Building Envelope Design by Roxul® (BEDR™)

CurtainRock® and Roxul SAFE®

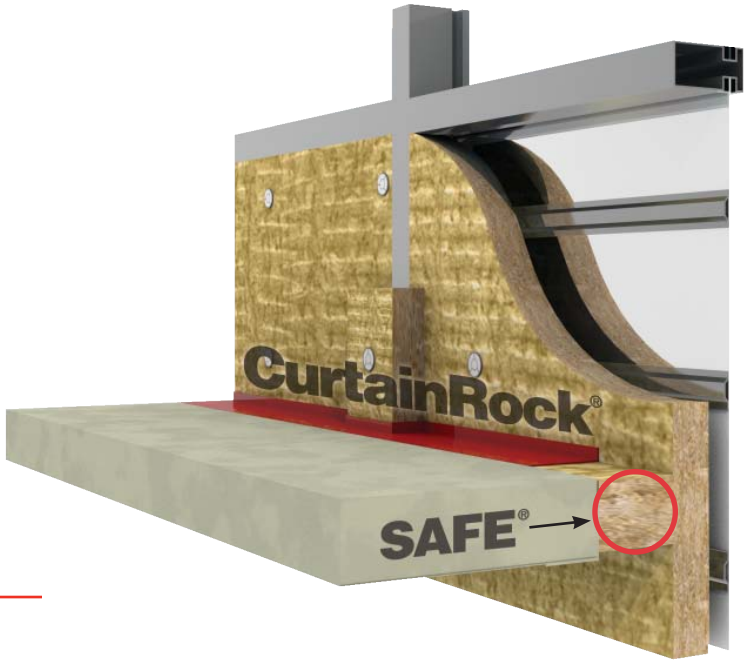
Insulation for Curtain Wall Systems

Ritz-Carlton Project, Toronto, ON
Roxul CurtainRock® and Roxul SAFE®

ROXUL®
The Better Insulation

Superior Protection and Performance in a Curtain Wall System

- ✓ Fire Resistant
- ✓ Long-Term Stable R-Value
- ✓ Sound Absorbent
- ✓ Water Repellent
- ✓ Environmentally Sustainable



Components: Concrete Floor Slab, SAFE®, Fire sealant, Mullion cover – (CurtainRock®), CurtainRock®, Transom, Stiffeners, Spandrel panel.

SAFE®

Roxul SAFE® is a lightweight, semi-rigid stone wool insulation that provides superior fire resistance and sound control. SAFE is UL and Intertek approved as a forming material for numerous fire stop systems. SAFE is designed to fill perimeter gaps between concrete floor slabs and exterior wall systems, between firewalls and ceiling slabs, and around conduit pipes and duct openings through walls and floor slabs.

SAFE is always used in conjunction with a fire sealant to prevent passage of fire and smoke from one floor to the next.

CurtainRock®

CurtainRock® is a lightweight, semi-rigid stone wool insulation board designed for curtain wall systems. Roxul offers CurtainRock®, CurtainRock® 40, and CurtainRock® 80 to meet a wide variety of curtain wall specifications.

Product Specifications

Product	Dimensions W x L	Thickness							
		1.5"	2"	2.5"	3"	3.5"	4"	5"	6"
CurtainRock®	24" x 48" (610 mm x 1219 mm)	✓	✓	✓	✓	✓	✓	✓	✓
	24" x 60" (610 mm x 1524 mm)		✓		✓		✓	✓	
CurtainRock® 40/80	24" x 48" (610 mm x 1219 mm)		✓	✓	✓	✓	✓		
	36" x 48" (914 mm x 1219 mm)		✓	✓	✓	✓	✓		
	36" x 60" (914 mm x 1524 mm)		✓	✓	✓	✓	✓		
	72" x 48" (1829 mm x 1219 mm)		✓	✓	✓	✓	✓		
SAFE®	24" x 48" (610 mm x 1219 mm)		✓		✓		✓		

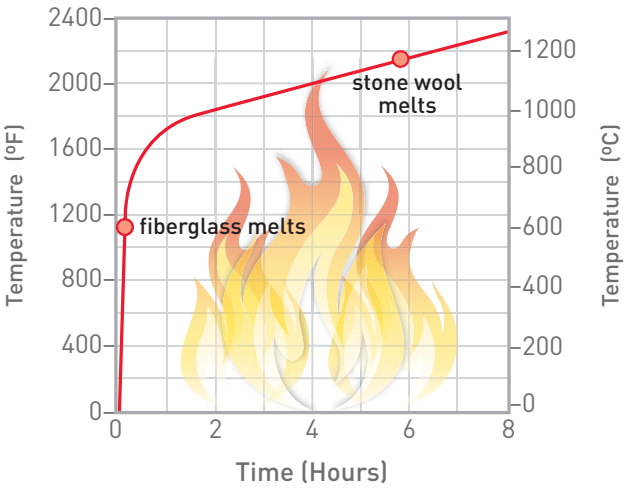
• Custom sizes available

Fire Resistance

CurtainRock® is non-combustible and fire-resistant. CurtainRock does not develop smoke or promote flame spread when exposed to fire, providing a critical line of defense in fire protection.

Roxul stone wool products have an extremely high melting point of 2150 °F (1177 °C). When used in combination with Roxul SAFE®, CurtainRock® 40 and CurtainRock® 80 provide a comprehensive fire-stopping system that has been UL/ULC tested and approved for perimeter fire containment systems.

Temperature Development in a Standard Fire (ASTM E119)



Designed by James K. M. Cheng Architects Inc., the visually stunning Living Shangri-La hotel, located on the Vancouver waterfront, was built using CurtainRock® and Roxul SAFE® products as its specified insulation.

Fire Performance

Product	Specification	Test	Result
SAFE®, CurtainRock® CurtainRock® 40/80	ASTM E 136	Behaviour of Materials at 750 °C (1382 °F)	Non-Combustible
SAFE®, CurtainRock® CurtainRock® 40/80	CAN4 S114	Test for Non-Combustibility	Non-Combustible
SAFE®, CurtainRock® CurtainRock® 40/80	ASTM E 84(UL 723) and CAN/ULC S102	Surface Burning Characteristics	Flame Spread = 0 Smoke Developed = 0
CurtainRock® 40/80	ASTM E2307/E119	Perimeter Fire Barrier Systems	Complies
SAFE®	CAN4 S115M	Standard Test Method/Fire Stop Systems	Complies
SAFE®	CAN/ULC-S129	Smoulder Resistance	0.01%

Thermal Resistance

The R-value of Roxul insulation will not change over time because stone wool is not produced with blowing agents, which off-gas and result in lower thermal performance. Not only is the thermal performance of Roxul insulation maintained over its lifetime, but the wall's thermal performance remains consistent because Roxul products are dimensionally stable.

Roxul insulation will not expand or contract due to temperature variances in the curtain wall system. These attributes result in optimal thermal performance of a building envelope.

Developer Monterey Park used Roxul CurtainRock® insulation for its recently opened 75,000 sq. ft. commerical building in Brampton, Ontario.

Thermal Performance

Product	Specification	Test	Result
CurtainRock®/40/80	ASTM C 518(C 177)	R-value/inch @ 75 °F	4.2 hr.ft².F/BTU
		RSI value/25.4 mm @ 24 °C	0.74 m²K/W

THE RITZ-CARLTON

Putting on the Ritz

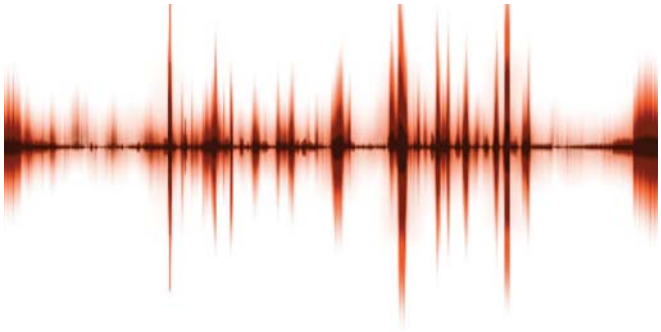
The elegant and post-modern 53 storey Ritz-Carlton hotel/condominium in Toronto was built using more than 30,000 sq.ft of CurtainRock® and Roxul SAFE® insulation.

Roxul insulation is recognized and trusted by top architects and contractors across North America who specify our products for energy efficiency, sustainability, fire protection, water resistance, and sound control.

Minimizing Noise with Superior Sound Absorption

CurtainRock® demonstrates superior sound attenuation characteristics. The unique multi-directional fiber structure and high density effectively traps and dissipates sound waves, reducing noise transmission into and out of the building.

Roxul SAFE® shares the same unique fiber structure and density, also allowing for greater sound attenuation.



In addition to superior sound absorption properties, Roxul CurtainRock® and Roxul SAFE® are frequently specified for a variety of commercial curtain wall applications.

SAFE® – Acoustical Performance

ASTM C 423 CO-EFFICIENTS AT FREQUENCIES							
Thickness	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
2.0	0.26	0.68	1.12	1.10	1.03	1.04	1.00
3.0	0.63	0.95	1.14	1.01	1.03	1.04	1.05
4.0	1.03	1.07	1.12	1.04	1.07	1.08	1.10

CurtainRock® Acoustical Performance

ASTM C 423 CO-EFFICIENTS AT FREQUENCIES							
Thickness	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
2.0	0.26	0.68	1.12	1.10	1.03	1.04	1.00
3.0	0.63	0.95	1.14	1.01	1.03	1.04	1.05
4.0	1.03	1.07	1.12	1.04	1.07	1.08	1.10

CurtainRock® 40 – Acoustical Performance

ASTM C 423 CO-EFFICIENTS AT FREQUENCIES							
Thickness	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
2.0	0.26	0.71	1.14	1.09	1.04	1.03	1.00
3.0	0.65	0.94	1.13	1.07	1.06	1.04	1.10
4.0	0.92	1.04	1.07	1.07	1.07	1.08	1.05

CurtainRock® 80 – Acoustical Performance

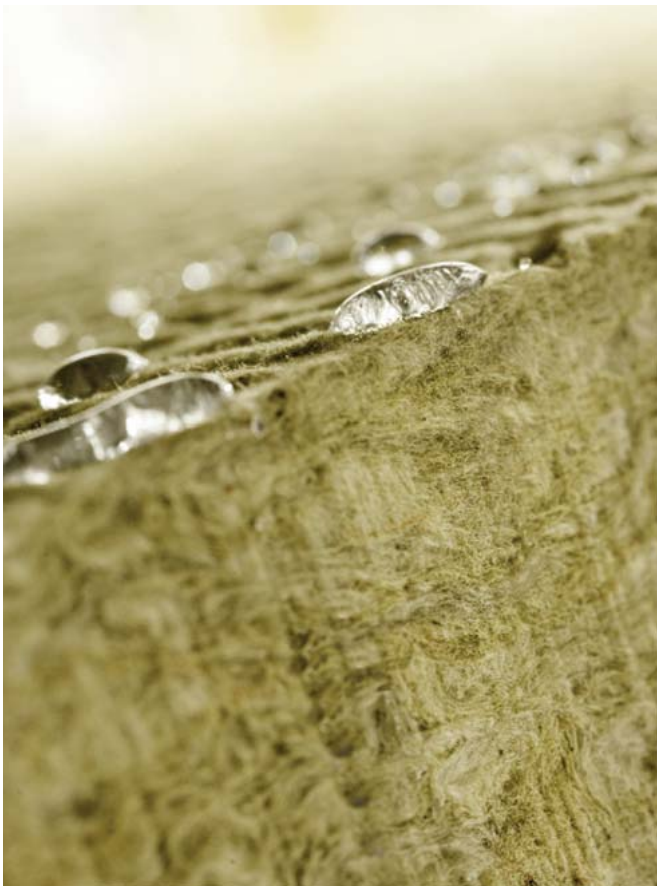
ASTM C 423 CO-EFFICIENTS AT FREQUENCIES							
Thickness	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
2.0	0.39	0.84	1.08	1.01	1.02	1.01	1.00
3.0	0.68	0.92	1.08	1.03	1.03	1.03	1.10
4.0	1.00	0.95	1.06	1.04	1.06	1.08	1.05

Excellent Moisture Management Features

Roxul CurtainRock® and Roxul SAFE® are inorganic and therefore do not rot, corrode or promote fungi, mold and bacterial growth.

Both CurtainRock® and SAFE® are water repellent, yet vapor permeable (30-40 perms). These products resist the infiltration of water into the insulation layer and facilitate the drainage of water out of the system to enhance the drying potential of curtain wall assemblies.

This unique vapor permeable quality of Roxul's curtain wall insulation allows for an increased potential for drying "breathability" without trapping water in the wall assembly.



Moisture Resistance

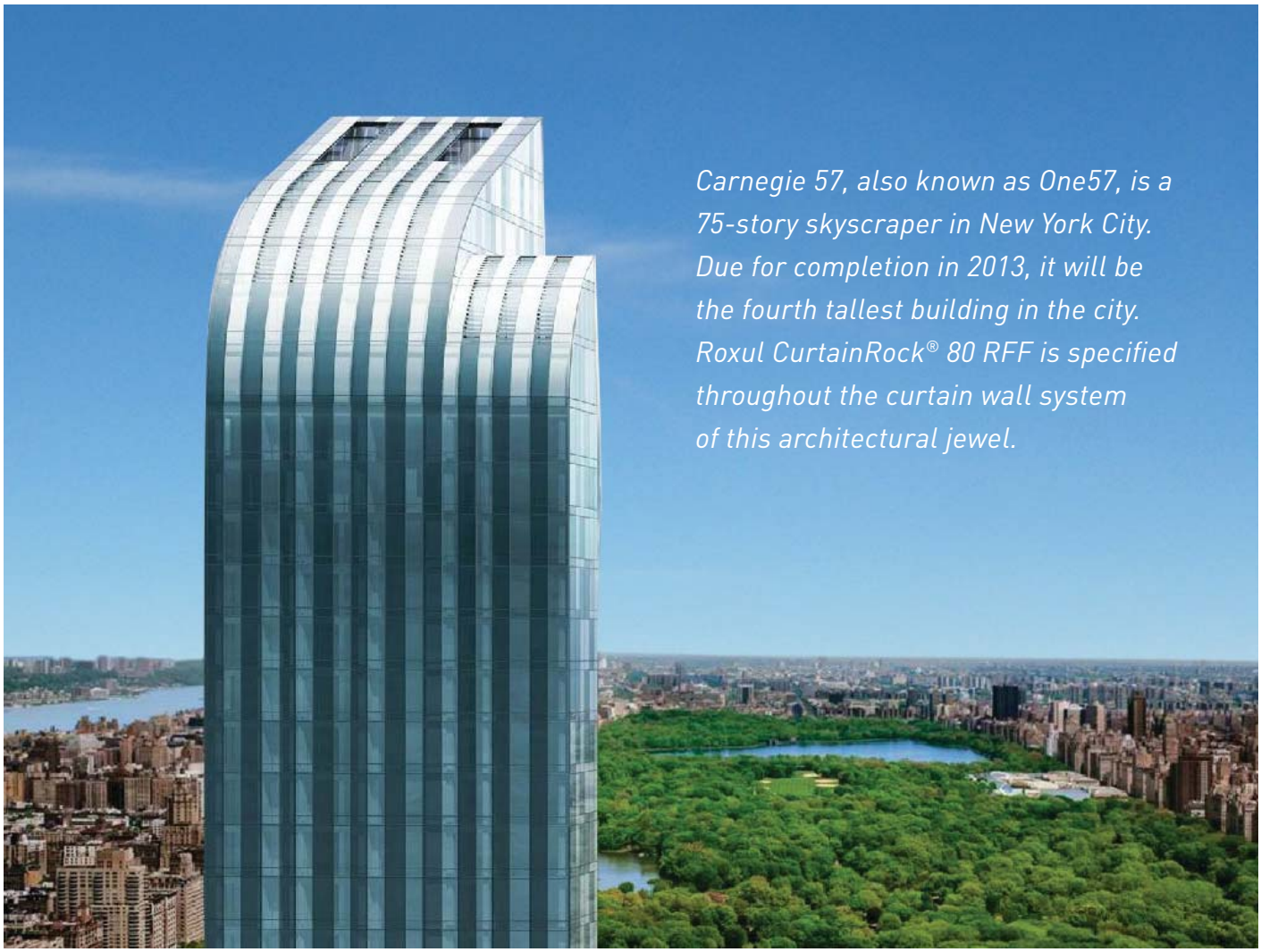
Product	Specification	Test	Result
CurtainRock®/40 SAFE®, CurtainRock® 80	ASTM C 1104	Moisture Sorption	0.01% 0.04%

Corrosive Resistance

Product	Specification	Test	Result
CurtainRock® CurtainRock® 40/80	ASTM C 665	Corrosiveness to Steel	Pass
CurtainRock® CurtainRock® 40/80	ASTM C 795	Stainless Steel Stress Corrosion Specification as per Test Methods C871 and C692: U.S. Nuclear Regulatory Commission, Reg. Guide #1.36: U.S. Military Specifications MIL-I-24244 (all versions including B and C)	Conforms

Facing Options To Meet Any Application Requirement

Roxul CurtainRock® products are available with or without reinforced foil facing (RFF). For example, CurtainRock® 80 RFF is often used in fire rated assemblies, for aesthetics behind glass, and as a vapor barrier. CurtainRock® 40 and CurtainRock® 80 are approved for use as a component in UL classified perimeter fire containment systems.



Carnegie 57, also known as One57, is a 75-story skyscraper in New York City. Due for completion in 2013, it will be the fourth tallest building in the city. Roxul CurtainRock® 80 RFF is specified throughout the curtain wall system of this architectural jewel.

A Global Leader

Roxul Inc. is part of Rockwool International, the largest producer of stone wool insulation, which is made from natural basalt rock and recycled material.

Rockwool International was founded in 1909 and today operates worldwide with more than 8,500 employees, with 25 factories across three continents.

Rockwool has more than 40 years experience in developing and manufacturing advanced wall system products. For more than 20 years, Roxul has been serving the North American market.

In addition to curtain wall and fire-stopping insulation for commercial construction, Roxul also manufactures a range of other premium insulation products for multiple applications.

Roxul is the Better Insulation

Roxul CurtainRock® and SAFE® are innovative insulation products offering a world of green features. When Roxul is the specified insulation, green building developers can earn a variety of LEED® (Leadership in Energy and Environmental Design) points across four key categories toward sustainable development.

Environmentally Sustainable

Our stone wool production process utilizes some of the most advanced technology available. The Roxul facility is designed to capture and recycle rainwater, reduce energy consumption, and create zero waste to landfill by recycling raw materials back into the production process.

Roxul insulations are created using naturally occurring, inorganic raw materials and materials with a high-recycled content. Stone wool insulation is non-combustible and achieves its thermal performance without the use of blowing agents. The products do not off-gas and are fully recyclable, therefore contributing to a sustainable environment.

Roxul is pleased to have third-party certification of our products' recycled content for our Milton facility, completed by **ICC-ES SAVE**™. All Roxul products produced in the Milton facility contain a minimum of **75% recycled content.** Our Milton facility is certified to produce product containing up to 93% recycled content. For further details, contact your Roxul Sales Representative. Roxul products produced in our Grand Forks facility are currently under ICC-ES SAVE™ Certification review. Please visit **www.roxul.com** for the latest information.

ICC ES SAVE™

HIGH RECYCLED CONTENT • RECYCLABLE •
*Contact us for details.

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