



ENGINEERS' SUBMITTAL REVIEW STAMP & COMMENTS

Project: MMC Bean AHU Replacement Project	
Submittal Name # 4 - Bean A.H.U. Replacement Project - HVAC Insulation Submittals (4-30-2015)	
AKF Project No: B140263-000	AKF Log No. H-06

AKF Group, LLC Submittal Stamp

- No Exceptions Taken
- Make Corrections Noted - No Resubmission Required
- Revise and Resubmit
- Rejected
- Returned Without Action

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contractor documents. Any action shown is subject to the given requirements of the plans and specifications. Contractor 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 the satisfactory performance of his work.

Date: 6/19/15

By: DAC

General Comments: Review of submitted shop drawings is limited to system material and function compliance to issued plans, specifications, addendums and bulletins. Specific quantities of necessary material items to provide a complete and functioning system are not being confirmed as part of this review. Ultimate responsibility for quantities of necessary materials to provide a complete and functioning system shall be by the submitting contractor and equipment vendor.

Review Comments:



Submittal #50.0 23 07 00 - HVAC Insulation

P/D: HVAC Insulation Product Data (para 1.3.A)

APPROVERS:	Brandon Romano (Maine Medical Center) David Roberts (AKF)	CREATED BY:	Samantha Loring(Consigli Construction Co., Inc.)
RESPONSIBLE CONTRACTOR:	Johnson & Jordan, Inc Dana Foote (Johnson & Jordan, Inc)	STATUS:	Open
TYPE:	Product Information	SPEC SECTION:	23 07 00 - HVAC Insulation
COPIES TO:			
DESCRIPTION:			
ATTACHMENTS: # 4 - Bean A.H.U. Replacement Project - HVAC Insulation Submittals (4-30-2015).pdf			

ARCHITECT'S STAMP

CONTRACTOR'S STAMP

Consigli Construction Co., Inc.	
<input type="checkbox"/> Approved for A/E Review	<input type="checkbox"/> Revise & Resubmit
<input type="checkbox"/> Approved as Noted for A/E Review	<input type="checkbox"/> Rejected
Spec. Section: 23 07 00	Submittal No.: 50
Date: 6/4/2015	By: Nick Munro
<p>If so marked, approval is given for design only. It does not relieve the subcontractor from complying with the requirements of the contract, contract drawings and specifications. The subcontractor shall be responsible for all dimensions, quantities, schedules and field conditions.</p>	

SUBMITTAL WORKFLOW

#	NAME	SUBMITTER/ APPROVER	SENT DATE	DUE DATE	RETURNED DATE	RESPONSE	ATTACHMENTS	COMMENTS
1	Nick Munro	Submitter		6/4/2015	6/4/2015	Submitted		
2	David Roberts	Approver	6/4/2015	6/18/2015		Pending		
3	Brandon Romano	Approver		6/18/2015		Pending		

BY _____ DATE _____ COPIES TO _____

Johnson and Jordan Mechanical

SUBMITTAL - # 4

PROJECT: **MMC – Bean Air Handler Replacement Project**
22 Bramhall Street
Portland, Maine 04102
JOB # 15035

Construction Managers: Maine Medical Center Facilities Development
P.M. – Brandon Romano
22 Bramhall Street
Portland, Maine 04102

SUBMITTED BY: JOHNSON & JORDAN, INC
18 MUSSEY RD.
SCARBOROUGH, ME
(207) 775-1169

SUBCONTRACTOR: JOHNSON & JORDAN, INC
18 MUSSEY RD.
SCARBOROUGH, ME
(207) 775-1169

SUPPLIER: Tri-State Insulation
P.O. BOX 278
Auburn, Maine 04212
(207) 344-6644

SPECIFICATION SECTION: **230700**

PARAGRAPH:

ITEM: **HVAC Insulation**



MECHANICAL CONTRACTORS

APPROVED _____ APPROVED AS NOTED _____
REVIEWED _____ RE-SUBMIT _____
SUBJECT TO ARCHITECTS APPROVAL _____
DATE **4/30/15** _____ By: ***Jamie Evans*** _____

TRI-STATE INSULATION, INC

Commercial and Industrial Insulation

P.O. BOX 278 * Auburn, Maine 04212-0278

TEL. NO. 207-344-6644

FAX NO. 207-344-6646

SUBMITTAL RECAP SHEET

JOB NAME: MMC BEAN 2 ADDITION
LOCATION: PORTLAND, ME

1. FIBERGLASS PIPE INSULATION

DCW 1" & LESS = 1/2" TH; 1-1/4" & UP = 1" THICK, ASJ

DHW 1" THICK, ASJ

CONDENSATE DRAINS 1" THICK, ASJ

CHWS&R 3" & LESS = 1" TH; 4" & UP = 1-1/2" THICK, ASJ

HWS&R 1-1/2" THICK, ASJ

STEAM & STEAM CONDENSATE 3/4" & LESS = 2" TH; 1" & UP = 3" THICK, ASJ

2. PVC FITTING COVERS

3. DUCT WRAP

CONCEALED AND EXPOSED SUPPLY, RETURN, AND OUTSIDE AIR DUCT

2" THICK, .75 PCF, FSK FACING



ALLEY-K® pipe insulation is a preformed insulation product composed of high quality glass fibres, bonded together with a thermosetting resin. The 36" pipe sections are available with or without the All Service Jacket (ASJ). Our all service vapour retarder jacket (ASJ) reinforced with glass fibres comes with a factory applied pressure sensitive self-sealing lap closure system (SSL). Butt strips are also supplied.

USES

ALLEY-K® pipe insulation is intended as a thermal insulation product for hot and cold service piping. Typical uses include domestic hot and cold water, hot water heating, high temperature, dual temperature, steam, condensate and refrigerated lines. As a component of a suitable insulation system, plain ALLEY-K® pipe insulation may be used for light industrial applications, while ALLEY-K® pipe insulation with ASJ jacket may be used for commercial and institutional usage.

AVAILABILITY

Manufactured dimensions are listed in the Manson Insulation product catalog.

SPECIFICATION COMPLIANCE

ASTM C547 - TYPE I

Standard Specifications for Mineral Pipe Insulation

ASTM C795, MIL-I-24244C, NRC 1.36

Specification for wicking-type thermal insulation for use over austenitic stainless steel

CITY OF NEW YORK MEA 325-83-M

NATIONAL FIRE PROTECTION ASSOCIATION

NFPA 90A & 90B

CGSB 51-GP-9M

FIRE HAZARD CLASSIFICATION

(UL 723, CAN/ULC-S102-M88, ASTM E84, NFPA 255)

JACKETING

- UL 723/ASTM E84
- CGSB 51-GP-52M
- ASTM C1136 (Type I, II)
- Water Vapour Permeance (ASTM E-96) : 0.02 perms MAX
- ASTM C1338 : Does not promote microbial growth
- TAPPI T803 (Beach Units) Jacket minimum rating of 50 units.

GREENGUARD Environmental Institute™

Children & SchoolsSM Certified for superior indoor air quality (IAQ) performance

PRODUCT FEATURES

WATER VAPOUR ABSORPTION

ASTM C 1104 - Less than 0.2% by volume

ALKALINITY (ASTM C 871)

Less than 0.6% as Na₂O.
pH between 7.5 and 10.0

MICROBIAL GROWTH (ASTM C 1338)

Does not promote microbial growth

HOT SURFACE PERFORMANCE

ASTM C 411 - Rated to 850°F (454°C)

LINEAR SHRINKAGE

(ASTM C 356) Negligible

STRESS CORROSION

Complies with ASTM C 795,
MIL-I-24244C and NRC 1.36.

CORROSIVENESS (ASTM C 665)

No greater than sterile cotton.

CONTRACTOR:

JOB NAME:

DATE:

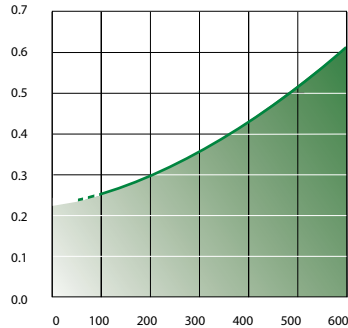
ALLEY-K®

Fiberglass Pipe Insulation

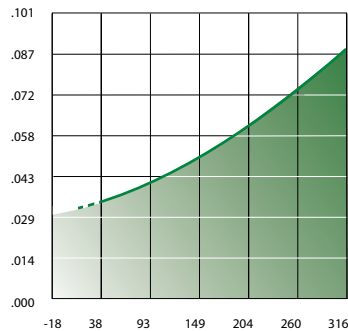
0°F to 850°F (-18°C to 454°C)



THERMAL CONDUCTIVITY
(Btu.in/hr.ft².°F)



METRIC THERMAL CONDUCTIVITY
(W/m.°C)



THERMAL CONDUCTIVITY
(ASTM C335)

MEAN TEMPERATURE		THERMAL CONDUCTIVITY	
°F	°C	Btu.in/ hr.ft². °F	W/m.°C
75	24	0.23	0.033
100	38	0.24	0.035
200	93	0.28	0.040
300	149	0.34	0.049
400	204	0.42	0.061
500	260	0.51	0.074
600	316	0.62	0.089

USAGE QUALIFICATIONS

- Hot surface performance: tested to 850°F (454°C) according to ASTM C411.
- A sufficient thickness of insulation must be used to keep maximum surface temperature of Alley-K® pipe insulation with ASJ jacket below 140°F (60°C).
- At operating temperatures above 500°F (260°C), Alley-K® pipe insulation must be applied in a thickness ranging from 2" (51mm) min to 6" (152mm) max.
- Due to the fact that binder is organic in nature, we recommend the following heat up schedule for operating temperatures from 500°F (260°C) to 850°F (454°C). (see table)
- When pressure sensitive self-sealing tape and butt strips are used, the material must be stored in a clean, dry environment. When adhering SSL tape and butt strip, rub firmly with a hard object such as a plastic squeegee or back of a knife to assure good vapour seal.
- Fibrous insulation can emit a acrid odour during the initial heat-up when applied to hot surfaces above 392°F (200°C). It is recommended that adequate ventilation be provided and /or workers be supplied with approved full face respirators.

FIRE HAZARD
CLASSIFICATION

	FLAME SPREAD	SMOKE DEVELOPED
Plain	25	50
ASJ	25	50

HEAT UP SCHEDULE

TIME	TEMPERATURE @	TOTAL TIME
3.5 hrs	550°F (288°C)	3.5 hrs
2.5 hrs	650°F (343°C)	6 hrs
2 hrs	750°F (399°C)	8 hrs

INSTALLATION

Manson Alley-K® pipe insulation is usually applied in accordance with the procedure in the publication "Commercial & Industrial Standards" by the National Insulation Association.

Manson Insulation Products Ltd. has no control over installation design, installation workmanship, accessory materials, or conditions of application. Manson does not warrant the performance or results of any installation containing their products. This warranty disclaimer includes all implied warranties, including the warranties of merchantability and fitness for a particular purpose.

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.

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

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/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. (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™

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

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.



ALLEY WRAP® fiberglass blanket insulation is a thermal and acoustical insulation product made from highly resilient, inorganic glass fibers bonded by a thermosetting resin. It is available unfaced or with a multi-purpose foil-scrim kraft (FSK) jacket. Vapor retarders have a 2" (51 mm) stapling flange on one edge, and the factory-applied facing assures uniform quality.

USES

Manson ALLEY-WRAP® is used as an external insulation on commercial or residential heating or air conditioning ducts. It is suitable for the exterior of rectangular or round sheet metal ducts and spaces, or surfaces where temperature and condensation must be controlled.

AVAILABILITY

Manufactured dimensions are listed in the Manson Insulation product catalog.

TECHNICAL DATA

Surface Burning Characteristics

- UL Classified, ULC Classified (Plain only).
- Unfaced or composite (insulation, facing and adhesive) does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84, CAN/ULC S102-M88, NFPA 255 and UL 723.

Temperature Range (ASTM C 411)

- Faced, can be used on ducts operating up to 250°F (121°C).
- Unfaced, up to 350°F (177°C).

Water Vapor Permeance (ASTM E 96, Procedure A)

- FSK facings have maximum water vapor permeance of .02 perms.

Water Vapor Sorption (ASTM C 1104)

- Less than 5% by weight when tested for 96 hours at 120°F (49°C) and 95% relative humidity.

Corrosiveness (ASTM C 665)

- Will not accelerate corrosion of a steel panel compared to sterile cotton.

Mold Growth (ASTM C 1338)

- No growth.

Puncture Resistance (TAPPI Test T803) (Beach Units)

- FSK : 25

SPECIFICATION COMPLIANCE

Canada

- CAN/ULC S102-M88
- CAN/CGSB 51.5M; Type II (FSK facing)
- CAN/CGSB 51.11-92

USA

- ASTM C 553; Type I, II, III
- ASTM C 1136; Type II
- ASTM C 1290

GREENGUARD Environmental Institute™

Children & SchoolsSM Certified for superior indoor air quality (IAQ) performance

California Title 24 (installed at 25% compression)
HH-I-558C; Form B, Type I, Class 7
NFPA 90A and 90B

CONTRACTOR:

JOB NAME:

DATE:

ALLEY WRAP®

Fiberglass Blanket Insulation

Temperature Limit: UNFACED : 350°F (177°C)
FACED : 250°F (121°C)



ACOUSTICAL PERFORMANCE	INSERTION LOSS (Reduction of Sound Transmitted Through Duct Wall) <small>(Sound and Vibration Design and Analysis, National Environmental Balancing Bureau, 1994)</small>												
	DUCT WRAP				INSERTION LOSS, dB								
	DUCT DIMENSIONS	SHEET METAL	NOMINAL THICKNESS		NOMINAL DENSITY		63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz
12" x 12" (305 mm x 305 mm)	24 GA	1.5"	(38 mm)	0.75 PCF	(12kg/m ³)	0.6	0.6	0.6	0.7	7.4	14.2	20.9	
24" x 12" (610 mm x 305 mm)	24 GA	1.5"	(38 mm)	0.75 PCF	(12kg/m ³)	0.6	0.6	0.6	0.7	7.4	14.2	20.9	
48" x 12" (1219 mm x 305 mm)	22 GA	1.5"	(38 mm)	0.75 PCF	(12kg/m ³)	0.6	0.5	0.5	0.6	7.4	14.1	20.9	
24" x 24" (610 mm x 610 mm)	22 GA	1.5"	(38 mm)	0.75 PCF	(12kg/m ³)	0.6	0.5	0.5	0.6	7.4	14.1	20.9	
24" x 12" (610 mm x 305 mm)	26 GA	1.5"	(38 mm)	0.75 PCF	(12kg/m ³)	0.8	0.8	0.8	0.8	7.5	14.2	21.0	
24" x 8" (610 mm x 203 mm)	26 GA	2"	(51 mm)	0.75 PCF	(12kg/m ³)	1.0	1.0	1.0	3.6	10.4	17.1	23.9	

THERMAL PERFORMANCE (ASTM C 177)	THERMAL EFFICIENCY						
	MEAN TEMPERATURE	0.75 PCF (12kg/m ³)		1.0 PCF (16kg/m ³)		1.5 PCF (24kg/m ³)	
		k	k (SI)	k	k (SI)	k	k (SI)
50°F (10°C)	0.28	0.040	0.26	0.037	0.23	0.033	
75°F (24°C)	0.29	0.042	0.27	0.039	0.24	0.035	
100°F (38°C)	0.31	0.045	0.29	0.042	0.26	0.037	
125°F (52°C)	0.33	0.048	0.31	0.045	0.28	0.040	
150°F (66°C)	0.36	0.052	0.34	0.049	0.31	0.045	
175°F (80°C)	0.39	0.056	0.37	0.053	0.33	0.048	
200°F (93°C)	0.43	0.063	0.40	0.058	0.36	0.052	

FIBERGLASS AND MOLD

Fiberglass insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated with organic materials.

Carefully inspect any insulation that has been exposed to water. If it shows any sign of mold, it must be discarded. If the material is wet but shows no evidence of mold, it should be dried rapidly and thoroughly. If it shows signs of facing degradation from wetting, it should be replaced.

Air handling insulation used in the air stream must be discarded if exposed to water.

INSTALLATION PROCEDURES

Manson ALLEY-WRAP® blanket insulation is usually applied in accordance with the procedure in the publication "Commercial & Industrial Standards" by the National Insulation Association (NIA).

Manson Insulation Products Ltd. has no control over installation design, installation workmanship, accessory materials, or conditions of application. Manson does not warrant the performance or results of any installation containing their products. This warranty disclaimer includes all implied warranties, including the warranties of merchantability and fitness for a particular purpose.

NOTES

The chemical physical properties of Manson Alley-Wrap® blanket insulation represent typical average values determined in accordance with accepted test methods. The data is subject to normal manufacturing and testing variations. The data is supplied as a technical service and is subject to change without notice.

References to numerical flame spread ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

Check with your Manson sales representative to assure information is current.