SECTION 07 21 00

THERMAL INSULATION

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\*\* NOTE TO SPECIFIER \*\* ROCKWOOL(TM); Stone wool Insulation products.
This section is based on the products of ROCKWOOL(TM), which is located at:
8024 Esquesing Line
Milton, Ontario, L9T 6W3
Phone: 905-878-8474
Toll Free: 1-800-265-6878
Email: contactus@rockwool.com
Web: [www.rockwool.com](http://www.rockwool.com)
[ [Click Here](http://www.arcat.com/arcatcos/cos35/arc35276.html) ] for additional information.
The ROCKWOOL Group is one of the world's leading manufacturer of stone wool insulation. ROCKWOOL Group offers a full range of high-performing and sustainable insulation products for the construction industry. Today, ROCKWOOL operates in more than 30 countries - with production in 14 territories from Canada in the West to Malaysia in the East.
ROCKWOOL is part of the ROCKWOOL Group. With 1000 employees, 3 factories and a fourth under construction, the North America operations offers a wide range of solutions for residential and commercial construction.
Stone wool insulation is made from one of nature's most abundant resources - volcanic rock. Not only is it a naturally renewable and sustainable material, it also boasts a unique combination of benefits and lays the foundation for our business. ROCKWOOL's insulation products possess outstanding fire, acoustic and thermal insulation properties as well as a lifelong durability, making it the sustainable and cost-effective choice.
At the ROCKWOOL Group, we are committed to enriching the lives of everyone who experiences our product solutions. Our expertise is perfectly suited to tackle many of today's biggest sustainability and development challenges, from energy consumption and noise pollution to fire resilience, water scarcity and flooding. Our product range reflects the diversity of the world's needs, while supporting our stakeholders in reducing their own carbon footprint.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Water Repellent, Semi-Rigid Board Insulation for Cavity Walls.
		2. Water Repellent, Rigid Mineral Wool Insulation Board for Exterior Curtain Wall Systems, and other board insulation applications.
		3. Blanket and Batt Firestopping Insulation.
		4. Water Repellent, Semi-Rigid Mineral Wool Insulation Board for 1 Hour Fire Rated Walls in Metal Building Systems, and other board insulation applications.
		5. Water Repellent, Semi-Rigid Mineral Wool Insulation Board for 2 Hour Fire Rated Walls in Metal Building Systems, and other board insulation applications.
		6. Water Repellent, Semi-Rigid, Non- Combustible, Mineral Wool Insulation Board for Exterior Curtain Wall Systems, and other board insulation applications.
		7. Water Repellent, Semi-Rigid, Non- Combustible, Mineral Wool Insulation Board for Exterior Curtain Wall Systems (CR40), and other board insulation applications.
		8. Water Repellent, Semi-Rigid, Non- Combustible, Mineral Wool Insulation Board for Exterior Curtain Wall Systems
		9. Semi-Rigid Stone Wool, Thermal Batt and Blanket Insulation for Steel Stud Wall Applications.
		10. Semi-Rigid Mineral Wool Board Insulation (RB40) for General Purpose applications.
		11. Semi-Rigid Mineral Wool Board Insulation (RB60) for General Purpose applications.
		12. Semi-Rigid Mineral Wool Board Insulation (RB80) for General Purpose applications.
		13. Semi-Rigid Mineral Wool, Acoustical and Fire Batt Insulation for Walls and Floors.
		14. Batt and Blanket Firestopping Insulation for Exterior Walls of Metal Buildings.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 04 40 00 - Stone Assemblies.
		2. Section 05 30 00 - Metal Decking
		3. Section 05 40 00 - Cold-Formed Metal Framing.
		4. Section 06 10 00 - Rough Carpentry
		5. Section 07 50 00 - Membrane Roofing
		6. Section 07 42 13 - Metal Wall Panels.
		7. Section 07 84 13 - Penetration Firestopping.
		8. Section 07 91 23 - Backer Rods
		9. Section 08 44 23 - Structural Sealant Glazed Curtain Wall.
		10. Section 09 23 13 - Acoustical Gypsum Plastering
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM C 165 - Standard Test Method for Measuring Compressive Properties of Thermal Insulations.
		2. ASTM C 167 - Standard Test Method for Thickness and Density of Blanket or Batt Thermal Insulations.
		3. ASTM C209 - [Standard Test Methods for Cellulosic Fiber Insulating Board.
		4. ASTM C 303 - Standard Test Method for Dimensions and Density of Preformed Block and Board-Type Thermal Insulation.
		5. ASTM C 356 - Standard Test Method for Linear Shrinkage of Preformed High-Temperature Thermal Insulation Subjected to Soaking Heat.
		6. ASTM C 411 - Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation
		7. ASTM C 423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
		8. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
		9. ASTM C 553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
		10. ASTM C 612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
		11. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
		12. ASTM C 795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
		13. ASTM C 1104/C 1104M - Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation.
		14. ASTM C 1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.
		15. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
		16. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
		17. ASTM E 96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
		18. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
		19. ASTM E 413 - Classification for Rating Sound Insulation.
		20. ASTM E 814 - Standard Test Method for Fire Tests of Penetration Firestop Systems.
		21. ASTM E 1050 - Standard Test Method for Impedance and Absorption of Acoustical Materials Using a Tube, Two Microphones and a Digital Frequency Analysis System.
		22. FM 4473 - Specification Test Standard for Impact Resistance Testing of Rigid Roofing Materials by Impacting with Freezer Ice Balls.
		23. UL 181 - Factory-Made Air Ducts and Connectors.
		24. UL Fire Resistance Directory U654, Fire Resistance Ratings, 1 Hour Assembly - Interior Surface.
		25. UL Fire Resistance Directory, Fire Resistance Ratings, 1 Hour Assembly - Interior and Exterior Surfaces.
		26. ULC Fire Resistance Directory W605 - Fire Resistance Ratings, 1 Hour Assembly - Interior Surface.
		27. ULC Fire Resistance Directory W606 - Fire Resistance Ratings, 2 Hour Assembly - Interior Surface.
		28. ULC Fire Resistance Directory W610 - Fire Resistance Ratings, 1 Hour Assembly - Interior and Exterior Surfaces.
		29. ULC Fire Resistance Directory W611 - Fire Resistance Ratings, 2 Hour Assembly - Interior and Exterior Surfaces.
		30. CAN/ULC S102 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
		31. CAN/ULC S114 - Standard Method of Test for Determination of Non-Combustibility in Building Materials.
		32. CAN/ULC S115 - Standard Method of Test of Firestop Systems.
		33. CAN/ULC S702 - Standard for Thermal Insulation Mineral Fiber for Buildings
		34. LEED v4 (Leadership in Energy and Environmental Design): Green Building Rating System.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data: Manufacturer's data sheets on each product to be used, including:
			1. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Installation methods.
			4. MSDS report.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + 1. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
			1. EA Credit 1: Thermal value of insulation contributing to overall energy performance of building.
			2. MR Credits 4: Recycled content of insulation indicating percentages by weight of preconsumer and postconsumer recycled content.
			3. MR Credits 5: Verify location where insulation is extracted, processed and manufactured
		2. Verification Samples: For each product specified, two samples, minimum size 12 inches (300 mm) square, representing actual products specified.
		3. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
		4. Sustainable Design Closeout Documentation (LEED).
			1. Provide calculations on end-of-project recycling rates, salvage rates, and landfill rates for work of this Section demonstrating percentage of construction wastes which were recycled.
			2. Submit verification from recycling facility showing receipt of materials
	1. QUALITY ASSURANCE
		1. Installer Qualifications: Documented experience of 5 years minimum with work similar to work of this Section.

\*\* NOTE TO SPECIFIER \*\* Pre-installation meeting may be deleted if the size and complexity of the project does not require prior co-ordination and review of the barrier or insulation system installation.

* + 1. Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and [one week] before starting work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.
			1. Comply with Section 01 31 13 - Project Coordination Project Meetings and co-ordinate with other similar pre installation meetings.
			2. Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:
				1. Owner;
				2. Consultant;
				3. Board Insulation Installation Subcontractor;
				4. Manufacturer's Technical Representative.
			3. Ensure meeting agenda includes review of methods and procedures related to insulation installation including co-ordination with related work.
			4. Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Deliver materials and accessories in insulation manufacture's original packaging with identification labels intact and in sizes to suit project.
		2. Store products in manufacturer's unopened packaging until ready for installation.
		3. Ensure insulation materials are not exposed to moisture during delivery or storage.
	2. SEQUENCING
		1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
	3. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: ROCKWOOL; 8024 Esquesing Line, Milton, Ontario, L9T 6W3. Phone: 905-878-8474, Toll Free: 1-800-265-6878. E-mail: contactus@rockwool.com, URL: http://www.ROCKWOOL.com

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs as required and applicable to project requirements. Delete the paragraphs that are not applicable.

* 1. PRODUCTS
		1. Water Repellent, Semi-Rigid Board Insulation for Cavity Walls: ROCKWOOL CAVITYROCK non-combustible, lightweight, water repellent, rigid insulation board with rigid upper surface to ASTM C 612 Type IVB.
			1. Size: Provide to the maximum sizes practical.
				1. 16 by 48 inches (406 by 1219 mm).
				2. 24 by 48 inches (610 by 1219 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 1 inch (25 mm).
				2. 1.5 inches (38 mm).
				3. 2 inches (50 mm).
				4. 2.5 inches (65 mm).
				5. 3 inches (76 mm).
				6. 3.5 inches (89 mm).
				7. 4 inches (102 mm).
				8. 4.5 inches (114 mm).
				9. 5 inches (127 mm).
			3. Thickness 1.5 inches (38 mm) and below Density 5.3 lb/ft3 (85 kg/ m3) to ASTM C 303
			4. Thicknesses 2 inches (50 mm) and below Density 4.4 lb/ft3 (70 kg/m3) to ASTM C 303
			5. Thicknesses 2.5 inches (65 mm) and above Density:
				1. Outer layer: 6.2 lb/ft3 (100 kg/m3) to ASTM C 303.

\*\* NOTE TO SPECIFIER \*\* Edit inner layer thickness to suit project requirements. For densities of insulation board of thicknesses other than those listed, contact ROCKWOOL.

* + - * 1. Inner layer: 4.1 lb/ft3 (60 kg/m3) to ASTM C 303.
			1. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable. The addition of a Dual Density facing material to the product will cause significant changes to the surface burning characteristics. Verify surface burning characteristics with the manufacturer before specifying facings.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Thermal Resistance
				1. 2 inch (50 mm) and less R value/1 inch at 75 degrees F (24 degrees C): 4.3 h ft2 degrees F/Btu \*0.74 m2K/W) to ASTM C 518
				2. 2.5 inch (65 mm) and greater R value/1 inch at 75 Degrees F (24 degrees C): 4.3 h ft2 degrees F/Btu (0.76 m2K/W) to ASTM C 518.
			2. Water Vapor Permeance: 27.2 Perm minimum.
			3. Moisture Absorption: 1 percent maximum to ASTM C 1104/C 1104M.
			4. Fungi Resistance: Zero mold growth to ASTM C 1338.
			5. Corrosive Resistance:
				1. Steel to ASTM C 665: Pass.
				2. Stainless steel to ASTM C 795: Pass.

\*\* NOTE TO SPECIFIER \*\* All ROCKWOOL insulation materials contain recycled content. All products produced in the Milton, Ontario, facility contain a minimum of 40 percent recycled content. Products produced in our Grand Forks, British Columbia and Byhallia, Mississippi facilities contain a minimum of 16 percent recycled content. Edit the following paragraph to the recycled content for the location of the manufacturing plant required.

* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.

\*\* NOTE TO SPECIFIER \*\* For sound absorption coefficients for different insulation thicknesses, refer to manufacturer's web site at [www.ROCKWOOL.com](http://www.ROCKWOOL.com) .

* + - 1. Acoustical Performance: Sound absorption coefficients to ASTM C 423.
				1. Thickness: 1.5 inch (37 mm), NRC 0.90.
				2. Thickness: 2.0 inch (50 mm), NRC 1.00.
				3. Thickness: 3.0 inch (76 mm), NRC 0.90.
		1. Water Repellent, Rigid, Mineral Wool Insulation Board for Exterior Wall Systems, and other board insulation applications: COMFORTBOARD 110, rigid, water repellent, mineral wool insulation board to ASTM C 612, Type IVB.
			1. Size: Provide to the maximum sizes practical.
				1. 24 by 48 inches (610 by 1219 mm).
				2. 48 by 72 inches (1219 by 1828 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 1 inch (25 mm).
				2. 1.25 inches (32 mm).
				3. 2 inches (50 mm).
				4. 2.5 inches (65 mm).
				5. 3 inches (76 mm).
			3. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select CA Standards as applicable.

* + - * 1. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable. The addition of a Dual Density facing material to the product will cause significant changes to the surface burning characteristics. Verify surface burning characteristics with the manufacturer before specifying facings.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Thermal Resistance: R value/inch at 75 degrees F: 4.0 hr ft2 F/Btu (RSI value/25.4 mm at 24 degrees C: 0.70 m2K/W) to ASTM C 518.
			2. Moisture resistance:
				1. Moisture absorption: 0.28 percent maximum to ASTM C 1104/C 1104M.
				2. Water vapor transmission: 35 perm (2160 ng/Pa x s x m2) to ASTM E 96, Desiccant Method.
				3. Water absorption: 1.2 percent to ASTM C 209.
			3. Dimensional stability: 0.38 percent maximum linear shrinkage at 1200 degrees F (650 degrees C) to ASTM C 356.
			4. Corrosive resistance:
				1. Steel to ASTM C 665: Pass.
				2. Stainless steel to ASTM C 795: Pass.
			5. Density: 11.0 lb/ft3 (176 kg/m3) to ASTM C 303.
			6. Compressive strength: To ASTM C 165.
				1. 584 psf (28 kPa) at 10 percent.
				2. 1566 psf (75 kPa) at 25 percent.
			7. Fungi resistance: To ASTM C 1338.

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.

\*\* NOTE TO SPECIFIER \*\* For sound absorption coefficients for different insulation thicknesses, refer to manufacturer's web site at [www.ROCKWOOL.com](http://www.ROCKWOOL.com) .

* + - 1. Acoustical Performance: Sound absorption coefficients to ASTM C 423.
				1. Thickness: 1.0 inch (25 mm), NRC 0.80.
				2. Thickness: 2.0 inch (50 mm), NRC 0.85.
		1. Blanket and Batt Firestopping Insulation: ROXUL SAFE Lightweight batt insulation for firestopping to ASTM C 612 that provides fire resistance to ASTM E 136 and sound control to ASTM C 423.
			1. Size:
				1. 24 by 48 inches (610 by 1219 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 2 inches (50 mm).
				2. 3 inches (76 mm).
				3. 4 inches (102 mm).
			3. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Smoulder resistance: 0.01 percent to ASTM C 612.
			1. Moisture Absorption: 0.04 percent to ASTM C 1104/C 1104M.
			2. Corrosive Resistance: To ASTM C 665, Corrosive to steel - Pass.
			3. Stainless Steel Stress Corrosion: To ASTM C 795 - Pass.
			4. Density: To ASTM C 303, 4.5 lbs/ft3 (72 kg/m3).

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.

\*\* NOTE TO SPECIFIER \*\* For sound absorption coefficients for different insulation thicknesses, refer to manufacturer's web site at [www.ROCKWOOL.com](http://www.ROCKWOOL.com) .

* + - 1. Acoustical Performance: Sound absorption coefficients to ASTM C 423.
				1. Thickness: 2.0 inch (50 mm), NRC 1.00.
				2. Thickness: 3.0 inch (76 mm), NRC 1.05.
				3. Thickness: 4.0 inch (100 mm), NRC 1.10.
		1. Water Repellent, Semi-Rigid, Mineral Wool Insulation Board for 1 Hour Fire Rated Walls in Metal Building Systems, and other board insulation applications: ROXUL SAFE 65 Non-combustible, rigid, mineral wool fire rated insulation board to ASTM C 612, Type IVB.
			1. Size: Provide to the maximum sizes practical.
				1. 24 by 48 inches (610 by 1219 mm).
				2. 31.5 by 48 inches (800 by 1219 mm).
				3. 32 by 48 inches (813 by 1219 mm).
			2. Thickness:
				1. 3 inches (76 mm).
			3. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Fire Rating:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. 1 hour interior side only fire rating to UL Fire Resistance Directory U654.
				2. 1 hour interior side and exterior fire rating to UL Fire Resistance Directory U658.
				3. 1 hour interior side only fire rating to ULC Fire Resistance Directory W605.
				4. 1 hour interior side and exterior fire rating to ULC Fire Resistance Directory W610.
			1. Thermal resistance R value/1 inch at 75 degrees F: 4.2 h ft2 degrees F/Btu (RSI value/25.4 mm at 24 degrees C: 0.74 m2K/W) to ASTM C 518.
			2. Moisture sorption: 1 percent maximum to ASTM C 1104/C 1104M.
			3. Dimensional stability: 1 percent maximum linear shrinkage at 1200 degrees F (650 degrees C) to ASTM C 356.
			4. Corrosive resistance:
				1. Steel to ASTM C 695: Pass.
				2. Stainless steel to ASTM C 795: Pass.

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.
		1. Water Repellent, Semi-Rigid, Mineral Wool Insulation Board for 2 Hour Fire Rated Walls in Metal Building Systems: ROXUL SAFE 55 Non-combustible, rigid, mineral wool fire rated insulation board to ASTM C 612, Type IVB.
			1. Size: Provide to the maximum sizes practical.
				1. 24 by 48 inches (610 by 1219 mm).
				2. 31.5 by 48 inches (800 by 1219 mm).
				3. 32 by 48 inches (813 by 1219 mm).
			2. Thickness:
				1. 4 inches (102 mm).
			3. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Fire Rating:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. 2 hour interior side only fire rating to UL Fire Resistance Directory U654.
				2. 2 hour interior side and exterior fire rating to UL Fire Resistance Directory U658.
				3. 2 hour interior side only fire rating to ULC Fire Resistance Directory W605.
				4. 2 hour interior side and exterior fire rating to ULC Fire Resistance Directory W610.
			1. Thermal resistance R value/1 inch at 75 degrees F: 4.2 h ft2 degrees F/Btu (RSI value/25.4 mm at 24 degrees C: 0.74 m2K/W) to ASTM C 518.
			2. Moisture absorption: 1 percent maximum to ASTM C 1104/C 1104M.
			3. Dimensional stability: 1 percent maximum linear shrinkage at 1200 degrees F (650 degrees C) to ASTM C 356.
			4. Corrosive resistance:
				1. Steel to ASTM C 695: Pass.
				2. Stainless steel to ASTM C 795: Pass.

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.
		1. Water Repellent, Semi-Rigid, Non-Combustible, Mineral Wool Insulation Board for Exterior Curtain Wall Systems, and other board insulation applications: ROCKWOOL CURTAINROCK Semi-Rigid, Water Repellent, Non- Combustible, Mineral Wool Insulation Board to ASTM C 612, Type IVB.
			1. Size: Provide to the maximum sizes practical.
				1. 24 by 48 inches (610 by 1219 mm).
				2. 24 by 60 inches (610 by 1524 mm).
				3. 36 by 48 inches (610 by 1219 mm).
				4. 36 by 60 inches (610 by 1524 mm).
				5. 48 by 72 inches (1219 by 1829 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 1.5 inches (38 mm).
				2. 2 inches (50 mm).
				3. 2.5 inches (65 mm).
				4. 3 inches (76 mm).
				5. 3.5 inches (89 mm).
				6. 4 inches (102 mm).
				7. 4.5 inches (114 mm).
				8. 5 inches (127 mm).
				9. 6 inches (152 mm).

\*\* NOTE TO SPECIFIER \*\* RFF Facer is optional. Specify the facing appropriate to the product being used and the project conditions. Adding a facing to a product may significantly change the fire characteristics of the product. Verify the flame spread and the smoke developed characteristics of the product with the manufacturer before including the product facing in the specification. Delete if not required for project.

* + - 1. RFF facer: ROCKWOOL RFF FACER Aluminum foil with fiberglass reinforcement.
			2. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Thermal resistance R value/1 inch at 75 degrees F: 4.2 h ft2 degrees F/Btu (RSI value/25.4 mm at 24 degrees C: 0.74 m2K/W) to ASTM C 518.
			2. Moisture absorption: 1 percent maximum to ASTM C 1104/C 1104M.
			3. Dimensional stability: 1 percent maximum linear shrinkage at 1200 degrees F (650 degrees C) to ASTM C 356.
			4. Corrosive resistance:
				1. Steel to ASTM C 695: Pass.
				2. Stainless steel to ASTM C 795: Pass.
			5. Service temperature hot surface performance: 1200 degrees F (650 degrees C) maximum to ASTM C411.
			6. Actual Density: 3.5 lb/ft3 (56 kg/m3) to ASTM C303.

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.

\*\* NOTE TO SPECIFIER \*\* For sound absorption coefficients for different insulation thicknesses, refer to manufacturer's web site at [www.ROCKWOOL.com](http://www.ROCKWOOL.com) .

* + - 1. Acoustical Performance: Sound absorption coefficients to ASTM C 423.
				1. Thickness: 2.0 inch (50 mm), NRC 1.00.
				2. Thickness: 3.0 inch (76 mm), NRC 1.05.
				3. Thickness: 4.0 inch (100 mm), NRC 1.10.
		1. Water Repellent, Semi-Rigid, Non- Combustible, Mineral Wool Insulation Board for Exterior Curtain Wall Systems, and other board insulation applications: ROCKWOOL CURTAINROCK 40 Semi-Rigid, Water Repellent, Non- Combustible, Mineral Wool Insulation Board to ASTM C 612, Type IVB.
			1. Size: Provide to the maximum sizes practical.
				1. 24 by 48 inches (610 by 1219 mm).
				2. 24 by 60 inches (610 by 1524 mm).
				3. 36 by 48 inches (610 by 1219 mm).
				4. 36 by 60 inches (610 by 1524 mm).
				5. 48 by 72 inches (1219 by 1829 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 2 inches (50 mm).
				2. 2.5 inches (65 mm).
				3. 3 inches (76 mm).
				4. 3.5 inches (89 mm).
				5. 4 inches (102 mm).

\*\* NOTE TO SPECIFIER \*\* RFF Facer is optional. Specify the facing appropriate to the product being used and the project conditions. Adding a facing to a product may significantly change the fire characteristics of the product. Verify the flame spread and the smoke developed characteristics of the product with the manufacturer before including the product facing in the specification. Delete if not required for project.

* + - 1. RFF facer: ROCKWOOL RFF FACER Aluminum foil with fiberglass reinforcement.
			2. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Thermal resistance R value/1 inch at 75 degrees F: 4.3 h ft2 degrees F/Btu (RSI value/25.4 mm at 24 degrees C: 0.74 m2K/W) to ASTM C 518.
			2. Moisture absorption: 1 percent maximum to ASTM C 1104/C 1104M.
			3. Dimensional stability: 1 percent maximum linear shrinkage at 1200 degrees F (650 degrees C) to ASTM C 356.
			4. Corrosive resistance:
				1. Steel to ASTM C 695: Pass.
				2. Stainless steel to ASTM C 795: Pass.
			5. Service temperature hot surface performance: 1200 degrees F (650 degrees C) maximum to ASTM C411.
			6. Nominal Density: Minimum 4 lb/ft3 (64 kg/m3) to ASTM C303.

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.

\*\* NOTE TO SPECIFIER \*\* For sound absorption coefficients for different insulation thicknesses, refer to manufacturer's web site at [www.ROCKWOOL.com](http://www.ROCKWOOL.com) .

* + - 1. Acoustical Performance: Sound absorption coefficients to ASTM C 423.
				1. Thickness: 2.0 inch (52 mm), NRC 1.00.
				2. Thickness: 3.0 inch (76 mm), NRC 1.05.
				3. Thickness: 4.0 inch (100 mm), NRC 1.05.
		1. Water Repellent, Semi-Rigid, Non- Combustible, Mineral Wool Insulation Board for Curtain Wall: ROCKWOOL CURTAINROCK 80 Semi-Rigid, Water Repellent, Non- Combustible, Mineral Wool Insulation Board to ASTM C 612, Type IVB.
			1. Size: Provide to the maximum sizes practical.
				1. 24 by 48 inches (610 by 1219 mm).
				2. 24 by 60 inches (610 by 1524 mm).
				3. 36 by 48 inches (610 by 1219 mm).
				4. 36 by 60 inches (610 by 1524 mm).
				5. 48 by 72 inches (1219 by 1829 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 1 inch (25 mm).
				2. 1.5 inches (37 mm).
				3. 2 inches (50 mm).
				4. 2.5 inches (65 mm).
				5. 3 inches (76 mm).
				6. 3.5 inches (89 mm).
				7. 4 inches (102 mm).

\*\* NOTE TO SPECIFIER \*\* RFF Facer is optional. Specify the facing appropriate to the product being used and the project conditions. Adding a facing to a product may significantly change the fire characteristics of the product. Verify the flame spread and the smoke developed characteristics of the product with the manufacturer before including the product facing in the specification. Delete if not required for project.

* + - 1. RFF facer: ROCKWOOL RFF FACER Aluminum foil with fiberglass reinforcement.
			2. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Thermal resistance R value/1 inch at 75 degrees F: 4.3 h ft2 degrees F/Btu (RSI value/25.4 mm at 24 degrees C: 0.74 m2K/W) to ASTM C 518.
			2. Moisture absorption: 1 percent maximum to ASTM C 1104/C 1104M.
			3. Dimensional stability: 2 percent maximum linear shrinkage at 1200 degrees F (650 degrees C) to ASTM C 356.
			4. Corrosive resistance:
				1. Steel to ASTM C 695: Pass.
				2. Stainless steel to ASTM C 795: Pass.
			5. Service temperature hot surface performance: 1200 degrees F (650 degrees C) maximum to ASTM C411.
			6. Nominal Density: 8 lb/ft3 (128 kg/m3) to ASTM C 303.

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.

\*\* NOTE TO SPECIFIER \*\* For sound absorption coefficients for different insulation thicknesses, refer to manufacturer's web site at [www.ROCKWOOL.com](http://www.ROCKWOOL.com) .

* + - 1. Acoustical Performance: Sound absorption coefficients to ASTM C 423.
				1. Thickness: 2.0 inch (50 mm), NRC 1.00.
				2. Thickness: 3.0 inch (76 mm), NRC 1.10.
				3. Thickness: 4.0 inch (100 mm), NRC 1.05.
		1. Semi-Rigid, Stone Wool, Thermal Batt and Blanket Insulation for Steel Stud Wall Applications: ROCKWOOL COMFORTBATT Non-combustible, lightweight, semi-rigid stone wool batt insulation to ASTM C 665, Type 1.
			1. Size: Provide to the maximum sizes practical.
				1. 16 by 48 inches (412 by 1219 mm).
				2. 24 by 48 inches (616 by 1219 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 2.5 inches (65 mm).
				2. 3.5 inches (89 mm).
				3. 6 inches (152 mm).
				4. 7 inches (178 mm).
				5. 8 inches (203 mm).

\*\* NOTE TO SPECIFIER \*\* Listed R value is for 1 inch thick insulation. Contact ROCKWOOL for R values for other thicknesses.

* + - 1. R value: 1 inch at 75 degrees F: 0.125 h ft2 degrees F/Btu (RSI value/25.4 mm at 24 degrees C: 0.71 m2K/W) .
			2. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Thermal Resistance: To ASTM C 518.
			2. Density: To ASTM C 303, 2 lbs/ft3 (32 kg/m3).

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.
		1. Semi-Rigid, Mineral Wool Board Insulation for General Purpose applications: ROCKWOOL ROCKBOARD 40 Non-combustible, semi-rigid, mineral wool fire rated insulation board to ASTM C 612, Type IVA.
			1. Compressive resistance:
				1. At 10 percent: 90 psf (4.3 kPa) to ASTM C165.
				2. At 25 percent: 226 psf (10.8 kPa) to ASTM C165.
			2. Size:
				1. 24 by 48 inches (616 by 1219 mm).
			3. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 1.0 inch (25 mm).
				2. 1.5 inches (38 mm).
				3. 2 inches (50 mm).
				4. 2.5 inches (65 mm).
				5. 3.5 inches (89 mm).
				6. 6 inches (152 mm).

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* + - 1. RFF facer: ROCKWOOL RFF FACER Aluminum foil with fiberglass reinforcement.
			2. Pin perforated facer: ROCKWOOL White pin perforated polypropylene with fiberglass reinforcement.
			3. Black mat facer: ROCKWOOL Black mat with non-woven fiberglass.
			4. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread unfaced: 5.

Smoke developed unfaced: 5.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread unfaced: 5.

Smoke developed unfaced: 5.

* + - 1. Thermal resistance R value/1 inch at 75 degrees F: 4.2 h ft2 degrees F/Btu (RSI value/25.4 mm at 24 degrees C: 0.74 m2K/W) to ASTM C 518.
			2. Moisture absorption: Unfaced 5 percent maximum; with PSP facing 2 perms maximum; when tested to ASTM C 1104/C 1104M.
			3. Dimensional stability: 1 percent maximum linear shrinkage at 1200 degrees F (650 degrees C) to ASTM C 356.
			4. Corrosive resistance:
				1. Steel to ASTM C 665: Pass.
				2. Stainless steel to ASTM C 795: Pass.
			5. Actual Density: 4.0 lb/ft3 (64 kg/m3) to ASTM C 303.

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.

\*\* NOTE TO SPECIFIER \*\* For sound absorption coefficients for different insulation thicknesses, refer to manufacturer's web site at [www.ROCKWOOL.com](http://www.ROCKWOOL.com) .

* + - 1. Acoustical Performance: Sound absorption coefficients to ASTM C 423.
				1. Thickness: 1.0 inch (25 mm), NRC 0.80.
				2. Thickness: 1.5 inch (37 mm), NRC 0.90.
				3. Thickness: 2.0 inch (50 mm), NRC 1.00.
				4. Thickness: 3.0 inch (76 mm), NRC 1.05.
				5. Thickness: 4.0 inch (100 mm), NRC 1.10.
		1. Semi-Rigid, Mineral Wool, Board Insulation for General Purpose applications: ROCKWOOL ROCKBOARD 60 Non-combustible, semi-rigid, mineral wool fire rated insulation board to ASTM C 612, Type IVB.
			1. Compressive resistance:
				1. At 10 percent: 355 psf (17 kPa) to ASTM C165.
				2. At 25 percent: 585 psf (28 kPa) to ASTM C165.
			2. Size:
				1. 24 by 48 inches (616 by 1219 mm).
			3. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 1.0 inch (25 mm).
				2. 1.5 inches (38 mm).
				3. 2 inches (50 mm).
				4. 2.5 inches (65 mm).
				5. 3.5 inches (89 mm).
				6. 6 inches (152 mm).

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* + - 1. RFF facer: ROCKWOOL RFF FACER Aluminum foil with fiberglass reinforcement.
			2. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select CA Standards as applicable.

* + - * 1. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread unfaced: 0.

Smoke developed unfaced: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread unfaced: 0.

Smoke developed unfaced: 0.

* + - 1. Thermal resistance R value/1 inch at 75 degrees F: 4.3 h ft2 degrees F/Btu (RSI value/25.4 mm at 24 degrees C: 0.75 m2K/W) to ASTM C 518.
			2. Moisture absorption: Unfaced 1 percent maximum when tested to ASTM C 1104/C 1104M.
			3. Dimensional stability: 1 percent maximum linear shrinkage at 1200 degrees F (650 degrees C) to ASTM C 356.
			4. Fungi resistance: Passed to ASTM C 1338
			5. Corrosive resistance:
				1. Steel to ASTM C 665: Pass.
				2. Stainless steel to ASTM C 795: Pass.
			6. Actual Density: 6.0 lb/ft3 (96 kg/m3) to ASTM C 303.

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\*\* NOTE TO SPECIFIER \*\* For sound absorption coefficients for different insulation thicknesses, refer to manufacturer's web site at [www.ROCKWOOL.com](http://www.ROCKWOOL.com) .

* + - 1. Acoustical Performance: Sound absorption coefficients to ASTM C 423.
				1. Thickness: 1.0 inch (25 mm), NRC 0.80.
				2. Thickness: 1.5 inch (37 mm), NRC 0.90.
				3. Thickness: 2.0 inch (50 mm), NRC 0.95.
				4. Thickness: 3.0 inch (76 mm), NRC 1.00.
		1. Semi-Rigid, Mineral Wool, Board Insulation for General Purpose applications: ROCKWOOL ROCKBOARD 80 Non-combustible, semi-rigid, mineral wool fire rated insulation board to ASTM C 612, Type IVA.
			1. Compressive resistance:
				1. At 10 percent: 439 psf (21 kPa) to ASTM C165.
				2. At 25 percent: 1065 psf (50 kPa) to ASTM C165.
			2. Size:
				1. 24 by 48 inches (616 by 1219 mm).
			3. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 1.0 inch (25 mm).
				2. 1.5 inches (38 mm).
				3. 2 inches (50 mm).
				4. 2.5 inches (65 mm).
				5. 3.5 inches (89 mm).
				6. 4.0 inches (100 mm).
				7. 5.0 inches (127 mm).
				8. 6 inches (152 mm).
			4. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select CA Standards as applicable.

* + - * 1. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread unfaced: 0.

Smoke developed unfaced: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread unfaced: 0.

Smoke developed unfaced: 0.

* + - 1. Thermal resistance R value/1 inch at 75 degrees F: 4.0 h ft2 degrees F/Btu (RSI value/25.4 mm at 25.4 degrees C: 0.74 m2K/W) to ASTM C 518.
			2. Moisture absorption: Unfaced 1 percent maximum when tested to ASTM C 1104/C 1104M.
			3. Dimensional stability: 1 percent maximum linear shrinkage at 1200 degrees F (650 degrees C) to ASTM C 356.
			4. Fungi resistance: Passed to ASTM C 1338
			5. Corrosive resistance:
				1. Steel to ASTM C 665: Pass.
				2. Stainless steel to ASTM C 795: Pass.
			6. Actual Density: 8.0 lb/ft3 (96 kg/m3) to ASTM C 303.

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.

\*\* NOTE TO SPECIFIER \*\* For sound absorption coefficients for different insulation thicknesses, refer to manufacturer's web site at [www.ROCKWOOL.com](http://www.ROCKWOOL.com) .

* + - 1. Acoustical Performance: Sound absorption coefficients to ASTM C 423.
				1. Thickness: 1.0 inch (25 mm), NRC 0.80.
				2. Thickness: 1.5 inch (37 mm), NRC 0.90.
				3. Thickness: 2.0 inch (50 mm), NRC 0.90.
				4. Thickness: 3.0 inch (76 mm), NRC 0.90.
		1. Mineral Wool, Acoustical and Fire Batt Insulation for Walls and Floors: ROCKWOOL AFB Non-combustible, lightweight, semi-rigid stone wool batt insulation to CAN/ULC S702, Type 1, that provides fire resistance to ASTM E 136 and a sound control to ASTM E 90 and ASTM E 423.
			1. Size: Provide to the maximum sizes practical.
				1. 16 by 48 inches (406 by 1219 mm).
				2. 24 by 48 inches (616 by 1219 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 1.0 inch (25 mm).
				2. 1.5 inches (38 mm).
				3. 2 inches (50 mm).
				4. 2.5 inches (65 mm).
				5. 3.5 inches (89 mm).
				6. 4.0 inches (100 mm).
				7. 5.0 inches (127 mm).
				8. 6 inches (152 mm).
			3. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Acoustical Performance:
				1. Airborne sound transmission loss: To ASTM E 90.
				2. Rating sound insulation: To ASTM E 413.
				3. Sound absorption coefficients: To ASTM E 423.

Thickness: 1.0 inch (25 mm), NRC 0.70.

Thickness: 1.5 inch (37 mm), NRC 0.85.

Thickness: 2.0 inch (50 mm), NRC 0.95.

Thickness: 3.0 inch (76 mm), NRC 1.05.

Thickness: 4.0 inch (100 mm), NRC 1.10.

* + - * 1. Impedance and absorption of acoustic materials: To ASTM E 1050.
			1. Air erosion velocity: 1,000 ft/m maximum to UL 181.
			2. Thermal resistance: To ASTM C518.
			3. Corrosive resistance:
				1. Steel to ASTM C 665: Pass.
				2. Stainless steel to ASTM C 795: Pass.
			4. Actual Density: Thickness below 3 inches 2.8 lb/ft3 (45 kg/m3) to ASTM C 303.
			5. Actual Density: Thickness 3 inches and above 2.5 lb/ft3 (45 kg/m3) to ASTM C 303.
		1. Mineral Wool, Acoustical and Fire Batt Insulation for Walls and Floors: ROCKWOOL AFB evo, Non-combustible, lightweight, semi-rigid stone wool batt insulation to CAN/ULC S702, Type 1, that provides fire resistance to ASTM E 136 and a sound control to ASTM E 90 and ASTM E 423.
			1. Size: Provide to the maximum sizes practical.
				1. 16 by 48 inches (406 by 1219 mm).
				2. 24 by 48 inches (616 by 1219 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 1.0 inch (25 mm).
				2. 1.5 inches (38 mm).
				3. 2 inches (50 mm).
				4. 2.5 inches (65 mm).
				5. 3.5 inches (89 mm).
				6. 4.0 inches (100 mm).
				7. 5.0 inches (127 mm).
				8. 6 inches (152 mm).
			3. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 0.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 0.

* + - 1. Acoustical Performance:
				1. Airborne sound transmission loss: To ASTM E 90.
				2. Rating sound insulation: To ASTM E 413.
				3. Sound absorption coefficients: To ASTM E 423.

Thickness: 1.0 inch (25 mm), NRC 0.70.

Thickness: 1.5 inch (37 mm), NRC 0.85.

Thickness: 2.0 inch (50 mm), NRC 0.95.

Thickness: 3.0 inch (76 mm), NRC 1.05.

Thickness: 4.0 inch (100 mm), NRC 1.10.

* + - * 1. Impedance and absorption of acoustic materials: To ASTM E 1050.
			1. Air erosion velocity: 1,000 ft/m maximum to UL 181.
			2. Thermal resistance: To ASTM C518.
			3. Corrosive resistance:
				1. Steel to ASTM C 665: Pass.
				2. Stainless steel to ASTM C 795: Pass.
			4. Thickness below 3 inches Actual Density: 2.8 lb/ft3 (45 kg/m3) to ASTM C 303.
			5. Thickness 3 inches and above Actual Density: 2.5 lb/ft3 (45 kg/m3) to ASTM C 303.
		1. Blanket and Batt Firestopping Insulation for Exterior Walls of Metal Buildings: ROCKWOOL PLUS MB, Non-combustible, blanket insulation for exterior wall metal building construction to ASTM C553, Types I, II, and III.
			1. Size:
				1. 24.25 by 48 inches (616 by 1219 mm).
			2. Thickness: Provide to the thicknesses indicated on the Drawings.
				1. 2 inches (50 mm).
				2. 2.5 inches (65 mm).
				3. 3.0 inches (76 mm).
				4. 3.5 inches (89 mm).
				5. 4.0 inches (100 mm).
				6. 5.0 inches (127 mm).
				7. 6 inches (152 mm).

\*\* NOTE TO SPECIFIER \*\* Listed R value is for 1 inch thick insulation. Contact ROCKWOOL for R values for other thicknesses.

* + - 1. R value: 1 inch at 75 degrees F: 4.0 h ft2 degrees F/Btu (RSI value/0.71 mm at 24 degrees C: 0.71 m2K/W).
			2. Fire performance:

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Non-combustibility: To ASTM E 136.
				2. Non-combustibility: To CAN/ULC S114.

\*\* NOTE TO SPECIFIER \*\* Select US or CA Standards as applicable.

* + - * 1. Surface Burning Characteristics: To ASTM E 84.

Flame spread: 0.

Smoke developed: 5.

* + - * 1. Surface Burning Characteristics: To CAN/ULC S102.

Flame spread: 0.

Smoke developed: 5.

* + - 1. Dimensional stability: 0.74% linear shrinkage at 450 degrees F (232 degrees C) to ASTM C356.
			2. Moisture Absorption: 0.028 percent to ASTM C 1104/C 1104M.
			3. Thermal Resistance: To ASTM C 518.
			4. Corrosive Resistance: To ASTM C 665, Corrosive to steel - Pass.
			5. Stainless Steel Stress Corrosion: To ASTM C 795.
			6. Density: To ASTM C 303, 2.0 lbs/ft3 (32 kg/m3).

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* + - 1. Recycled Content: 40 percent minimum.
			2. Recycled Content: 16 percent minimum.
	1. ACCESSORlES
		1. Mechanical fasteners in accordance with insulation manufacturer's written recommendations.
		2. Insulation Clips: in accordance with manufacturer's written recommendations.
		3. Adhesive: All purpose construction adhesive in accordance with insulation manufacturer's written recommendations.
		4. Foundation Sealing Compound: Bitumen sealing compound in accordance with Section 07 90 00 - Joint Protection.
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly prepared.
		2. Ensure surfaces are free of snow, ice, frost, grease and other deleterious materials.
		3. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Clean surfaces thoroughly prior to installation.
		2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
	3. INSTALLATION

\*\* NOTE TO SPECIFIER \*\* Refer to the insulation manufacturer's current installation guide for detailed information regarding installation

* + 1. General:
			1. Install in accordance with manufacturer's written recommendations.
			2. Install insulation to maintain continuity of thermal protection to building elements and spaces.

\*\* NOTE TO SPECIFIER \*\* Use the following paragraph when insulation is being used as part of a firestopping system.

* + - 1. Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

\*\* NOTE TO SPECIFIER \*\* For following paragraph, verify clearances with local building regulations, safety codes and authorities having jurisdiction.

* + - 1. Keep insulation minimum 3 inches (75 mm) from heat emitting devices such as recessed light fixtures, and minimum 2 inches (50 mm) from sidewalls of chimneys and vents.

\*\* NOTE TO SPECIFIER \*\* Use the following paragraph when specifying installation of board insulation for exterior cavity walls

* + - 1. Install Exterior Cavity Wall insulation board in accordance with insulation manufacturer's written recommendations.

\*\* NOTE TO SPECIFIER \*\* Use the following paragraph when specifying board insulation for foundations.

* + - 1. Installation of Insulation Board for Foundations: Install insulation board on foundation using all purpose construction adhesive in accordance with insulation manufacturer's written recommendations.

\*\* NOTE TO SPECIFIER \*\* Use the following paragraph when specifying board insulation for metal sandwich panel use.

* + - 1. Installation of Insulation Board for Metal Sandwich Panel Systems: Install insulation board in accordance with insulation manufacturer's and metal sandwich panel manufacturer's written recommendations.

\*\* NOTE TO SPECIFIER \*\* Use the following paragraph when specifying board insulation for curtain wall applications.

* + - 1. Installation of Insulation Board for Curtain Wall Systems: Install insulation board in accordance with insulation manufacturer's and curtain wall manufacturer's written recommendations.

\*\* NOTE TO SPECIFIER \*\* Use the following paragraph when specifying board insulation for general purpose applications.

* + - 1. Installation of Insulation Board for General Purpose Applications: Install insulation board in accordance with insulation manufacturer's and curtain wall manufacturer's written recommendations.
				1. Install insulation board using all-purpose construction adhesive in accordance with insulation manufacturer's written recommendations.
				2. Install insulation board using mechanical fasteners in accordance with insulation manufacturer's written recommendations.
				3. Attach insulation board with 1.5 inches concrete nails and seal with bitumen sealing compound.

\*\* NOTE TO SPECIFIER \*\* Use the following paragraph when acoustical insulation is being used as part of a sound absorbing system.

* + - 1. Seal joints with acoustical joint sealant in accordance with Section 07 91 13 - Compression Seals.

\*\* NOTE TO SPECIFIER \*\* Use the following paragraph when Field Quality Control Field Inspection is specified. Delete if not applicable.

* + - 1. Do not enclose insulation until before Field Quality Control inspection and approval.
	1. FIELD QUALITY CONTROL

\*\* NOTE TO SPECIFIER \*\* Include the following paragraphs if manufacturers are to provide field quality control with onsite personnel for instruction or supervision of product installation, application, erection or construction.

* + 1. Field Inspection: Coordinate field inspection in accordance with Section 01 45 16.13 - Contractor Quality Control Quality Control.
			1. Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product installation review in accordance with manufacturer's instructions.
			2. Report any inconsistencies from manufacturer's recommendations immediately to the Architect and Contractor.
			3. Submit reports to Architect and Contractor within 3 days of visit.
	1. CLEANING
		1. Progress Cleaning: Perform cleanup as work progresses [in accordance with Section 01 74 16 - Site Maintenance.
	2. PROTECTION
		1. Protect installed products until completion of project.
		2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION