

Welcome



Program





Design

System components









sealant

WALLTITE ECO spray polyurethane foam

transition membranes

Design





WALLTITE ECO spray polyurethane foam

- main system components
 - air barrier material
 - thermal insulation
 - vapour barrier function
- minimum thickness 25.4 mm (1")

(for air barrier system)

installation per CAN/ULC-S705.2

Design





Accessories – continuity

transition membranes

- self-adhesive
- torch-on
- liquid, Enershield

sealant - BASF NP1



from BASF Canada





Assembly and Installation



Wall assembly - materials

- 20 gauge steel studs @ 16" o/c
- transition membranes, approved by BASF (verified by independent third party)
- gypsum board screws, TEK # 6, 1¼ in
- brick ties 3 types
- backer rod (polyethylene)
- sealants, approved by BASF
- galvanized Z bars

Assembly and Installation

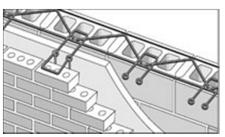


Wall Assembly – brick ties

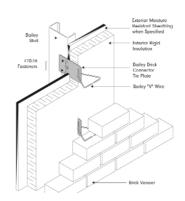
- surface mounted
- horizontal trussed reinforcement with built-in masonry connectors
- ajustable ties attached to wall framing

- d/a 213 by Dur-o-wall with Dur-o-pair ties
- Dur-o-eye by Dur-o-wall
- Bailey Brick Connector 10–18









Assembly and Installation



Substrates

- exterior grade gypsum board, ½" min
- OSB, 7/16" min
- plywood, 7/16" min
- concrete block, 6" min
- poured or precast concrete

Verifying the adhesion of WALLTITE ECO spray polyurethane foam to various substrates is fundamental.



Assembly and Installation



Adhesion - transition membranes

- follow manufacturers' instructions
- installation by qualified personnel, authorized by the manufacturer
- inspection prior to WALLTITE ECO installation
- minimum adhesion 103 kPa (15 lb/in²)
- mechanical fastening (wood forbidden)
- location and frequency of inspections



Assembly and Installation



WALLTITE ECO® v.2

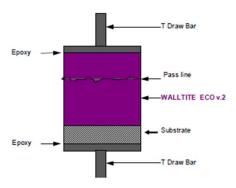
Appendix A

Adhesion tests

ASTM D1623 (type C sample)

DESCRIPTION*

WALLITTE ECO® v.2 was sprayed at 50.8 mm (2 in) in 2 passes. The samples were cut into 50 mm (2 in) cubes. T-shaped draw bars were adhered to the samples using epoxy glue. Tensile break strength was measured in accordance with ASTM D 1623 (Type C sample testing with crosshead speed 1.3 mm/ min). Results are from the average of three tested samples. The minimum adhesion accepted when our insulation / a barrier system is used is the following: membrane over the substrate and WALLITTE ECO over the membrane or substrate is 10.3 it Part 15.0 psi).



APPROVALS AND CREDENTIALS: CCMC # 13408-L - Insulation / air barrier material CCMC # 13467-R - Insulation / air barrier system

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*All the values were obtained in our development facility under controlled conditions. The values will vary with differences in application (i.e. ambient conditions, process equipment and settings, material throughput, etc.). As a result, these published values should be used as guidelines solely for the purpose of evaluation.

Important: The information, data and products presented herein are based upon information reasonably available to BASE Corporation at the time of publication, and are presented in good fast, but are not to be construed as guarantees or warrantee, expenses or implied, regarding performance, results to be obtained from use comprehensiveness merchantability, or that said information, data or products can be used without infringing patients of third parties. You should horoupply test any apposition, and independently determine statistication performance before commercialization.

"Warning" These products can be used to prepare a variety of polyurethane products. Polyurethanes are organic materials and must be considered combustible.

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Adhesion



Application Guidelines

Substrate	WALLTITE ECO® v.2 applied over:	Tensile Break Strength
Owens Corning Codeboard	Substrate	Pass
Dow Cladmate	Substrate	Pass
E2XPTM exterior grade (National Gypsum)	Substrate	Pass
CGC FIBEROCKMD Interior panel	Substrate	Pass
CGC GYPLAPMD Exterior Sheathing	Substrate	Pass
GlasRooti (Certainteed)	Substrate	Pass
DensGlass Gold® e		Pass
%* Plywood		Pass
DensGlass Gold® €	Field	Pass
Cement Board	ICIG	Pass
DensGlass Gold® 6		Pass
% Plywood Inc	pection :	Pass
%* OSB	Jection 1	Pass
DensGlass Gold® €		Pass
%* Plywood	Blueskin SA (membrane)	Pass
%* Plywood	Lastobond 195	Pass
DensGlass Gold® exterior grade (GP)	Lastobond 195	Pass
%" Plywood	Lastobond Shield 36	Pass
DensGlass Gold® exterior grade (GP)	Lastobond Shield 36	Pass
%* Plywood	Sopraseal Stick 130S	Pass
DensGlass Gold® exterior grade (GP)	Sopraseal Stick 130S	Pass
%" Plywood	Sopraseal Stick 1100LT	Pass
DensGlass Gold® exterior grade (GP)	Sopraseal Stick 1100LT	Pass
%* Plywood	Sopraseal Stick 1100T	Pass
DensGlass Gold® exterior grade (GP)	Sopraseal Stick 1100T	Pass
Securock	Substrate	Pass
%* Plywood	IKO Torchflex 9TF-95-FF-Base	Pass
DensGlass Gold® exterior grade (GP)	Tremco ExoAir 120	Pass
%* Plywood	Soprema 180 HD F/F	Pass
%* Plywood	Senerflash (BASF)	Pass
DensGlass Gold® exterior grade (GP)	Bakor AirBioc 32	Pass

BASF Canada 162 Barr Street Montreal Quebec, H4T-1Y4 Tel: 514-341-5411 ext 3936 Fax: 514-340-1248

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Assembly and Installation





Assembly and Installation



Continuity - transition membranes

Purpose

- transition and bridge between different materials
- transition and bridge between envelope components and assemblies
- ensure continuity of air barrier system

Function

account for differential movements due to differing materials, structural movements, external loads, temperature, humidity and other causes

Assembly and Installation



Continuity - transition membranes

- construction / expansion / control joints
- junctions between assemblies / different materials
- penetrations (e.g. services)
- openings (e.g. doors, windows)
- minimum width 75 mm (3 po)



Assembly and Installation



Continuity - sealant

- foundation / transition membrane junction
- perimeter of openings (e.g. doors, windows)
- service penetrations

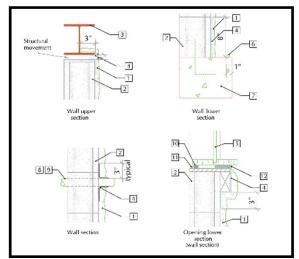


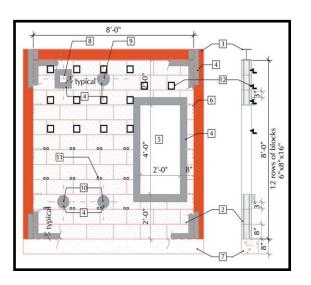
Assembly and installation



Resources and Documents

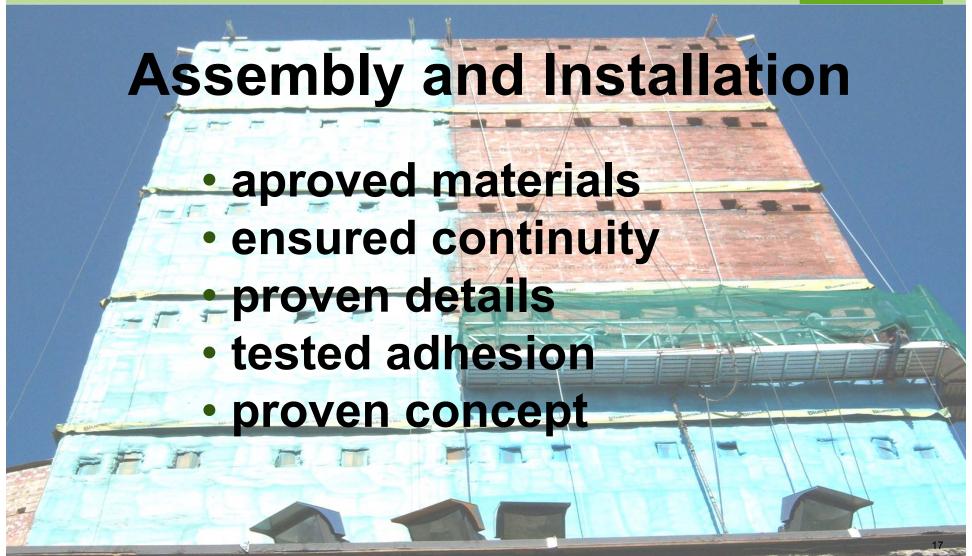
- data sheet
- technical details
- application guidelines
- CCMC evaluation report
- specifications





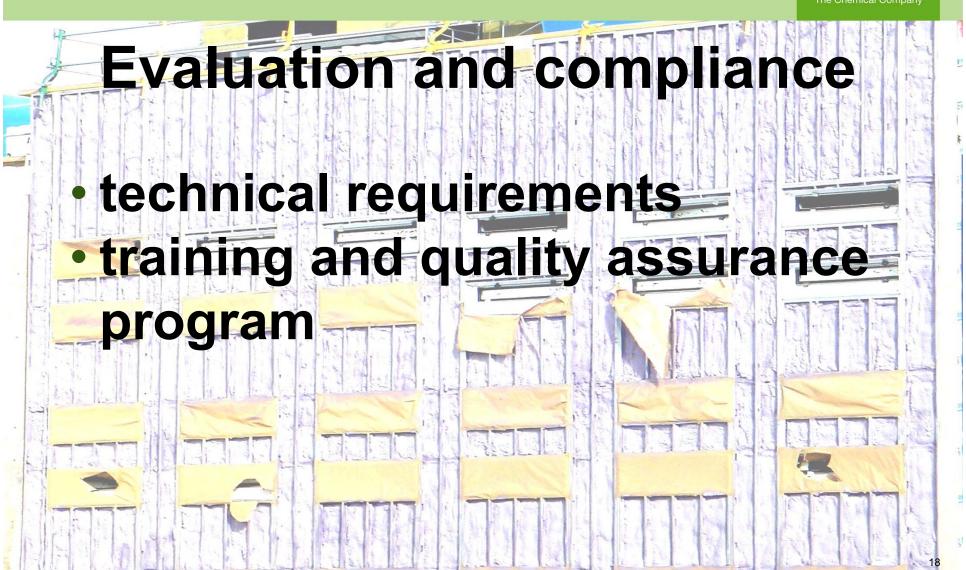
from BASF Canada





from BASF Canada





Evaluation and Compliance - CCMC



Technical Guide for

Air Barrier Systems for Exterior Walls of Low-Rise Buildings

System evaluation:

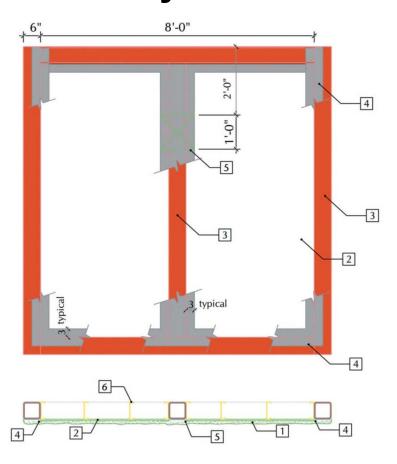
- technical requirements
- testing materials and assemblies
- quality assurance program
- installation manual

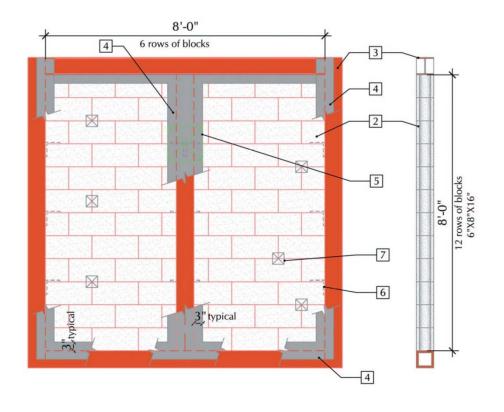
Completed for walls built in accordance with specifications set by BASF

Evaluation and Compliance - CCMC



Assembly Tests



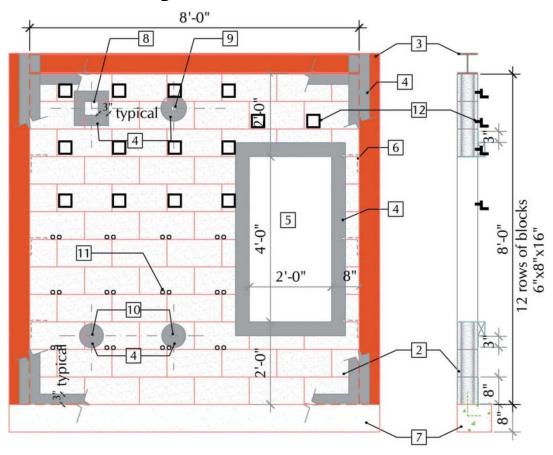


Opaque Walls

Evaluation and Compliance - CCMC



Assembly Tests

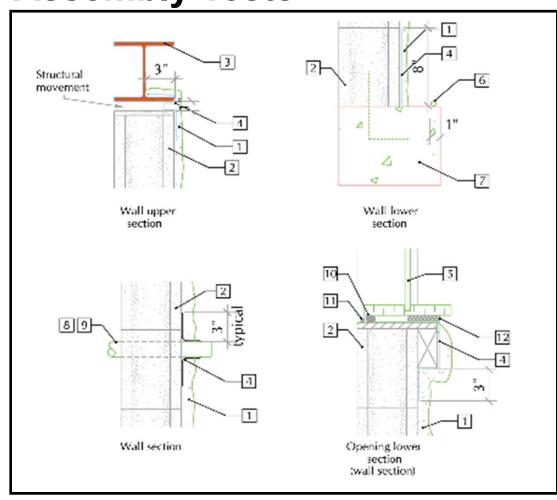


Walls with penetrations

Evaluation and Compliance - CCMC



Assembly Tests



Assembly details and penetrations

Evaluation and Compliance - CCMC



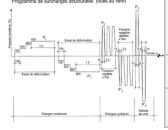
Air Permeance	Requirement	Result
Material L/s/m ² @ 75 Pa	≤ 0.02	0.00012
System L/s/m ² @ 75 Pa	≤ 0.05	0.0054

Air leakage rate - measured after completing structural and durability trials, according to methods:

- ASTM E-283 warm side
- ASTM E1424 cold side (-20° C)



Vapour Permeance H ₂ O (ng/Pa·s·m²)	Air Leak max
15 < H ₂ O ≤ 60	0.05
60 < H ₂ O ≤ 170	0.10
170 < H ₂ O ≤ 800	0.15
> 800	0.20



	Wind Pressure	Sustained Loads (Pa)	Cyclical Loads (Pa)	Wind Gusts (Pa)
•	< 0.40 kPa	400	530	800
	< 0.60 kPa	600	800	1200 23

Evaluation and Compliance - CCMC



WALLTITE ECO

WALLTITE ECO

Thermal insulation:

Air barrier system:

CCMC# 13588-L CCMC# 13467-R

*

National Research Council Canada

Conseil national de recherches Canada

Institute for Research in Construction

Institut de recherche en construction

CCMC 12932-R



DIVISION 07272 Issued 1999-11-01

Re-evaluation due 2002-11-01

Walltite® – Air Barrier System



CCMC 13467-R

Issued: 2009-08-19 Re-evaluation due: 2012-08-19

Walltite ECO™ - Air Barrier System

It is the opinion of the Canadian Construction Materials Centre (CCMC) that "Walltite ECO^{TM} - Air Barrier System" when used as an air barrier system for exterior walls of buildings in accordance with the conditions and limitations stated in Section 3 of this Report, complete with the National Building; Code 2005:

Classe 1.2.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of
performance required by Division B in the areas defined by the objectives and functional statements attrib
the following applicable acceptable solutions:

 Subsection 9.25.3. Air Barrier Systems

This opinion is based on CCMC's evaluation of the technical evidence in Section 4.1 provided by the Report Holder

This report addresses the performance of the product as an air barrier system as specified by BASF Canada. A "Walltite ECO™ Air Barrier System" is defined as possessing the following components and accessories:

- executes for communy are:

 3 Blin Sin SA², a modified-birminous membrane (i.e. peel-and-stick or thermally fused) manufactured
 Monasy Baker for use as a transition membrane over construction, control and expansion points, at junc
 between different assemblies and a presentations; and
 5 Specified sealants that confirm to CANICOSES 37:20-3408; "Rubbet-Auphalt Sealing Compound," for
 use at membrane-b-ofoundation junctions and conforming to COSES 18-0-3477, "Methods for Testing Pu
- use as mantenaré—bromations junctions and confirming no COSB 319-0-M77, "Methods for Testing Patt Craiking and Selang Compounds, "for use on the interior inde seround vindow and door openages; tens component for travegit."

 of a structural solvintes, auch as concrete block, exterior gypoum sheetding, OSB (oriented strandboard), or plywood sheetding substrate, within a wall designed to withstand the anticipated loads; allation:
- stablistics.

 or To be installed on-tire BASF Canada mined installers following the BASF Canada specified "Walkine®
 Air Barrier System" installation manual entitled "BASF Walkine® Technical Guide" and dated December 1,
 1999. In addition, Mornion Hershfeld (MH) Limited carries our follow-up impections of the installations on a periodic Ub basis.

Wallite ECO^{Nes}s insulation material, if installed as part of the designated air barrier system, will serve a dual function in the wall assembly: as the principal plane of airrightness of the designated air barrier system and as an exterior insulation. The use of Wallite ECO^N as an insulation is covered under COMC Listing No.13464-L.



Evaluation Report CCMC 13467-R

Issued:

2009-08-19 2011-12-01

Walltite ECO™ v.2 - Air Barrier System

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that "Walltite ECO™ v.2 - Air Barrie System", when used as an air barrier system for exterior walls of buildings in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code 2010:

- · Clause 1.2.1.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
- * Subsection 9.25.3. Air Barrier Systems

This opinion is based on CCMC's evaluation of the technical evidence in Section 4.1 provided by the Report

Ruling No. 09-35-233 (13467-R) authorizing the use of this product in Ontario, subject to the terms and conditions contained in the Ruling, was made by the Minister of Municipal Affairs and Housing on 2009-12-02 pursuant to 2.5 of the Building Code Act, 1992 (see Ruling for terms and conditions). This Ruling is subject to periodic revisions and updates.

This report addresses the performance of the product as an air barrier system as specified by BASF Canada. A "Walltite ECO™ v.2 Air Barrier System" is defined as possessing the following components and accessories:

- BASF Walltite ECOTM v.2 spray wrethane material as the principal material in the plane of airtightness;
- · Accessories for continuity are:
- · Blue Skin SA® a modified hituminous membrane (i.e. neel and stick or thermally fused)
- Bittle Stati 3AV², a monomic chromatous memorane (i.e. peet-and-nick or membrace) manufactured by Monsey Black for the use as a transition membrane() over construction, control and expansion joints, at junctions between different assemblies and at penetrations; and Specified sealants that conform to CAN/CGSB-37 29-M89; "Rubber-Anphalt Sealing Compound," for use at membrane-to-foundation junctions and conforming to CGSB 19-0 M77, "Methods for Testing

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from BASF Canada





Training and Quality Assurance



Raising performance to New Heights®

- Classroom training and evaluation
 - WALLTITE ECO thermal insulation
 - WALLTITE ECO air barrier system
- On-site continuous improvement training
- Site visits
- Mandatory certification of contractors and installers

Training and Quality Assurance



BASF T&QA Program

- Contractor certification
- Installer training (classroom and on-site)
- Installer certification
- Technical support
- Contractor's responsibilities
- Warranty

Training and Quality Assurance



Who can benefit from BASF's QA&T program?

- Contractors
- Installers
- Building owners
- Building inspectors and officials
- Architects and engineers

Training and Quality Assurance



Installer Training

- Class room training (2-3 days)
- Written examination
- Field training continuous improvement

Classroom training:

- chemistry of polyurethane
- storage and handling of chemical products
- substrate preparation (various)
- building science

- standards CAN/ULC S705.1 and CAN/ULC S705.2
- health and safety
- installation of spray polyurethane foam

Training and Quality Assurance



Morrison Hershfield independent party certifying BASF program

- certification of quality assurance and training program
- certification of trainers
- site inspections Level 1 installers
- site inspections thermal insulation and air barrier system
- conflict resolution
- manage warranty program (in event of a problem)

Training and Quality Assurance



Warranty

BASF warrants to the original purchaser that WALLTITE *ECO*® – Air Barrier System, including the installation thereof, shall be free from defects in design, materials and workmanship for a period of two years from the date of completion of the installation of the Product.

- BASF shall require an independent third party to perform an inspection of the installation, if the installation contractor disputes the finding of BASF that the installation was defective, and refuses to remedy the installation work, or fails to remedy the installation work to the satisfaction of the Purchaser
- BASF shall repair or replace at its discretion any defective part or parts of the Product

Training and Quality Assurance



Frequency of WALLTITE ECO air barrier system inspections on the basis of total wall area (ft²):

1. 0	to	25,000	= 1 inspection
2. 25,001	to	50,000	= 2 inspections
3. 50,001	to	75,000	= 3 inspections
4. 75,001	+		= 4 inspections

Additional inspections may be requested by the project manager when stipulated in the project specifications.

Training and Quality Assurance



WALLTITE ECO air barrier system inspections

- visual inspections
- polyurethane foam:
 - adhesion
 - thickness

- cohesion
- density
- transition membranes :
 - installation
 - overlaps
 - folds and fish mouths



Training and Quality Assurance



Inspection – adhesion, transition membranes

Inspections are mandatory at

- all building corners and building angles
- wall/concrete slab intersections
- wall/roof intersections
- if not possible to conduct adhesion tests, approved transition membrane is to be mechanically fastened (wood forbidden)

walls:

Length (m)	≤ 30	31 – 60	≥ 60
# of inspections	1	2	every 30 m

Training and Quality Assurance



Inspection – adhesion, transition membranes

Transition membrane inspections required at

- perimeter of openings (windows, doors, service penetrations)
- tests must be conducted on 20% of openings, with a minimum of three tests to be completed
- every tenth column or beam
- not required if the approved transition membrane is mechanically fastened (metalic components only)

from BASF Canada



Evaluation and Compliance

- evaluation according to established requirements by others
- certification of quality assurance and training program – by independent third party

from BASF Canada



Characteristics and Advantages material system evaluation et compliance

Characteristics and Advantages





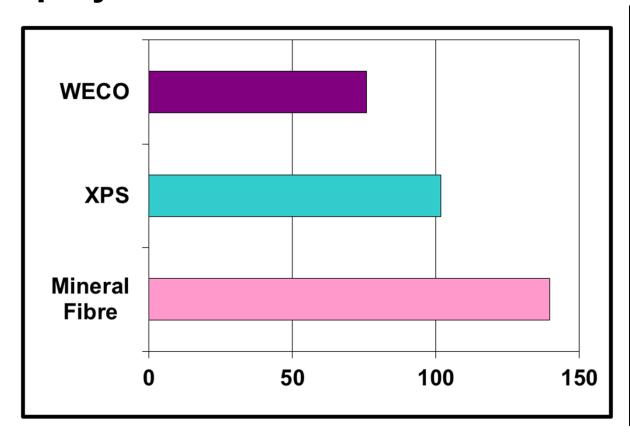


- distinct colour
- unique gradation
- clear identification
- true system
- resistant to aging

Characteristics and Advantages



Highest long-term R-value (LTTR) of all spray polyurethane foam insulations!



Thickness	LTTR
mm	RSI (m².°C/W)
50	2.14
75	3.33
100	4.55
inches	R (ft².hr.°F/Btu)
2	12.4
3	19.2
4	26.2

Characteristics and Advantages





WALLTITE ECO air barrier system

- simpler (fewer components and details)
- fewer penetrations
- insulates

interior air barrier system

- complex
- more penetrations
- higher failure risk



Characteristics and Advantages





- simple
- minimum # of components
- continuous
- monolithic
- multi-functional
- proven
- less susceptible to labour errors
- adheres very well to many substrates
- installation by trained and certified sprayers
- supported by a quality assurance program and an unmatched warranty

from BASF Canada



Characteristics and advantages

- successfully evaluated by the CCMC
- surpasses requirements of the NBCC
- recognized by CMHC
- high resistance to air leakage
- structural resistance
- durable material

from BASF Canada



the only spray polyurethane foam insulation having successfully passed the requirements of the CCMC's

Technical Guide for

Air Barrier Systems for Exterior Walls of Low-Rise Buildings

WALLTITE ECO

from BASF Canada



THANK YOU

