



Flex 850 Insulated Concrete Form (ICF)



Be free to create: Polycrete®, a durable choice

Insulated Concrete Form (ICF) systems for concrete building solution have evolved over the last two decades.

Our mission

To conceive and promote methods and solutions to facilitate the construction of all types of buildings by using insulating formworks for concrete and in respect of the environment while keeping a high level of quality of products, training and services.

Our vision

By 2020, a significant portion of the residential and commercial building market will be built from insulating formworks for concrete, replacing the conventional wood structures that will be costly and inefficient on an ecological and performance point of view.



Polycrete® Flex 850 system

The **Polycrete® insulating form** is composed of type 3 expanded polystyrene panels, fastened together by T-shaped polymer fixtures that are inserted into end grooves on adjoining panels.

Once poured, the concrete adheres perfectly to the surface of the forms creating a concrete and expanded polystyrene sandwich completely free of air pockets. The result: a load-bearing wall with far greater strength than conventional structures.

The Polycrete® FLEX 850 is perfect for any type of building design, and can be easily adapted to suite the construction of columns, beams or polygonal curves. In addition to more common types of facing materials, Polycrete® also lends itself to the application of highly resistant exterior finishes that can be fixed directly to the expanded polystyrene.

There are two Flex 850 systems, one with masonry support and one without. The contribution of these two systems differs slightly due to its recycled content (MRc4) and its regional material content (MRc5). The contribution of these two Flex 850 systems is described in the following table.



Flex 850 Insulated Concrete Form (ICF)



A positive impact with LEED® Canada-NC

The increasing interest in durability in building conception and operation, which we are part of, is well represented by the North American *Leadership in Energy and Environmental Design* (LEED®) evaluation system.

This document explores the potential contribution of the Polycrete products use for a LEED® Canada-NC Version 1.1 project (New construction and major renovations). This system is based on 70 points allocated in six credit categories. The LEED® Canada-NC is part of an evaluation system family for different construction project types. Furthermore, a material cannot be certified or bring a certification to a project on its own; the LEED certification is given to a project as a whole based on its conception and on the synergy between all its components.



Summary of the LEED® Canada-NC V.1.1 system			
Category	Pre-requisite	Credits	Points
SS	1	8	14
WE	0	3	5
EA	3	6	17
MR	1	7	14
EQ	2	8	15
ID	0	2	5
Total	7	34	70

Contribution of the Polycrete® Flex 850 system	
Category	Contribution
SS	1 point
WE	0 point
EA	1-10 points
MR	7 points
EQ	3 points
ID	3 points
Total	Up to 24 points

LEED® Canada-NC credit categories

SS: Sustainable Sites

EQ: Indoor Environmental Quality

MR: Materials and Resources

EA: Energy and Atmosphere

WE: Water Efficiency

ID: Innovation and Design Process



Flex 850 Insulated Concrete Form (ICF)



Table: contribution of the Polycrete® Flex 850 system to LEED® Canada-NC version 1.1

Target credits	Durable strategies	Potential points	Credit implementation	Credit requirements	Contribution and compliance of the Polycrete® Flex 850 system
SSc5.1	Reduce site disturbance : protect or restore open space	1	Synergy	On greenfield sites, limit site disturbance including earthwork and clearing of vegetation to 12 meters (40 feet) beyond the building perimeter, 1.5 meters (5 feet) beyond primary roadway curbs, walkways, and main utility branch trenches, and 7,5 meters (25 feet) beyond constructed areas with permeable surfaces (such as pervious areas, storm water detention facilities and playing fields) that require additional staging areas in order to limit compaction in the constructed area.	The Flex 850 Polycrete® installation is conducted from the inside of the building and requires a crane on site. By limiting the vegetation clearing to less than 40 ft of the building perimeter, the Flex 850 Polycrete® can contribute to this credit and get one point.



Flex 850 Insulated Concrete Form (ICF)



Table: contribution of the Polycrete® Flex 850 system to LEED® Canada-NC version 1.1

Target credits	Durable strategies	Potential points	Credit implementation	Credit requirements	Contribution and compliance of the Polycrete® Flex 850 system
EAp2	Minimum energy performance	Required (0 point)	Direct	<p>Option 1 – New buildings: Reduce the design energy consumption to comply with Natural Resources Canada’s Commercial Building Incentive Program (CBIP) requirements for a 25% reduction relative to the consumption of the reference building designed to the Model National Energy Code for Buildings 1997 (MNECB) including supplemental CBIP requirements. Compliance shall be demonstrated by using whole building energy simulation. OR Reduce the design energy cost by 18% relative to the reference building designed to ASHRAE/IESNA 90.1-1999 (without amendments). Compliance shall be demonstrated by using whole building energy simulation. The energy reduction percentage calculation shall comply with the ASHRAE 90.1 standard.</p> <p>Option 2 – Major renovations to existing buildings: Reduce the design energy consumption by 10% relative to the consumption of the reference building designed to the CBIP adaptation of the MNECB. Compliance shall be demonstrated by using whole building energy simulation. OR Design the building to comply with ASHRAE/IESNA Standard 90.1-1999.</p>	<p>The Polycrete® Flex 850 system is taken into account in the simulation and calculation of the energetic performance. However, since it remains a complex calculation involving the building conception as a whole, it is not possible to rule on the exact contribution of this product to the LEED certification.</p> <p>The Polycrete® Flex 850 Insulated Concrete Forms (ICF) eliminate air leakage and thermal bridges. Their R-28 isolation factor for a 6” thick concrete wall with interior and exterior finishing allow for an important energetic performance.</p> <p>The envelope system R value complies with the standard minimal requirements and can be provided to the conception teams.</p>



Flex 850 Insulated Concrete Form (ICF)



Table: contribution of the Polycrete® Flex 850 system to LEED® Canada-NC version 1.1

Target credits	Durable strategies	Potential points	Credit implementation	Credit requirements	Contribution and compliance of the Polycrete® Flex 850 system
EAc1	Optimize energy performance	1 to 10 points (depending on the building energetic performance)	Direct	<p>New buildings: Reduce design energy cost compared to the energy cost of the MNECB or ASHRAE/IESNA 90.1-1999 reference building for energy systems regulated by these standards. Points are awarded according to table 1. Compliance shall be demonstrated by using whole building energy simulation using the same compliance path (MNECB or ASHRAE/IESNA 90.1-1999) as was used for EAp2.</p> <p>The scale used allocate one point for an energy cost reduction of 24% from the MNECB standard and 15% from the ASHRAE 90.1-1999 standard, and up to 10 points for an energy cost reduction of 64% from the MNECB standard and 60% from the ASHRAE 90.1-1999 standard.</p> <p>Major renovations to existing buildings: Reduce design energy cost compared to the energy cost of the MNECB or ASHRAE/IESNA 90.1-1999 reference building for energy systems regulated by these standards. Points are awarded according to table 2. Compliance shall be demonstrated by using whole building energy simulation using the same compliance path (MNECB or ASHRAE/IESNA 90.1-1999) as was used for EAp2.</p>	<p>The Polycrete® Flex 850 system is taken into account in the simulation and calculation of the energetic performance. However, since it remains a complex calculation involving the building conception as a whole, it is not possible to rule on the exact contribution of this product to the LEED certification.</p> <p>The Polycrete® Flex 850 Insulated Concrete Forms (ICF) eliminate air leakage and thermal bridges. Their R-28 isolation factor for a 6” thick concrete wall with interior and exterior finishing allow for an important energetic performance.</p> <p>The envelope system R value complies with the standard minimal requirements and can be provided to the conception teams.</p>



Flex 850 Insulated Concrete Form (ICF)



Table: contribution of the Polycrete® Flex 850 system to LEED® Canada-NC version 1.1

Target credits	Durable strategies	Potential points	Credit implementation	Credit requirements	Contribution and compliance of the Polycrete® Flex 850 system
MRc2.1	Construction waste management	1	Synergy	Develop and implement a waste management plan, quantifying material diversion goals. Recycle and/or salvage at least 50% of construction, demolition and land clearing waste. Calculation can be done by weight or volume, but must be consistent throughout.	The Polycrete® Flex 850 can contribute to fulfill the requirements of this credit. The forms stay within the structure, therefore minimizing the waste. This will help attaining the goals of the waste management plan.
MRc2.2	Construction waste management	1	Synergy	Develop and implement a waste management plan, quantifying material diversion goals. Recycle and/or salvage at least 75% of construction, demolition and land clearing waste. Calculation can be done by weight or volume, but must be consistent throughout.	The Polycrete® Flex 850 can contribute to fulfill the requirements of this credit. The forms stay within the structure, therefore minimizing the waste. This will help attaining the goals of the waste management plan.
MRc4.1	Recycled content : 7,5%	1	Direct	Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 7.5% of the total value of the materials in the project.	The Polycrete® Flex 850 can contribute to fulfill the requirements of this credit. The Flex 850 system without support can contain up to 27,36% of recycled content and the Flex 850 system with support can contain up to 28,78% of recycled content .
MRc4.2	Recycled content : 15%	1	Direct	Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 15% of the total value of the materials in the project.	The Polycrete® Flex 850 can contribute to fulfill the requirements of this credit. The Flex 850 system without support can contain up to 27,36% of recycled content and the Flex 850 system with support can contain up to 28,78% of recycled content .



Flex 850 Insulated Concrete Form (ICF)



Table: contribution of the Polycrete® Flex 850 system to LEED® Canada-NC version 1.1

Target credits	Durable strategies	Potential points	Credit implementation	Credit requirements	Contribution and compliance of the Polycrete® Flex 850 system
MRc5.1	Regional content : 10%	1	Direct	Use a minimum of 10% of building materials or products for which at least 80% of the mass is extracted, processed, and manufactured within 800 km of the project site shipped by road or within 2400 km of the project site shipped by rail or water. OR use a minimum of 10% of building materials or products that reflects a combination of the above extracted, processed, manufactured and shipping criteria (e.g., 5% within 800 km and 5% shipped by rail within 2400 km).	The material used to make the Polycrete® Flex 850 for which the extraction and manufacturing sites are within the required limits can contribute to this credit. For example, for a project in Southern Quebec, Northern New England or Eastern Ontario , the Flex 850 without support has a regional content up to 48,63% and the Flex 850 with support has a regional content up to 50,13% thanks to local providers.
MRc5.2	Regional content : 20%	1	Direct	Use a minimum of 20% of building materials or products for which at least 80% of the mass is extracted, processed, and manufactured within 800 km of the project site shipped by road or within 2400 km of the project site shipped by rail or water. OR use a minimum of 20% of building materials or products that reflects a combination of the above extracted, processed, manufactured and shipping criteria (e.g., 10% within 800 km and 10% shipped by rail within 2400 km).	The material used to make the Polycrete® Flex 850 for which the extraction and manufacturing sites are within the required limits can contribute to this credit. For example, for a project in Southern Quebec, Northern New England or Eastern Ontario , the Flex 850 without support has a regional content up to 48,63% and the Flex 850 with support has a regional content up to 50,13% thanks to local providers.
MRc8	Durable building	1	Direct	Develop and implement a Building Durability Plan, in accordance with the principles in CSA S478-95 (R2001) – Guideline on durability in Buildings , for the components within the scope of the Guideline, for the construction and preoccupancy phases of the building.	The Polycrete® Flex 850 can contribute to fulfill the requirements of this credit. It allows to fulfill the objectives of the CSA S478-95 (R2001) – Guideline on durability in Buildings .



Flex 850 Insulated Concrete Form (ICF)



Table: contribution of the Polycrete® Flex 850 system to LEED® Canada-NC version 1.1

Target credits	Durable strategies	Potential points	Credit implementation	Credit requirements	Contribution and compliance of the Polycrete® Flex 850 system
EQc3.2	Construction IAQ management plan : Testing before occupancy	1	Synergy	Develop and implement an Indoor Air Quality (IAQ) Management plan for the preoccupancy phase that follows one of the three options below: 1. Building flush prior to occupancy 2. Building flush overlapping with occupancy 3. IAQ testing prior to occupancy	If option 3 is used, the Polycrete® Flex 850 system contributes to fulfill the requirements of this credit by emitting no or few VOC in the building. Virtually no VOC emitting product are inside of the Polycrete® Flex 850 system , therefore helping to maintain a good indoor air quality .
EQc4.1	Low emitting materials : Paints and coatings	1	Direct	The VOC content of adhesives, sealants and sealant primers must be less than the VOC content limits of the State of California's South Coast Air Quality Management District (SCAQMD) Rule 1168. The spray adhesives must comply with the GS-36 standard from green Seal.	The Flex 850 system is the only one that can contribute to this credit since it uses an adhesive. When the polymer T of the Flex 850 system are installed on site, Polycrete® can contribute to this credit because the Adfast adhesive contains no VOC. When the Flex 850 system is manufactured in the factory as with the Legerlite, the adhesives do not fall under the VOC limits, although this is considered as a good practice.



Flex 850 Insulated Concrete Form (ICF)



Table: contribution of the Polycrete® Flex 850 system to LEED® Canada-NC version 1.1

Target credits	Durable strategies	Potential points	Credit implementation	Credit requirements	Contribution and compliance of the Polycrete® Flex 850 system
EQc7.1	Thermal comfort	1	Synergy	Comply with ASHRAE Standard 55-2004 , Thermal Comfort conditions for Humans Occupancy.	The Polycrete® Flex 850 system contributes in a positive way to the building energy conservation and thermal insulation strategy but plays an indirect role in the required thermal comfort compliance which is validated by engineering calculations for the building as a whole according to psychometric charts. The Polycrete® Flex 850 system eliminates air leakage and thermal bridges. Their air tightness and R-28 isolation factor for a 6" thick concrete wall ensure a uniform and comfortable ambient temperature without unpleasant and uncontrolled air draughts.



Flex 850 Insulated Concrete Form (ICF)



Table: contribution of the Polycrete® Flex 850 system to LEED® Canada-NC version 1.1

Target credits	Durable strategies	Potential points	Credit implementation	Credit requirements	Contribution and compliance of the Polycrete® Flex 850 system
IDc1.1	Innovation in design	1	Direct	Develop a close environment impact reduction plan which will allow to attain these objectives: <ul style="list-style-type: none"> - sound pollution limitation - visual pollution limitation - exceptional traffic jam reduction - project duration reduction 	The Polycrete® Flex 850 system contributes to this credit through its rapid installation, allowing to decrease the cranes, trucks, generators and workers presence. By reducing by up to 50% the shell construction time, the Polycrete® Flex 850 system contributes to the visual and sound pollution. The Insulated Concrete Forms (ICF) also allow to reduce the indirect pollution caused by exceptional traffic jams.
IDc1.2	Innovation in design	1	Direct	To go beyond the EAc1 requirements: to optimize energy performance (Credit presented on basis of exceptional performance).	Exceptional performance for EAc1: to optimize energy performance , that is to say more than 65% of energy efficiency according to ASHRAE 90.1-199 for a new construction.
IDc1.3	Innovation in design	1	Direct	Reduce noise transmission from outside with an STC index of at least 35. (Requirement taken from the USGBC LEED® for Schools 2009, IEQ Credit 9 Enhanced Acoustical Performance.)	The Polycrete® Flex 850 system contributes to this credit by reducing transmission of exterior noises. By being air tight and insulated, the Polycrete® Flex 850 system allow for a parasite free sound ambiance. The sound insulation is STC 60 for a 6" wall with interior and exterior finish.
TOTAL	24	The Polycrete® Flex 850 system can contribute to twenty three (24) points for a LEED® Canada-NC project.			

All POLYCRETE documents required for LEED® certification documentation are available. They have been developed by LEED® certification specialists Vertima, in Canada, providing you with comprehensive and reliable information.

