

NOREX® LEED® Canada-CI v1.0

Norbec Architectural®: **INNOVATING AND OFFERING VALUE-ADDED SOLUTIONS TO IT'S CUSTOMER'S NEEDS**

Norbec Architectural was created in 1999 under the name of Norlam. The company began by making prefabricated architectural panels with expanded polystyrene core, on which the galvanized steel is flattened. It was then an innovative solution for the shell of buildings (ships).

Indeed, NORLAM's panels offered an enhanced look, quick installation and a high energy efficiency compared to a traditional wall of corrugated metal and insulating wool.

After many growing years, the company bought a state-of-the-art unit of production which allowed to produce panel with polyisocyanurate core (polyurethane) or mineral fiber core. All located in a building exclusively designed for this purpose. Norex and Noroc products were born.

As an economic and innovative alternative, NORSERIES provides high-performance custom responses that far outstrip conventional construction methods.

Norlam : Panel with expanded polystyrene core, versatile and offering an unrivalled price-quality ratio.

Norex : Most advanced and high-performance panel with polyisocyanurate core (polyurethane) which responds to more specific needs.

Noroc : Panel with mineral fiber core which blends exceptional fire-resistance properties with cutting-edge innovations.

***Norbec Architectural** is still growing by expanding his market every day and innovating persistently, always keeping his quality standards very high. Norbec's products contribute to the obtention of LEED®'s credit and **Norbec Architectural** is proud to participate in the conception of green buildings leading to a reduction of energy consumption. With your needs in mind, the Norbec Group is committed to providing you with unparalleled solutions through our ongoing program of research and development.*



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NOREX®

PANEL WITH POLYISOCYANURATE CORE (polyurethane)

Supported by cutting-edge technology, Norex® is indisputably the most advanced panel in the series.

High-performance Norex® responds to more specific needs and is offered in three configurations: Norex® -L, Norex® -H, Norex® -S

NOREX® ADVANTAGES

- ✓ Offset joint with concealed fasteners
- ✓ Stable thermal resistance over time
- ✓ Integrated pressure-equalized rainscreen
- ✓ Best performing anchoring system on the market
- ✓ Exclusive fastener system for anchoring noble materials, decorative facings and architectural elements
- ✓ Elimination of thermal bridges
- ✓ Enhanced resistance to wind and tear-out
- ✓ Lower installation time and costs
- ✓ Insulation and finish : no additional steps
- ✓ Contains up to 25 % recycled material

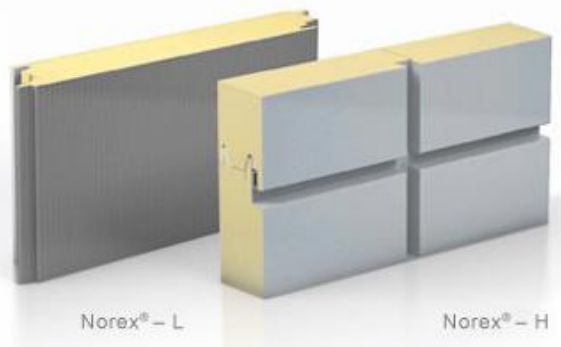
Basic uses/ related uses

- Architectural composite panel designed for the construction of exterior building walls, interior partitions and suspended ceiling.
- For use in a wide variety of applications, including industrial and commercial buildings, cold-storage buildings, sports centers.
- Interior partitions.
- Suspended ceilings with limited load bearing capacity.



PRODUCTS | NORSERIES | NOREX®

**PANEL WITH POLYISOCYANURATE
CORE (polyurethane)**



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A positive impact with LEED® Canada CI v 1.0

With a growing demand for sustainability in the design and operation of buildings from all key stakeholders in North America, the Leadership in Energy and Environmental Design (**LEED**) green building rating system is helping building owners and industry professionals walk the talk.

The following product data outlines **the potential contribution of NORBEC products** for credit achievement under the **LEED Canada-CI v1.0** (Commercial Interiors) which is a reference for tenants in the sustainable improvements market. It is the established system for high performance sustainable interiors that are healthy and productive for the employees, less costly to maintain and with a lower ecological footprint. LEED Canada-CI gives the opportunity to the tenants and the designers, who don't always have the control on building opérations, to make sustainable choices.

The certification levels are:

Certified:	21 points
Silver:	27 points
Gold:	32 points
<u>Platine:</u>	<u>42 points</u>
Available points:	57 points

Summary of the LEED® Canada-CI v1.0					NOREX®
Categories		Prerequisite	Credits	Points	Potential Contribution
SS	Sustainable Sites	0	3	7	0 points
WE	Water Efficiency	0	1	2	0 points
EA	Energy and Atmosphere	3	4	12	2 points
MR	Materials and Ressources	1	7	14	8 points
IEQ	Indoor Environmental Quality	2	8	17	3 points
ID	Innovation and Design	0	2	5	2 points
Total		7	25	57	Up to 15 points

The use of this product may contribute to earn points for the LEED® credits mentioned above. However, since it is the building that gets certified and not its components, they cannot guarantee the building certification.

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Summary of NOREX Panels Contribution to LEED® Canada-CI v1.0

Credits	Durable strategies	Potential points	Credit relevance	Credit requirements	Contribution and compliance of NOREX Panels
Energy and Atmosphere (EA)					
EAp2	Minimum Energy Performance	0 (prerequisite)	Direct	Design portions of the building as covered by the tenant's scope of work to comply with ASHRAE/IESNA Standard 90.1-2004 or the local energy code, whichever is more stringent.	The Norex architectural panels from Norbec Architectural are used for construction of cold chambers and can contribute to this prerequisite with their R factor depending on their thickness between 2 and 6 inches. For the polyisocyanurate foam insulation, the R factor varies between R14.2 and R42.6 (depending on the specifications). The Norex panels offer good air tightness and eliminate thermal bridges within the wall, which could optimise the overall building energetic performance.
EAc1	Optimize Energy Performance EAc1.3 HVAC	1 -2 points	Direct	Credit EAc1 also includes the following elements: EAc1.1- Lighting Power (1 to 3 points) EAc1.2- Lighting Controls (1point) EAc1.4- Equipment & Appliances (1 to 2 points) EAc1.3 HVAC Option A: Implement one or both of the following strategies: Equipment Efficiency (1point) et/ou Appropriate Zoning and Controls (1 point). Option B: Reduce design energy cost compared to the energy cost budget for regulated energy components described in the requirements of ASHRAE/IESNA Standard 90.1- 2004. (1 à 2 points)	The Norex architectural panels from Norbec Architectural are used for construction of cold chambers and can contribute to this prerequisite with their R factor depending on their thickness between 2 and 6 inches. For the polyisocyanurate foam insulation, the R factor varies between R14.2 and R42.6 (depending on the specifications). The Norex panels offer good air tightness and eliminate thermal bridges within the wall, which could optimise the overall building energetic performance.
Materials & Ressources (MR)					
MRC2.1	Construction Waste Management	1	Indirect	Develop and implement a Construction Waste Management Plan, quantifying material diversion goals. Recycle and/or salvage at least 50% of construction, demolition and packaging debris. Calculation may be done by weight or volume, but must be consistent throughout.	The use of prefabricated Norbec Architectural panels helps minimising construction waste and can therefore contribute to this credit. A pallet refund policy has been established by Norbec Architectural in order to cut construction waste. A return slip is issued with the number of inbound and outbound pallets and their corresponding weight.

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Credits	Durable strategies	Potential points	Credit relevance	Credit requirements	Contribution and compliance of NOREX Panels
MRC2.2	Construction Waste Management	1	Indirect	Develop and implement a Construction Waste Management Plan, quantifying material diversion goals. Recycle and/or salvage at least 75% of construction, demolition and packaging debris. Calculation may be done by weight or volume, but must be consistent throughout.	The use of prefabricated Norbec Architectural panels helps minimising construction waste and can therefore contribute to this credit. A pallet refund policy has been established by Norbec Architectural in order to cut construction waste. A return slip is issued with the number of inbound and outbound pallets and their corresponding weight.
MRC3.1	Resource Reuse 5%	1	Direct	Use salvaged, refurbished or reused materials for at least 5% of building (construction) materials, excluding furniture and furnishings.	The Norex architectural panels can easily be dismantled and replaced as often as wished. However, they can only contribute to this credit when they are recycled or reused in another project or when they are used for another purpose in the same project. When the products are new they don't contribute to this credit.
MRC3.2	Resource Reuse 10%	1	Direct	Use salvaged, refurbished or reused materials for at least 10% of building (construction) materials, excluding furniture and furnishings.	The Norex architectural panels can easily be dismantled and replaced as often as wished. However, they can only contribute to this credit when they are recycled or reused in another project or when they are used for another purpose in the same project. When the products are new they don't contribute to this credit.
MRC4.1	Recycled Content 10%	1	Direct	Use materials, including furniture and furnishings, with recycled content such that the sum of post-consumer recycled content plus 1/2 (one-half) of the preconsumer content constitutes at least 10% of the total value of the materials in the project. (Divisions 2 -10,12)	The Norex architectural panels can contribute to this credit. Depending on the wall thickness, the steel type or the insulation type, the pre-consumer recycled content will vary between 16,22% and 22,16% and the post-consumer content will vary between 2,41% and 16,91%. Therefore, up to 28% of the Norex panels costs can be applied to a project aiming at credit MRC4.1 (7.5%) for recycled content. All data pertaining to the Norex panels components have been reviewed by a third party – Vertima. Norbec Architectural can therefore provide all necessary information for a LEED® project.

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Credits	Durable strategies	Potential points	Credit relevance	Credit requirements	Contribution and compliance of NOREX Panels
MRc4.2	Recycled Content 20%	1	Direct	Use materials, including furniture and furnishings, with recycled content such that the sum of post-consumer recycled content plus 1/2 (one-half) of the preconsumer content constitutes at least 20% of the total value of the materials in the project. (Divisions 2 -10,12)	The Norex architectural panels can contribute to this credit. Depending on the wall thickness, the steel type or the insulation type, the pre-consumer recycled content will vary between 16,22% and 22,16% and the post-consumer content will vary between 2,41% and 16,91%. Therefore, up to 28% of the Norex panels costs can be applied to a project aiming at credit MRc4.2 (20%) for recycled content. All data pertaining to the Norex panels components have been reviewed by a third party – Vertima. Norbec Architectural can therefore provide all necessary information for a LEED® project.
MRc5.1	Regional Materials 20% Manufactured Regionally	1	Direct	Use a minimum of 20% of the combined value of construction and Division 12 (Furniture) materials and products that are manufactured regionally within a radius of 800 kilometres (500 miles).	The Norex architectural panels components for which the extraction and manufacturing sites are within the prescribed radius can contribute to this credit. The Norex panels are manufactured in Ste-Hyacinthe (J2S 8A2). The main component's origin as well as their transportation mode can be validated for each project. All data pertaining to the Norex panels components have been reviewed by a third party – Vertima. Norbec Architectural can therefore provide all necessary information for a LEED® project.

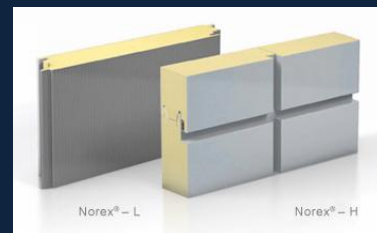
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Credits	Durable strategies	Potential points	Credit relevance	Credit requirements	Contribution and compliance of NOREX Panels																								
MRC5.2	Regional Materials 10% Extracted and Manufactured Regionally	1 (in addition to Mrc5.1)	Direct	In addition to the requirements of MR 5.1, use a minimum of 10% of the combined value of construction and Division 12 (Furniture) materials and products extracted, harvested or recovered , as well as manufactured, within 800 kilometres (500 miles) of the project.	The Norex architectural panels components for which the extraction and manufacturing sites are within the prescribed radius can contribute to this credit. The Norex panels are manufactured in Ste-Hyacinthe (J2S 8A2). The main component’s origin as well as their transportation mode can be validated for each project. All data pertaining to the Norex panels components have been reviewed by a third party – Vertima. Norbec Architectural can therefore provide all necessary information for a LEED® project.																								
Indoor Environmental Quality (IEQ)																													
IEQc3.2	Construction Indoor Air Quality Management Plan – Before Occupancy (option B)	1	Indirect	Develop and implement an Indoor Air Quality (IAQ) Management Plan for the preoccupancy phases as follows:. A. <i>Flush-Out Procedure</i>: B. IAQ Test Procedure: (Indoor Air Quality)	The Norex architectural panels indirectly contribute to this credit if option B is used in the project. Since the Norex panels can be used as interior partitions or hanging ceilings, they could be a source of interior air pollution. They are factory manufactured but their installation on the job site can require adhesives and sealants that can comply with the prescribed VOC content. (see credit IEQ4.1 Compliance)																								
IEQc4.1	Low-Emitting Materials: Adhesives and Sealants	1	Direct	All materials listed below that are used in the <u>building interior</u>, (i.e., inside of the exterior air barrier) must not exceed VOC content of the South Coast Air Quality Management District (SCAQMD) Rule #1168 requirements in effect on January 1, 2003. Aerosol Adhesives must comply with the Green Seal Standard GC-36 requirements in effect on October 19, 2000.	The Norex architectural panels can contribute to this credit since they are sometimes used as interior partitions or hanging ceilings. The Norex panel installation on the job site can require adhesives and sealants that can comply with the prescribed VOC content of this credit. List of adhesives and sealants applied on the job site and their VOC content: <table><tr><td>Adfast :</td><td>Adfoam 1885-2</td><td>sealant</td><td>5 g/l</td></tr><tr><td></td><td>Adseal 4550</td><td>sealant</td><td>49 g/l</td></tr><tr><td></td><td>Adsil 4800</td><td>sealant</td><td>48 g/l</td></tr><tr><td></td><td>Adbond 8-400*</td><td>adhesive</td><td>389 g/l</td></tr><tr><td></td><td>Adbond 1920</td><td>adhesive</td><td>18 g/l</td></tr><tr><td></td><td>Adbond 1921</td><td>adhesive</td><td>18 g/l</td></tr></table> *off specification	Adfast :	Adfoam 1885-2	sealant	5 g/l		Adseal 4550	sealant	49 g/l		Adsil 4800	sealant	48 g/l		Adbond 8-400*	adhesive	389 g/l		Adbond 1920	adhesive	18 g/l		Adbond 1921	adhesive	18 g/l
Adfast :	Adfoam 1885-2	sealant	5 g/l																										
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IEQc4.2	Low-Emitting Materials: Paints & Coatings	0 Non-applicable	Indirect	Interior paints and coating applied on-site must meet the limitations and restrictions concerning chemical components set by the following standards: Topcoat Paints: Green Seal Standard GS-11, Paints, January 1997. Anti-Corrosive and Anti-Rust Paints: Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997 For Applications on Ferrous Metal Substrates. All other Architectural Coatings, Primers and Undercoats: South Coast Air Quality Management District (SCAQMD) Rule #1113, Architectural Coatings, rules in effect on January 1, 2004.	The finishing of Norbec Architectural products is done at the factory. Since this credit only applies to paints and coatings applied on the job site , they don't qualify for this credit.
IEQc7.1	Thermal Comfort : Compliance	1	Indirect	Comply with ASHRAE Standard 55-2004 , Thermal Comfort Conditions for Human Occupancy.	There is a synergy between the use of Norex architectural panels and this credit. They contribute to the building energy conservation strategy thanks to their air tightness. This compliance must be validated with engineering calculation for the whole building according to psychometric charts.
Innovation in Design (ID)					
IDc1.1	Innovation in Design	1	Direct	Exemplary Performance : Optimize Energy Performance Exemplary Performance for EAc1 : Optimize the energetic performance to 65% under the ASHRAE 90.1.1999 standard for new construction.	The Norex architectural panels have an insulation value of up to R42.6 depending on the selected wall thickness. They also offer superior air tightness and eliminate thermal bridges. These elements could help optimising the energetic performance of the building depending on its design.
IDc1.2	Innovation in Design	1	Indirect	Exemplary Performance : Construction Waste Management Exemplary Performance for MRc2 : Develop and implement a waste management plan, quantifying material diversion goals. Recycle and/or salvage at least 95% of construction, demolition and land clearing waste. Calculations can be done by weight or volume, but must be consistent throughout.	The use of prefabricated Norex architectural panels helps minimising construction waste and can therefore contribute to this type of exemplary performance. The design team could think of including this right from the start. A pallet refund policy has been established by Norbec Architectural in order to cut construction waste. A return slip is issued with the number of inbound and outbound pallets and their corresponding weight.

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Total		Up to 15 points	Norex Panels can contribute up to a total of 15 potential points for a LEED® Canada-CI v1.0 project		

All NORBEC Architectural's documents required for the LEED certification are available. They were written by Vertima, LEED® certification specialists providing you with comprehensive and reliable information.