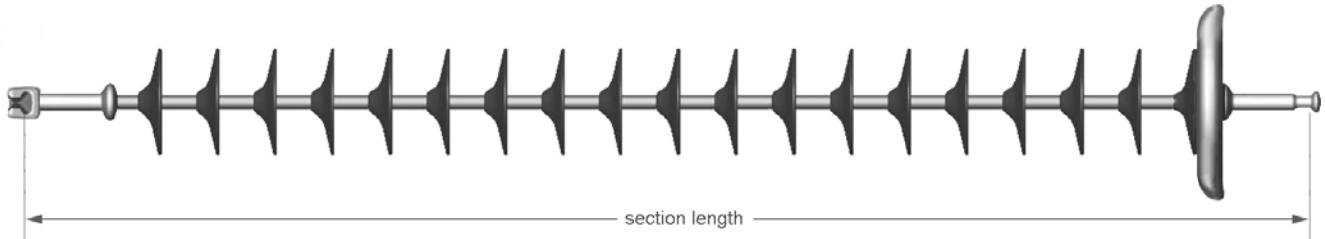


INSULATOR, SUSPENSION, POLYMER FOR 230 KV NOMINAL SYSTEMS



1. Scope

This standard applies to 230 kV polymer, suspension insulators.
 This material standard applies to the following Seattle City Light Stock Number: 012782.

2. Application

Insulator is intended for use in overhead transmission systems nominally rated up to 230 kV phase-to-phase, 60Hz.

3. Industry Standards

Insulator shall meet the applicable requirements of the following industry standards:

- ANSI C29.1-1988 (R2002)** Test Methods for Electrical Power Insulators
- ANSI C29.2-1992 (R1999)** Insulators – Wet-Process Porcelain and Toughened Glass – Suspension Types
- ANSI C29.11-1989 (R1996)** Tests for Composite Suspension Insulators for Overhead Transmission Lines
- ANSI C29.12-1997 (R2002)** Insulators—Composite Suspension Type
- ASTM A153-2005** Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware

4. Construction

4.1 General

Insulator shall meet the following requirements (with the grading ring installed):




section length, in.	89 (± 2)
strike/dry arc distance, minimum, in	75
leakage distance, minimum, in	150
60 Hz dry flashover minimum, kV RMS	725
60 Hz wet flashover minimum, kV RMS	625
positive critical impulse flashover, minimum, kV peak-to-peak	1105
specified mechanical load, minimum, lb	30,000
routine test load, minimum, lb	15,000

4.2 Weathershed/Sheath Material

Weathershed/sheath material shall be made out of silicon rubber – to qualify as silicon type, weathershed/sheath material must be composed of at least 33% silicon by weight; “EP silicon alloys” do not qualify.

Parting lines along the weathershed/sheath must be kept to a minimum so as to reduce the likelihood of tracking when contaminated.

Weathershed/sheath material shall be gray.

<i>standards coordinator</i>	<i>standards supervisor</i>	<i>unit director</i>
 John Shipek	 John Shipek	 Darnell Cola

Material Standard

Insulator, Suspension, Polymer for 230 kV Nominal Systems

4. Construction, continued**4.3 End Fittings**

Insulator shall meet the following requirements:

	Requirements	Reference
material	ductile iron or forged steel	SCL preference
end fitting type (top/structure end)	socket, ANSI 52-5 class	ANSI C29.2 Table 3
end fitting type (bottom/line end)	ball, ANSI 52-5 class	ANSI C29.2 Table 3

Cotter key shall be stainless steel and humped, self-retaining and self-locking after each installation.

4.4 Grading Ring

One 9" diameter (plus/minus 3") grading ring shall be provided for the line end of each insulator.

Grading rings shall be designed to allow easy installation and removal with the conductor in place.

No information bands or tags shall be placed in the area where the grading ring brackets are mounted to the end fitting.

Grading ring installation instructions shall be packed with each insulator in a waterproof, ultraviolet-light resistant plastic envelope or other waterproof, Seattle City Light approved means.

5. Notice of Changes

Manufacturer shall provide Seattle City Light reasonable notice of anticipated design changes.

This includes, but is not limited to, changes in polymer formulation, dimensions, electrical characteristics, mechanical characteristics, or accessories.

6. Testing

Insulator test data that establishes compliance with the requirements of ANSI C29.11, Section 7 shall be provided upon request.

7. Marking

Insulator shall be clearly and indelibly marked in accordance with ANSI C29.12, Section 6.

Load ratings shall be stated in units of pounds.

Labeling shall be in English.

8. Packaging

Insulators shall be packaged in wood crates to protect against physical damage that could occur during shipping, handling, or long-term outside storage. If slatted crates are used, each insulator shall be sealed in plastic. If sealed crates are used, plastic is not required.

Insulator weathersheds shall not bear any load due to its own weight or that of insulators or crates above or below it.

Crates shall be secured to pallets for handling by forklift. Pallets shall not exceed 4 feet in height or 1,000 pounds in weight. Crates shall be marked with the manufacturer's name or symbol, catalog number, Seattle City Light's Stock Number, and Purchase Order number.

Number of insulators per crate: 18 maximum

9. Issuance

Stock Unit: EA

10. Approved Manufacturers

Manufacturer	Catalog Number
MacLean Power Systems (Reliable Power Products)	S57080089VA
NGK-Locke	301-SC640-SJ-08
Hubbell Power Systems	S030077S301AP1

11. References

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