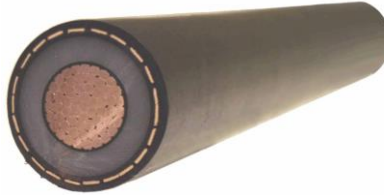


## 28 kV, 1/C, TRXLPE Insulated, Flat Strap Shielded Cable, Compressed Stranding



### 1. Scope

This standard covers the detailed requirements for 28 kV, tree retardant, cross-linked polyethylene (TRXLPE), single conductor cable used for the distribution of electric energy.

Industry designation: **1/C**

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

Stock Number	613645	613655
Size	500 kcmil	1000 kcmil

### 2. Application

Cable is intended for use on a nominal 26.4 kV, three-phase, 4-wire, solidly-grounded, wye-connected, 60 Hz power system.

At one time, this cable was designated for use as the preferred and alternate feeds to the West Point Sewer Treatment plant. This cable is no longer purchased. SCL engineers are encouraged to work with Material Control to coordinate depleting existing inventory. Stock numbers 012100 and 012102 are approved for use in replacement situations after 613645 and 613655 are used up.

### 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**; "Concentric Neutral Cables Rated 5 Through 46 kV"

See 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 City Light requirements, some of which are detailed in SCL 6015.00.

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**MATERIAL STANDARD**28 kV, 1/C, TRXLPE Insulated, Flat Strap Shielded Cable,  
Compressed Strandingstandard number: **6020.14**

superseding: October 30, 2015

effective date: January 28, 2019

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**5.2 Conductor**

		Requirements		Reference
<b>Stock Number</b>		<b>613645</b>	<b>613655</b>	SCL
<b>Size</b>		500 kcmil	1000 kcmil	various
<b>Diameter</b>	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
<b>Metal</b>		copper		ASTM B49
<b>Stranding type</b>		concentric-lay		ASTM B8
<b>Class</b>		B		ASTM B8
<b>Stranding subtype</b>		compressed		ASTM B8
<b>Number of strands</b>		37	61	ASTM B8
<b>Temper</b>		soft drawn, annealed prior to stranding		ASTM B3
<b>Lay, outer layer</b>		left hand		ASTM B3, Section 5.5.1
<b>Lay, successive layers</b>		reversed		ASTM B3, Section 5.5.1
<b>Sealant for stranded conductors</b>		required ▲		ICEA S-94-649, Section 2.2

**5.3 Conductor Shield (Stress Control Layer)**

		Requirements		Reference
<b>Stock Number</b>		<b>613645</b>	<b>613655</b>	SCL
<b>Size</b>		500 kcmil	1000 kcmil	various
<b>Thickness, minimum point</b>		16 mil	20 mil	ICEA S-94-649, Part 3, Table 3-1

**5.4 Insulation**

		Requirements		Reference
<b>Stock Number</b>		<b>613645</b>	<b>613655</b>	SCL
<b>Size</b>		500 kcmil	1000 kcmil	various
<b>Material</b>		unfilled tree retardant crosslinked polyethylene (TRXLPE)		ICEA S-94-649, Section 4.1
<b>Approved material formulations</b>		specified in general material standard		SCL 6015.00
<b>Thickness</b>	minimum point	265 mil		ICEA S-94-649, Section 4.2, Table 4-7
	nominal	280 mil		ICEA S-94-649, Table 8-1
	maximum point	310 mil		ICEA S-94-649, Section 4.2, Table 4-7
<b>Insulation level</b>		100%		ICEA S-94-649, Section 4.2, Table 4-7
<b>Basic impulse level (BIL)</b>		150 kV crest		ICEA S-94-649, Section 4.3, Table 4-6

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**5.5 Extruded Insulation Shield**

		Requirements		Reference
<b>Stock Number</b>		<b>613645</b>	<b>613655</b>	SCL
<b>Size</b>		500 kcmil	1000 kcmil	various
<b>Material</b>		discharge-free (thermosetting material)		ICEA S-94-649, Section 5.1 to 5.4.1.5
<b>Thickness</b>	minimum point	24 mil		ICEA S-94-649, Section 5.2
	maximum point	60 mil		ICEA S-94-649, Section 5.2

**5.6 Metallic Shield**

Flat strap conductors are for metallic shielding only.

		Requirements		Reference
<b>Stock Number</b>		<b>613645</b>	<b>613655</b>	SCL
<b>Size</b>		500 kcmil	1000 kcmil	various
<b>Metal</b>		copper, uncoated or tin coated		ICEA S-94-649, Section 6
<b>Type</b>		flat strap helically applied ▲		ICEA S-94-649, Section 6
<b>Number of straps</b>		19+4, -3 ▲	23+3, -3 ▲	SCL preference
<b>Cross-sectional area, minimum</b>		89,000 cmil ▲	106,000 cmil ▲	SCL preference
<b>Water blocking components for metallic shield</b>		required ▲		ICEA S-94-649, Section 6.6

**5.7 Jacket**

		Requirements		Reference
<b>Stock Number</b>		<b>613645</b>	<b>613655</b>	SCL
<b>Size</b>		500 kcmil	1000 kcmil	various
<b>Material</b>		linear low density polyethylene (LLDPE)		ICEA S-94-649, Section 7.1.1
<b>Color</b>		black		ICEA S-94-649, Section 7.1.1
<b>Type</b>		extruded to fill		ICEA S-94-649, Section 7.2.1
<b>Thickness</b>	minimum point	64 mil ▲		ICEA S-94-649, Section 7.2.1, Table 7-10 and SCL preference
	maximum point	120 mil		ICEA S-94-649, Section 7.2.1, Table 7-10
<b>Maximum diameter over jacket</b>		1.95 in ▲	2.40 in ▲	SCL preference

**MATERIAL STANDARD**

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**5.8 Sheath (Continuous Metallic Covering)**

Cable shall not be provided with a sheath.

**5.9 Assembly and Identification ▲**

	Requirements		Reference
<b>Stock Number</b>	<b>613645</b>	<b>613655</b>	SCL
<b>Size</b>	500 kcmil	1000 kcmil	various
<b>Red stripe identification</b>	required ▲		ICEA S-94-649, Section 8.2.1.1

**6. Packaging**

	Requirements		Reference
<b>Stock Number</b>	<b>613645</b>	<b>613655</b>	SCL
<b>Size</b>	500 kcmil	1000 kcmil	various
<b>Reel type</b>	steel, fluted		WC 26, Section 2.1.2
<b>Reel dimension</b>	flange diameter, maximum	96 in ▲	SCL preference
	outside width, maximum	54 in ▲	SCL preference
	drum diameter, minimum	29 in ▲      31 in ▲	SCL preference
	length per reel ± 10%	2,100 ft ▲	SCL preference
	gross weight, maximum	17,000 lb ▲	SCL preference

**7. Issuance**

	Requirements	
<b>Stock Number</b>	<b>613645</b>	<b>613655</b>
<b>Size</b>	500 kcmil	1000 kcmil
<b>Stock unit</b>	FT	

**8. Approved Manufacturing Plants**

Manufacturer	Location
<b>Prysmian Group – General Cable</b>	DuQuoin, IL
	Malvern, AR
	Marshall, TX
	Moose Jaw, SK, Canada
	St. Jerome, QC, Canada
<b>Southwire</b>	Carrollton, GA
	Heflin, AL

**9. References**

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

**10. Sources**

Shipek, John; Standards Supervisor, subject matter expert, and originator of 6020.14 (john.shipek@seattle.gov)