

INSULATING PLASTIC GUARDS & COVERS



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TESTING

ASTM F712 TABLE 3 Typical Electrodes for Testing Plastic Guard Equipment

Types of Guards	Energized Inner Electrode for All Tests ^A	Outer Ground Electrode ^A	
		Proof Test	Flashover and Leakage Tests
Line guards and line guard connectors	Round metal tube or bar.	Complete electrode ^B shall be spaced back from openings through which the energized electrode protrudes during the test only as necessary to avoid flashover. Therefore, the entire area of each cover shall be tested as nearly as practical.	4 x 6" Flexible conductive pad placed alternately on all exterior surfaces and across conductor opening of guard and assembled guard system joints spaced back from openings through which the energized electrode protrudes during the test only as necessary to avoid flashover at outer ends.
Insulator covers and dead-end covers	Maximum conductor, hardware and insulator assembly for which rated or similar mock-up including mandrel ^C of conductive material approximate. ^D		
Pole guards, ridge pin and switch blade covers	^E Round metal tube, fabricated mandrel ^C or cluster small metal tubes. ^D		
Arm guards Cutout covers	Round or rectangular metal tube or fabricated mandrel ^C Largest cutout with bare leads covered with equal rated line hose. Or similar mock-up including mandrel ^C of conductive material. ^D		
Structural barrier	Rectangular metal sheets approximately 3 mm (0.06") thick, having smoothly rounded edges and corners, have been found to be satisfactory for this purpose. Also satisfactory are wet felt or sponge-top electrodes.		

^A Moistened electrodes may be secured with rubber straps or blanket pins. Pressure-sensitive tape is helpful in securing dry metal foil electrodes.

^B Suitable materials include: metal foil or screen; tap water-moistened sponge sheeting, or blanket made of wool, or similar material including synthetics.

^C Thin metal sheet or screen wire secured on wood frames make suitable electrodes. Carved synthetic sponge moistened with tap water is suitable for small forms.

^D The dimensions of the mandrel are to approximate the maximum size of equipment to which the guard system is to be applied.

^E Metal canisters made for storing rubber blankets make suitable electrodes for pole guard tests.

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ASTM F712
TABLE 2 Minimum Flashover Test^A

	Rating, kV	Max Use 60 Hz	Min Flashover Voltage Test f -Ground kV		Criteria
	0-0 ^A	0-Ground	60 Hz	DC	
2	14.6	8.4	14.0	20	No flashover other than momentary as a result of too-close spacing of electrode
3	26.4	15.3	25.0	35	
4	36.6	21.1	34.0	48	
5	48.3	27.0	43.0	61	
6	72.5	41.8	67.0	95	

^A Cover-up materials are tested at values greater than the maximum use phase to ground values. The maximum use phase to phase values relate to guarded phase to guarded phase. The units are not rated for bare phase to guarded phase potentials.

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GUARDS AND COVERS are intended for brush contact applications. All guards can be coupled together to cover any length required.

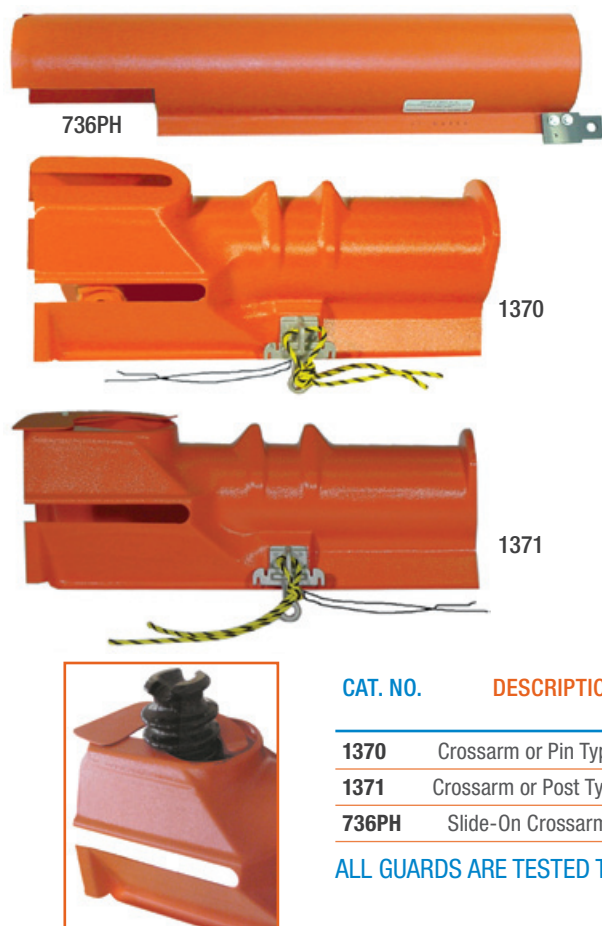
Guards and covers are available in three different grades: Grade 1 with hot stick handles attached for application and removal, Grade 2 with eye fittings for standard shotgun sticks and Grade 3 without eye fittings. Guards are designed to nest within each other for storage.

The guards and covers are made from two different orange thermoplastics: Type I is an ABS standard cold weather high impact plastic and Type III is an ABS/PVC weather resistant material that offers advantages in tensile and impact strength, hardness, UV stability and flame resistance.

ALWAYS FOLLOW YOUR COMPANY'S SAFETY PROCEDURES.

Rubber insulating equipment is realistically limited to Class 4 material in the design specification standards. Plastic guard equipment has been designed to go beyond these voltages and provide a satisfactory degree of worker protection. Major differences exist in use criteria between the rubber and the plastic guard equipment. Each glove, sleeve or other article of rubber insulating equipment has a given safety factor for the phase to phase voltage on which it may be used and the class or proof voltage at which it is tested. Plastic guard equipment; however, is designed to provide a satisfactory safety factor only when used in a phase-to-ground exposure. If exposure is phase-to-phase, then a satisfactory safety factor is only provided if the exposure is covered-phase-to-covered-phase.

CROSSARM GUARDS



CROSSARM GUARDS are available in two different styles: the 1370 pin type and the 1371 post type. They are used to prevent tie wires from contacting crossarms during hot line operations. Two different tie downs are provided: a neoprene and a polypropylene rope. Both are secured in the slots provided in the eye fitting. The post type model has an automatic gap closer which covers the insulator slot opening over the end of the arm.

The **SLIDE-ON CROSSARM GUARD** 736PH is applied by sliding the cover on to the arm from the end using the shotgun eye until the unit locks onto the insulator pins. The cover overlaps on top and has notches to ease application and removal.

Both of these guards are made from orange Type I ABS cold weather high impact plastic. These guards have a voltage rating of 36.6 kV*.

*guarded Ø to guarded Ø .

CAT. NO.	DESCRIPTION	DIMENSIONS in. (mm)	ASTM VOLTAGE CLASS	WEIGHT EA. lbs. (kgs)
1370	Crossarm or Pin Type Guard	9 x 9 x 25.5 (229 x 229 x 648)	4	5.7 (2.6)
1371	Crossarm or Post Type Guard	Fits Crossarm: 5 x 6 (127 x 152)	4	6.0 (2.7)
736PH	Slide-On Crossarm Guard	7" I.D. x 36" (178 I.D. x 914)	4	4.5 (2)

ALL GUARDS ARE TESTED TO ASTM F712

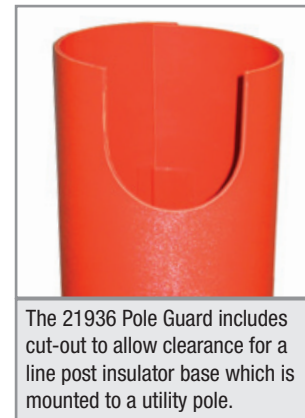
AIR GAP® POLE GUARDS

POLE GUARDS are installed before setting new poles to guard against accidental line contact. They also guard against pole contacts by personnel working in insulating aerial buckets or on platforms. Pole Guards are made from orange, Type I ABS, cold weather, high impact thermoplastic. Salisbury Pole Guards feature the unique Air Gap® design. Uniformly spaced dimples minimize the amount of surface area contacting the pole. This provides added insulation to keep electrical leakage to a minimum. When two pole guards are used to cover longer lengths, the Air Gap® dimples nest together “locking” the two together with ample overlap. **This is an exclusive feature to Salisbury Pole Guards.** The Air Gap® design also allows for air flow between it and the pole minimizing moisture condensation and contamination buildup.

All Salisbury Pole Guards include drilled rope handles for easy application. Pole Guards should be used for brush contact. The opening should face away from possible line contacts, whenever possible. Pole Guards should be stored indoors to avoid prolonged exposure to UV rays and can be cleaned with a warm detergent solution.

CAT. NO.	CLASS	DIAMETER in. (cm)	LENGTH ft. (cm)	WEIGHT EA. lbs. (kgs)
2851	4	6" (15.2)	X 1' (30.5)	1.8 (0.8)
2852	4	6" (15.2)	X 2' (61.0)	3.6 (1.6)
2853	4	6" (15.2)	X 3' (91.4)	5.3 (2.4)
2854	4	6" (15.2)	X 4' (121.9)	7.1 (3.2)
2856	4	6" (15.2)	X 6' (182.9)	10.7 (4.9)
1385	4	9" (22.9)	X 1' (30.5)	2.3 (1.1)
1386	4	9" (22.9)	X 2' (61.0)	4.6 (2.1)
1356	4	9" (22.9)	X 3' (91.4)	6.9 (3.1)
1357	4	9" (22.9)	X 4' (121.9)	9.2 (4.2)
2496	4	9" (22.9)	X 6' (182.9)	13.8 (6.3)
2461	4	12" (30.5)	X 1' (30.5)	2.7 (1.3)
2462	4	12" (30.5)	X 2' (61.0)	5.3 (2.4)
2464	4	12" (30.5)	X 4' (121.9)	10.7 (4.9)
2466	4	12" (30.5)	X 6' (182.9)	16 (7.3)
21837	4	9" (22.9)	X 4' (121.0)	9.2 (4.2)
21936	4	7" (17.8)	X 2' (61.0)	3.8 (1.7)
29024	5	9" (22.9)	X 1' (30.5)	2.3 (1.1)
29023	5	9" (22.9)	X 2' (60.9)	4.6 (2.1)
29022	5	9" (22.9)	X 3' (91.4)	6.9 (3.1)
29021	5	9" (22.9)	X 4' (121.9)	9.2 (4.2)
2486	5	9" (22.9)	X 6' (182.9)	13.8 (6.3)
29028	5	12" (30.5)	X 1' (30.5)	2.7 (1.3)
29027	5	12" (30.5)	X 2' (60.9)	5.3 (2.4)
29026	5	12" (30.5)	X 3' (91.4)	8.0 (3.6)
29025	5	12" (30.5)	X 4' (121.9)	10.7 (4.9)
2478	5	12" (30.5)	X 6' (182.9)	16.0 (7.3)

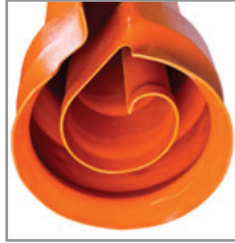
ALL GUARDS ARE TESTED TO ASTM F712



Strong memory improves grip when applied to the utility pole. The pole guard has high impact properties suitable for cold weather service.



2475



Versa Guards® and Link Guard® Cross Section



2884

VERSA GUARDS® AND LINK GUARDS make use of air as well as the dielectric strength of plastic to provide total insulating value. Both guards have a 7” diameter and a hook shaped inner lip to keep the guard in place.

VERSA GUARDS®, with a voltage rating of 36.6 kV*, are designed so that two guards can be coupled together to cover most 13 kV single and double arm, pin and post constructions. A lighter 47” version (**2389**) of the standard 4.5’ Versa Guard is available in a Type III ABS/PVC weather resistant material.

LINK GUARDS®, with a voltage rating of 72.5kV*, have inner and outer shells that run full length to include male and female couple ends. Two guards connected provide four overlapping thicknesses of plastic plus air at a joint.

TEE CONNECTORS are used on horizontal and vertical posts and suspension insulator strings when plastic line guards are used on the conductor. Made from Type I, ABS plastic with eye fittings, the connector accommodates the male end of a guard. Available in two ratings: 72.5 kV* and 48.3 kV*. Accepts 34.5 kV pin insulators along with post and insulator strings.

*guarded Ø to guarded Ø .

Bags are available on page D-10.



1680

CAT. NO.	DESCRIPTION	TYPE	ASTM VOLTAGE CLASS	GRADE	WEIGHT EA. lbs. (kgs)
VERSA GUARDS®- 4.5' (1.37 M)					
1686	ABS Eye	I	4	2	8.8 (4.0)
1687	ABS 4' Stick	I	4	1	10.8 (4.9)
1688	ABS 6' Stick	I	4	1	11.8 (5.4)
2373	ABS/PVC Eye	III	4	2	8.8 (4.0)
2377	ABS/PVC 4' Stick	III	4	1	10.8 (4.9)
2378	ABS/PVC 6' Stick	III	4	1	11.8 (5.4)
VERSA GUARDS®- 3.92' (1.19 M)					
2389	ABS/PVC 4' Stick	III	4	1	6.1 (2.8)
2689	ABS/PVC Eye	III	4	2	8.1 (3.7)
LINK GUARDS®- 4.5' (1.37 M)					
1680	ABS Eye	I	6	2	10.5 (4.8)
1681	ABS 4' Stick	I	6	1	12.5 (5.7)
1682	ABS 6' Stick	I	6	1	13.5 (6.1)
2475	ABS/PVC Eye	III	6	2	10.5 (4.8)
2476	ABS/PVC 4' Stick	III	6	1	12.5 (5.7)
2477	ABS/PVC 6' Stick	III	6	1	13.5 (6.1)
TEE CONNECTORS					
2224	ABS Eye	I	6	2	7.8 (3.5)
2884	ABS Eye	I	5	2	6.0 (2.7)

ALL GUARDS ARE TESTED TO ASTM F712

LIGHTWEIGHT CONDUCTOR COVERS

LIGHTWEIGHT CONDUCTOR COVERS are ideal to cover long spans when weight is a consideration. They can be applied when wearing rubber gloves or with a fiberglass hotstick. Available with an eye for application with clampsticks. These covers have a voltage rating of 26.4 kV*. The inside diameter is 2". This product can connect with Salisbury 1.5" I.D. Class 3 or 4 flexible cover-up equipment.

The **21826 LIGHTWEIGHT CONDUCTOR COVER** is a six foot 36.6 kV* class 4 rated cover. It is applied using rubber gloves when following appropriate company work rules. The inside diameter is 3" making it useful on a wide range of conductor sizes.

The unique "connector-stop" molded into one end prevents covers from overlapping during installation. This eliminates wasted time when trucks have to be moved to reconnect sections that did not couple correctly. This cover is also compatible with Salisbury 1.5" I.D. Class 3 or 4 flexible rubber line hose.

All of our lightweight covers are made from orange Type I high density cross link polyethylene.

*guarded Ø to guarded Ø .

CAT. NO.	DESCRIPTION ft. (m)	ASTM VOLTAGE CLASS	GRADE	WEIGHT EA. lbs. (kgs)
26.4 KV GUARDED PHASE TO GUARDED PHASE				
21172	5' (1.5) Cover w/ Eye	3	2	4.0 (1.8)
21173	5' (1.5) Cover w/o Eye	3	--	3.0 (1.4)
21315	5' (1.5) Cover w/ 4' (1.2) Fiberglass Stick	3	1	5.0 (2.25)
21234	Adapter Eye	3	--	1.5 (0.7)

36.6 KV GUARDED PHASE TO GUARDED PHASE				
21826	6' (1.8) Cover	4	--	6.5 (2.95)

ALL GUARDS ARE TESTED TO ASTM F712



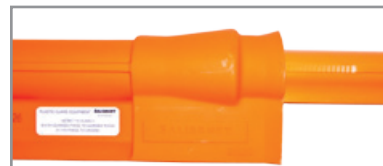
21173



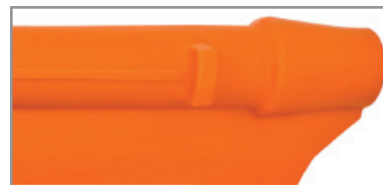
21172



21315



Conductor Covers connect easily with either plastic or rubber line hose



21826 Unique Connector Stop



21826



21234 Adapter Eye

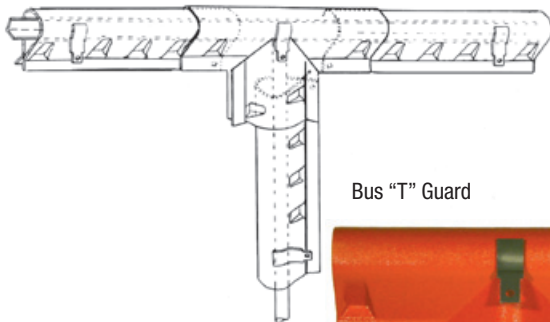


1374

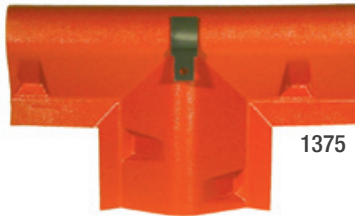


Bus Guard

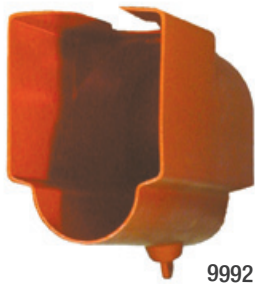
Eye kit is available on page D-10.



Bus "T" Guard

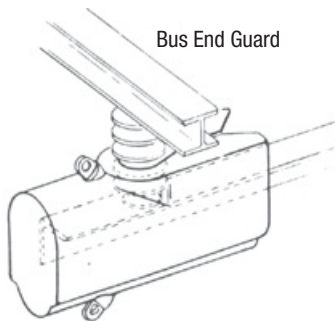


1375



9992

Bus End Guard



SUBSTATION COVER-UP and barrier equipment is used during routine maintenance where accidental contact may occur. This barrier equipment is often used where outages are difficult to reach and the occurrence of accidental contact is high. These covers may be applied with rubber gloves or hot sticks. These covers are made from Type I orange ABS plastic. This equipment is not intended for permanent or semipermanent barrier or insulating applications. The use of these covers is to protect against accidental contact only. These covers are not to be left installed for extended periods of time especially when in contact with both a grounded and energized object.

BUS GUARDS are easily interlocked with each other. To interlock units, determine the length of bus to be covered. Place one unit on the bus guard then the other, pulling it over the first cover until the dimples interlock at the required length. This guard has a voltage rating of 36.6 kV*.

BUS "T" GUARDS interlock two or three bus guards at bus tap "T" connections and 90 degree angles. To interlock units, first position the bus guard. Then, slide the "T" guard over the top and interlock the dimples. This guard has a voltage rating of 36.6 kV*.

BUS END GUARDS cover the ends of a substation bus supported by station post insulators. The slot and insulator grip hole can be easily enlarged in the field with a sharp knife. This cover also has a guide bead for a trim fit. This guard has a voltage rating of 26.4 kV*.

*guarded Ø to guarded Ø .

CAT. NO.	DIMENSION in. (mm)	DESCRIPTION	ASTM VOLTAGE CLASS	WEIGHT EA. lbs. (kgs)
BUS GUARD				
1374	5.25"x 9.5"x 4.5' (133 x 241 x 1.4m)	Impact Resistant ABS Plastic	4	6.0 (2.7)
BUS "T" GUARD				
1375	5"x 15" x 25" (127 x 381 x 635)	Impact Resistant ABS Plastic	4	4.0 (1.8)
BUS END GUARD				
9992	8.5"x 12" x 24" (216 x 305 x 610)	UV Resistant High Density Cross Linked Polyethylene	3	5.0 (2.3)

ALL GUARDS ARE TESTED TO ASTM F712

All Bus Guards may be applied with rubber gloves or hotsticks. Contact your local Salisbury representative for hotstick purchasing or visit www.salisburybyhoneywell.com for more information on our line of hotstick products. Use Salisbury Insulating Rubber Blankets as additional or alternative cover-up in situations where Bus Guards may be used.

SUBSTATION COVER-UP

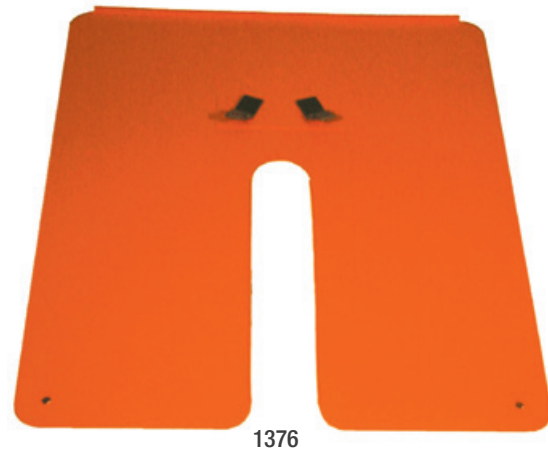
SWITCH JAW GUARD & BARRIER

SWITCH JAW GUARDS insulate the energized upper switch jaw and insulator when work is being done on the switch blade, lower insulator or other de-energized equipment ahead of the open switch. These guards easily slide over the upper insulator on open substation switches and lock over the bus. Jaw Guards are made from Type I UV resistant plastic. Salisbury offers switch jaw guards rated at both 26.4 kV* and 14.6 kV*.

The **24219 SWITCH JAW COVER** provides an insulated barrier to the energized upper switch jaw and insulator, when work is being done on the switch blade, lower insulator or other de-energized equipment ahead of the open switch. This guard slides easily over the upper insulator on open substation neutral disconnect cabinet switches and locks over the bus. The 24219 Cover is made from Type I cold weather high impact plastic. This guard has a voltage rating of 14.6 kV*.

SWITCH BARRIERS slide between the last two skirts on the post or pin cap insulators of the substation disconnect switch. This locks the barrier in place. When switches are mounted back to back and work is needed on one switch, the barrier can be placed on the energized switch to form a visible, electrical and mechanical barrier. Work can then be done on the opposite switch or other de-energized equipment. This guard has a voltage rating of 36.6 kV*.

*guarded Ø to guarded Ø .



1376



Barrier and Switch Jaw Guard installed on a Substation Switch.

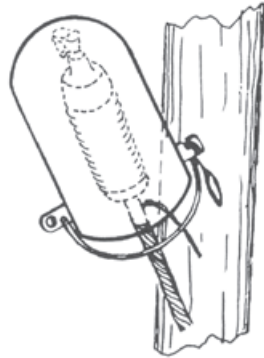


24455



2418

CAT. NO.	DIMENSIONS in. (mm)	DESCRIPTION	ASTM VOLTAGE CLASS	WEIGHT EA. lbs. (kgs)
JAW GUARD				
2418	8" D. x 18" (203 D. x 457)	Use w/ switch 8"(203) Dia. Insulated	3	4 (1.8)
2424	8" D. x 24" (203 D. x 610)	Use w/ switch 8"(203) Dia. Insulated	3	5 (2.3)
24455	8" D. x 16" (203 D. x 406)	Use w/ switch 8"(203) Dia. Insulated	2	2.25 (1.14)
2413	13" D. x 24" (330 D. x 610)	Use w/ switch 13"(330) Dia. Pin Cap Insulators	3	7 (3.2)
BARRIER				
1376	.125"x43"x52" (3.2 x 1092 x 1320) 5" (127) slot to center	Orange Type I High Impact ABS Plastic	4	12 (5.5)



Pole Bracket and Insulator Base Cover



Elbow

4314



Elbow Cover Application

The **UNIVERSAL HOT COVER** is used to provide additional cover-up and clearances. This cover is made from orange Type I polyethylene plastic. The hotstick eye allows this cover to be placed and removed with a shotgun type clamp stick or with rubber gloves. To secure in place, use the elastic tie-down cord. This cover can be used on overhead or underground energized cable terminators, potheads or while inverted, on lightning arrestors. This cover has a 36.6 kV guarded phase to guarded phase rating.

The **POLE BRACKET AND INSULATOR BASE COVER** guards against accidental contact with a pole, bracket or insulator base during routine maintenance. It is made from an orange UV resistant Type I polyethylene plastic. The Grade 2 hotstick eye allows this cover to be applied and removed with a hotstick or with rubber gloves. It covers metal or fiberglass brackets 8-12" long and pole mounting plates. This cover also interlocks with a pole insulator. This cover has a voltage rating of 26.4 kV*.

The **UNDERGROUND DISTRIBUTION ELBOW COVER** covers primary elbows and spade terminals during routine maintenance. It covers up to the face plate and cable connection. This cover is made from orange Type I polyethylene plastic. The hotstick eye allows this cover to be applied and removed with a hotstick. This cover self locks for a secure fit in confined areas. The bead can be trimmed in the field to meet clearance requirements. This cover has a voltage rating of 26.4 kV*.

*guarded Ø to guarded Ø .

CAT. NO.	DESCRIPTION	ASTM VOLTAGE CLASS	WEIGHT EA. lbs. (kgs)
816	Hot Cover 8" x 16" (203 x 406)	4	2.5 (1.1)
4314	Underground Distribution Elbow Cover 15" x 14.25" (381 x 362)	3	2.0 (.9)
4333	Pole Bracket & Insulator Base Cover 20" x 25" (508 x 635)	3	2.5 (1.1)

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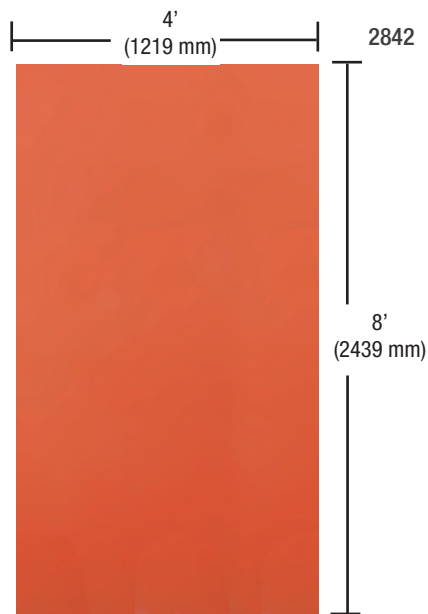
GUARD AND COVER ACCESSORIES

BAGS FOR LINE GUARDS AND POLE GUARDS come in two different sizes and can hold two nested line guards.

All of these bags are made from soil-resistant, vinyl-coated nylon and are equipped with a drawstring and mail bag lock.

The **APPLICATOR EYE KIT** is used to apply a new or extra shotgun eye where needed. If a Bus or "T" guard needs to be shortened or inverted, this kit allows modifications to be made. Clear PVC pipe cement may be used to secure the eye. Directions are included.

The **INSULATING BARRIER SHEET** can be used to create barriers in the field. This sheet is made from Type I ABS plastic and can be worked with ordinary hand tools, saws, tin snips and drills. It can also be hot formed using a heat gun. For example, this sheet can be bent at right angles over a table top to produce flanges for joining with other parts. Pipe adhesive can be used to join to other parts. The rated puncture is 50kV. This sheet is not intended for permanent or semipermanent barrier or insulating applications. It should be used for accidental brush applications. The 2842 barrier material meets the requirements of ASTM F712, 9.1.1 Type 1 Guards. The final application and classification of the barrier/cover is the responsibility of the user.



CAT. NO.	DIMENSIONS		WEIGHT EA. lbs. (kgs)
	ft. (m)	in. (mm)	
BAGS - LINE GUARDS			
1841	2 - 6' (1.8) line guards or 2 - 9" x 6' (229 x 1.8) Line Guards		4.5 (2.0)
1933	2 - 4.5' (1.4) line guards or 2 - 9" x 4' (229 x 1.22) Line Guards		3.5 (1.6)
BAGS - POLE GUARDS			
1871	2 - 12" x 6' (305 x 1.8) Pole Guards		5.2 (2.4)
EYE KIT			
1378	1 eye per kit		.25 (.11)
BARRIER SHEET			
2842	4' x 8' x .125" (1.2m x 2.4m x 3.2)		36 (16.4)

