

PROTO FITTING COVERS

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

SUBMITTAL SHEET

Effective: 05/01/07

Submitted Date: _____

Used For:
Fiberglass Fittings
(Where Applicable)

PROTO REGULAR PVC LoSMOKE® PVC JACKETING

PROTO CORP.

10500 47th Street North
Clearwater, FL 33762-5017
Tel: (727) 573-4665
Fax: (727) 572-6823
Toll Free (800) 875-7768

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 indoor color jacketing, Protop® Tank End Panels, 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. Both give a quality appearance and have 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. The standard line of Proto Fitting Covers are made in LoSMOKE® PVC designed for indoor and outdoor use. Virtually all sizes pass 25/50 when made of LoSMOKE® PVC. Colored PVC is manufactured from a LoSMOKE® formula that is suitable for indoor use only.

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. Do not use tacks where a vapor retarder is applied.

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 G 21, ASTM G 22) 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/cm²)
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/cm²), °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® PVCpasses 25/50 ASTM-E 84
Up to .035" Thk.

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

Protect 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.

2. **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.

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: Insulate as per above instructions.

Minimum Proto PVC Jacketing thickness for outdoor applications should be .030" (.7 mm). Over 15" O.D., .040 is recommended. Under 3 1/8" O.D., .020 is permitted. 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.

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 between fittings.

Painting: Painting must be done only after priming the PVC surface with a suitable primer, such as X-1-M 400W Primer, or a similar, approved product.

Outdoor Painting: Only over White Exotuff® 195°F deflection temp. (modified PVC) or EXOD™ 225°F deflection temp. CPVC after X-1-M primer, or a similar, approved product. Use PVC compatible paints without strong solvents. Test paint a section before proceeding.

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: Conforms to CAN 4-S102.2

LoSMOKE® fitting covers conform 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.

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

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

Vapor Retarder: A vapor retarder is required under all fitting covers for systems operating below ambient temperatures, such as chilled water lines, and is recommended for all outdoor applications. The fitting vapor retarder should provide a continuous seal with the adjacent pipe vapor retarder.

Outdoor Fitting Covers: Use extra thick, plastic 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" plastic 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 indoor 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" or .060" thick tank panels for outdoor applications and .030" or .040" for indoor tanks. Use .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.

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 similar, approved product. The finished jacketing material should employ staggered joints with at least a .010 mil thick first layer. 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 Chemical Resistance and High Deflection Temperature:

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.

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™

10500 47th Street North
Clearwater, FL 33762-5017
Tel: [727] 573-4665
Fax: [727] 572-6823
Toll Free [800] 875-7768

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.

Shop Drawing Submittal Review

Transmitted To: Cannon Design

Date: February 7, 2017

Attention: stl-cac@cannondesign.com

Contact Person / WTA Field Inspector:
Patrick Garner

Project Name: Webster University-**ISB**

Reviewed by: Mike Nolte

Project No. WT 14127.01

☐

UPS

☐

Courier

☒

Email

Copies	No.	Description
1 PDF	232500M01	(Submittal No.'s:) (R&B CxSRC)
		(Cannon #232500-001) - (Paric #15051-0453) - (WES #607)
		➤ Mechanical Insulation Product Data

***Remarks: See Review Comments on PAGE 2.**

c: Kelvin Patel
Kpatel@cannondesign.com

☐ Furnish as Submitted

☒ ***Furnish as Noted**

☐ Rejected

☐ Revise & Resubmit

☐ Reviewed

☐

Corrections or comments made on shop drawings during this review do not relieve contractor from compliance with requirements of drawings and specifications. This check is only for review of general conformance with the design concept of project and general compliance with information given in contract documents. Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

Shop Drawing Submittal Review

***Submittal Review Comments**

1. Contractor responsible to verify that all adhesives, sealants and sealant primers meet the requirements of LEED Credit IEQ 4.1. Provide Product Data for Credit IEQ 4.1 for all adhesives, sealants and sealant primers, including printed statement of VOC content. The submittal does not appear to contain this information for all sealants submitted.
2. Provide aluminum jacketing on all exterior piping per Specification 232500-2.2-D-5: For insulation installed outdoors and insulation subject to water damage, provide an additional **0.016 inch** aluminum jacket with lock seam, longitudinal joint and gasketed bands for butted joints as required for a watertight installation. Jacket shall be complete with waterproof, laminated paper lining and shall be manufactured by ITW Insulation System or RPR Products.

14127.01 - 232500 M01
MTN TO REVIEW -
01/18/17

From: STL-CAC <STL-CAC@CANNONDESIGN.COM>
To: 'Patrick Garner' <pgarner@wmtao.com>, "WTASHOP (WTASHOP@wmtao.com)"
<WTA...
CC: "Patel, Kelvin" <kpatel@CANNONDESIGN.COM>
Date: 1/18/2017 3:01 PM
Subject: Webster ISB - 23 2500-001
Attachments: 232500-001 Mechanical Insulation Product Data.pdf

Attached for review.

Melissa Pirtle

[cid:image001.png@01D2719B.8CD710A0]
1100 Clark Ave
St. Louis, Missouri 63102
T 314.425.8797
cannondesign.com

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

PROJECT NAME	
ADDRESS	
NUMBER	
OWNER	
ARCHITECT / ENGINEER	
SUBMITTED BY	
CONTRACTOR / CM SUBMITTAL NO.	CANNON DESIGN SUBMITTAL NO.
DRAWING / DETAIL REFERENCE	SPECIFICATION SECTION / PARAGRAPH
MANUFACTURER / SUPPLIER	ITEM / PRODUCT ID
REQUIRED DATE	PRIORITY
CRITICAL	☐

To be completed by Reviewer

CANNON DESIGN SUBMITTAL NUMBER
RECEIVED DATE

- ☐ **A. No Exceptions Taken**
No further review of submittal is required.
- ☐ **B. Make Corrections Noted**
Incorporate corrections in work;
resubmission is not required.
- ☐ **C. Revise and Resubmit**
Revise as noted, and resubmit for review.
- ☐ **D. Rejected**
Submittal is not in compliance with Contract Documents;
provide new submittal.
- ☐ **E. For Record / Information Only**
Submittal was reviewed for Record / Information
purposes only.
- ☐ **F. Not Required for Review**
Submittal is not required by Contract Documents
and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be affected thereby. This review is null and void if submittal deviates from contract documents and does not indicate or note deviations.

ITEM BEING SUBMITTED (check only one)

- ☐ Shop Drawings ☐ Certification / Qualifications ☐ Coordination Drawing
☐ Samples ☐ Record Documents ☐ Calculations
 (_____ copies) ☐ Product Data ☐ Schedules
☐ LEED Submittal ☐ O&M Manuals
☐ Other

ITEM BEING SUBMITTED FOR (check only one)

- ☐ Action ☐ Information Only ☐ Record

REMARKS OR DEVIATIONS

CONTRACTOR / CM CERTIFICATION
(SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)



PARIC CORPORATION
SUBMITTAL STAMP

THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION

Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents.

Ry:

By:
Devin D. Gates

REVIEWED BY	DATE

A/E COMMENTS

- ☐
- See attached sheet(s) for additional comments

REVIEWED BY	DATE



77 Westport Plaza
Suite 250
St. Louis, MO 63146

TRANSMITTAL

No. 15051-0453

Paric Corporation

PROJECT: 15051-Webster University Interdisciplinary Science Building

DATE: 01/17/2017

TO: Cannon Design
1100 Clark Ave
St Louis MO 63102

Fax;
314-241-2203

RE: Mechanical insulation product data

ATTN: Kelvin Patel

JOB: 15051

WE ARE SENDING:		SUBMITTED FOR:	ACTION TAKEN:
☐ Shop Drawings		☒ Approval	☐ Approved as Submitted
☐ Letter		☐ Your Use	☐ Approved as Noted
☐ Prints		☐ As Requested	☐ Returned After Loan
☐ Change Order		☐ Review and Comment	☐ Resubmit
☐ Plans			☐ Submit
☐ Samples		SENT VIA:	☐ Returned
☐ Specifications		☐ Attached	☐ Returned for Corrections
☒ Other: Product Data		☐ Separate Cover Via:	☒ Due Date: 08/26/2016

Item	Package	Code	Rev.	Copies	Date	Description	Status
Submittal		232500-001	1		01/17/2017	Mechanical insulation product data	Submitted

NOTES:

CC:

Signed: _____
Devin Gates



Mechanical

LETTER OF TRANSMITTAL

TO: Paric Corporation

77 West Port Plaza #250

St. Louis, MO 63146

ATTN: Jason Szachnieski, Devin Gates

DATE: 1/16/17

JOB #: 5768

RE: Webster ISB

We are sending you

☒

Shop drawings

☐ Attached

☐ Prints

☐ Under separate cover

☐ Plans

☐ Samples

☐ Specifications

☐ Copy of letter

☐ Change order

☐ Other

COPIES	DATE	NO.	DESCRIPTION
1	1/16/17	232500	Mechanical Insulation

These are transmitted as checked below:

☐ For signature

☐ For your use

☐ As requested

☐ For bids due

☒

For review and comment

☐ Approved as submitted

☐ Approved as noted

☐ Returned for corrections

☐ Prints returned after loan to us

☐ Other

☐ Resubmit

☒ Submit

☐ Return

☐ copies for approval

☐ copies for distribution

☐ corrected prints

Remarks: Please return by 1/24/17

COPY TO: file

SIGNED:

Alex Chambers



Mechanical

Webster University ISB Webster Groves, MO

Submittal #:

232500

Submittal Description:

Mechanical Insulation

Return By:

1/24/17

Please Note: To avoid scheduling delays and equipment release delays, please submit by the "Return By" date.

CHECKED BY:			
DESIGNER:		ENGINEER: X	
X	NO EXCEPTION TAKEN		MAKE CORRECTIONS NOTED
	SUBMIT SPECIFIED ITEM		REVISE AND RESUBMIT
	REJECTED		
Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Equipment supplier is responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and satisfactory performance of his work.			
		Job #:	5768
		Date:	1/16/17
		By:	ARC



TDK Mechanical Services

745 Merus Ct.
Fenton, Missouri 63026
636-600-1662 phone / fax

SUBMITTAL TRANSMITTAL

DATE: December 21, 2016

COMPANY: Trenholm Mechanical Insulation
ATTENTION TO: Audra Trenholm
EMAIL: audra@trenholminsulation.com

FROM: Dan Esker
PHONE: (636) 290-3733 cell / (636) 600-1662 office
EMAIL: dan@tdkmechanical.com

PROJECT: Webster University Interdisciplinary Science E
St. Louis, MO
DESCRIPTION: _____

Mechanical System	Insulation	Thickness	Occurs at
Heating Hot Water	Fiberglass ASJ Pipe Covering	1"	Indoors - Pipe Sizes Under 4"
Heating Hot Water	Fiberglass ASJ Pipe Covering	1-1/2"	Indoors - Pipe Sizes 4" & Over
Chilled Water	PolyISO Pipe Covering	1"	Indoors - All Pipe Sizes
Chilled Water Equipment	Elastomeric Sheet Rubber	1"	Indoors - Mechanical Room
PCS/PCR	PolyISO Pipe Covering	1"	Indoors - All Pipe Sizes
Glycol Piping	Elastomeric Pipe Covering	1"	Indoors - All Pipe Sizes
Refrigeration Piping	Elastomeric Pipe Covering	1"	Indoors - All Pipe Sizes
Medium Pressure Supply Air Duct	FSK Fiberglass Duct Wrap	1-1/2" / 0.75#	Indoors - Concealed
Fume Exhaust Duct	Unifrax Fyre Wrap	(1) layer of 1-1/2"	Indoors - Concealed
Kitchen Exhaust Hood Duct	Unifrax Fyre Wrap	(2) layers of 1-1/2"	Indoors - Concealed
Outside Air Duct	FSK Fiberglass Duct Board	1-1/2" / 3#	Indoors - Concealed
All Duct Work Systems	Foil Tape	4"	Indoors - Concealed
PVC Fittings	Proto PVC Fittings	N/A	At Fiberglass & PolyISO Pipe Covering Fittings
Vimasco Adhesive	WC-5	N/A	At Fiberglass Pipe Covering
Armaflex Adhesive	Armaflex 520 Adhesive	N/A	At Elastomeric Pipe Covering
PolyISO Adhesive	Childer's CP-10	N/A	At PolyISO Pipe Covering

NOTES/CLARIFICATIONS:

Low Pressure Round Supply Air Duct. FSK Fiberglass Duct Wrap. 1-1/2" / 0.75#. Indoors - Concealed