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**Date:** 2/12/2024

**Return Request:** 2/22/2024

**Project:** Arkansas Children's Hospital – 4D Renovations

**Supplier:** Coleman Industrial Construction

**Manufacturer:** Various

**Submittal:** HVAC Piping Insulation

**Submittal Number:** 23 07 19-01

**Drawing # and Installation:** Mechanical Drawings

**ARCHITECT**

Cromwell  
1300 E. 6<sup>th</sup> Street  
Little Rock, AR 72202  
501-372-2900

**ENGINEER**

Cromwell  
1300 E. 6<sup>th</sup> Street  
Little Rock, AR 72202  
501-372-2900

**GENERAL CONTRACTOR**

Nabholz  
612 Garland St.  
Conway, AR 72032  
501-505-5800

**MECHANICAL SUBCONTRACTOR**

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501-834-3320

Notes:

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64116



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February 9, 2024

Comfort Systems USA  
9924 Landers Rd  
North Little Rock, AR 72117

Mr. Casey Howell

Re: Mechanical Insulation Submittals for **ACH 4D Reno**, Little Rock, Arkansas.

**No Spec.**

The following items will be insulated with Johns Manville pipe insulation with ASJ + vapor barrier jacket. All fittings will have an additional PVC fitting cover.

Item #1: Heating Water ----- 1 ½" Thick

Thank You,  
Chad Bartlett

**DESCRIPTION**

Micro-Lok HP fiberglass pipe insulation is a high-performance insulation made from biosoluble glass fibers bonded with a thermosetting resin and produced in 36" (0.92 m) lengths. Micro-Lok HP insulation is used to insulate standard iron pipe, plastic pipe and copper tubing. The 3' (0.92 m) sections are available plain or with a factory-applied vapor-barrier jacket. The all-service (ASJ) vapor-retarder jacket includes a longitudinal, self-sealing closure lap. The jacket system is adhered to each fiberglass section using a specially formulated adhesive to ensure jacket securement.

The factory-installed tape system permits installation at ambient temperatures down to 20°F (-7°C) and will not soften or separate when exposed to high ambient temperatures and humidity.

**USES**

Micro-Lok HP fiberglass pipe insulation is suitable for installation over hot, cold, concealed and exposed piping systems with operating temperatures up to 850°F (454°C). Weather-protective jacketing is required for outdoor applications. Pipes operating below ambient temperatures require all joints to be sealed with the factory-applied, self-seal lap and butt strips. Micro-Lok HP is UL listed and labeled over plastic pipes for air plenum applications when used at 1.0" thickness or greater.

**PHYSICAL PROPERTIES**

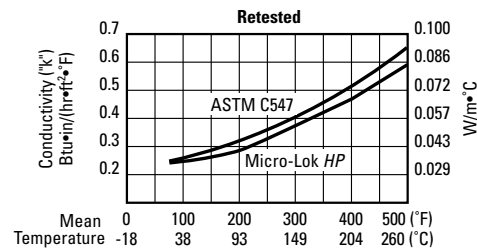
Service Temp. Range (ASTM C411)	0°F to 850°F (-18°C to 454°C)
Moisture Sorption	<5% by weight
Corrosivity (ASTM C1617)	<5 ppm chloride standard
Shrinkage (ASTM C356)	None
Microbial Growth (ASTM C1338)	Does not promote microbial growth
Surface Burning Characteristics	Composite FHC 25/50 per ASTM E84, NFPA 255, CAN/ULC S102.2
Limited Combustibility	NFPA 90A and 90B
Jacketing	ASTM C1136 (Type I & II)
Water Vapor Permeance (ASTM E96 – Procedure A)	0.02 perms max.
Burst Strength (ASTM D774)	55 lbs/in <sup>2</sup> (4.6 Kg/cm <sup>2</sup> )
Tensile Strength (ASTM D828)	45 lbs./in. (7.9N/mm) width min. (MD) 30 lbs./in. (5.23N/mm) width min. (CD)

**SPECIFICATION COMPLIANCE**

- ASTM C547 Type I (Replaces HH-I-558B, Form D, Type III, Class 12, Class 13 up to 850°F [454°C])
- ASTM C585 – Dimension Standard
- ASTM C1136 (Jacketing) (Replaces HH-B-100B, Type I & II)
- MIL-DTL-32585 Type 1, Form 4, Facing A ([unjacketed only](#))
- MIL-I-22344D, MIL-PRF-22344E
- Coast Guard/IMO Approved 164.109/56/0 (plain, unjacketed only – excluding 7/8 x 1/2 [22 mm x 13 mm], 1/2 x 1/2 [13 mm x 13 mm])
- Bureau of Household Goods and Services CA-T1039 (CO)
- Firestop Assemblies: Meets requirement for jacketed fiberglass pipe insulation product density at or above 3.5 pcf.
- ASTM E84, CAN ULC S102.2 – 25/50 listed and labeled Intertek testing laboratories, listed and labeled Underwriter Laboratories
- NRC 1.36, ASTM C795, MIL-I-24244C, MIL-DTL-24244D\*

\*When ordering material to comply with these specifications a statement of that fact must appear on the purchase order. Specific lot testing will be conducted and a certification of compliance can be provided.

**Operating Temperature Limits:** 0°F to 850°F (-18°C to 454°C)


**THERMAL CONDUCTIVITY ("K") \***


Mean Temperature	°F	75	100	200	300	400	500
Temperature	°C	24	38	93	149	204	260
<b>Btu•in/(hr•ft<sup>2</sup>•°F)</b>		0.23	0.24	0.28	0.34	0.44	0.55
<b>W/m•°C</b>		0.034	0.035	0.040	0.049	0.063	0.079

\* Apparent thermal conductivity values are determined by applying procedures dictated per ASTM C1045 on test data obtained using ASTM Test Method C335. All values are based on nominal manufacturing and testing parameters, are subject to normal variation, and are not guaranteed for specification purposes or otherwise.

**SUSTAINABLE BUILDING ATTRIBUTES**

Manufacturing Location	Defiance, Ohio (43512)	
Recycled Content (glass only)	41%	
Recycled Content (total product)	28%	
Volatile Organic Compounds (ASTM D5116)	Total	0.22 g/l
(Analysis ASTM D6196 & ASTM D5197)		
Fiberglass Pipe Insulation	Formaldehyde	0.009 ppm
	Aldehydes	0.043 ppm
Volatile Organic Compounds (Calculated)	Total	<49 g/l
Self-Sealing Lap & Butt Strips		

**SUSTAINABLE BUILDING CERTIFICATIONS**

GREENGUARD®	Certified
GREENGUARD® GOLD	Certified
LEED® Credits	To see LEED info call technical support
LEED-NC	



**SIZE AVAILABILITY**

Insulation Thickness		Iron Pipe Size Range		Copper Tubing Size Range		Notes:
in.	mm	in.	mm	in.	mm	
½	13	½-6	13-152	⅝-4½ <sup>§</sup>	16-105	*2½" and 23" IPS not available in this insulation thickness.
1	25	½-24	13-610	⅝-6⅞	16-156	**22" and 23" IPS not available in this insulation thickness.
1½	38	½-24	13-610	⅝-6⅞	16-156	†21", 22" and 23" IPS not available in this insulation thickness.
2	51	½-24	13-610	1⅞-6⅞	29-156	
2½	64	1-24	25-610	1⅞-6⅞	35-156	
3	76	1-24	25-610	1⅞-6⅞	35-156	
3½	89	1½-24*	38-610	-	-	††19" IPS not available in this insulation thickness.
4	102	3-24**	76-610	-	-	§3⅝" CTS not available in this insulation thickness.
4½	114	3-24†	76-610	-	-	
5	127	3-20††	76-508	-	-	

**ACOUSTIC - INSERTION LOSS**

Insertion loss data for Johns Manville pipe insulation acoustic treatments tested per ASTM E1222

Frequency	1-in Micro-Lok HP	1-in Micro-Lok HP with Zeston PVC (20 mil)	1-in Micro-Lok HP with MLV (1 psf)	2-in Micro-Lok HP	2-in Micro-Lok HP with Zeston PVC (20 mil)	2-in Micro-Lok HP with MLV (1 psf)
Hz	dB	dB	dB	dB	dB	dB
315	2	1	10	1	0	12
400	2	4	13	0	8	17
500	3	5	14	1	10	19
630	5	11	21	6	14	21
800	7	13	20	8	15	22
1000	9	19	25	13	20	29
1250	10	20	28	14	22	31
1600	13	24	33	17	26	37
2000	15	27	35	20	29	39
2500	17	29	36	21	30	38
3150	19	30	36	23	32	40
4000	20	29	36	26	34	41
5000	22	30	36	29	34	38

**ACOUSTIC - TRANSMISSION LOSS**

Transmission loss data and sound transmission class (STC) for Johns Manville pipe insulation acoustic treatments tested per ASTM E90

Frequency	1-in Micro-Lok HP	1-in Micro-Lok HP with Zeston PVC (20 mil)	1-in Micro-Lok HP with MLV (1 psf)	2-in Micro-Lok HP	2-in Micro-Lok HP with Zeston PVC (20 mil)	2-in Micro-Lok HP with MLV (1 psf)
Hz	dB	dB	dB	dB	dB	dB
125	4	7	15	6	8	15
250	4	7	18	6	8	20
500	4	11	23	7	15	29
1000	7	19	32	12	25	38
2000	14	25	38	20	32	45
4000	21	29	44	30	38	51
STC	8	16	28	12	19	31

**QUALIFICATIONS FOR USE**

A sufficient thickness of insulation must be used to keep the maximum surface temperature of Micro-Lok HP insulation below 150°F (66°C). In addition, at operating temperatures above 500°F (260°C), Micro-Lok HP pipe insulation must be applied in a thickness ranging from 2" (51 mm) minimum to 6" (152 mm) maximum.

During initial heat-up to operating temperatures above 350°F (177°C), an acrid odor and some smoke may be given off as the organic binders used in the fiberglass pipe insulation begin to decompose. When this occurs, caution should be exercised to ventilate the area well. This loss of binder does not directly affect the thermal performance of the pipe insulation, but the compressive strength and resiliency of the product are reduced. For applications with excessive physical abuse or vibration at high temperatures, consult your local Insulation Systems Market Development Manager for alternate material recommendations.

**CHILLED WATER SYSTEMS**

For chilled water systems, see [3-Part Specification, MECH-261](#).

**APPLICATION RECOMMENDATIONS\*****MICRO-LOK HP PIPE INSULATION AND BUTT STRIPS**

1. Do not apply Micro-Lok HP insulation if air temperature is below 20°F (-7°C) or above 130°F (54°C) due to the effect of temperature on tape performance. We recommend stapling when application falls outside this temperature range.

When stapling, we recommend mastic be applied over staples to prevent moisture penetration.

2. If stored below 20°F (-7°C) or above 130°F (54°C), insulation cartons should stand within the recommended temperature range for 24 hours prior to application.

3. Once release paper is removed, both adhesive and lap must be kept free of dirt and water, and the lap sealed immediately.

4. When adhered, the lap and butt strips must be pressurized by rubbing firmly with a plastic squeegee or the back of a knife blade to ensure positive closure.

*\*For complete application recommendations and installation instructions, see MECH-261 InsulSpec Specifications.*



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717 17th St.  
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[www.JM.com](http://www.JM.com)

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Insulation Systems****Eastern Region and Canada**

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800-334-2399  
Fax: 419-784-7866

**Western Region**

P.O. Box 5108  
Denver, CO 80217  
800-368-4431  
Fax: 303-978-4661

Technical specifications as shown in this literature are intended to be used as general guidelines only. Please refer to the Safety Data Sheet and product label prior to using this product. The physical and chemical properties of Micro-Lok HP listed herein 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. Any references to numerical flame spread or smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions. Check with your customer service representative for current information.

**All Johns Manville products are sold subject to Johns Manville's standard Terms and Conditions, which includes a Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville standard Terms and Conditions or for information on other Johns Manville thermal insulation and systems, visit [www.jm.com/terms-conditions](http://www.jm.com/terms-conditions) or call (800) 654-3103.**



# Technical Data Sheet

## 3M™ Venture Tape™ Facing Tape 1540CW

### Product Description

3M™ Venture Tape™ 1540CW is a kraft/scrim/foil (ASJ) laminate coated with a cold weather acrylic pressure sensitive adhesive.

### Product Features

- Cold weather adhesive performs well over a wide temperature range
- Mold inhibitor helps maintain adhesive strength and effectiveness
- High puncture and tear resistance ensures long life and durability.
- Conforms well to curved and irregular surfaces



### Technical Information Note

The following technical information and data should be considered representative or typical only and should not be used for specification purposes.





### Typical Physical Properties

Property	Values	Additional Information
Backing	ASJ	
Adhesive Type	Acrylic	
Liner	Release Liner	
Color	White	
Backing Thickness (mm)	0.16 mm	View
Test Method: ASTM D3652		
Total Tape Thickness (mil)	7.5 mil	View
Test Method: ASTM D3652		
Total Tape Thickness (mm)	0.19 mm	View

Test Method: ASTM D3652

Backing Thickness	6.5 mil	View 
Test Method: ASTM D3652		
Water Vapor Transmission	0.02 Perms	View 
Test Method: ASTM E96		

### Typical Performance Characteristics

Property	Values	Additional Information
Tensile Strength	70.1 N/cm	View 
Test Method: ASTM D3759		
180° Peel Adhesion	Exceeds the strength of tape backing oz/in	View 
Test Method: ASTM D3330		
Notes: 12 in/min (300 mm/min)		
Tensile Strength (lb/in)	40 lb/in	View 
Test Method: ASTM D3759		
Elongation at Break (%)	2 %	View 
Test Method: ASTM D3759		
Long Term Temperature Resistance	116 °C	
Minimum Long Term Temperature Resistance	-40 °C	
Long Term Temperature Resistance	240 °F	
Minimum Long Term Temperature Resistance	-40 °F	

### Certifications/Standards

Property	Values	Additional Information
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Certifications

- UL723 Classified (15/10 Flame/Smoke Rating) [UL file #R10984]
- CAN/ULC Classified (15/10 Flame/Smoke Rating) [UL file #R10984]

Codes & Test Standards

Meets ASTM C1136, Type 1, II, III, IV. \*ASTM C1136 testing based in part on third party test data of the product backing

Storage and Shelf Life

Store in a clean, dry place. Temperature of 40-80°F (4-26°C) and 40 to 50% relative humidity are recommended. To obtain best performance, use this product within 24 months from date of manufacture.

Bottom Matter

3M  
Industrial Adhesives and Tapes Division  
3M Center, Building 225-3S-06  
St. Paul, MN 55144-1000  
800-362-3550

Trademarks

3M and Venture Tape are trademarks of 3M Company.

Handling/Application Information

Application Examples

- Closure system on ASJ faced duct piping systems
- Vapor seal on ASJ faced ductboard and pipe insulation

References

Property	Values
3m.com Product Page	<a href="https://www.3m.com/3M/en_US/p/d/b40067987/">https://www.3m.com/3M/en_US/p/d/b40067987/</a>
Safety Data Sheet SDS	<a href="https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&amp;msdsLocale=en_US&amp;co=ptn&amp;q=1540CW">https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&amp;msdsLocale=en_US&amp;co=ptn&amp;q=1540CW</a>

Family Group

Link Tags:

- 1540CW

Products	Adhesive Type	Liner	Color	Backing Thickness (mm)	Tensile Strength	Long Term Temperature Resistance	Minimum Long Term Temperature Resistance
1540CW	Acrylic	Release Liner	White	0.16 mm	70.1 N/cm	240 °F	-40 °C

ISO Statement



This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

## Information

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**Technical Information:** The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

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### INDOOR & OUTDOOR WATER-BASED, VAPOR RETARDER COATING

#### DESCRIPTION

CP-33 is a water-based, vapor retarder coating for insulation on interior, exterior, low temperature, some dual temperature applications (such as chilled water and refrigerated pipe lines), HVAC ducts and low temperature equipment. It is fast drying and forms a tough, flexible dry film which protects insulated surfaces and helps retard the flow of vapor through an insulation system. It has a smooth, creamy consistency that spreads easily and can be applied in a relatively heavy coating or brushed out into a thin, smooth film.

#### USES

CP-33 can be used on most types of thermal insulations in both cold and dual temperature service. It is used to vapor seal the seams, overlaps and punctures from pins and staples in FSK, ASJ, white paper and polyester vapor retarder facings on insulation boards, duct wrap and pipe covering. It may also be used to seal cut ends of insulation to prevent moisture ingress and fiber release. It is compatible with fiber glass, mineral fiber, cellular glass, polyisocyanurate, polyurethane, polystyrene, phenolic, rubber foam and other insulations.

#### APPLICATION

CP-33 features easy application by trowel or brush. It may be applied with CHIL-GLAS® #10 Glass Fiber Reinforcing Mesh to increase film strength. See reverse side of product data sheet for application information.

#### ADVANTAGES

- Water-based for personal and environmental safety.
- Fast-drying contributes to maximum production rates.
- Non-flammable – safe for transport, storage and usage.
- Quick and efficient cleanup of tools and metal with warm water before coating completely dries.
- Outdoor rated and UV resistant.

#### CERTIFIED

- MAS Certified Green®
- California Dept. of Public Health Standard Method v1.2
- VOC Emissions and Content requirements to contribute to

**LEED v4** EQ Credit: Low Emitting Materials – Paints and Coatings

- VOC Content: 49 g/l, less water and exempt solvents
- Collaborative for High Performance Schools EQ 7.1
- Meets NFPA Standard 90A and 90B 25/50 requirements as a closure mastic



#### COLOR

White

#### AVERAGE WET WEIGHT (ASTM D1475)

11.9 lbs./U.S. gal. (1.4 kg/liter)

#### AVERAGE NON-VOLATILE (ASTM D2369)

55% by volume (68.5% by weight)

#### SERVICE TEMPERATURE RANGE

Temperature to which dry film is subjected.  
-20°F to 190°F (-29°C to 88°C)

#### APPLICATION & STORAGE TEMPERATURE RANGE

40°F to 100°F (4°C to 38°C)

#### DRYING TIME

Temperature, humidity and film thickness will affect drying time.

To Touch: 3 Hours

Through: 24 Hours

#### COVERAGE

Varies with substrate and membrane.  
4 U.S. gal./100 sq. ft. (1.6 l/m<sup>2</sup>)

#### CLEAN UP

Warm, soapy water while coating is still wet.

#### WATER VAPOR PERMEANCE (TYPICAL AVERAGE)

Tested with reinforcing mesh.

ASTM F1249: 0.15 perms (0.10 metric perms) at 28 – 53 mils (1.1 – 1.27 mm) dry film thickness. Tested at 73°F, 50% RH.

ASTM E96, PROCEDURE A: 0.15 perms (0.10 metric perms) at 50 mils (1.25 mm) dry film thickness.

Meets the permeance requirements of ASTM C755-19, Section 7.2.2 for below ambient vapor retarder coatings when used as a closure mastic in conjunction with ASJ and other vapor retarder membranes.

#### SURFACE BURNING CHARACTERISTICS (ASTM E84)

Flame Spread: 5

Smoke Developed: 15

Tested as applied in a 4 in. strip at a rate of 25 sq. ft./U.S. gallon to inorganic reinforced cement board.

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Visit us on the web at [www.fosterproducts.com](http://www.fosterproducts.com)

### H.B. Fuller Construction Products Inc.

Customer Service  
800-832-9002

1105 South Frontenac Street  
Aurora, IL 60504

Fax  
800-952-2368

## To seal seams, overlaps, punctures, penetrations and terminations of vapor retarder membrane jacketing:

CP-33 Vapor Retarder Coating shall be applied with a first tack coat applied at a coverage rate of 2 U.S. gals./100 sq. ft. (0.8 l/m<sup>2</sup>). While still wet, a layer of CHIL-GLAS® #10 Glass Fiber Reinforcing Mesh shall be embedded, with all seams overlapped a minimum of 2" (5.08 cm). A finish coat at a coverage rate of 2 U.S. gals./100 sq. ft. (0.8 l/m<sup>2</sup>) shall be applied so that the total wet film thickness is a minimum of 0.064". This will provide a minimum dry film thickness of 0.035".

## NOTES TO SPECIFYING ENGINEER

1. CP-33 Vapor Retarder Coating, white, should be specified where white All Service Jacketing (ASJ), or other white coatings/finishes are specified on the adjoining pipe or equipment insulation.
2. CHIL-BYL® CP-76 or CHIL-JOINT® CP-70 Joint Sealant is recommended for use with CP-33 Vapor Retarder Coating. Confirm compatibility of joint sealant with insulation before choosing.
3. Do not use over copper clad wire.
4. All outdoor horizontal surfaces must be sloped at least 1/2 inch per foot to assure water run-off and prevent the ponding of rain water and melting snow or ice.

## Application Guide and Suggested Procedures

### 1. USE OF MATERIAL

DO NOT THIN. Store the product in a warm and dry area. Protect from freezing until dry.

It is essential in applying vapor retarder sealing materials that the recommended film thickness be achieved. Therefore, do not try to spread the vapor retarder coating too thin.

### 2. THE CONDITION OF THE INSULATION TO BE COATED

Since CP-33 is a vapor retarder, it should never be applied over insulation containing moisture. Dusty or porous substrates should first be primed with CHIL-SEAL® CP-50A MV1, diluted 50% with water for proper bonding. Allow the primer to thoroughly dry before over-coating with CP-33 Vapor Retarder Coating.

### 3. HINTS FOR SUCCESS

A vapor retarder system is no better than its weakest link. It is extremely important that where the finish terminates at an uninsulated point, the finish of CP-33 Vapor Retarder Coating and glass fiber reinforcing mesh be flashed over the uninsulated section for a minimum of 4" (10.16 cm).

Where there is a possibility of the temperature of the uninsulated section exceeding 190°F (88°C) due to steam-off or other heated application, the vapor sealing at this joint shall be accomplished by using CHIL-BYL® CP-76 Joint Sealant.

The surface of extruded polystyrene and polyisocyanurate board stock may contain water-soluble inks that may bleed through water-based mastics. Test before applying CP-33 Vapor Retarder Coating.

## CUSTOMER SERVICE: (800) 832-9002

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Consult Safety Data Sheet and container label for further information.**