

15 kV, 3-1/C, EPR/EAM Insulated, Flat Strap Shielded Cable



1. Scope

This standard covers the detailed requirements for 15 kV, ethylene propylene rubber (EPR) and ethylene alkene copolymer (EAM), three conductor triplexed cable used for the distribution of electric energy.

Industry designation: 3-1/C

This standard applies to the following Seattle City Light (SCL) stock numbers:

Stock Number	Size
012735	500 kcmil
623670	1000 kcmil

2. Application

Cable is intended for use on a nominal 13.8 kV, three-phase, three-wire, delta, 60 Hz power system.

For a cable fault occurring between two vaults, full fault current flows in the metallic shield from the fault location to the first splice vault nearest the source. Because the phases of a 3-1/C cable are individually jacketed, adjacent metallic shields (or separately-pulled, bare ground conductors) cannot be counted upon to dissipate fault current.

3. General Requirements

This detailed material standard is to be used in conjunction with the latest revision of SCL 6015.00, "Medium Voltage Cable – General."

4. Industry Standards

Cable shall meet the requirements of the following industry standard: ICEA S-94-649-2013.

Refer to SCL 6015.00 to obtain the appropriate revision date for other referenced industry standards.

5. Construction

5.1 General

Unless indicated otherwise, all values cited below should be consistent with industry standards. They are repeated here for the convenience of the reader. The ▲ symbol indicates special SCL requirements, some of which are detailed in SCL 6015.00.

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Seattle City Light
MATERIAL STANDARD

15 kV, 3-1/C, EPR/EAM Insulated, Flat Strap Shielded Cable

standard number: **6025.60**
 superseding: November 16, 2022
 effective date: September 8, 2023
 page: 2 of 5

5.2 Conductor

Requirement	Stock Number		Reference
	012735	623670	
Size	500 kcmil	1000 kcmil	
Diameter			
minimum	0.773 in	1.095 in	ICEA S-94-649, Section 2.5
nominal	0.789 in	1.117 in	ASTM B8
maximum	0.805 in	1.139 in	ICEA S-94-649, Section 2.5
Metal	copper	copper	ASTM B49
Stranding type	concentric-lay	concentric-lay	ASTM B496
Class	B	B	ASTM B8
Stranding subtype	compressed	compressed	ASTM B8
Number of strands	37	61	ASTM B8
Temper	soft drawn, annealed prior to stranding	soft drawn, annealed prior to stranding	ASTM B3
Lay, outer layer	left hand	left hand	ASTM B3, Section 5.5.1
Lay, successive layers	reversed	reversed	ASTM B3, Section 5.5.1
Sealant for stranded conductors	required ▲	required ▲	ICEA S-94-649, Section 2.2

5.3 Conductor Shield (Stress Control Layer)

Requirements	Stock Number		Reference
	012735	623670	
Size	500 kcmil	1000 kcmil	
Thickness, minimum point	16 mil	20 mil	ICEA S-94-649, Part 3

5.4 Insulation

Requirements	Stock Number		Reference
	012735	623670	
Size	500 kcmil	1000 kcmil	
Material	ethylene propylene rubber (EPR)/ethylene alkene copolymer (EAM), Class III	ethylene propylene rubber (EPR)/ethylene alkene copolymer (EAM), Class III	ICEA S-94-649, Section 4.1
Thickness			ICEA S-94-649, Section 4.2, Table 4-7
minimum point	165 mil	165 mil	
nominal	175 mil	175 mil	"
maximum point	205 mil	205 mil	"
Insulation level	100%	100%	ICEA S-94-649, Section 4.3, Table 4-7
Basic impulse level (BIL)	110 kV crest	110 kV crest	ICEA S-94-649, Section 4.3, Table 4-6

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 superseding: January 28, 2019
 effective date: 2022/01/26 DRAFT
 page: 3 of 5

5.5 Extruded Insulation Shield

Requirements	Stock Number		Reference
	012735	623670	
Size	500 kcmil	1000 kcmil	
Material	discharge-free (thermosetting material)	discharge-free (thermosetting material)	ICEA S-94-649, Section 5.1 to 5.4.1.5
Thickness			
minimum point	24 mil	24 mil	ICEA S-94-649, Section 5.2, Table 5-2
nominal	60 mil	60 mil	ICEA S-94-649, Section 5.2, Table 5-2

5.6 Metallic Shield

Requirements	Stock Number		Reference
	012735	623670	
Size	500 kcmil	1000 kcmil	
Metal	copper, uncoated or tin coated	copper, uncoated or tin coated	ICEA S-94-649, Section 6
Type	flat strap, helically applied ▲	flat strap, helically applied ▲	ICEA S-94-649, Section 6
Number of straps	13 + 3, - 2 ▲	23 + 3, - 3 ▲	SCL preference
Cross-sectional area, minimum	48,000 cmil ▲	106,000 cmil ▲	SCL preference
Water blocking components for metallic shield	required ▲	required ▲	ICEA S-94-649, Section 6.6

5.7 Jacket

Requirements	Stock Number		Reference
	012735	623670	
Size	500 kcmil	1000 kcmil	
Material	linear low density polyethylene (LLDPE)	linear low density polyethylene (LLDPE)	ICEA S-94-649, Section 7.1.1
Color	black	black	ICEA S-94-649, Section 7.1.1
Type	extruded-to-fill	extruded-to-fill	ICEA S-94-649, Section 7.2.1
Thickness			
minimum point	45 mil	70 mil	ICEA S-94-649, Section 7.2.1, Table 7-10
maximum point	80 mil	120 mil	ICEA S-94-649, Section 7.2.1, Table 7-10
Maximum diameter over jacket	1.55 in ▲	1.99 in ▲	SCL preference

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 page: 4 of 5

5.8 Sheath (Continuous Metallic Covering)

Cable shall not be provided with a sheath.

5.9 Assembly and Identification

Requirements	Stock Number		Reference
	012735	623670	
Size	500 kcmil	1000 kcmil	
Red stripe identification	required ▲	required ▲	ICEA S-94-649, Section 8.2.1.1

6. Packaging

Requirements	Stock Number		Reference
	012735	623670	
Size	500 kcmil	1000 kcmil	
Reel type	steel, fluted	steel, fluted	WC 26, Section 2.1.2
Reel dimension			
flange diameter, maximum	96 in ▲	96 in ▲	SCL preference
outside width, maximum	68.00 in ▲	68 in ▲	SCL preference ^a
drum diameter, minimum	42 in ▲	42 in ▲	SCL preference
length per reel +10%, - 0%			SCL preference
length per reel +0%, - 10%		1,200 ft ▲	SCL preference
gross weight, maximum	17,000 lb ▲	17,000 lb ▲	SCL preference

^a Due to maximum arm width of equipment at SCL, reels greater than 68 inches cannot be accepted.

7. Issuance

Requirements	Stock Number		Reference
	012735	623670	
Size	500 kcmil	1000 kcmil	
Stock unit	FT	FT	

8. Approved Manufacturing Plants – Manufacturers and Plant Locations

Prysmian Group	Okonite	Southwire	CME Wire and Cable
DuQuoin, IL	Orangeburg, SC	Carrollton, GA	Monterrey, Mexico
Marshall, TX	Richmond, KY	Heflin, AL	
St. Jerome, QC, Canada	Santa Maria, CA		

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page: 5 of 5

9. References

SCL Material Standard 6015.00, "Medium Voltage Cable – General"

10. Sources

Shipek, John; SCL Standards Engineering Supervisor, subject matter expert, and originator of 6025.60