Johns Manville
A Berkshire Hathaway Company

MECHANICAL INSULATION

MICRO-LOK® *HP*

HIGH-PERFORMANCE FIBERGLASS PIPE INSULATION

DATA SHEET

DESCRIPTION

Micro-Lok *HP* fiberglass pipe insulation is a high-performance insulation made from rotary 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 withthe factory-applied, self-seal lap and butt strips.

PHYSICAL PROPERTIES

Service Temp. Range (ASTM C411)	0°F to 850°F (-18°C to 454°C)
Moisture Sorption	<5% by weight
Alkalinity	<0.6% expressed as Na_2O
Corrosivity (ASTM C665)	Does not accelerate
Capillarity	Negligible (after 24 hours)
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)
Water Vapor Permeance (ASTM E96 – Procedure A)	0.02 perms max.
Burst Strength (ASTM D774)	55 lbs/in^2 (4.6 Kg/cm^2)
Tensile Strength (ASTM D828)	45 lbs./in. (7.9N/mm) width min. (MD) 30 lbs./in. (5.23N/mm) width min. (CD)

SPECIFICATION COMPLIANCE

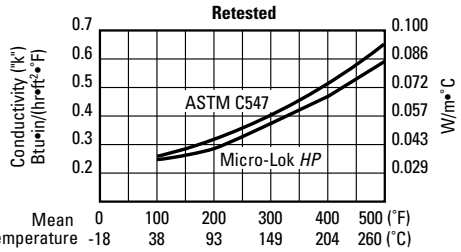
- ASTM C547 Type I (Replaces HH-I-558B, Form D, Type III, Class 12, Class 13 up to 850°F [454°C])
- ASTM C585 – Dimension Standard
- ASTM C1136 (Jacketing) (Replaces HH-B-100B, Type I & II)
- MIL-DTL-32585
- MIL-I-22344D, MIL-PRF-22344E
- Coast Guard/IMO Approved 164.109/56/0 (plain, unjacketed only – excluding $^7/_8$ x ½ [22 mm x 13 mm], ½ x ½ [13 mm x 13 mm])
- MEA compliant
- California Bureau of Home Furnishings and Thermal Insulation – Registry Number CA-T040 (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

- 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
	°C	24	38	93	149	204	260
Btu•in/(hr•ft²•°F)		0.23	0.24	0.28	0.34	0.44	0.55
W/m•°C		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)	32%	
Volatile Organic Compounds (ASTM D5116)	Total	0.15 g/l
(Analysis ASTM D6196 & ASTM D5197)		
Fiberglass Pipe Insulation	Formaldehyde	0.009 ppm
	Aldehydes	0.009 ppm
Volatile Organic Compounds (Calculated)	Total	<49 g/l
Self-Sealing Lap & Butt Strips		

SUSTAINABLE BUILDING CERTIFICATIONS

GREENGUARD®	Certified
GREENGUARD® GOLD	Certified
LEED® Credits	See JM.com/buildgreen
LEED-NC	JM LEED Credit Guide (HIG-1231)

GREENGUARD® Certified products have been screened for more than 10,000 volatile organic compounds (VOCs) and meet stringent standards for low chemical emissions based on established criteria from key public health agencies

MICRO-LOK® *HP*

HIGH-PERFORMANCE FIBERGLASS PIPE INSULATION

DATA SHEET

SIZE AVAILABILITY

Insulation Thickness		Iron Pipe Size Range		Copper Tubing Size Range	
in.	mm	in.	mm	in.	mm
½	13	½–6	13–152	⅝–4⅛[§]	16–105
1	25	½–24	13–610	⅝–6⅛	16–156
1½	38	½–24	13–610	⅝–6⅛	16–156
2	51	½–24	13–610	1⅛–6⅛	29–156
2½	64	1–24	25–610	1⅜–6⅛	35–156
3	76	1–24	25–610	1⅜–6⅛	35–156
3½	89	1½–24[*]	38–610	–	–
4	102	3–24[**]	76–610	–	–
4½	114	3–24[†]	76–610	–	–
5	127	3–20[††]	76–508	–	–

Notes:

[*] *2½" and 23" IPS not available in this insulation thickness.*

[**] *22" and 23" IPS not available in this insulation thickness.*

[†] *21," 22" and 23" IPS not available in this insulation thickness.*

[††] *19" IPS not available in this insulation thickness.*

[§] *3⅝" CTS not available in this insulation thickness.*

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 Chilled Water InsulSpec™ – 3-Part Specification, MECH-239.

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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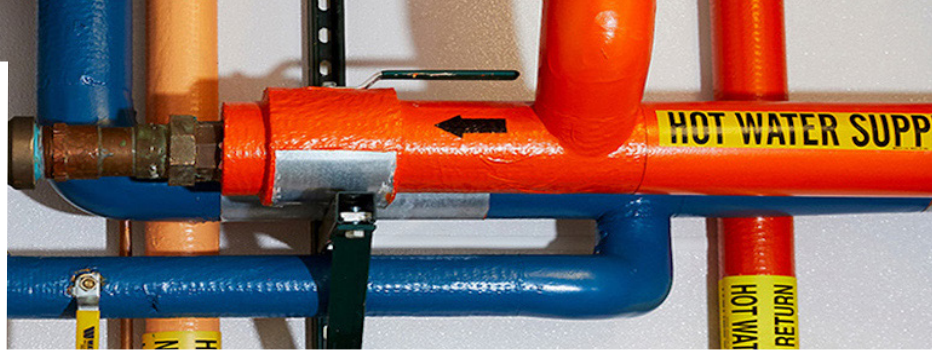
MECH-228 10/30/18 (Replaces 09/18/18)



SSL II® WITH ASJ MAX FIBERGLAS™ PIPE INSULATION

FIBERGLASS INSULATION

Description

Owens Corning® SSL II® with ASJ Max Fiberglas™ Pipe Insulation is molded of heavy density resin bonded inorganic glass fibers that come in one-piece, 36" (914mm) long, hinged sections. The insulation is tailored to fit for copper and iron pipe applications.

Features

- ASJ Max is an all-service-jacket with a polymer film exterior surface that is smooth, durable, cleanable, wrinkle-resistant, resists water staining and doesn't support mold or mildew growth[1]
- ASJ Max can resist short durations of water exposure that may occur during construction
- SSL II® Positive Closure System is an advanced double adhesion that fastens and installs with no need for staples or mastic
- Insulation is tailored to fit with:
  - FlexCore technology to compress over copper and some small-bore iron pipes and fittings, saving time by eliminating the need to fillet
  - RigidCore technology for fast and easy fabrication on larger pipes
- The product has a maximum operating temperature of 1,000°F (538°C) (with heat-up schedule)
- The product does not contain Polybromodiphenyl ethers (PBDE) (penta-, octa-, or deca-brominated diphenyl)

1. ASJ Max jacket does not support mold growth as tested in accordance with ASTM C1338.

Physical Properties

PROPERTY	TEST METHOD	VALUE
Density (size dependent)	ASTM C302	3.5 to 5.5 pcf
Operating Temperature Range[2]	ASTM C411	0°F to 1,000°F (-18°C to 538°C)
Water Vapor Sorption	ASTM C1104	Less than 5% by weight
Corrosion	ASTM C665	Pass – steel, copper, and aluminum
Corrosion	ASTM C1617	Pass – steel
Jacket Temperature Limitation	ASTM C1136	-20°F to 150°F (-29°C to 66°C)
Jacket Permeance	ASTM E96, Proc. A	0.01 perm
Burst Strength, min	ASTM D774/D774M	100 psi
Composite Surface Burning Characteristics[3]	UL 723, ASTM E84 or CAN/ULC-S201	Flame Spread 25 Smoke Developed 50

2. With heat-up schedule when operating temperatures between 850°F and 1,000°F.
3. The surface burning characteristics of these products have been determined in accordance with UL 723, ASTM E84 or CAN/ULC-S102. Values are reported to the nearest 5 rating.

Standards, Codes Compliance

- ASTM C547, Mineral Fiber Pipe Insulation: Type I, Grade A; and Type IV, Grade B
- ASTM C585, Inner and Outer Diameters of Thermal Insulation for Nominal Sizes of Pipe and Tubing
- ASTM C1136, Flexible Low Permeance Vapor Retarders for Thermal Insulation: Types I, II, III, IV, X
- UL Labeled for Flame Spread Index of 25 or less and Smoke Developed Index of 50 and is fully building code compliant
- UL Listed and Labeled for use over PVC and other polymer pipes UL Category BSMP
- ASTM C795, Thermal Insulation for Use in Contact with Austenitic Stainless Steel[4]
- Nuclear Regulatory Commission Guide 1.36, Non-Metallic Thermal Insulation[4]
- MIL-PRF-22344E, Insulation, Pipe, Thermal, Fibrous Glass
- MIL-DTL-32585, Type I, Form 4, Facing A
- MIL-DTL-24244D (Ships) Insulation Material with Special Corrosion, Chloride, and Fluoride Requirements[4]
- NFPA 90A and 90B

4. Preproduction qualification testing complete and on file. Chemical analysis of each production lot required for total conformance. Certification needs to be specified at time of order.

Applications

- Used to insulate iron, copper, PVC and other polymer pipes with operating temperatures between 0°F (-18°C) to 1,000°F (538°C) in commercial & institutional buildings, and industrial facilities
- When temperatures are above 650°F (454°C), maximum installed insulation thickness shall be no greater than 6" as a single layer or nested
- Rated per ASTM C547, Type I, Grade A - Pipe insulation can be installed on in-service/hot pipes with an operating temperature up to 850°F (454°C)
- Rated per ASTM C547, Type IV, Grade B - When operating temperatures will be between 850°F (454°C) to a 1,000°F (538°C) a heat-up schedule needs to be followed per the Installation Instructions, Pub No. 10021355
- When installed outdoors, an additional weather-protective jacket is required

Thermal Conductivity

MEAN TEMP °F	K BTU•IN/HR•FT²•°F	MEAN TEMP °C	λ W/M•°C
50	0.22	10	0.032
75	0.23	25	0.034
100	0.24	50	0.037
150	0.27	100	0.043
200	0.29	125	0.047
250	0.32	150	0.051
300	0.35	175	0.056
350	0.39	200	0.062
400	0.43	225	0.068
450	0.48	250	0.075
500	0.54	275	0.082

Apparent thermal conductivity values determined in accordance with ASTM practice C1045 with data obtained by ASTM Test Method C335. Values are nominal, subject to normal testing and manufacturing tolerances.

Thickness to Prevent Surface Condensation

Owens Corning® ASJ Max Jacket for up to 16" NPS (400mm DN), in. (mm)[5, 6]

AMBIENT TEMP °F	AMBIENT TEMP (°C)	RELATIVE HUMIDITY	SYSTEM OPERATING TEMPERATURES 35°F	(2°C)	45°F	(7°C)	55°F	(13°C)
110	(43)	70%	1	(25)	1	(25)	1	(25)
		80%	1½	(38)	1½	(38)	1½	(38)
		90%	3½	(89)	3½	(89)	3	(76)
100	(38)	70%	1	(25)	1	(25)	1	(25)
		80%	1½	(38)	1½	(38)	1	(25)
		90%	3½	(89)	3	(76)	2½	(64)
90	(32)	70%	1	(25)	1	(25)	1	(25)
		80%	1½	(38)	1	(25)	1	(25)
		90%	3½	(89)	3	(76)	2½	(64)
80	(27)	80%	1½	(38)	1	(25)	1	(25)
		90%	3	(76)	2½	(64)	2	(51)
70	(21)	80%	1	(25)	1	(25)	1	(25)
		90%	2½	(64)	2	(51)	1	(25)

[5]Calculations estimated using NAIMA 3E Plus version 4.0 software. Fixed design conditions: Steel Horizontal Piping, 16" NPS, 0 mph wind speed, Outer Surface Jacket Emittance of 0.9.
[6]Thermal conductivity values used in these calculations are subject to normal manufacturing tolerances.

Availability

Our Fiberglas™ Pipe Insulation portfolio is available in thicknesses up to 5". Contact your local Owens Corning Area Sales Manager for product availability.

Refer to Pipe Insulation Sizing Manual for more information: Pub. No. 10018078.

Installation

Ambient application temperatures are from 25°F (-4°C) to 110°F (43°C).

For complete installation instructions and recommendations see "Fiberglas™ Pipe Insulation Installation Instructions" (Pub. No. 10021355).

Environmental and Sustainability

Owens Corning is a worldwide leader in building material systems, insulation and composite solutions, delivering a broad range of high-quality products and services. Owens Corning is committed to driving sustainability by delivering solutions, transforming markets and enhancing lives. More information can be found at www.owenscorning.com.

Certifications and Sustainable Features

- Certified by SCS Global Services to contain an average of 53% recycled glass content, 31% pre-consumer and 22% post-consumer
- For faced products: GREENGUARD Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit ul.com/gg
- Environmental Product Declaration (EPD) has been certified by UL Environment
- Material Health Certificate from Cradle to Cradle Products Innovation Institute or Health Product Declarations available

Disclaimer of Liability

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Pub. No. 20547-Z. Printed in U.S.A. June 2019.