Welcome to TestoxCP.com

TESTOX

TESTOX Cathodic Protection

BY GEROME ELECTRIC SUPPLY CO.

(724)-437-2788

orders@gerometestox.com

OVERVIEW

PRODUCTS

ORDERS / QUOTES

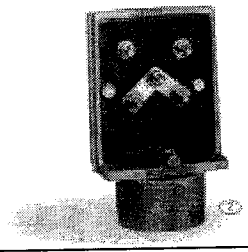
REQUEST INFORMATION

CONTACT

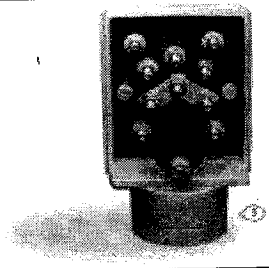
Series 700

Pipe Mounted Test Station

Standard



10 Terminal Application



- **5 Terminals standard to 10 terminals available.**
- **8" high, 4.5" wide, 2.5" deep.**
- **Slip fit 1", 1.25", 1.5", 2", 3", 4"**
- **Threaded 1", 1.25", 1.5", 2",**
- **Shipping weight 3.5" lbs.**

View Larger Image | Order Online

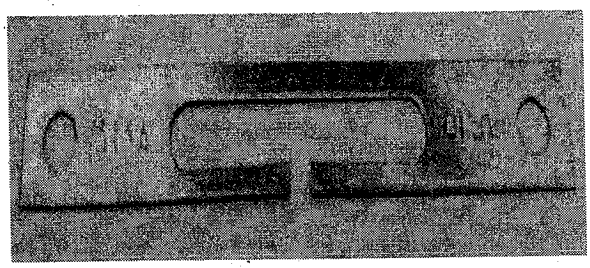
#1 - TEST STATION HEAD

MESA
Quality Focused, *Service Driven.*

#2 - SHUNT

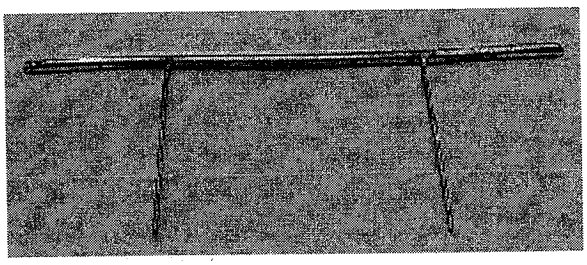
Shunts

Agra J. B.



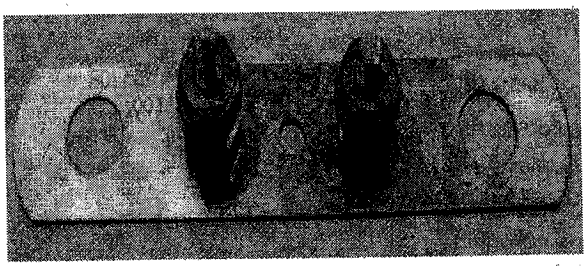
This is a 0.01 ohm, 8 ampere capacity manganin strip shunt designed for use in junction boxes. Size is 1/2" x 3 3/4". Standard hole size is for #10 (3/16") screws. Optional hole size for 1/4" screws is available at an additional $0.10 per shunt. Hole spacing is 3 1/4".

Holloway Type RS



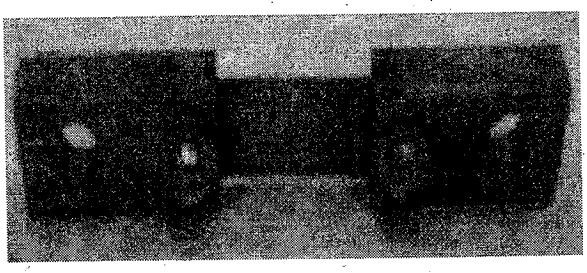
This is a 0.01 ohm manganin wire shunt with 6 ampere capacity.

Holloway Type SS



This is a 0.001 ohm constant ribbon shunt with 25 ampere capacity. Studs are #10. Holes are for 3/8" bolt. Bolt spacing is 3".

Holloway Type SW



This is a 50 millivolt panel shunt which can be ordered in a variety of amperage ratings up to 200 amp. Resistance varies according to amperage rating. Potential screws are #6. Holes are for 1/4" bolts and spacing is 2 1/2".

COTT Shunts

HWC
HOUSTON WIRE & CABLE COMPANY

Choose a category:
Power and Control Cable ...THHN/THWN, PVC/Nylon

Specification

HW001

Building Wire

600 Volt UL 90°CM
THHN/THWN Insulation
Copper Conductor

Catalog Number	Size AWG/kcmil	No. of Strands	PVC Insulation Thickness Mils	Nylon Jacket Thickness Mils	Overall Diameter Inch	Net Weight Lbs/Mft	
HW001 01401	14	19	15	4	0.12	16	Add to Quote
HW001 01201	12	19	15	4	0.14	25	Add to Quote
HW001 01001	10	19	20	4	0.17	39	Add to Quote
HW001 00801	8	19	30	4	0.23	66	Add to Quote
HW001 00601	6	19	30	5	0.25	98	Add to Quote
HW001 00401	4	19	40	6	0.33	155	Add to Quote
HW001 00301	3	19	40	6	0.36	190	Add to Quote
HW001 00201	2	19	40	6	0.39	235	Add to Quote
HW001 00101	1	19	50	7	0.45	300	Add to Quote
HW001 10101	1/0	19	50	7	0.50	370	Add to Quote
HW001 20101	2/0	19	50	7	0.54	460	Add to Quote
HW001 30101	3/0	19	50	7	0.60	570	Add to Quote
HW001 40101	4/0	19	50	7	0.66	710	Add to Quote
HW001 25001	250	37	60	8	0.72	845	Add to Quote
HW001 35001	350	37	60	8	0.83	1165	Add to Quote
HW001 50001	500	37	60	8	0.96	1640	Add to Quote
HW001 75001	750	61	70	9	1.17	2480	Add to Quote
HW001 10001	1000	61	70	9	1.32	3300	Add to Quote

View Quote

TEST WIRE'S White — TESTWIRE White & Black — ANODE HEADER

Application:
For use in general wiring applications for lighting and power in conduits, ducts, or other approved raceways with maximum conductor temperature of 90□C in dry locations and 75□C in wet locations. Chemical, gasoline and oil resistant.

Conductor:
Soft bare annealed copper per ASTM B-3, Class B stranding per ASTM B-8.

Insulation:
Heat and moisture resistant PVC per UL Standard 83.

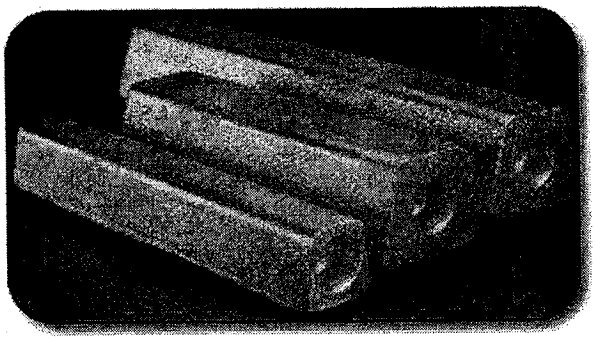
#3,4+5 -WIRE

MESA
Quality Focused, *Service Driven.*

H7- ANODE

MESA High Potential Magnesium Anodes

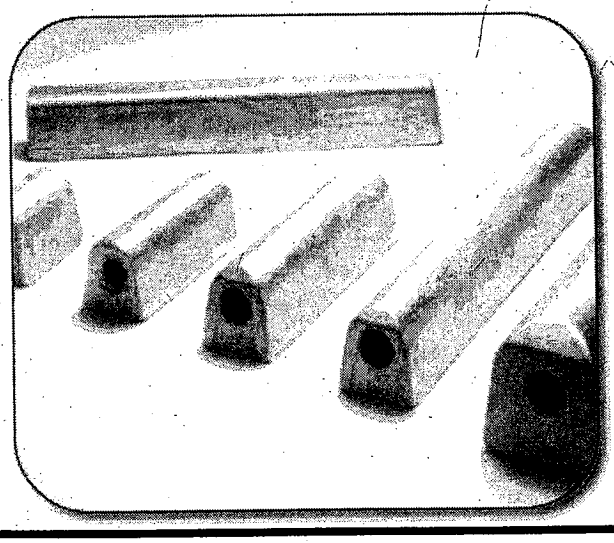
Primary Magnesium Delivers



The sacrificial anode of choice is the high potential magnesium anode cast of 'primary magnesium'. State of the art production techniques yield a higher open circuit voltage (driving) potential than conventional H-1 alloy anodes. These anodes produce potentials of 1.75-1.80 volts allowing protection levels to be achieved using fewer anodes. As a result you have a higher current output anode making it ideal for use in higher resistivity soils, while also performing very well in lower resistance environments.

Product Chemistry and Testing

The anodes meet or exceed the chemistry industry standard for high potential anodes.



Anode Chemistry Per ASTM B843 Industry Standard for high potential magnesium anodes- Alloy M1C	
Aluminum	0.01% max
Manganese	0.50 - 1.3%
Copper	0.02% max
Silicon	0.05% max
Iron	0.03% max
Nickel	0.001% max
Others, each	0.05% max
Magnesium	Remainder

Casting parameters are continuously checked to control production variables.

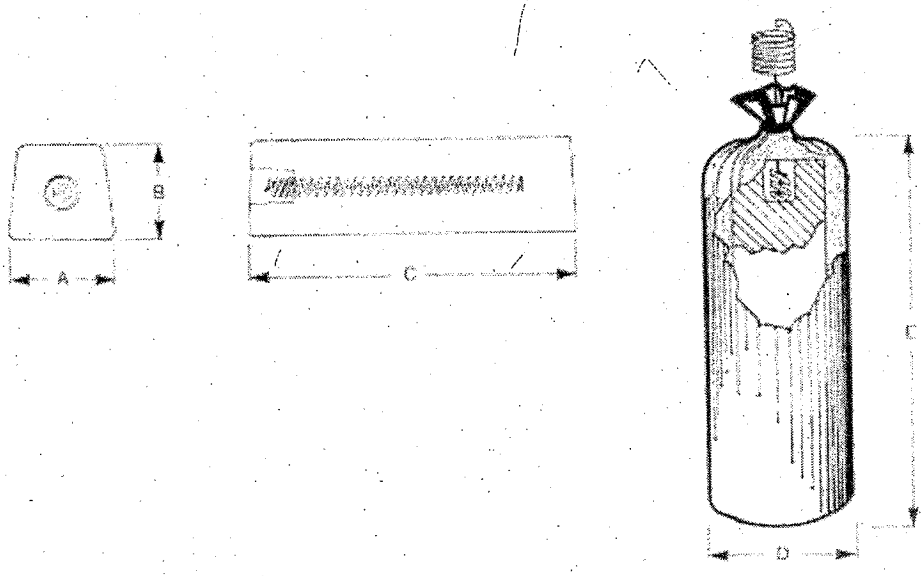
Anodes are individually weighed to insure they meet weight requirements. They are physically inspected for excessive shrink cavities, core security, and general physical appearance to insure highest quality.

Each production run is tested as per ASTM specification G97 Standard Test Method for Laboratory Evaluation of Magnesium Sacrificial Anode Test Specimens for Underground Applications. This tests the anodes for voltage potential and current efficiency performance. Often times the importance of current efficiency is overlooked when evaluating magnesium anodes. Current efficiency is the percent of metal consumed in producing useful cathodic protection to the total metal consumed. Because anodes must be installed in a corrosive environment to produce useful amount of current, the environment also promotes self corrosion of the anode material. Electrical currents produced by self corrosion cannot be used to advantage. The higher the percent of current efficiency the better the anode is, which also translates into longer life. A quality high potential magnesium anode should have a current efficiency of 48 to 52%.

MESA Manufacturing Process

A coiled lead wire of #12 TW insulated solid copper is silver soldered (45% silver) to the galvanized steel core. Standard wire length is 10 feet long. The 45% silver in the solder is critical to insuring a 'stronger than the wire itself' connection. The core cavity is filled with electrical sealing compound to assure a fully insulated and protected connection. Bare anodes are centered in cotton bags, then surrounded with a backfill mixture consisting of 75% hydrated gypsum, 20% bentonite, and 5% sodium sulfate. This backfill lowers the anode to earth resistance, draws moisture to the anode for best performance, and creates a uniform environment for the anode to consume itself evenly. The packaged anodes are then inserted into multiwall paper sacks, palletized, and film wrapped for shipping.

Dimensions and Weights



#7-ANODE

Dimensions & Weights

Anode Type	Bare Weight	Packaged Weight	Shipping Package	Bare			Packaged	
				A	B	C	D	E
* 1R8	1	5	6 per box	1-3/4"	1-3/4"	8"	3 1/4"	10"
* 3D3	3	9	5 per bag	3-1/2"	3-1/2"	5-1/4"	5 1/2"	10"
* 5D3	5	14	5 per bag	3-1/2"	3-1/2"	9-1/4"	5 1/2"	14"
9D2	9	35	2 per bag	2-3/4"	2-3/4"	26-1/4"	6"	31"
* 9D3	9	27	2 per bag	3-1/2"	3-3/4"	13-3/4"	6"	17"
17D2	17	60	1 per bag	2-3/4"	2-3/4"	50-1/4"	6"	55"
* 17D3	17	45	2 per bag	3-1/2"	4"	25-1/4"	6-1/2"	29"
* 20D2	20	72	1 per bag	2-3/4"	2-3/4"	56-3/4"	5-1/2"	66"
	32	90	1 per bag	3-3/4"	4"	47"	6-1/2"	53"
* 32D5	32	72	1 per bag	5-1/2"	5-3/4"	20"	8"	28"
40D3	40	105	1 per bag	3-3/4"	4"	56-1/2"	6-1/2"	66"
* 48D5	48	98	1 per bag	5-1/2"	5-3/4"	30-1/4"	8"	38"
60S4	60	125	1 per bag	4-3/4"	4-3/4"	57-1/2"	7"	64"

* Standard inventory size

D = "D" shaped **R** = Round Shape

How to Order:

Click here to view the Magnesium Anode Ordering Code Sheet.

#7 = BACKFILL

GALVANIC ANODE BACKFILL

This specially formulated anode backfill is used with either magnesium or zinc anodes to lower the anode to earth resistance and to help retain moisture around the anode, thus creating a more efficient ground bed.

The anode mixture consists of 75% gypsum, 20% bentonite & 5% sodium sulfate. A special mixture of 50% gypsum and 50% bentonite is available on request.

The backfill either comes with the prepackaged galvanic anodes or is available in fifty pound paper bags.

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#7- ANODE WIRE

HMWPE Direct Burial Cable

The cable utilized in cathodic protection systems is a critical component of any cathodic protection system. MESA provides cable manufactured specifically for cathodic protection applications from a variety of cable manufacturers. The industry standard cable for direct burial is a stranded copper conductor covered with an insulation of high molecular weight polyethylene (HMWPE). The thick insulation provides both electric isolation and mechanical protection. During installation, this cable can withstand considerable mechanical abuse without compromising the conductor. The HMWPE insulation is chemically resistant and protects against most organic and inorganic substances.

Application:

A direct earth burial DC feeder cable for use in cathodic protection systems, for storage tanks, pipelines, wells, vessels and metallic structures either buried or water submerged.

Standards:

- **Conductor**
  Stranded copper conductor conforms to ASTM Specification B-8.
- **Insulation**
  Insulation is high molecular weight polyethylene conforming to ASTM D-1248, Type 1, Class A, Category 5, Grades E4 & E5. Tensile Strengths JI, J3. Available with high density polyethylene (Types II, III, IV) Class B & C (all colors).

Construction:

Annealed, uncoated, stranded copper conductor, HMW polyethylene black insulation. Surface or indent printed. Custom printing available.

Size	No. of Strands	Circular Mils	AWG Diameter Inches	Insulation Thickness Inches	Nominal Diameter Inches	Weight Lbs per 1000 ft	DC Ohms per Mft at 20 C
#14	7	4,110	.0726	.110	.293	38	2.57
#12	7	6,530	.0915	.110	.311	48	1.62
#10	7	10,380	.116	.110	.340	62	1.02

NODES

#16 - BOND CABLES

#8	7	16,510	.142	.110	.370	87	.652
#6	7	26,240	.179	.110	.40	122	.411
#4	7	41,740	.225	.110	.45	175	.258
#2	7	66,360	.283	.110	.510	260	.162
#1	19	83,690	.322	.125	.580	330	.129
#1/0	19	105,600	.362	.125	.620	401	.102
#2/0	19	133,100	.406	.125	.660	492	.081
#4/0	19	211,600	.512	.125	.770	750	.051

BOND

Specification for HMWPE Cathodic Protection Cable

Scope

- This specification describes a special single conductor high molecular weight polyethylene insulated cable designed for direct earth burial DC service in cathodic protection installations.

Applicable Specifications

- The following specifications form a part of this specification to the extent specified herein:

- American Society for Testing and Materials (ASTM) Specification B-8, latest edition, for Concentric-Lay Stranded Copper Conductors, Hard, Medium-Hard or Soft.

- American Society for Testing and Materials (ASTM) Specification D-1248, latest edition, for Polyethylene Plastic Molding and Extrusion Materials.

- Insulated Cable Engineers Association (ICEA) Pub. No. S-61-402 (NEMA Pub. No. WC-5) for Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

Conductor

- The copper conductors shall be Class B stranded, compressed, annealed, uncoated copper in accordance with ASTM Specification B-8, latest edition.

Insulation

- The conductor shall be insulated with high molecular weight polyethylene insulation complying with physical and electrical requirements of ASTM Specification D-1248, latest edition.

- The average thickness of insulation shall be 0.110 inch for conductor sizes #8 AWG to #2 AWG and 0.125 inch for sizes #1 AWG to #4/0 AWG. The minimum thickness at any point shall be not less than 90% of the specified average thickness. The insulation shall be applied tightly to the conductor and shall be free-stripping.

Identification

- The insulated cable shall be surface ink printed with: Conductor Size, Manufacturer, HMW/PE CATHODIC PROTECTION CABLE.

Tests

- The completed cable shall be tested in accordance with the requirements of ICEA Pub. No. S-61-402, Part 6.

Shipping

- Shipping lengths shall be as specified for the individual order.

- Packaging shall be in accordance with standard commercial practices.

P.O. Box 52608 Tulsa, OK, USA 74152
918.627.3188 Fax 918.627.2676
www.Mesaproducts.com

BURNDY
an FCI Company

REVOLUTIONARY BURNDY DESIGN MEETS STRICT UL 486B STANDARDS

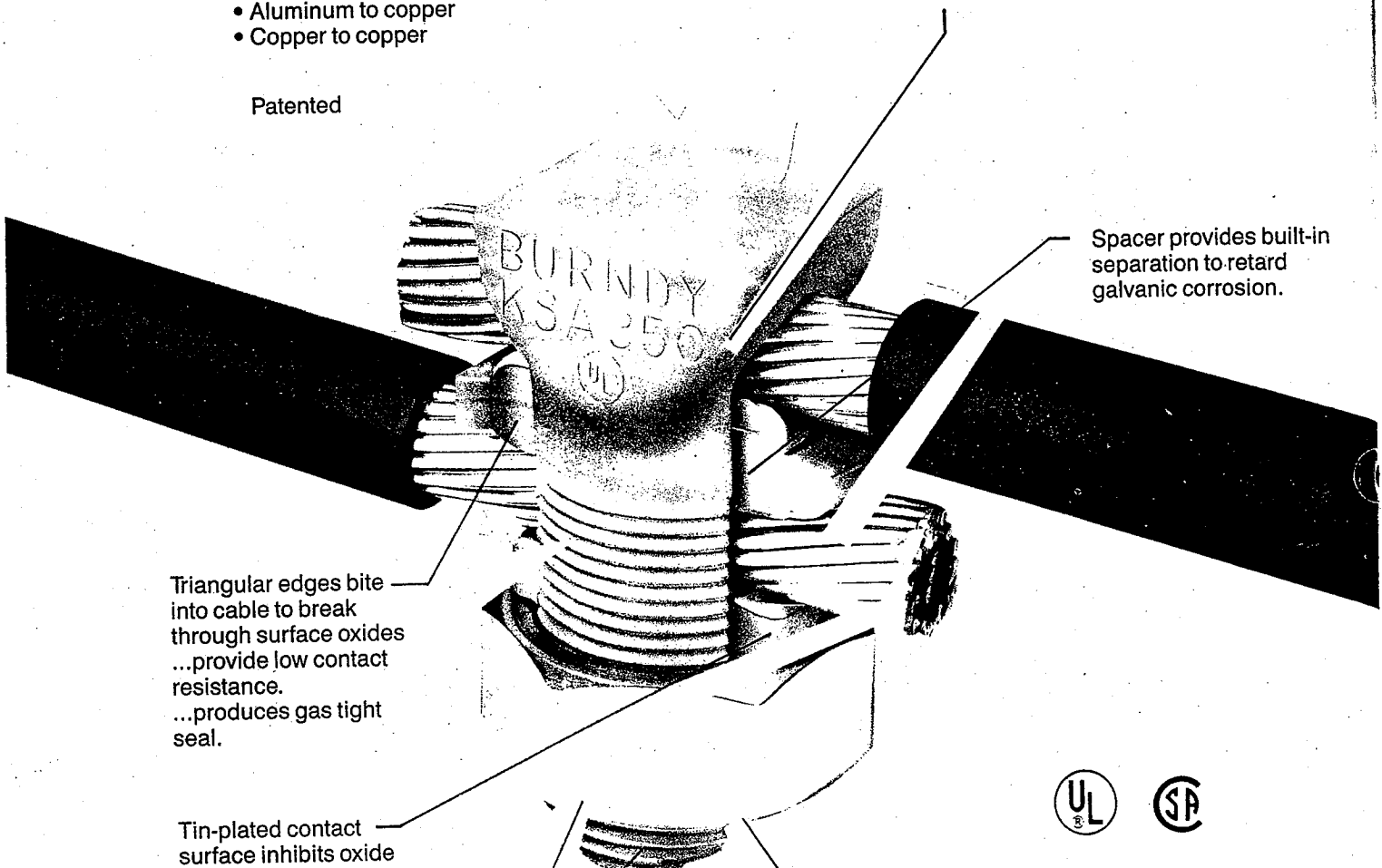
...and puts the bite on aluminum connections forever!

Unique "bite and grip" TriTap Servit™ contact delivers safe, long-term reliability — even without scratch brushing...without oxide inhibiting compounds.†

For use on all combinations
- Aluminum to aluminum
- Aluminum to copper
- Copper to copper

Patented

Available in sizes from #10 through 500 kcmil.



Spacer provides built-in separation to retard galvanic corrosion.

Triangular edges bite into cable to break through surface oxides ...provide low contact resistance. ...produces gas tight seal.

Tin-plated contact surface inhibits oxide formation.

Special heat-treated hard, aluminum alloy.

Anti-galling, high-efficiency threaded components result in high contact force. Easily installed using standard, everyday wrenches.

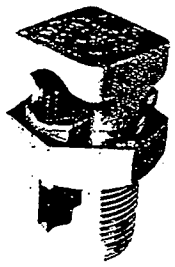
† When used in NEC applications of insulated cables only.

#8 - Split Bolts

TYPES KS & KS-3

SERVIT®

For Copper, Copperweld



Compact, high strength, high copper alloy SERVIT split-bolt has free-running threads and easy to grip wrench flats. Highly resistant to season cracking and corrosion, the SERVIT provides maximum pressure and assures a secure connection on all combinations of run and tap conductors. Type KS-3 accommodates 3 maximum size conductors.

CATALOG NUMBER	CONDUCTOR						RECOMMENDED▲ TIGHTENING TORQUE IN. LB.
	COPPER		COPPERWELD				
	RANGE FOR EQUAL RUN AND TAP	MIN. TAP WITH MAX. RUN	MAXIMUM RUN AND TAP				
			SOL.	STR.	TYPE A	TYPE D	
KS90	12 STR.-10 STR.	16 STR.	#10	—	—	—	80
KS15	10 STR.-8 STR.	14 STR.	#8	—	—	—	
KS17	8 STR.-6 SOL.	14 STR.	#6	3 #12	8A	9½D	165
KS17-3	8 STR.-6 SOL.	16 STR.	#6	3 #12	8A	9½D	
KS20	8 STR.-4 SOL.	14 STR.	#4	3 #10	6A	8D	
KS20-3	8 STR.-4 SOL.	14 STR.	#4	3 #10	6A	8D	
KS22	6 STR.-2 SOL.	14 STR.	#2	3 #8	4A	6D	275
KS22-3	6 STR.-2 SOL.	14 STR.	#2	3 #8	4A	6D	
KS23	6 STR.-2 STR.	14 STR.	#1	3 #7	3A	5D	
KS25	4 STR.-1/0 STR.	14 STR.	2/0	3 #5	2A	4D	385
KS26	2 STR.-2/0 STR.	14 STR.	3/0	7 #7	—	—	
KS27	1 STR.-3/0 STR.	8 SOL.	—	—	—	—	500
KS29	1 STR.-250	8 STR.	4/0	7 #5	—	—	650
KS31	1/0 STR.-350	1/0 STR.	—	19 #8	—	—	
KS34	2/0 STR.-500	2/0 STR.	—	19 #6	—	—	825
KS39	4/0 STR.-750	4/0 STR.	—	19 #5	—	—	1000
KS44	300-1000	4/0 STR.	—	—	—	—	1100

▲ Listed torque values are for maximum conductor combinations accommodated. Consult UL486 Tables 7-4, 7-5, 7-6 for smaller conductor combinations.

TYPE SC

SERVIT® COVER

Used indoors or outdoors, this compact, one-piece plastic SERVIT cover saves time and material, **eliminates costly taping of split-bolts.** Positive latch snaps easily and quickly over connector, ideal for tight quarters. Self positioning plastic fingers wrap around wires fully insulating joint. UL listed for 600 volt indoor application. Three Covers accommodate a range of 6 SERVIT sizes through 2/0 Str.

CATALOG NUMBER	CONDUCTOR RANGE				FOR USE WITH
	RANGE FOR EQUAL RUN AND TAP		MIN. TAP WITH MAX. CABLE RUN		
	MIN.	MAX.	MIN.	MAX.	
SC4	8 STR.	6 SOL.	14 STR.	6 SOL.	KS 17
SC4	8 STR.	4 SOL.	14 STR.	4 SOL.	KS 20
SC2	6 STR.	2 SOL.	14 STR.	2 SOL.	KS 22
SC2	6 STR.	2 STR.	14 STR.	2 STR.	KS 23
SC2/0	4 STR.	1/0 STR.	14 STR.	1/0 STR.	KS 25
SC2/0	2 STR.	2/0 STR.	14 STR.	2/0 STR.	KS 26

3M

Scotchfil™ Electrical Insulation Putty

#9 TAPE WRAP @ WIRE SPLICE

Data Sheet

1. Product Description

Scotchfil™ Electrical Insulation Putty is an electrical grade putty in a tape form. Scotchfil putty is UL Recognized as a splice insulation for electrical conductors at temperatures up to 176°F (80°C) when over-wrapped with either Scotch™ Super 33+ or Super 88 vinyl Electrical Tape.

- UL "Recognized" Category OCOT2, File No. E59951
- Noncorrosive, synthetic rubber
- Excellent electrical properties
- Excellent aging properties
- Will not dry out
- Applies cleanly without waste

2. Applications

- To insulate low voltage (600 volts and less) connections
- To build up cable splices and fill out major irregularities and voids in low voltage splices (2300 volts and less) in order to obtain a uniform base for further taping
- To round out high voltage connections
- To smooth bus bar irregularities
- To create a resin dam in resin pressure splices
- To create a moisture seal at ground wire exit in high voltage splices
- To moisture seal multiconductor cable connections

Typical Properties

Physical Properties	
Color	Black
Thickness ASTM D-1000	125 mils (3, 17 mm)
Elongation ASTM D-1000	1000%
Copper Corrosion	None

Electrical Properties	
Dielectric Strength ASTM D-1000	575 V/mil (22,6 kV/mm)
Insulation Resistance ASTM D-1000	$>10^6$ Megohms

3. Specification

The insulating putty must be in tape form, the thickness of which must be a minimum of 100 mils (2,54 mm). The tape must be a rubber based tape capable of being formed and molded with moderate finger tension at temperatures as low as 32°F (0°C). Neither the tape nor any of its components shall cause the corrosion of copper. The tape must be compatible with most synthetic cable insulation as well as other splicing tapes.

4. Engineering/Architectural Specification

All 2300 volt or less feeder connections, taps and splices, on wires larger than 6 AWG with irregular shaped connectors, shall be first built up with electrical insulating putty to eliminate both sharp corners and voids. Enough insulating putty shall be used until good overall padding is provided. Compress putty to fill all voids and generally smooth up before applying electrical splice protection.

All 600 volt or less splices and terminations on wires larger than 6 AWG with irregular shaped connectors shall be insulated with a minimum of 1/4 inch (6,3 mm) of electrical insulating putty. The entire connection must be covered with the insulating putty. The insulating putty must then be over-wrapped with a vinyl tape applied with the same tension as it has when it comes from the roll. This vinyl tape shall provide an uniform covering of at least four layers, half lapped in two directions.

5. Installation Techniques

To round out irregular connections, mold and pack Scotchfil Electrical Insulation Putty with moderate finger pressure, eliminating voids and air spaces. The layers of Scotchfil will fuse into a homogeneous mass. Over-wrap with two half lapped layers of Scotch Super 33+ or Super 88 Vinyl Electrical Tape.

To create a resin dam in resin pressure splices, wrap a layer of moderately stretched Scotchfil insulation putty around the cleaned cable jacket at a distance of 3.0 inches (7,6 cm) from the jacket cutback. Lay the ground wire along the cable jacket and through the Scotchfil putty. Wrap several layers of highly elongated Scotchfil putty around the cable and ground wire. Bind Scotchfil putty tightly with several wraps of Scotch Super 33+ or Super 88 Vinyl Electrical Tape. The putty and vinyl tape will make a seal through which resin cannot flow.

6. Shelf Life

Scotchfil Electrical Insulation Putty has a 5 year shelf-life (from date of manufacture) when stored under the following recommended storage conditions. Store behind present stock in a clean dry place at a temperature of 70°F and 40-50% relative humidity. Good stock rotation is recommended.

7. Availability

Scotchfil Electrical Insulation Putty is available in 1 1/2 in x 60 in (3,8 cm x 152,4 cm) rolls from your local 3M authorized electrical distributor.

Important Notice

All statements, technical information, and recommendations related to Seller's products are based on information believed to be reliable, but the accuracy or completeness thereof is not guaranteed. Before utilizing the product, the user should determine the suitability of the product for its intended use. The user assumes all risks and liability whatsoever in connection with such use.

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3M

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40% Pre-consumer waste paper
10% Post-consumer waste paper

Litho in USA.

#10 - TAPE WRAP

Scotch®

Scotch® Linerless Rubber Splicing Tape 130C

Data Sheet

Product Description

Scotch® Linerless Rubber Splicing Tape 130C is a highly conformable, linerless, ethylene rubber (EPR), high-voltage insulating tape, formulated to provide excellent thermal dissipation of splice heat. The tape is designed for use in splicing and terminating wires and cables. Rated up to 90°C continuous operating temperatures and short-term 130°C overload service. The tape has excellent physical and electrical properties, which provide immediate moisture seals and void-free build-ups. This product can be used for low and high-voltage (through 69 kV) applications.

- Linerless, self-bonding, primary insulating tape rated through 69 kV.
- High thermal conductivity.
- Ethylene propylene base.
- Excellent physical and electrical properties.
- Designed to insulate splices and terminate cables whose overload temperatures can reach 130°C.
- Physical and electrical properties unaffected by degree of stretch
- Compatible with common, solid dielectric cable insulation
- Uniform tape unwind from roll
- Small roll size (O.D.)
- Five-year shelf life
- Stable over wide application temperature range
- Weather resistant

Applications

- Primary insulation for splicing all types of solid dielectric insulated cables through 69 kV
- Primary insulation for building stress cones on all types of solid dielectric insulated cables up to 35 kV
- Jacketing (secondary insulation) on high-voltage splices and terminations
- Moisture-sealing electrical connections
- Bus bar insulation
- End-sealing high-voltage cables
- Motor leads
- Jacket repairs

Typical Data/Physical Properties

Physical Properties

Test Method	Typical Value*
Color	Black
Thickness (ASTM-D-4325)	30 mils (0,762 mm)
Tensile Strength (ASTM-D-4325)	250 psi (1,72 MPa)
Ultimate Elongation (ASTM-D-4325)	850%
Operating Temperature (ASTM-D-4388)	90°C (194°F)
Emergency Overload (ASTM-D-4388)	130°C (266°F)
Thermal Conductivity (23°C) (ASTM-C-518)	0.3 W/m°C
Ozone Resistance (ASTM-D-4388)	Pass
Heat Resistance (ASTM-D-4388)	Pass
UV Resistance (ASTM-D-4388)	Pass

Physical Properties

Test Method	Typical Value*
Dielectric Strength (ASTM-D-4325)	
Original	750 V/mil (29,5 MV/m)
24 hrs. in H_2O	750 V/mil (29,5 MV/m)
96 hrs. @ 23°C 96% RH	730V/mil (28,7 MV/m)

Volume Resistivity (ASTM-D-4325)	
Original	$>10^{15}$ ohm-cm
Aged 96 hrs. @ 23°C 96% RH	$>10^{14}$ ohm-cm
Dielectric Constant (ASTM-D-4325)	
1200 volts @ 60 Hz	
23°C	3.5
90°C	3.6
Dissipation Factor (ASTM-D-4325)	
1200 volts @ 60 Hz	
23°C	0.70%
90°C	3.00%

**** All values are averages and are not intended for specification purposes.***

Specification

Product

The high-voltage corona resistant tape must be supplied without a liner, be based on ethylene propylene rubber, and be capable of emergency operating cable temperature of 130°C. The tape must be capable of being applied in either stretched or unstretched conditions without resulting in loss of either physical or electrical properties. The tape must not split, crack, slip, or flag when exposed to various environments (indoor or outdoor). The tape must be compatible with all synthetic cable insulations and have a shelf life of five years.

Engineering/Architectural Specification

Splicing and terminating solid dielectric cable shall be done in accordance with drawings engineered by the splice material manufacturer. All splices and terminations shall be insulated using Scotch® Electrical Tape 130C.

Installation Technique

This tape should be applied in successive half-lapped level wound layers until desired build-up is reached. It should be applied like any rubber tape; that is, the side of the tape wrapped inside the roll should be applied outside on the splice (tacky side up). This will help prevent the roll from getting progressively further away from the work area.

To eliminate voids in critical areas, highly elongate 130C tape. Stretch tape in critical areas just short of the breaking point; doing so will not alter its physical or electrical properties. In less critical areas, less elongation may be used. The tape should be stretched to a minimum of 3/4 its original width. Always attempt to half-lap to produce a uniform buildup. When using 130C tape for splicing cable above 15 kV, always highly elongate the tape throughout the entire splice. Techniques for proper usage of 130C tape are contained in standard and special prints available though the "3M System for Splicing and Terminating" program. These are available through the local 3M Electrical Products Division representative.

Shelf Life

The 130C tape has a 5-year shelf life (from date of manufacture) when stored under the following recommended storage conditions. Store behind present stock in a clean dry place at a temperature of 70°F (21°C) and 40% to 50% relative humidity. Good stock rotation is recommended.

Availability

The 130C tape is available from your electrical distributor in the following roll sizes.

3/4 in. by 30 ft. (19 mm x 9,1 m)
1 in. by 30 ft. (25,4 mm x 9,1 m)
1 1/2 in. by 30 ft. (38 mm x 9,1 m)
2 in. by 30 ft. (50,8 mm x 9,1 m)

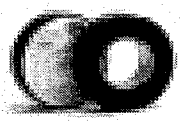
3M
Electrical Markets Division
6801 River Place Blvd.
Austin, TX 78726-9000
800-626-8381
Fax 800-828-9329
www.3M.com/electrical

Recycled paper
40% Pre-consumer waste paper
10% Post-consumer waste paper

Litho in USA

#11 - TAPE WRAP

Specifications for Vinyl Electrical Tapes

	Product Number	Product Description	Tape Thickness	U.V. Resistance	Temperature Rating	Typical Applications	Specifications/ Certifications and Listings
	Scotch® Super 33+ Professional Use Premium Vinyl Electrical Tape	Highly conformable, super stretchy in all weather applications; resists UV rays, abrasion, corrosion, alkalies & acids. Flame retardant.	7 mil	Exceeds UL510 requirements	220°F 105°C	Primary insulation for splices up to 600V. Protective jacketing.	A-A-55809 ASTM D-3005 Type I UL LISTED 539H CSA LR48769
	Scotch 35 Professional Use Vinyl Electrical Tape for Color Coding	Nine fade-resistant colors, super stretchy & conformable, excellent insulating properties. Resist UV rays, abrasion, corrosion, alkalies & acid.	7 mil	Exceeds UL510 requirements	220°F 105°C	Phase identification & marking. Harnessing	A-A-55809 UL LISTED 539H CSA LR48769
	Scotch Super 88 Professional Use Premium Vinyl Electrical Tape	All weather; heavy duty, professional use, abrasion resistant, fast build up.	8.5 mil	Exceeds UL510 requirements	220°F 105°C	Primary insulation for splices up to 600V. Protective jacketing.	MIL-I-24391C ASTM D-3005 Type II UL LISTED 539H CSA LR48769
	Scotch 22 Heavy Duty Vinyl Electrical Tape	Thicker for increased mechanical strength and abrasion resistance. Electrical insulating.	10 mil	Exceeds UL510 requirements	176°F 80°C	Bus bar insulation. Cable jacket repair.	ASTM D-2301 Type II UL LISTED 539H CSA LR48769
	Scotch 66R Vinyl Electrical Tape	Excellent mechanical strength, abrasion resistance and electrical insulating properties.	10 mil	Exceeds UL510 requirements	220°F 105°C	Primary insulation for 600V bus bar. Protective jacketing.	UL File E 17385
	Highland™ Commercial Grade Electrical Tape	Flexible, stretchy, conformable, commercial grade vinyl. Flame retardant.	7 mil	Meets UL510 requirements	194°F 90°C	Protective jacketing. Harnessing.	ASTM D-2301 Type I UL LISTED 539H CSA LR48769
	Temflex™ 1700 General Purpose Vinyl Electrical Tape	Economical, flexible, general purpose tape.	7 mil	Meets UL510 requirements	176°F 80°C	Protective jacketing. Harnessing.	ASTM D-2301 Type I UL LISTED 539H CSA LR48769

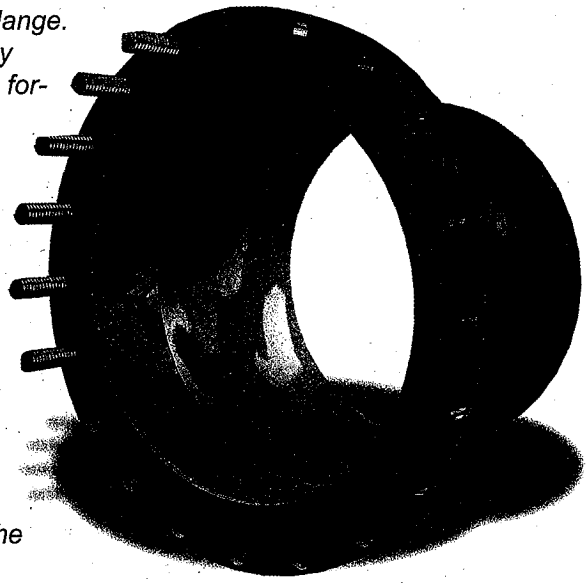
PSI Isolating Gasket Types and Styles

#12

Type "E" Gaskets

Type "E" Gaskets extend to the outside diameter of the flange. They feature precision located bolt holes, to automatically center the gasket, and offer maximum protection against foreign material "shorting-out" the flange.
Type "E" gaskets may be ordered in any one of the following configurations:

- *LineBacker® Sealing Gaskets*
- *GasketSeal® Sealing Gaskets*
- *Rubber Faced Phenolic Gaskets*
- *Plain Phenolic Gaskets*
- *Red Devil Gaskets*
- *Yellow Jacket Gaskets*
- *Garlock Gaskets*
- *Teflon® Gaskets*

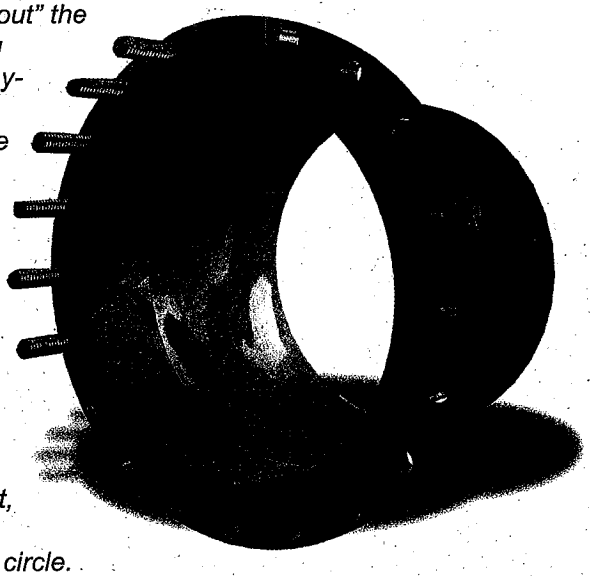


When configured as a LineBacker® Sealing Gasket, the sealing element may be positioned anywhere between the I.D. of the gasket and I.D. of the bolt circle.

Type "F" Gaskets

Type "F" Gaskets are made to fit within the bolt hole circle of the flange. The O.D. of the gasket extends out to the I.D. of the bolt hole circle for good protection against foreign material "shorting-out" the flange. When configured as a LineBacker® Sealing Gasket, the sealing element may be positioned anywhere between the I.D. and O.D. of the gasket.
Type "F" gaskets may be ordered in any one of the following configurations:

- *LineBacker® Sealing Gaskets*
- *GasketSeal® Sealing Gaskets*
- *Rubber Faced Phenolic Gaskets*
- *Plain Phenolic Gaskets*
- *Red Devil Gaskets*
- *Yellow Jacket Gaskets*
- *Garlock Gaskets*
- *Teflon® Gaskets*



When configured as a LineBacker® Sealing Gasket, the sealing element may be positioned anywhere between the I.D. of the gasket and I.D. of the bolt circle.

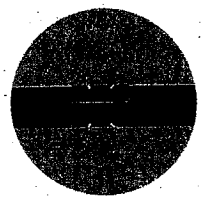
Type "D" Gaskets

Type "D" Gaskets are available for RTJ flanges but the LineBacker® Sealing Gasket is an excellent alternative to "D" gaskets because the sealing element may be positioned anywhere between the I.D. of the gasket and I.D. of the ring groove.

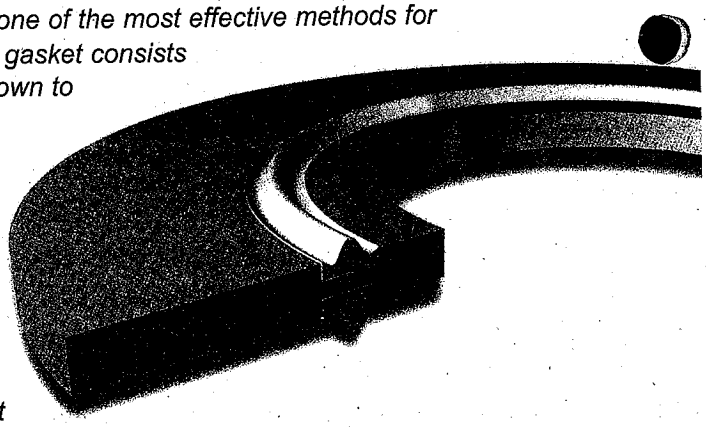
Teflon is a registered trademark of DuPont Dow Elastomer.

PSI Isolating Gaskets - Standard 1/8" Thick

GasketSeal® Sealing Gaskets

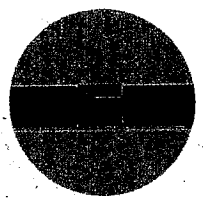


After Tightening

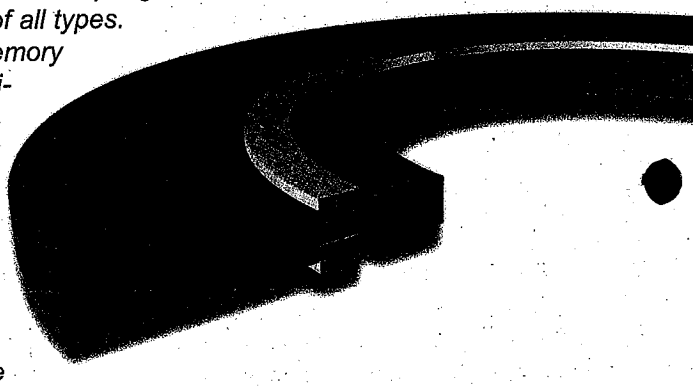


GasketSeal® sealing gaskets are considered one of the most effective methods for sealing and isolating flanges of all types. The gasket consists of two molded semi "O" rings (with precise crown to void ratio) mounted in grooves on opposite sides of an isolating retainer. While maintaining all the advantages of a full "O" ring seal, the semi "O" ring seal eliminates the need for a sealing groove in the flange face to reduce problems associated with alignment. GasketSeal® gaskets are self energizing with theoretical near zero "m" and "y" factors resulting in effecting a positive seal without excessive bolt loads required with flat gaskets. GasketSeal® sealing gaskets are available in a wide variety of retainer and sealing element combinations for matching gaskets to service and environmental conditions. Refer to the chart for the GasketSeal® sealing gasket temperature ranges and material compatibilities. Note: Flange Faces, see page 11.

LineBacker® Sealing Gaskets



After Tightening



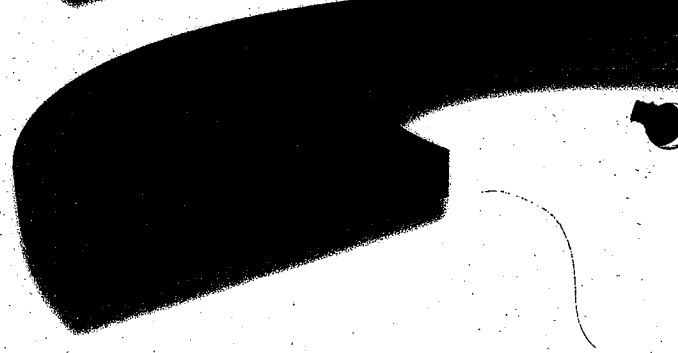
LineBacker® sealing gaskets utilize a patented rectangular sealing element, referred to as a "quad" ring, in combination with a unique groove design to effectively seal and isolate flanges of all types. With the unique "quad" ring design, elastic memory is provided for elastomers not normally associated with this characteristic. Materials such as AFLAS, TFE (Teflon) and KALREZ may therefore be used as sealing elements which dramatically increases the options available for matching gasket materials to service and environmental conditions. This greater variety of materials also provides excellent temperature and chemical range compatibility. LineBacker® sealing gaskets are self energizing with theoretical near zero "m" and "y" factors resulting in effecting a positive seal without excessive bolt loads required with flat gaskets. Refer to chart for LineBacker® sealing gasket temperature range and material compatibilities. Note: Flange Faces, see page 11.

Rubber Faced Phenolic Gaskets

Rubber Faced Phenolic gaskets have been used as standard "flat" isolating gaskets in the oil and gas industries for many years. Soft neoprene rubber sheets are factory applied to both sides of a laminated phenolic retainer providing an effective sealing surface. The temperature limit of these gaskets is approximately +175° F. (80° C.).

Note: Due to improved sealing characteristics and retainer/seal element options, LineBacker or GasketSeal sealing gaskets should be considered in lieu of rubber faced phenolic gaskets whenever possible.

Flat Gaskets



Flat gaskets are used in special applications such as elevated temperatures that often require materials such as Red Devil or Yellow Jacket. Please contact a PSI representative for additional information on available options.

Sleeves and Washers

Isolating Sleeves

Isolating sleeves are available in the following materials:

- *Mylar*
- *Polyethylene*
- *Phenolic*
- *Nomex®*
- *G-7 Silicon Glass*
- *G-10 Epoxy Glass*
- *G-11 Epoxy Glass*

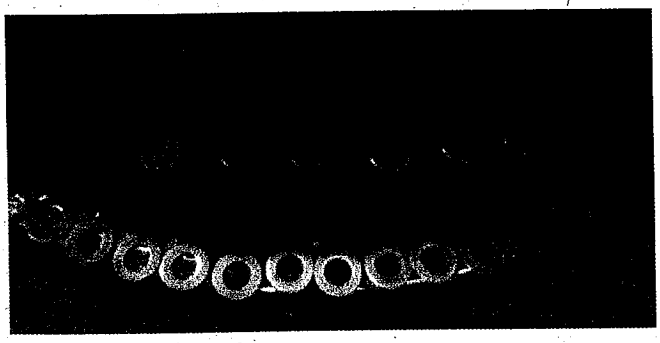
Designed to easily fit over standard size flange bolts/studs within standard size bolt holes, PSI isolating sleeves have a wall thickness of 1/32" (0.79mm) and are used with separate isolating and steel washers. They are available for standard American bolt sizes from 1/2" (12.7mm) to 3-1/2" (88.9mm) as well as metric bolt sizes from 12mm and larger.

Isolating Washers - Standard 1/8" Thick

Isolating washers are available in the following materials:

- *High Strength Glass Clad Phenolic*
- *G-3 High Temp. Phenolic*
- *G-7 Silicon Glass*
- *G-10 Epoxy Glass*
- *G-11 Epoxy Glass*

Designed to provide tough, positive isolation. PSI isolating washers are available for bolt sizes from 1/2" (12.7mm) through 3-1/2" (88.9mm) and are made to fit over the isolating sleeves.



One-piece Sleeves and Washers

Molded from acetal resin and available for bolt diameters from 1/2" to 1-1/2" (12.7 to 38.1mm), one-piece sleeves and washers are structurally tough but limited to applications where the flange temperature does not exceed +180°F (+80°C) and compressive loads do not exceed 18,000 psi.

They are generally used as single washer sets because they're molded to specific lengths and, in many instances, are longer than the thickness of a single flange. A washer centering ring positions the steel washer on the unit properly to avoid uneven pressures on the washers.

***Note:** G-10 One-Piece sleeve/washer assembly available for additional strength and convenience.*

Steel Washers

Steel washers are designed to fit over the isolating sleeve or the retainer ring on the one-piece sleeves and washers. The outside diameter is sized to fit within the bolt facing on ANSI standard flanges. They are made of 1/8" (3.2mm) thick plated hot-rolled steel.

***Custom Fabricated:** G-10 One-Piece Completely Assembled - No Loose Parts.*

Sleeve Material Physical Properties

ASTM Test Method		Poly-ethylene	Mylar	Nomex	Phenolic	G-7* Silicone Glass	G-10 Epoxy Glass	G-11 Epoxy Glass	One-piece Molded Acetal
D149	Dielectric Strength Volts/Mil (Short Time)	400	4000	400	400	350	400	400	1,200
D695	Compressive Strength psi	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18,000
D229	Water Absorption %	0.01	0.8	N/A	1.6	0.10	0.10	0.10	0.22
	Operating Temp. °F	-30 to +180	-75 to +300	-65 to +450	-20 to +225	Cryogenic to +450	Cryogenic to +280	Cryogenic to +320	-30 to +180
	°C	-34 to +82	-59 to +149	-54 to +232	-29 to +107	Cryogenic to +232	Cryogenic to +138	Cryogenic to +160	-34 to +82
D790	Flexural Strength psi	7,000	13,000	20,000	16,000	20,000	55,000	55,000	1,400
	Cut Through Resistance ft-lbs.	1,800	3,500	4,000	No Test	No Test	16,000	No Test	3,400

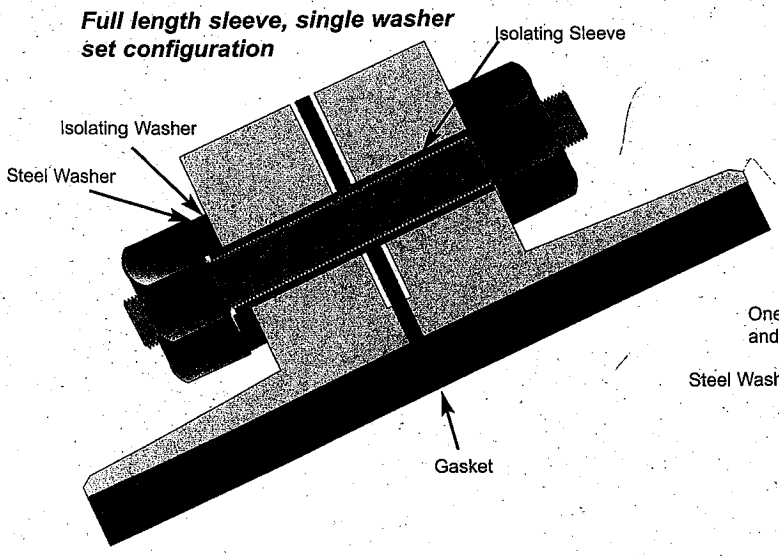
* = G-7 material should not be used with hydrocarbons, not even trace amounts.

1/8" Washer Material Physical Properties

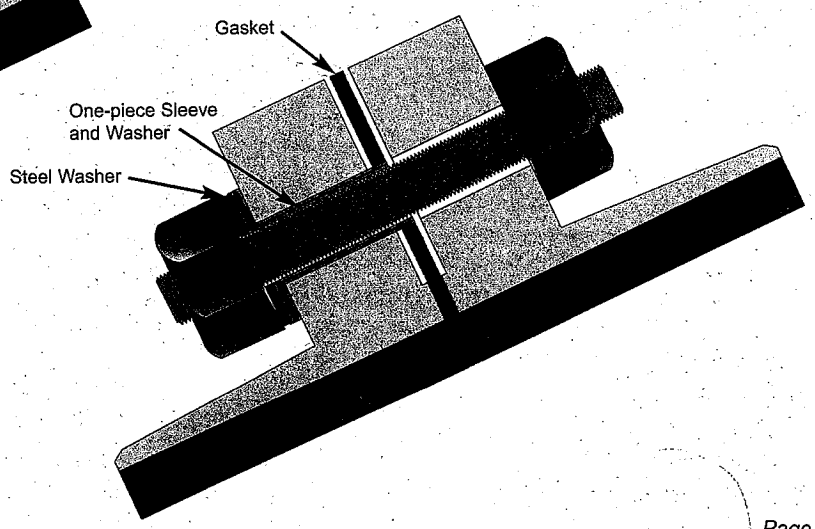
ASTM Test Method		Glass Clad Phenolic	G-3 Hi-Temp Phenolic Glass	G-7* Silicone Glass	G-10 Epoxy Glass	G-11 Epoxy Glass	One-piece Molded Acetal
D149	Dielectric Strength Volts/Mil (Short Time)	500	550	350-400	550	550	1,200
D695	Compressive Strength psi	33,000	50,000	40,000	50,000	50 - 80,000	18,000
D229	Water Absorption %	1.6	0.7	0.07	0.10	0.10	0.22
	Operating Temp °F	-65 to +300	-65 to +392	Cryogenic to +450	Cryogenic to +280	Cryogenic to +350	-30 to +180
	°C	-54 to +149	-54 to +200	Cryogenic to +232	Cryogenic to +138	Cryogenic to +177	-34 to +82

* = G-7 material should not be used with hydrocarbons, not even trace amounts.

Full length sleeve, single washer set configuration



One-piece sleeve & washer configuration



Flange Isolation Kits

Flange Isolation Kits

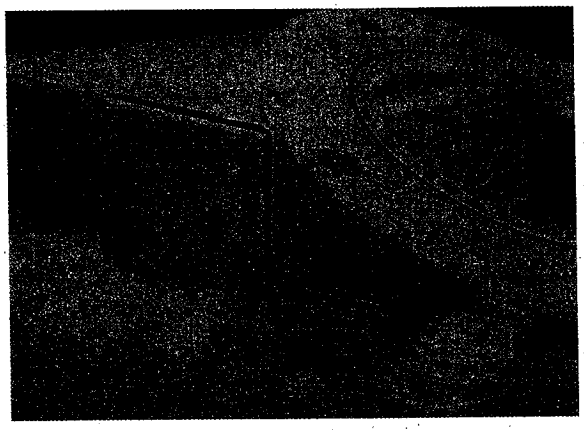
Flange isolation kits are available for all flange sizes, types, pressure ratings and materials. Each kit is individually and securely packed in a reinforced corrugated cardboard box, which is clearly labeled as to its contents for convenience in warehousing and field use. Very large diameter gaskets are packaged separately from the sleeves and washers for convenience in storing and handling.

Each gasket is labeled with:

- *Materials (Retainer Material or Retainer/Seal Element Combination)*
- *Pipe Size*
- *ANSI Class*
- *Date of Manufacture*
- *Type Flange (Weld Neck or Slip-on)*

Sleeves and Washers

Sleeves and washers are enclosed in a strong polyethylene bag to eliminate any possibility of loss. A chart showing the recommended sequence for tightening flange bolts is also included with each kit, as well as with each individual gasket.



Common LineBacker® & GasketSeal® Sealing Gasket Physical Properties

ASTM	Test Method	Plain Phenolic	Rubber Faced Phenolic	G-3 Hi-Temp Phenolic Glass	G-7* Silicone Glass	G-10 Epoxy Glass	G-11 Epoxy Glass
D149	Dielectric Strength Volts/Mil (Short Time)	500	500	550	350-400	550	550
D695	Compressive Strength (psi)	25,000	25,000	50,000	40,000	50,000	50,000+
D229	Water Absorption (%)	1.6	1.6	0.7	0.07	0.10	0.10
D257	Insulation Resistance Meg Ohms	40,000	40,000	46,000	2,500	200,000	200,000
D790	Flexural Strength (psi)	22,500	22,500	60,000	27,000	60,000	75,000+
D785	Hardness Rockwell "M"	85	85	115	105	115	115
D256	IZOD Impact Strength (Ft-Lbs/Inch)	1.2	1.2	12.0	8.0	14.0	12.0
D638	Tensile Strength (psi)	20,000	20,000	42,000	25,000	45,000	43,000
D732	Shear Strength (psi)	10,000	10,000	18,000	20,000	22,000	22,000
	Temperature Range (Degrees F)	-65 to +220	-65 to +175	-65 to +392	Cryogenic to +450	Cryogenic to +280	Cryogenic to +349
	Temperature Range (Degrees C)	-54 to +104	-54 to +79	-54 to +200	Cryogenic to +232	Cryogenic to 138	Cryogenic to +176

* = G-7 Material should not be used with hydrocarbons, not even trace amounts.

Seal Element Temperature Limits

	Nitrile	Viton	Teflon	Neoprene	EPDM
Degrees Fahrenheit	-40 to +250	-20 to +350	Cryogenic to +450	-40 to +175	-65 to +300
Degrees Celsius	-40 to +121	-29 to +177	Cryogenic to +232	-40 to +79	-54 to +149

*Consider **both** retainer and seal element temperature limits together for GasketSeal® and LineBacker® Sealing Gaskets.*

Flange Isolation Kits

Single Washer Set

Single washer set flange isolation kits include the following items for each bolt:

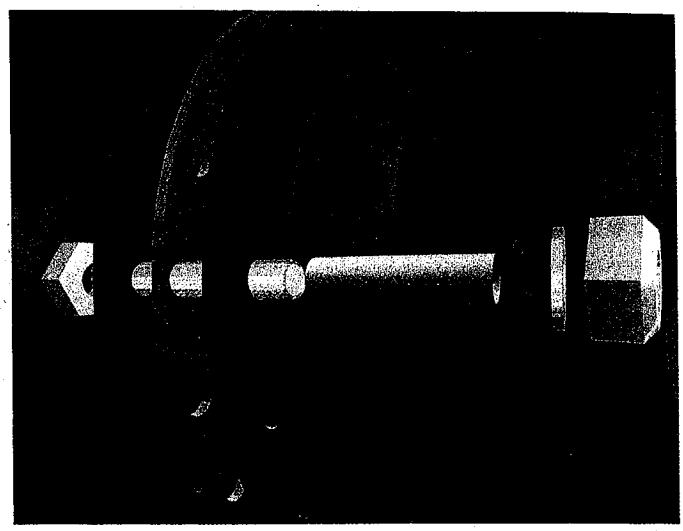
One - 1/8" thick steel washer

One - Isolating washer

One - Isolating sleeve

Application Considerations

In buried applications, single washer configurations may be used to allow the Cathodic Protection (CP) current to reach the nuts and bolts. If desired, nuts on the opposite side of the cathodically protected flange may be included as part of the CP system.



Double Washer Set

Double washer set flange isolation kits include the following components for each bolt:

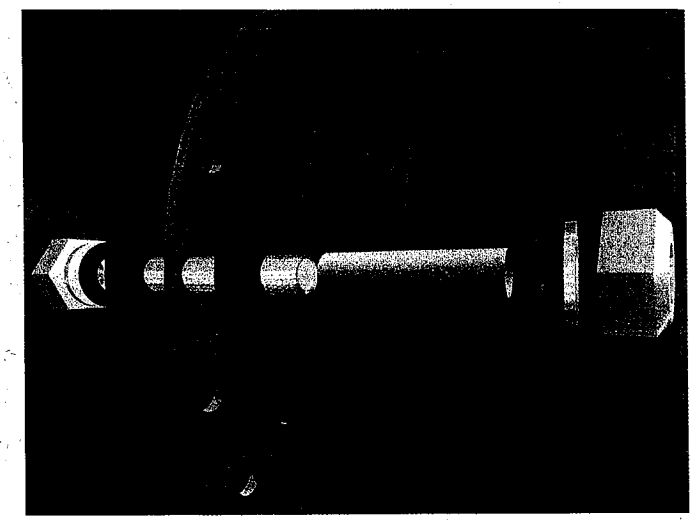
Two - 1/8" thick steel washers

Two - Isolating washers

One - Full length isolating sleeve

Application Considerations

Double washer configurations may be used for added protection against the possibility of "shorting out" the nuts and bolts. In addition, double washer sets electrically isolate the nuts and bolts from both flanges.



One-Piece Sleeve and Washer Sets

One-piece sleeve and washer set flange isolation kits include the following items for each bolt:

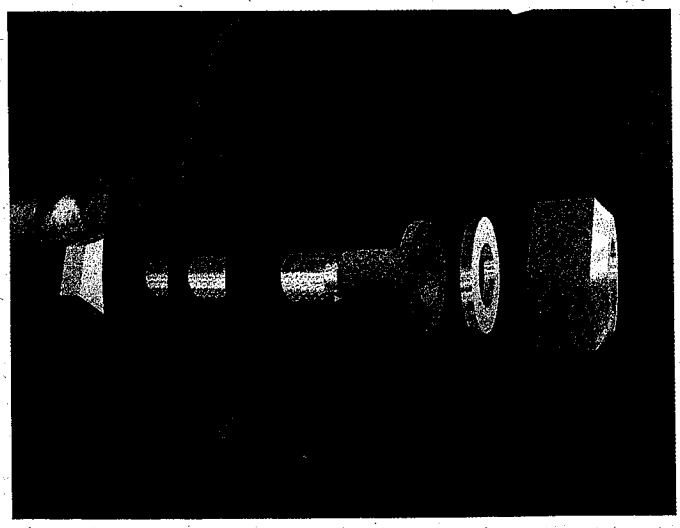
Two - 1/8" thick steel washers

One - One-piece Isolating sleeve

Application Considerations

Easier to install, one-piece sleeves also allow the inspector a visual indication of sleeve usage. Due to the relatively low compressive strength of this material, its use is not recommended for high pressure or large diameter flanges that require high torque loads.

Note: *G-10 One-Piece sleeve/washer assembly available for additional strength and convenience. See page 6 photo.*



Buried Application Note: *Consider using the ElectroStop™ monolithic isolation fitting.*

#13 - Wax Tape

MESA
Quality Focused, *Service Driven.*

#1 Wax Tape for Underground Piping

#1 Wax-Tape

For underground applications

Trenton #1 Wax-Tape prevents corrosion on underground pipe, including wet and irregular surfaces. It requires no waiting time or drying time, can be backfilled immediately, and supports cathodic protection. Trenton #1 Wax-Tape is user friendly, contains no VOCs, is non-toxic, non-hazardous and non-carcinogenic. It provides excellent protection for a variety of applications, including couplings, valves, fittings, weld cutbacks and cadwelds.

Trenton #1 Wax-Tape is easily applied to small and large valves and bolts and provides long lasting protection.

#1 Wax-Tape is used in the water industry and conforms to AWWA Standard C217.

Rehabilitation and repair of coatings is made easy because of minimal surface preparation, compatibility with other coatings, and immediate backfill.

The #1 Wax-Tape conforms to all types of fittings and irregular surfaces. It can also be applied to wet surfaces.

#1 Wax-Tape is provided in conveniently sized coreless rolls. Various widths and lengths are available.

Description

#1 Wax-Tape is a plastic-fiber felt, saturated with a blend of petrolatum waxes, plasticizers and corrosion inhibitors, forming a tape wrapper. Ideal because of its excellent conformability over irregular surfaces.

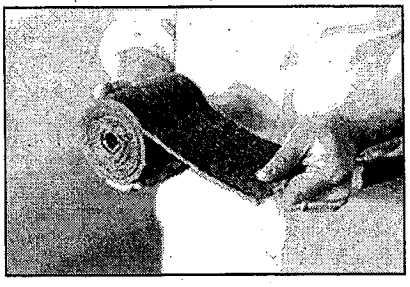
End Use

For application on below ground metal surfaces, pipe or fittings to prevent corrosion.

Packaging

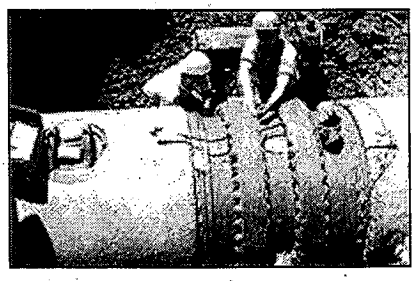
In rolls 4in. and 6in. widths by 9ft. length. Special widths and lengths are available.

Specifications



Color	Brown
Saturant pour point	115° -125° F
Thickness	70-90 mils
Dielectric strength	170 volts-mil

Advantages



- Conforms to irregular shapes
- Can be applied over wet surfaces
- Superior wetting and adhesion properties
- Composed of inert materials
- Self-sealing lap seams
- No drying or curing time before backfilling
- Can be applied at low temperatures
- Ideal where only minimal surface preperation is possible
- Easily removable for temporary installations and for examination of metal surface
- Easy clean-up with towel and hand cleaner

Quantity Requirements

<tr>

Pipe Size	Tape Width	Sq. Yards/100 ft. 1"overlap 55% overlap		Gallons of Wax-Tape Primer/100ft.
2"	4"	8	14	.5
4"	4"	17	28	1.0
6"	4"	26	42	1.5
8"	4"	35	56	2.0
10"	6"	38	70	2.5
12"	6"	46	84	3.25
14"	6"	54	98	3.75

16"	6"	62	112	4.25
18"	6"	69	126	4.75
20"	6"	77	140	5.25
22"	6"	85	154	5.75
24"	6"	92	168	6.25

P.O. Box 52608 Tulsa, OK, USA 74152
918.627.3188 Fax 918.627.2676
www.Mesaproducts.com

#1 WAX-TAPE

#14 Primer

Description:

#1 Wax-Tape is a plastic-fiber felt, saturated with a blend of petrolatums, plasticizers and corrosion inhibitors, forming a tape wrapper. Ideal because of its excellent conformability over irregular surfaces.

End Use:

For application on below ground metal surfaces, pipe or fittings to prevent corrosion.

Application Procedures:

Brush or wipe the surface clean of dirt and other foreign matter. Apply a thin film of Wax-Tape Primer then wrap #1 Wax-Tape over the surface with a one inch overlap. If surface is wet, cold or rusty rub and press on primer to displace the moisture and insure adhesion to the pipe surface. Because there is no drying or curing time back filling can take place immediately.

For additional protection on underground applications over-wrap with Trenton Guard-Wrap or Poly-Ply.

Packaging:

In rolls 4 in. and 6 in. widths by 9 ft. length. Special widths are available.

Specifications:

Color	Brown
Saturant pour point	115°-125°F
Thickness	70-90 mils
Dielectric strength	170 volts-mil

Advantages:

- Conforms to irregular shapes
- Superior wetting & adhesion properties
- Composed of inert materials
- Self-sealing lap seams
- No drying or curing time before backfilling
- Can be applied at low temperatures
- Ideal where only minimal surface preparation is possible
- Easily removable for temporary installations and for examination of metal surface
- Can be applied over wet surfaces
- Easy clean-up with towel and hand cleaner

Quantity Requirements:

Pipe Size	Tape Width	Sq. Yards/100 Ft. 1" overlap	Sq. Yards/100 Ft. 55% overlap	Gallons of Wax-Tape Primer/100 Ft.
2"	4"	8	14	.5
4"	4"	17	28	1.0
6"	4"	26	42	1.5
8"	4"	35	56	2.0
10"	6"	38	70	2.5
12"	6"	46	84	3.25
14"	6"	54	98	3.75
16"	6"	62	112	4.25
18"	6"	69	126	4.75
20"	6"	77	140	5.25
22"	6"	85	154	5.75
24"	6"	92	168	6.25

WAX-TAPE PRIMER

Description:

Wax-Tape Primer is a blend of petrolatums, plasticizer and corrosion inhibitor having a paste-like consistency, designed to displace moisture and wet the surface, insuring adhesion of the tape. It is easily applied by hand or brush.

End Use:

As a surface preparation for below ground metal surfaces prior to application of #1 Wax-Tape.

Application Procedures:

Brush or wipe the surface clean. Apply Wax-Tape Primer by hand or brush. A thin film of primer will be sufficient. On wet, cold or rusty surfaces rub and press Wax-Tape Primer firmly onto these areas displacing moisture and insuring adhesion to the surface. After application of the primer #1 Wax-Tape may be applied immediately.

Packaging:

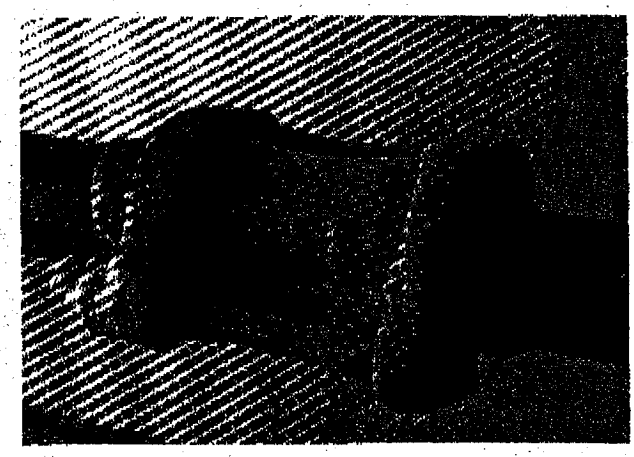
One gallon cans, four per carton.

Specifications:

Color	Brown
Pour point	100-110°F
Flash Point	350°F min.
Coverage (approximate)	1gal/100sf

Advantages:

- Goes on easily with hand or brush
- Displaces moisture
- Penetrates surface rust
- Facilitates "wetting" of surfaces
- Insures adhesion of tape
- Only a thin coat is required
- No waiting for drying or curing



Bolt-type coupling perfectly wrapped and protected with #1 Wax-Tape.

TRENTON™

#15 - Poly Ply

Corporate Office:
The Trenton Corporation
7700 Jackson Road
Ann Arbor, MI 48103
734/424-3600
Fax: 734/426-5882

Houston Div./ Export Office:
1880 S. Dairy Ashford
Suite 697
Houston, TX 77077
281/556-1000
Fax: 281/556-1122

Poly-Ply

Description:

Poly-Ply plastic wrapper consists of three 50 gauge, clear, polyvinylidene chloride plastic, high cling membranes, wound together as a single sheet. It provides a mechanical and electrical barrier over graycoat while remaining flexible enough to conform to irregular shaped surfaces. It is inert and will not deteriorate, and is resistant to chemicals and bacteria commonly found in soil.

End Use:

As a wrap over cold-applied Graycoat or Temcoat coating on straight pipe and irregular metal surfaces such as T's and Couplings.

Application Procedures:

Pre-apply Graycoat or Temcoat coating and form Poly-Ply wrapper over the coated surface. An additional second coating of Graycoat or Temcoat can then be applied over the Poly-Ply for greater protection.

Packaging:

Coreless rolls in cartons containing 50 sq. yds.
4" x 50' rolls (27 rolls/carton)
6" x 50' rolls (18 rolls/carton)
9" x 50' rolls (12 rolls/carton)
12" x 50' rolls (9 rolls/carton)
18" and 36" widths available by special order.

Specifications:

Color	Clear
Thickness	1.5 mils
Dielectric strength	2000 volts/mil
Water absorption	negligible

Advantages:

- 3-Ply composition for extra mechanical strength
- High Dielectric strength
- Conforms to irregular shapes
- Composed of inert plastic film that will not deteriorate
- Resistant to chemicals and bacteria
- Convenient size of roll
- Relatively inexpensive

Estimated Quantity Requirements:

Pipe size	Graycoat or Temcoat Pounds/100 ft.	Poly-Ply Square yards/100 ft.
4	74	
6	110	18
8	152	26
10	190	34
12	226	42
		49

ADAPTER SLEEVES

SHIM STOCK AND ADAPTER SLEEVES

thermOweld® molds designed for larger cable sizes can be used on smaller diameter cables if copper adapter sleeves are utilized.

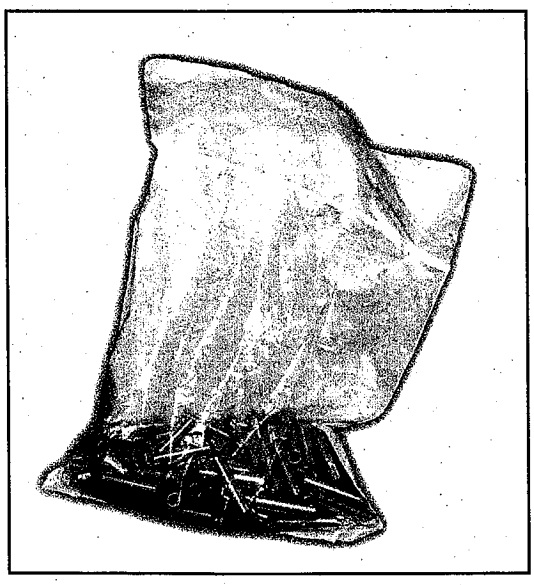
#6 - Adapter sleeves

FOR USE ON CABLE SIZE		PART NO.	USE IN MOLD SIZE	SLEEVE DIMENSIONS		
STRANDED	SOLID			O.D.	I.D.	LENGTH
#12, #14	#10, #12, #14	38-0200-00	#6 STR & Sol	.156	.111	1.00
#7, #8, #10	#6, #8	38-0201-00	#4	.227	.177	1.00
#4, #5	#3, #4	38-0207-00	#2	.287	.246	1.00
#2	#1	38-0203-00	1/0	.370	.307	1.00
1/0, #1	2/0	38-0205-00	3/0 & 4/0 Sol	.452	.389	1.00

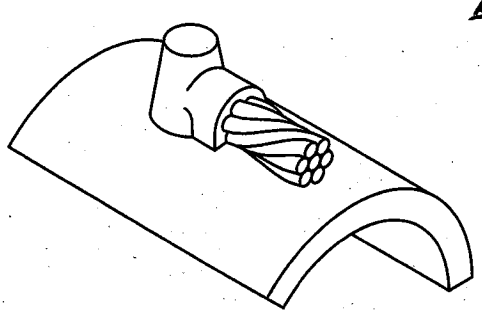
M-157/25CI

M-159/45CI

M-160/45 CI



CS-33



CS-33 TYPE MOLDS

Horizontal Cable to Horizontal Cast Iron Surface

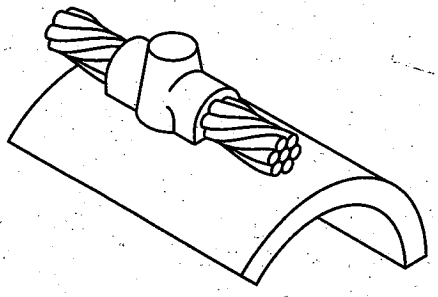
CS-33 type molds are for connecting copper cable to horizontal cast iron surfaces. When welding to cast iron pipe, each mold fits a specified pipe size. When welding to pipe, the cable runs parallel to the pipe. For welding to ductile iron pipe, see note below.

#18- Welders

CABLE SIZE	SURFACE	MOLD #	PRICE KEY	WELD METAL
#6 Sol‡	Flat (30" & larger pipe)	M-156	3	25CI
#4 Sol	Flat (30" & larger pipe)	M-158	3	45CI
#2 Sol	Flat (30" & larger pipe)	M-160	3	45CI
#1 Str	Flat (30" & larger pipe)	M-163	3	65CI

- **For sizes not listed, contact thermOweld®.**
- Sold complete with frame. If not required, specify MOLD NUMBER followed by suffix "-G".
- ‡ For wire size #14 to #10 solid, order (1) 38-0200-00 sleeve per weld.
- **Welding To Horizontal Pipe:** To weld to 4" to 24" horizontal pipe, add pipe size to mold number. To weld #1 str cable to 6" horizontal pipe, the mold number would be M-163-6. To weld to pipe 30" and larger, use flat surface mold.
- Required Tools;
  38-0309-00 ~ Flint Ignitor
- Other recommended accessories;
  38-3922-00 ~ Mold Cleaning Brush (pg 18)
  38-0135-00 ~ Cable Cleaning Brush (pg 18)
  38-0101-00 ~ Rasp (pg 18)
  38-6684-00 ~ thermOcap (pg 14)
- **Welding To Ductile Iron Pipe:** When welding to ductile iron pipe, use weld metal and molds designated for cast iron.

CS-35



CS-35 TYPE MOLDS

Horizontal Thru Cable to Horizontal Cast Iron Surface

CS-35 type molds are for connecting copper cable to horizontal cast iron surfaces. When welding to cast iron pipe, each mold fits a specific pipe size. When welding to pipe, the cable runs parallel to the pipe. For welding to ductile iron pipe, see note below.

CABLE SIZE	SURFACE	MOLD #	PRICE KEY	WELD METAL
#6 Sol‡	Flat (30" & larger pipe)	M-5316	3	32CI
#4 Sol	Flat (30" & larger pipe)	M-5536	3	45CI
#2 Sol	Flat (30" & larger pipe)	M-5538	3	45CI
#1 Str	Flat (30" & larger pipe)	M-5542	3	65CI

- **For sizes not listed, contact thermOweld®.**
- Sold complete with frame. If not required, specify MOLD NUMBER followed by suffix "-G".
- ‡ For wire size #14 to #10 solid, order (2) 38-0200-00 sleeves per weld.
- **Welding To Horizontal Pipe:** To weld to 4" to 24" horizontal pipe, add pipe size to mold number. To weld #1 str cable to 6" horizontal pipe, the mold number would be M-5542-6. To weld to pipe 30" and larger, use flat surface mold.
- Required Tools;
  38-0309-00 ~ Flint Ignitor
- Other recommended accessories;
  38-3922-00 ~ Mold Cleaning Brush (pg 18)
  38-0135-00 ~ Cable Cleaning Brush (pg 18)
  38-0101-00 ~ Rasp (pg 18)
  38-6687-00 ~ thermOcap (pg 14)
- **Welding To Ductile Iron Pipe:** When welding to ductile iron pipe, use weld metal and molds designated for cast iron.

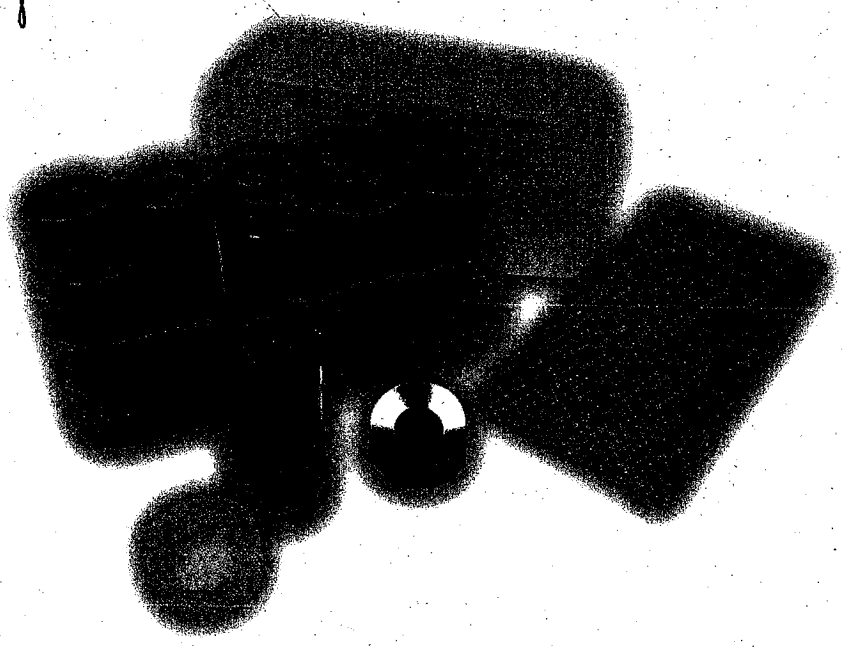
DO NOT use type CS-33 or CS-35 mold on Soil Pipe (ASTM A74-82). At least one weld should be made on a section of the pipe being used to determine the possibility of detrimental metallurgical transformation.

WELD METAL

thermOweld® weld metal is packaged in moisture-resistant plastic cartridges that have tight fitting caps. These cartridges and the necessary steel discs are then packaged in boxes that are shrink-wrapped. This insures the weld metal will arrive in good condition, always dry, and ready for a positive ignition every time.

thermOweld® weld metal is used for welding copper to steel, copper to ductile iron and copper to cast iron. The size and weight of the cartridge are marked on each individual tube. thermOweld® weld metal is available to be shipped via ground, air or ocean freight.

#17- Charges



CAST IRON CARTRIDGE SIZE	CATHODIC PROTECTION CARTRIDGE SIZE	PACKED PER BOX
#15CI	#15CP	20
#25CI	#25CP	20
#32CI	#32CP	10
#50CI	#50CP	20
#65CI	#65CP	20

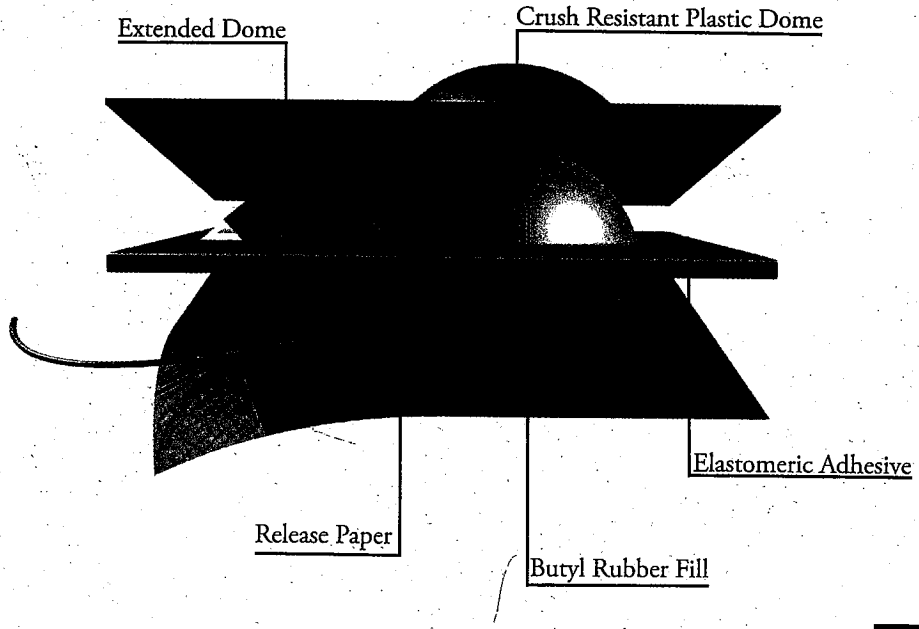
thermOcap

Protect Your Weld

thermOcap

thermOwelds® NEW thermOcap is designed to cover your exothermically welded connections.

- Elongated wire inlet allows the cap to conform easier to the pipe.
- Outer shell designed to prevent crushing.
- Butyl rubber filled dome.
- Easier field application.
- Packaged in boxes of 20 with immediate delivery available.



Part Number	Item
38-6687-00	thermOcap

Properties:

Construction - Molded plastic dome filled with corrosion resistant compound on a base of thick elastomeric tape.

Dimensions: Overall: 4"x 4"
Sheet Thickness: 21mils
Plastic Dome: 1 5/8"x 5/8"
Wire Way: 3/8" x 1 3/8"

Application Temperature: 35° F to 170° F
Service Temperature: -20° F to 225° F
Height: 3/4"
Adhesive Thickness: 1/8"