

## PROTO FITTING COVERS

25/50 RATED  
PER ASTM E-84 — LoSMOKE® PVC

### SUBMITTAL SHEET

Effective: 05/01/03

Submitted Date: \_\_\_\_\_

## PROTO REGULAR PVC & LoSMOKE® PVC 25/50 RATED JACKETING (Up to .035" Thk.)

### PROTO CORP.

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PVC FITTING COVERS, PRE-MOLDED, INSULATED  
WHITE GLOSS FINISH — INDOOR OUTDOOR GRADE

SUBMITTAL SHEET DOES NOT SUPERCEDE WRITTEN  
SPECIFICATIONS OR OWNER AGREEMENT.

#### DESCRIPTION

The Proto Fitting Cover System consists of one piece and two piece pre-molded high impact LoSMOKE® PVC fitting covers with fiberglass inserts and accessories, which include elbows, tee/valves, end caps, mechanical line couplings, specialty fittings, white and color jacketing, Protop® Tank End Panels, Aluminum Faced PVC supported jacketing, tack fasteners, tapes and specialty items.

#### APPLICATIONS

The Proto Fitting Cover System is used to insulate mechanical piping systems at fitting locations, and provide a PVC Jacketing for straight run piping which gives a quality appearance, and excellent durability.

#### FEATURES AND BENEFITS

**25/50 Rated.** All Proto PVC Fittings are made of LoSMOKE® grade PVC. Roll Jacketing is available in either 25/50 rated or regular PVC Grade (not 25/50 rated). The 25/50 products meet fire and smoke safety requirements of federal, state and local building codes.

**Excellent Appearance.** Bright high-gloss white coloring adds a distinct quality appearance to the system. Both LoSMOKE® PVC and regular PVC are designed for outdoor use. Regular PVC Jacketing costs less than LoSMOKE® PVC Jacketing, and has excellent fire resistance for outdoor use, with a flame spread of 10 and smoke development of (.020") approximately 150. The standard line of Proto Fitting Covers are all made in LoSMOKE® PVC only (no regular PVC). Virtually all sizes pass 25/50 when made of LoSMOKE® PVC.

**Easy To Clean.** Due to the smooth high gloss finish on Proto PVC Fittings, the product cleans easily with soap and water. This makes the system ideal for food and drug facilities.

**Low Cost Installation.** Significant cost savings vs. conventional cement, molded sections, and mitered sections.

**Fast and Easy.** At fitting locations, wrap the fiberglass insert around the pipe fitting, apply the Proto PVC Fitting over the insert and tack or tape in place.

**Wide Temperature Range.** May be used for mechanical piping systems operating from -20°F to +140°F surface temperature of insulation. Variety: LoSMOKE®, Indoor/Outdoor, Exod®, Exotuff®. Proto products are also available in LoSMOKE® Indoor colors. Exod® is CPVC, GOOD TO 225° F.

**Long Lasting.** Can be used more than once on retrofit projects, general maintenance.

**Excellent Thermal Value.** K value of .26 at 75°F (.037 W/m °C at 24°C) of fiberglass insert, mean temperature assures better thermal efficiency than conventional cement fittings.

**Resistance To Fungi and Bacteria.** (ASTM C 665) Does not promote growth of fungi or bacteria.

**U.V. Resistant.** Can be used on indoor or outdoor applications, for both (White) LoSMOKE® PVC and Regular PVC. Extra thick fitting covers should be used outdoors. (All Std. Proto Fitting covers are made of LoSMOKE® PVC.)

#### TECHNICAL PHYSICAL PROPERTIES OF PVC LoSMOKE® MATERIALS

Specific Gravity (ASTM D-792) .....1.41  
Tensile Modulus, PSI (ASTM D-638) .....361,000 (25,380 kg/cm<sup>2</sup>)  
Tensile Strength, PSI (ASTM D-638) .....6,011

Flexural Strength, PSI (ASTM D-790) .....9,396  
Izod Impact (1/4") ft. lb./in (ASTM D-256) .....3.7  
Heat Deflection Temp. (ASTM D-648) .....157°F (70°C)  
at 264 PSI (8.95 kg/cm<sup>2</sup>), °F  
VICAT Softening Temp. (ASTM D-1525) .....198°F (92°C)

Water Vapor Transmission  
ASTM E 96-95

70°F & 50% Relative Humidity

.015" thick = .058  
.020" thick = .047  
.030" thick = .027

Surface Burning Characteristics of All Fitting Covers and Jacketing  
LoSMOKE® PVC .....passes 25/50 ASTM-E 84  
Up to .035" Thk. (The best rated PVC we know of)  
Puncture Resistance (ASTM D 781) ... .006" thick = 178 Beach Units  
.015" thick = 221 Beach Units

#### FEDERAL SPECIFICATIONS COMPLIANCE— POLY VINYL CHLORIDE — ASTM 1784-92

**LP-1035A** Type II Grade GU and Type III

**LP-535E** Type II Grade GU and Type III

**United States Department of Agriculture Authorized  
Agriculture Canada Authorized**

**New York City MEA 243-84-M, Chicago, Los Angeles ASTM  
C-585-76 (sizes)**

**Canada CAN/CGSB - 51.53-95**

#### TECHNICAL PROPERTIES OF FIBERGLASS INSERT MATERIAL

Thermal Conductivity (ASTM C 177)

| Mean Temperature — | °F           | "k" — BTU in/hr. Ft.2 °F |
|--------------------|--------------|--------------------------|
| HH-I-558 Form B    | 75° 1(24°C)  | .26 (.037 W/m. °C)       |
| Type 1 Class B     | 150° 1(66°C) | .33 (.048 W/m. °C)       |
|                    | 250° (121°C) | .44 (.063 W/m. °C)       |

#### APPLICATION AND SPECIFICATION GUIDELINES

##### A. STORAGE

Protects cartons from water damage or other abuse. Proto Fitting Cover cartons are not designed for outside storage.

##### B. PREPARATION

Proto Fitting Covers should be applied on clean dry surfaces.

##### C. APPLICATION

1. **General** The matching fiberglass insert shall be wrapped completely around the metal fitting leaving no voids. Loose wrappings of twine is helpful in shaping difficult surfaces. The Proto Fitting Cover shall then be applied over the fitting and insert, and the throat secured by either tack fastening or taping. Seal all laps with caulk adhesive, outdoors.

2. **Cold Pipe** Fitting systems below ambient temperature must have a continuous vapor retarder, either with Proto PVC tape, Butt Strips, Proto PVC Adhesive, or a vapor retardant mastic as specified by the engineer. When using Proto PVC Tape, a 2" (51mm) minimum downward overlap is recommended for optimum performance. Care should be taken not to stretch the last 2" (51mm) of Proto PVC Tape, to avoid stretching or creeping.

3. **Hot Pipe** Insulate as per General Instructions given above. Due to PVC softening point at approximately 159°F (70.6°C), care should be taken to ensure sufficient insulation thicknesses are applied.

For hot piping which requires Pipe Insulation over 1 1/2" (38 mm) wall thickness, an extra fiberglass insert shall be applied for each additional inch of pipe insulation wall thickness. Proto recommends the surface temperature of the Pipe Insulation and PVC to be no higher than 125°F (52°C). To complete application of Proto PVC Fittings on hot piping, the throat seam shall be tack fastened or taped. Seal all laps outdoors and in wash down areas.

**CAUTION:** During initial heat-up to operating temperatures above 350°F, (177°C) an acrid odor and some smoke may be given off as a portion of the bonding material used in the insulation begins to undergo a controlled decomposition. If natural convection is not adequate in confined areas, forced ventilation should be provided in order to protect against any harmful fumes and vapors that might be generated.

4. **Outdoor Pipe:** Insulates as per above instructions. When installing Proto PVC Fittings outdoors, add one layer aluminum foil or saran wrap over the fiberglass insert applied, making sure the aluminum foil is extended over the adjacent pipe insulation and sealed with adhesive or tape.

Minimum Proto PVC Jacketing thickness for outdoor application should be .030" (.7 mm). The PVC Jacketing shall be overlapped a minimum of 2" (51 mm) on the down side so as to shed water. All long and round joints shall be completely weather sealed with caulk adhesive. Piping insulation up to 3 1/8" O.D. can be .020" Thk. PVC.

On all piping, insulation shall be of sufficient thickness to keep the surface temperature below 125°F (52°C). Additionally, a slip type expansion joint of 8" (202 mm) minimum width shall be applied at least every 25 lineal feet (6.1 lineal meters) and within 10 feet between fittings.

**Painting:** Painting must be done only after priming the PVC surface with X-1-M 400W Primer (X-1-M Products, Inc., Westlake, Ohio 44145, Telephone (440) 871-4737 or (800) 262-8469.

**Outdoors Painting:** Only over White Exotuff® 195°F deflection temp. (modified PVC) or EXOD™ 225°F (52°C). Additionally, a slip type expansion joint of 8" (202 mm) minimum width shall be applied at least every 25 lineal feet (6.1 lineal meters) and within 10 feet between fittings.

5. **CAUTION:** Fiberglass may cause temporary skin irritation. Wear long-sleeved, loose-fitting clothing, head covering, gloves and eye protection when handling and applying material. Wash with soap and warm water after handling. Wash work clothes separately and rinse washer. A disposable mask designed for nuisance type dusts should be used where sensitivity to dust and airborne particles may cause irritation to the nose or throat.

#### D. HEAVY INDUSTRIAL APPLICATIONS OUTDOORS

Use .030" or higher PVC Jacketing. Use "heavy duty" two piece fitting covers made from minimum .030" thick to .050" thick PVC sheet depending on size of fitting cover. Jacketing to be cut and oven precured

#### E. FIRE TEST RESULTS: PROTO LoSMOKE® — PVC

**USA:** E-84 25/50 Rated up to .035" thick (The Best Rated PVC)

**CANADA:** Passes CAN 4-S102.2

LoSMOKE® fitting covers confirm to virtually all city, state and federal codes, for use in hotel, commercial and industrial buildings.

LoSMOKE® fitting covers will be labeled on the box "Passes ASTM E-84, Flame spread 25; smoke developed 50".

All E-84 ratings shown here were tested on flat sheets from which fitting covers are made. (Our .035" thick tested out at 13 flame spread and 25 smoke.)

Virtually all Proto LoSMOKE® fitting covers will pass E-84 25/50 flame spread and smoke development rating requirements.

## SUGGESTIONS

**Slide Joints:** Do not apply PVC Jacketing too tightly. Slide joints plus PVC thickness must work together to prevent cracks and puckering.

### Caulk/Adhesives:

Use: Celulon® (Red Devil Inc.) water base "Ultra Clear".  
Service temp. -25°F to +175°F  
Dow #739 silicone plastic adhesive.  
Service temperature of -65°F to +350°F  
Over 350°F use appropriate Dow silicone. (Grease on Slide Joints)

**PVC Cement:** Avoid use if possible. Heavy application can cause puckering and cracks. Learn how to use it sparingly.

**Vapor Barrier Foil:** Use .001" thick kitchen type aluminum foil, over the insulated fitting, outdoors and on all chilled 50°F to below freezing pipe temperatures, prior to PVC cover. Kitchen saran wrap can also be used. This doubles waterproof protection, and assures a good vapor barrier.

**Outdoor Fitting Covers:** Use extra thick, two piece heavy duty covers.

**Outdoor and Indoor Washdown Areas:** Use EXOD™ (CPVC) by Proto, for its higher deflection temperature (225°F). It is light grey.

**PVC Outdoor Thickness (Reg. PVC Jacketing):** Use .030" thick cut and oven precured jacketing. Use "heavy duty" two piece fitting covers formed from minimum .030" to .050" thick PVC sheet depending on size of fitting cover. On pipe insulation larger than 15" O.D. use .040" thick PVC.

**PVC Indoor Thickness:** Use white or color LoSMOKE® on piping. Use .020" thick with standard one piece fitting cover, .030" jacketing can also be used.

**Vessels and Tank Tops:** Use .050" thick tank panels, and .050" thick Protop® segments for tank heads. (Only Proto Corp. has them.) Made of LoSMOKE® PVC.

**Pipe Insulation End Caps:** Use on all outdoor, indoor washdown areas, and all vapor sealed systems. End caps will be PVC, metal, or gasket materials appropriate for the metal pipe temperatures. Silicone rubber (500°F) can be applied (min. 1/16" thick) as an end cap outdoors.

Seal to pipe and jacketing with Dow #739, or Celulon®. Described above — in Caulk/Adhesives. Indoor hot piping need not be sealed to the end cap. Cap will be sealed or taped, to the jacket.

**Two-Ply Waterproofing System:** Use .010" thick PVC with self-sealing long lap tape, as the first waterproof layer. Overlap ends 3" and PVC tape over. Caulk all openings with Celulon® or Dow #739 then apply staggered joint next heavy layer of PVC, or your choice of jacketing. Recaulk again over last layer. Install slide joints every 25', caulk shut all other seams, openings, or end overlaps with PVC tape or caulk. Use vapor seal jacketing (instead of .010" thick PVC first layer) where a vapor seal system is required.

**CPVC-High Chem, Resis. and High Deflect. Temp.:** Use "Exod™" CPVC jacketing and fitting covers for 225°F deflection temperature and maximum chemical resistance. Offered only by Proto Corp. as a substitute for stainless steel at 1/2 to 1/3 the price of stainless steel.

**Regular PVC Jacketing Outdoors:** Use regular PVC jacketing outdoors. It is less expensive, does the same job as LoSMOKE® PVC. Regular PVC has very good fire (self-extinguishing) properties — not as good as the LoSMOKE® PVC used in confined people areas (buildings), however much better than common plastics used outdoors.

**Vessels with ends 24" O.D. or larger:** Use .040" thick jacketing up to 48" O.D. On sides of vessels larger than 48" O.D. See Protop® brochure for instructions requiring a suspended band system, to hang panels from, (Gerrard & Company or equal). Use thick PVC panels on Outdoor Tanks not PVC Roll Jacketing. See Tank Tops above for end segments.

**PROTO** **PVC**  
**CORP™**

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The physical and chemical properties of Proto Corp. PVC represent typical average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Numerical flame spread rating is not intended to reflect hazards presented by this or any other materials under actual fire conditions. Check with Proto Corp. office to assure current information. Purchaser will be responsible to determine suitability of this product for purchaser's use Proto Corp. liability will be limited to the purchase price of the material. No person is authorized to alter this without a Proto Corp. officer's written approval.