Building Envelope Design using ROXUL® (BEDR™)

ROCKBOARD® PG

Insulation for Parking Garage Applications

ROXUL
The Better Insulation

A Bright, Quiet and Energy Efficient Solution for Parking Garages

All ROXUL® stone wool insulation has long-term stable R-value, is sound absorbent, non-combustible, water repellent, and environmentally sustainable.

Best known for its thermal and acoustical properties, the ROCKBOARD® family of products is available in various densities to support different applications. ROCKBOARD® PG and ROCKBOARD® PG Pin Perfembraces these core benefits and is designed specifically for parking garage applications; incorporating an additional reinforced white polypropylene facing.

Effective and Functional

Traditionally parking garages have not been designed for looks but for function. Dark concrete or metal underdecking has graced the walls and ceilings of these areas and even the thought of entering this space can feel unsafe or uncomfortable. In addition, low frequency noise emanating from these areas can affect the indoor environment. ROCKBOARD PG provides an effective sound and thermal barrier while the reflective facing offers a clean bright solution to increase the overall aesthetic.

- ✔ Vapor Permeable
- ✔ Sound Absorbent
- ✔ Energy Efficient
- ✔ Non-combustible
- ✔ Environmentally Sustainable
- ✔ Water Repellent
- ✔ Stable Long-Term R-Value

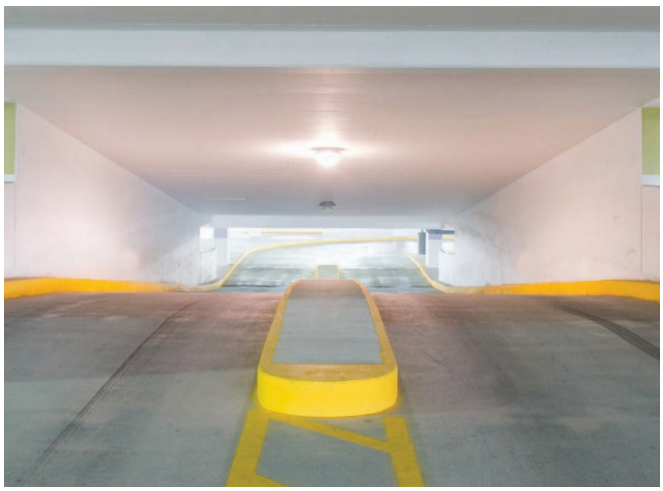
Energy Efficiency & Thermal Performance

Increasing the light reflectivity of the walls and ceilings means that fewer lights are needed and the annual electricity consumption required to illuminate the area is reduced*.

Stone wool is dimensionally stable and maintains its proportions under all conditions. Unlike glass wool it will not slump, condense or absorb moisture over time. It will also not expand or contract with temperature fluctuations like spray polyurethane foam. This stability allows for sustained, long-term thermal performance versus other insulating materials.

Thermal Resistance

ASTM C 518 (C 177)	R-value/inch @ 75°F	4.1 hr.ft².F/Btu
	RSI value/25.4 mm @ 24°C	0.72 m²K/W



ROCKBOARD PG was used in this shopping centre parking garage to brighten the space.

* Case Study- Lamtec White Facings Reduces Lighting Investments Cost and Annual Electricity Costs (Lamtec® Corp) Light Reflectance Determined in Testing By Atlas Services Group On May 3rd, 2011.

Acoustic Performance

ROXUL® insulation has two physical characteristics that assist with the acoustical performance; one being the multi-directional fiber orientation and the other is a factor of its density.

ROCKBOARD® PG and ROCKBOARD® PG PinPerf are excellent at absorbing Low Frequencies Sound (LFS) transmissions, characteristic of vehicles in a parking garage, reducing incandescent (residual) noise which is not measured by standard STF ratings.

Acoustical Performance

ASTM C423 COEFFICIENTS AT FREQUENCIES

Thickness	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NRC
1.0"	0.08	0.23	0.66	0.93	1.02	1.02	0.70
1.5"	0.15	0.47	0.98	1.06	1.02	1.02	0.90
2.0"	0.26	0.68	1.14	1.13	1.06	1.07	1.00
3.0"	0.62	1.03	1.20	1.10	1.08	1.10	1.10
4.0"	1.07	1.01	1.07	1.06	1.07	1.06	1.05

Water Vapor Permeance

ROCKBOARD PG has an ASTM E96 standard permeance of 0.02% where the ROCKBOARD PG Pin Perf has a permeance of >10%. This number is not definitive given there are various factors which would affect this rating. The pin perforations occur in the facer at roughly 16 pinholes per inch, which allows the product more breathability. Whether to use a pin perforated facer or not is dependent on various criteria including: climate zone, whether the parking area is heated or not, above or below ground temperatures and thickness of the material desired. Insulation boards should be mechanically fastened using standard screws or pins and washers.

Product Details

Product	Permeance of Facer	Density	Standard Thicknesses	Standard Dimensions W X L	Reflectivity of Facer
ROCKBOARD® PG	ASTM E96 Permeance (WVTR) 0.02% (grains/hr.ft².in Hg)	ASTM C 612 Actual 3.5 lbs/ft³, (56kg/m³)	2",3",4",5", 6"	24" x 48" 610mm x 1219 mm)	ASTM C523- 85% Light reflectivity (energy saving- light installation up to 20%)
ROCKBOARD® PG Pin Perf	Permeance (WVTR) >10 perm (grains/hr.ft².in Hg)			36 "x 48" (914mm x 1219 mm)	

Fire Resistance

ROCKBOARD® products are non-combustible and meet ASTM E 136 and CAN4 S114 standards. ROXUL® stone wool has an extremely high melting point of 2150 °F (1177 °C) compared to fiberglass at ~1112 °F (~600 °C), thermoplastic insulation at 160-600 °F (~70-315 °C). ROCKBOARD products do not produce toxic smoke in the event of a fire and are an excellent barrier against the spread of flames to help protect occupants and reduce property damage.

Fire Performance of ROCKBOARD® PG & ROCKBOARD® PG Pin Perf

ASTM E 136	Behaviour of Material at 750°C (138°F)	Non-Combustible
CAN4 S114	Test for Non-Combustability	Non-Combustible
ASTM E 84 (UL 723) unfaced	Surface Burning Characteristics	Flame Spread = 5 Smoke Developed = 5
ASTM E 84 (UL 723) PSP facing	Surface Burning Characteristics	Flame Spread = 25 Smoke Developed = 50
CAN/ULC S102 unfaced	Surface Burning Characteristics	Flame Spread = 5 Smoke Developed = 10
CAN/ULC S102 PSP facing	Surface Burning Characteristics	Flame Spread = 25 Smoke Developed = 50

ROXUL is the Better Insulation

ROXUL ROCKBOARD PG and ROCKBOARD PG PinPerf are an innovative insulation 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.

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 8,800 employees, with 27 factories across 16 countries.

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 ROCKBOARD® PG for commercial parking garage applications, ROXUL also manufactures a range of other premium insulation products for commercial, industrial, and residential buildings.

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 40% recycled content. ROXUL products produced in our Grand Forks facility are currently awaiting ICC-ES Save™ certification. ROXUL demonstrates its commitment to the environment through eco-friendly insulation products and green manufacturing processesFor further details contact your ROXUL sales representative. Please visit www.roxul.com for the latest information.

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