	Minimum Bending Radius mm	Ampacity A
8	8,37	4,5	1,52	23,1	835	139	59
6	13,3	5,5	1,52	25,6	1.093	154	79
4	21,2	6,8	1,52	29,7	1.529	178	104
2	33,6	8,7	1,52	34,0	2.131	204	138
1	42,4	9,8	2,03	39,1	2.713	235	161
1/0	53,5	10,9	2,03	41,9	3.294	251	186
2/0	67,4	12,7	2,03	44,5	3.554	267	215
3/0	85	13,9	2,03	48,0	4.662	288	249
4/0	107	15,8	2,03	51,8	5.376	311	287
250	127	16,8	2,41	60,7	6.982	364	320
350	177	20,2	2,41	68,1	9.145	409	394

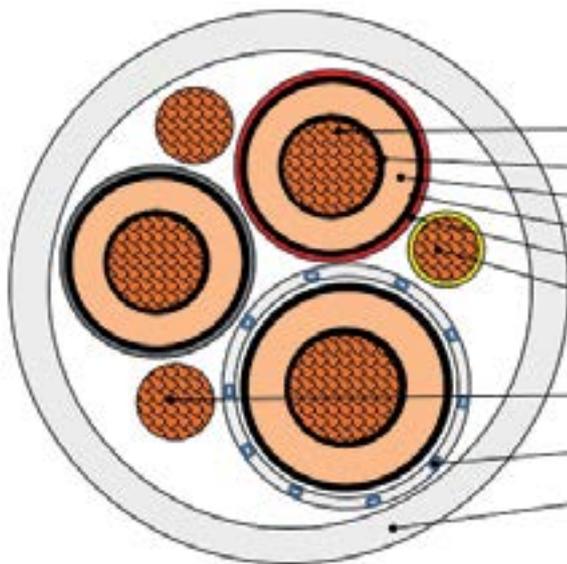
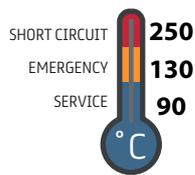
# SPECIALTIES



Mining Specialties Cables

## SHD-GC HIGH VISIBILITY (LED)

SHD-GC: Three stranded extra-flexible soft copper conductor, EPR insulation, Led strip, Two bare grounds, ground check conductors and Transparent TPU Jacket 8 kV, 15 kV and 25 kV



Description
* Extra flexible copper conductor
* Semiconductive tape over conductor
* EPDM insulation
* Semiconductive tape over insulation
* Electrostatic screen stranded mesh
* Ground conductor
* Ground check conductor
* Led strip applied over one phase
* TPU External cover

## APPLICATIONS

Medium Voltage Trailing Cable for Super Heavy Duty usage and designed as a flexible conductor for open pit and underground mining operations, for powering electrical shovels, cranes, drilling machines and mobile mining equipment, to be installed in aerial circuits, cable crossovers or any installation where safety and prevention is needed or having better cable visibility to avoid mechanical damage for heavy equipment use (production, support and auxiliaries). It can also be extended to applications in the mining operation under extreme climatic conditions.

Its Transparent Polyurethane (TPU) external cover in combination with a LED strip grants the cable with a better visibility when energized, mainly by night, along with its mechanical characteristics that grants the cable with great traction, tear, impact and abrasion resistance.

## CONSTRUCTION

### Conductor

Soft copper cable of concentric extraflexible group, class I. Its large number of fine copper strands considered in the cable construction grants the cable with the flexibility required for its use.

### Conductor Shield

Conductors shall be covered with a semiconductor overlapped layer.

### Insulation

Ethylene Propylene Rubber (EPR) grants the cable at the same time with very good electrical properties and great flexibility and very good mechanical characteristics like tear, fatigue and moisture resistance, assuring a great life of the cable.

### Insulation Shield

Each insulated phase conductor shall be covered with a overlapped semiconducting tape that makes easier, safer and quicker the preliminary work of the cable during the splicing process.

### Metallic Shield

Tinned copper/textile fibers braid is applied. The textile fibers in the shield braid is colored black, white and red for easy circuit identification. The shielding braid shall provide a 60% of minimum coverage.

### LED Strip

Luminescent LED strip applied helically over one of the phases.

### Ground Check conductor

Extra flexible soft bare copper conductor, yellow HDPE insulation with cross sectional area and strand number complying with ICEA S-75-381 Standard. The ground check conductor allows constant monitoring of the ground conductors granting the equipment operators with great safety.

### Grounding Conductors

Two extra-flexible soft bare copper conductor with cross sectional area and strand number complying with Standard ICEA S-75-381 table 3-25.

## MANUFACTURE STANDARD AND TEST SPECIFICATIONS

Manufacture, design, test methods and their frequency are based on ICEA S75-381 and following General Cable/Cocesa's Quality assurance Procedures, certified by ISO 9001

### Textile Reinforcement

Polyester stranded mesh of high tensile resistance strength applied helically and crossed one to each other.

### Jacket

Transparent elastomeric compound external cover material formulated for Super Heavy Duty work, high mechanical resistance, with high tear, cut and abrasion resistance. Good resistance to oil, chemical agents, solvents, ozone, UV radiation and moisture. The combination with the textile reinforcement grants the cable with a great mechanical resistance that allows it to work in several mechanical conditions.

### Packaging

Non-returnable wooden reels. Nominal Lengths: 300 m.

**SHD-GC 3x3/0 + 2x2 + 1x4 AWG Cu 8kV LED**

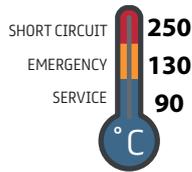
Description	Unit	Measure
Conductor Size	AWG	3/0
Conductor Diameter approx	mm	12,1
Insulation Thickness (nominal)	mm	3,81
Grounding Conductors Size	AWG	2
Jacket Thickness (nominal)	AWG	4
Overall Diameter (nominal)	mm	6,35
Total Weight approx.	mm	70
Minimum Bending Radius	mm	560
Service T° / Emergency T° / Short Circuit T°	°C	90/130/250
<b>Electrical Values</b>		
Maximum Electrical Resistance CC 20°C	Ω/km	0.217
Ampacity at air 40°C, ICEA S75-381, Tabla H-1	A	279



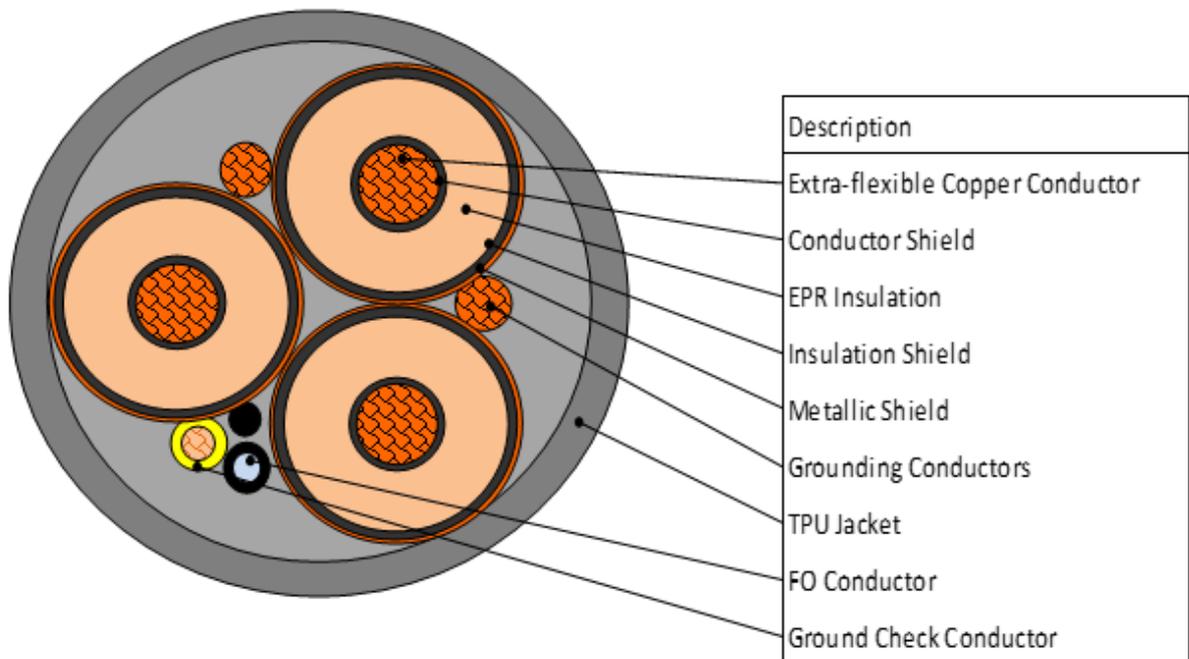
## Mining Specialties Cables

### SHD-GC -FO

SHD-GC: Three stranded extra-flexible soft copper conductor, EPR insulation, Two bare grounds, ground check conductors Optical fiber and TPU Jacket 8 kV, 15 kV, 25 kV and 35 kV



			
FLEXIBLE CONDUCTOR	OIL RESISTANCE	WATER RESISTANCE	WEATHER RESISTANCE
			
IMPACT RESISTANCE	FLAME RETARDANT	LOW TEMPERATURE RESISTANCE	REDUCE BENDING RADIUS



## APPLICATIONS

Medium Voltage Trailing Cable for Super Heavy Duty usage and designed as a flexible conductor for open pit and underground mining operations, for powering electrical shovels, cranes, drilling machines and mobile mining equipment, to be installed in aerial circuits, cable crossovers or any installation where safety and prevention is needed o have better cable visibility for heavy equipment operators (production, support and auxiliaries). Its use can also be extended to applications in the mining operation under extreme climatic conditions.

## CONSTRUCTION

### Conductor

Soft copper cable of concentric extraflexible group, class I. Its large number of fine copper strands considered in the cable construction grants the cable with the flexibility required for its use.

### Conductor Shield

Conductors shall be covered with a semiconductor overlapped layer.

### Insulation

Ethylene Propylene Rubber (EPR) grants the cable at the same time with very good electrical properties and great flexibility and very good mechanical characteristics like tear, fatigue and moisture resistance, assuring a great life of the cable.

### Insulation Shield

Each insulated phase conductor shall be covered with a overlapped semiconducting tape that makes easier, safer and quicker the preliminary work of the cable during the splicing process.

### Metallic Shield

Tinned copper/textile fibers braid is applied. The textile fibers in the shield braid is colored black, white and red for easy circuit identification. The shielding braid shall provide a 60% of minimum coverage.

## MANUFACTURE STANDARD AND TEST SPECIFICATIONS

Manufacture, design, test methods and their frequency are based on ICEA S75-381 and following General Cable/Cocesa's Quality assurance Procedures, certified by ISO 9001

### Grounding Conductors

Two extra-flexible soft bare copper conductor with cross sectional area and strand number complying with Standard ICEA S-75-381 table 3-25.

### Ground Check conductor

Extra flexible soft bare copper conductor, yellow HDPE insulation with cross sectional area and strand number complying with ICEA S-75-381 Standard. The ground check conductor allows constant monitoring of the ground conductors granting the equipment operators with great safety.

### Optical Fiber Conductor

12 optical fibers Monomode Conductor

### Jacket

TPU compound external cover material formulated for Super Heavy Duty work, high mechanical resistance, with high tear, cut and abrasion resistance. Good resistance to oil, chemical agents, solvents, ozone, UV radiation and moisture. The combination with the textile reinforcement grants the cable with a great mechanical resistance that allows it to work in several mechanical conditions.

### Packaging

Non-returnable wooden reels. Nominal Lengths: 300 m

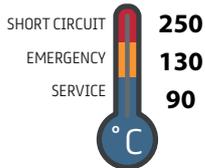
### SHD-GC 3x500 kcmil+2x4/0 AWG+1x6 AWG Cu 35kV 12FO TPU

Description	Unit	Measure
Conductor Size	kcmil	500
Conductor Diameter approx.	mm	20.7
Insulation Thickness (minimum)	mm	10.2
Grounding Conductors Size	AWG	4/0
Ground Check Conductor Size	AWG	6
Overall Diameter (nominal)	mm	110
Total Weight approx.	kg/m	19.0
Minimum Bending Radius - Final / During Installation	mm	935 / 1403
Service T° / Emergency T° / Short Circuit T°	°C	90/130/250
<b>Electrical Values</b>		
Maximum Electrical Resistance CC 20°C	Ω/km	0.0735

Medium Voltage Specialties Cables

**XAT/EVA FO- ARMOR (AA+FA)**

Copper Conductor, XLPE-TR Insulation, Cu tape metallic shield, Steel Wire and Tape Armor, EVA jacket and Optical Fiber



LEAD  
FREE



HALÓGENS  
FREE



LOW  
TOXICITY



LOW SMOKE



FIRE  
RETARDANT



WATER  
RESISTANCE



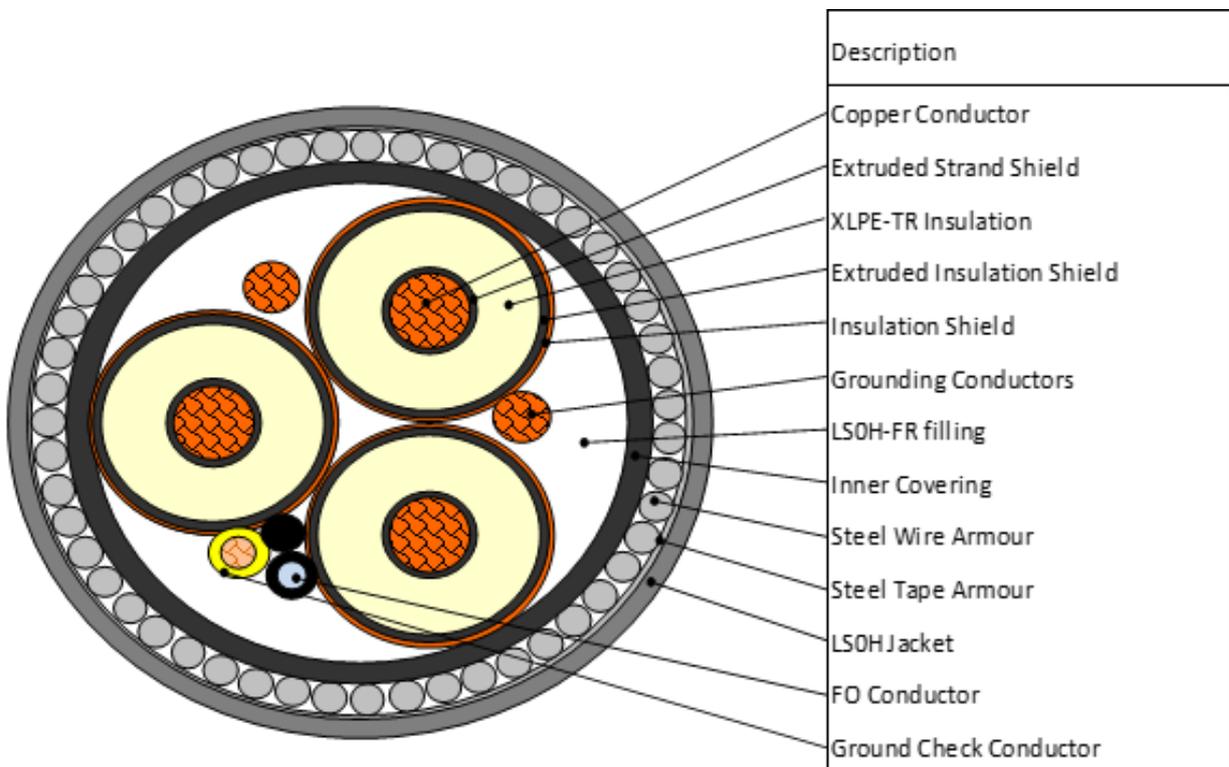
WEATHER  
RESISTANCE



IMPACT  
RESISTANCE



FLAME  
RETARDANT



## APPLICATIONS

This cable are recommended for power transmission and distribution lines to and from substations, for outdoor or underground industrial and commercial installations in dry or damp environments, and other related applications.

Additionally, the sheath applied to the cable is a special compound that emits Low Smoke (LS) and does not contain halogen gases (OH) which allows its use in places with a high concentration of public, where flame retardant properties are required.

## MANUFACTURE STANDARD AND TEST SPECIFICATIONS

Manufacture, design, test methods and their frequency are based on ICEA S-93-639 and following General Cable/Cocesa's Quality assurance Procedures, certified by ISO 9001.

## CONSTRUCTION

**CONDUCTOR:** Three compact round stranded copper conductor by ASTM B496 or ASTM B835 standards.

**EXTRUDED STRAND SHIELD:** Extruded thermosetting semi-conducting stress control layer over the conductor.

**INSULATION:** Cross-Linked Polyethylene Tree Retardant (XLPE-TR) insulation.

**EXTRUDED INSULATION SHIELD:** Extruded thermosetting semi-conducting layer over insulation.

**INSULATION SHIELD:** Overlapped annealed copper tape.

**GROUNDING CONDUCTORS:** Round stranded copper conductor, class B.

**GROUND CHECK CONDUCTOR:** Extra flexible soft bare copper conductor insulated with yellow color Pe.

**OPTICAL FIBER CONDUCTOR:** 12 optical fibers Monomode Conductor

**INNER COVERING:** LSOH compound (Low Smoke Zero Halogen) with flame retardant properties.

**METALLIC ARMOR:** Steel Wires and Two Tapes applied over the inner covering.

**JACKET:** LSOH compound (Low Smoke Zero Halogen) with flame retardant properties.

**PACKAGING:** Non-returnable wooden reels

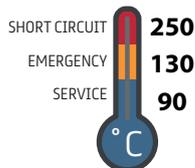
### XAT/EVA 3x500 kcmil + 2x4/0 + 1x6 AWG Cu 35kV 12FO AA+ FA

Description	Unit	Measure
Conductor Size	kcmil	500
Conductor Diameter approx.	mm	18.7
Insulation Thickness (minimum)	mm	10.2
Grounding Conductors Size	AWG	4/0
Ground Check Conductor Size	AWG	6
Overall Diameter (nominal)	mm	119
Total Weight approx.	kg/m	30.1
Minimum Bending Radius - Final / During Installation	mm	1428 / 2142
<b>Electrical Values</b>		
Maximum Electrical Resistance CC 20°C	Ω/km	0.0708

## Medium Voltage Specialties Cables

### XAT/EVA FO- ARMOR (FA)

Copper Conductor, XLPE-TR Insulation, Cu tape metallic shield, Steel Tape Armor, EVA jacket and Optical Fiber



LEAD FREE



HALÓGENS FREE



LOW TOXICITY



LOW SMOKE



FIRE RETARDANT



WATER RESISTANCE



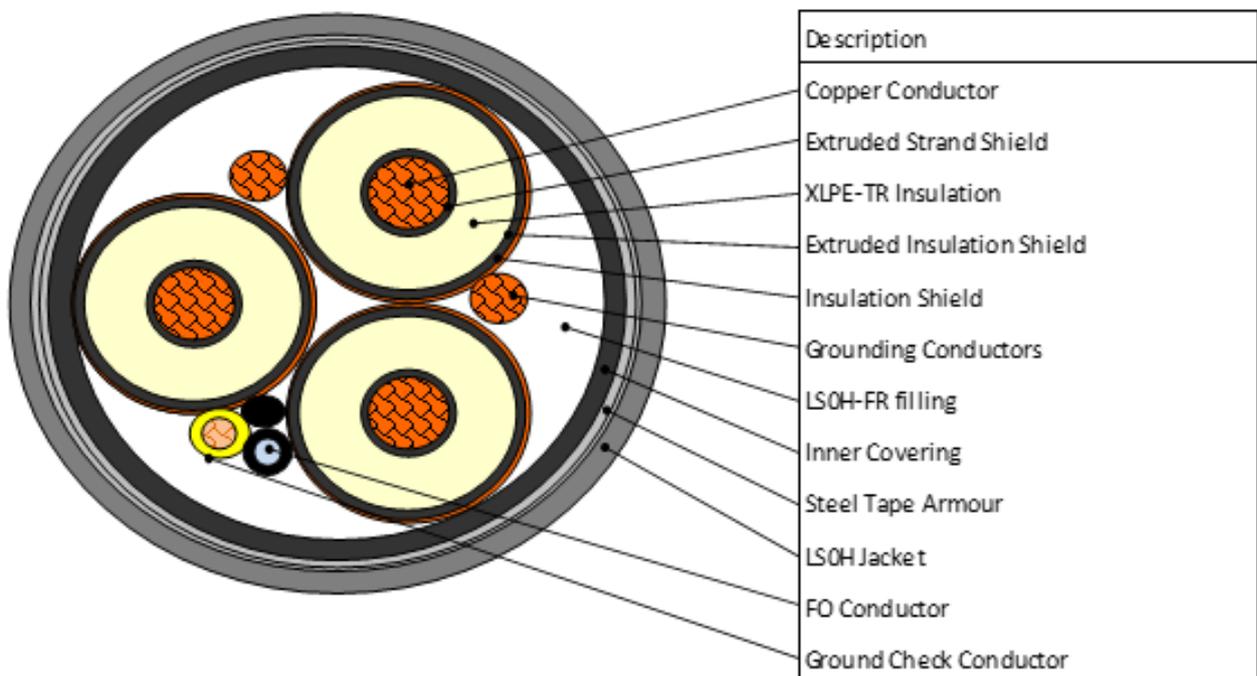
WEATHER RESISTANCE



IMPACT RESISTANCE



FLAME RETARDANT



## APPLICATIONS

This cable are recommended for power transmission and distribution lines to and from substations, for outdoor or underground industrial and commercial installations in dry or damp environments, and other related applications.

Additionally, the sheath applied to the cable is a special compound that emits Low Smoke (LS) and does not contain halogen gases (OH) which allows its use in places with a high concentration of public, where flame retardant properties are required.

## MANUFACTURE STANDARD AND TEST SPECIFICATIONS

Manufacture, design, test methods and their frequency are based on ICEA S-93-639 and following General Cable/Cocesa's Quality assurance Procedures, certified by ISO 9001.

## CONSTRUCTION

**CONDUCTOR:** Three compact round stranded copper conductor by ASTM B496 or ASTM B835 standards.

**EXTRUDED STRAND SHIELD:** Extruded thermosetting semi-conducting stress control layer over the conductor.

**INSULATION:** Cross-Linked Polyethylene Tree Retardant (XLPE-TR) insulation.

**EXTRUDED INSULATION SHIELD:** Extruded thermosetting semi-conducting layer over insulation.

**INSULATION SHIELD:** Overlapped annealed copper tape.

**GROUNDING CONDUCTORS:** Round stranded copper conductor, class B.

**GROUND CHECK CONDUCTOR:** Extra flexible soft bare copper conductor insulated with yellow color Pe.

**OPTICAL FIBER CONDUCTOR:** 12 optical fibers Monomode Conductor

**INNER COVERING:** LSOH compound (Low Smoke Zero Halogen) with flame retardant properties.

**METALLIC ARMOR:** Two Steel Tapes applied over the inner covering.

**JACKET:** LSOH compound (Low Smoke Zero Halogen) with flame retardant properties.

**PACKAGING:** Non-returnable wooden reels

### XAT/EVA 3x500 kcmil + 2x4/0 + 1x6 AWG Cu 35kV 12FO FA

Description	Unit	Measure
Conductor Size	kcmil	500
Conductor Diameter approx.	mm	18.7
Insulation Thickness (minimum)	mm	10.2
Grounding Conductors Size	AWG	4/0
Ground Check Conductor Size	AWG	6
Overall Diameter (nominal)	mm	108
Total Weight approx.	kg/m	20.1
Minimum Bending Radius - Final / During Installation	mm	1296 / 1944
Electrical Values		
Maximum Electrical Resistance CC 20°C	Ω/km	0.0708



A company of the  
**Prysmian**  
Group

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Toda la información contenida en este catálogo constituye únicamente una guía para la selección de productos y se considera fiable. Los posibles errores de impresión serán subsanados en posteriores ediciones del presente catálogo. Antes de proceder a su publicación, General Cable ha tomado las debidas precauciones a fin de garantizar la exactitud de todas las especificaciones de los productos que aquí se detallan. No obstante, dichas especificaciones podrán ser modificadas sin previo aviso.

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