

## DESCRIPTION

The Proto Fitting Cover System consists of one or two piece pre-molded high impact, UV resistant, LoSmoke® PVC fitting covers with or without formaldehyde free fiberglass inserts and accessories. This product line is designed to cover all standard and specialty fittings; which include elbows, tee/valves, end caps, mechanical line couplings, and many more. When combined with our PVC jacketing and solvent welding adhesive or tape, our PVC fitting covers form a completely sealed system that may be used for below ambient applications. Colored PVC is manufactured from a LoSmoke® formula that is suitable for indoor use only.

## AVAILABLE FORMS

**Thickness:** Standard and Heavy Duty

**Fitting Covers:** 45° and 90° small and long radius, tees, valves, flanges, reducers, end caps, traps, mechanical groove - fittings and many more

**Jacketing:** PVC rolls and cut and curl are available in thickness ranging from 10 to 40 mil at a 35 1/2" and 48" width

## OPERATING TEMPERATURE

**PVC:** -20° F (-29° C) to 150° F (66° C)  
(exposed surface)

**Inserts:** - 20° F (-29° C) to 1000° F (538° C)

## PHYSICAL PROPERTIES

Specific Gravity (ASTMD-792)	1.41	
Tensile Modulus, PSI (ASTMD-638)	361,000 (25,380kg/cm2)	
Tensile Strength, PSI (ASTMD-638)	6,011	
Flexural Strength, PSI (ASTMD-790)	9,396	
IZOD Impact (1/4") ft. lb./in(ASTMD-256)	3.7	
Heat Deflection Temp. (ASTMD-648) @ 264 PSI (8.95 kg/cm2)	157° F (70° C)	
VICAT Softening Temp. (ASTMD-1525)	198° F (92° C)	
Permeance (WVTR)	0.015" thick	≤0.058
ASTM E E96	0.020" thick	≤0.047
Procedure A Perm, (grains/hr-ft2in Hg)	0.030" thick	≤0.027
Tested over code compliant Vapor barrier*	0.02" thick	≤0.02
*ASTM C1136@ ≤ 0.02 perm		
ASTM E 84 and CAN/ULC S102	Flame	≤25
Surface Burning Characteristics	Smoke	≤50
Puncture Resistance (ASTMD781)	0.006" thick	178 Beach Units
	0.015" thick	221 Beach Units
Electrical resistance	Non-conductor	

## SPECIFICATION COMPLIANCE

ASTM E84	Surface burning characteristics
ASTM E136	Non-combustibility (insert only)
ASTM C585	Standard dimensions for pipe
ASTM D1784	Specification for rigid PVC
ASTM C1338	Fungi test
ASTM G21 & G22	Fungi and bacteria test
<b>Federal Specification</b>	
LP-1035A	Federal standard PVC - Type II Grade GU
LP-535E	US Army standard PVC - Type II Grade GU
USDA	United States Department of Agriculture
New York City MEA	Toxicity
<b>Canada</b>	
CAN/CGSB – 51.53.95	PVC Jacketing
CAN/ULC S102	Surface burning characteristics
<b>Agriculture Canada</b>	
ICC	International code council
IBC	International building code
IMC	International mechanical code

## GREEN BUILDING ATTRIBUTES

<b>Manufacturing Location</b>	Clearwater, FL
<b>Recycled Content</b>	Pre 55+%
<b>CA 1350 - VOC</b>	Pass office and School
<b>Berkeley Analytical</b>	Cert NO 160504 – 10
<b>LEED Credits per V4</b>	Contributes EA, MR, EQ (See Proto LEED credit guide)
<b>RoHS</b>	Heavy metal compliant
<b>DecaBDE ≤0.01%</b>	Pass State of Oregon
<b>Rigid PVC</b>	No plasticizers or phthalates

## INSERTS

Formaldehyde free precut fiber glass inserts save time and labor and are an integral part of our LoSmoke PVC fitting system. This 1000° F rated, 1 pcf dense, insulation classified as noncombustible, meets all fungi and corrosion resistance criteria and design requirements of ASHRAE 90.1-10. The product is designed to be installed using one insert per each inch of installed pipe insulation thickness.

### Specification compliance:

ASTM C553, ASTM C547, C665, C1338, C1617, C795, ASTM E84,

ASTM E136

ASHRAE 90.1

ASTM E84 & CAN ULC S102

**GREENGUARD:** Gold

**Recycled content:** 53% pre and post consumer content

**Decabrom free**

### INSERT COMPRESSED THERMAL CONDUCTIVITY

Mean Temperature		K value	
F°	C°	BTU in/sq ft hr F	W/M C
75	24	0.23	0.033
150	66	0.27	0.039
300	40	0.4	0.058

## APPLICATION FOR USE

### Storage:

Protect cartons from water damage or other abuse. Proto cartons are not designed for outside storage.

### Preparation:

Proto fitting covers and inserts should be applied on a clean, dry surface.

### Above ambient – General installation:

A Proto fiberglass insert shall be wrapped completely around the metal fitting leaving no voids or open spaces. A loose wrapping of twine or tape may be helpful to hold insulation in place. The Proto Fitting Cover shall then be applied over the insert, and secured by using serrated stainless steel tacks or by taping.

### Cold pipe:

Fitting systems below ambient temperature must have a continuous vapor retarder or 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.

### Hot system:

Use proper insulation thickness to ensure PVC covers are kept below 150°F (66°C). PVC jackets and fitting covers should be kept away from direct contact or exposure to radiated heat. For conditions where operating temperatures exceed 250°F (121°C) or where pipe insulation thickness is greater than 1" (25.4mm), two or more layers of insulation inserts are required beneath the fitting cover.

### Refrigerant Systems and/or Cold Systems In Severe Ambient Conditions:

An intermediate layer of low perm facing or vapor-compatible mastic with PVC is required to completely seal the insulation prior to installing the PVC fitting cover. Vapor barrier mastic should be applied between the pipe insulation and the insert, fitting cover, throat of the fitting cover, and overlap seam.

### Totally Sealed Systems (USDA):

20 mil (0.5 mm) minimum LoSmoke PVC jacketing should be applied to pipe insulation in conjunction with LoSmoke PVC fitting covers. Circumferential and longitudinal jacketing and fitting cover seams should be sealed with solvent welding adhesive. Circumferential seams should be a minimum of 1 ½" - 2" (38mm to 51mm) overlap and longitudinal seams should be 1 ½" - 2" (38mm to 51mm) overlap (with 6-8 inches for expansion joints). All seams should visually be checked for seal and, if necessary, repaired. Slip joints will be required between fixed supports and on continuous long runs of straight piping.

### Outdoors (for white only):

Proto PVC Jacketing thickness for outdoor applications should be a minimum of 0.030" (0.8 mm) and 0.040" (1.0 mm) for any O.D. over 15". The PVC Jacketing shall be overlapped a minimum of 2" (51 mm) on the down side so as to shed water. All longitudinal and circumferential joints shall be completely weather sealed with caulk adhesive. 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 between fittings.

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.

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