

# **UL Solutions Evaluation Report**

# ULC ER41037-03

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UL Solutions category code: ULEY7 - Weather Barriers for Canada

#### **CSI MasterFormat®**

Division:07 25 00Weather BarriersSub Level :07 27 19Air BarriersSub Level:07 27 36Spray Foam Air Barrier

## Company:

#### BASF Canada Inc.

10 Constellation Court Toronto, Ontario Canada M9W 1K1 www.basf.com

1. Subject:

BASF HP+™ CFR wall assembly



#### 2. Scope of evaluation:

To demonstrate compliance with the following codes:

2015 National Building Code of Canada, NBCC (June 30, 2017) 2020 National Building Code of Canada, NBCC (July 15, 2019)

Clause 1.2.1.1.(1)(a) Compliance with this Code (Acceptable Solution from Division B)

Part 5 – Environmental Separation Article 5.4.1.2 Air Barrier Assemblies

Part 9 – Housing and Small BuildingsSubsection 9.25.3.Air Barrier SystemsClause 9.36.2.9.(1)(b)Air TightnessSentence 9.36.2.10.(1)Construction of Air Barrier Materials

The product underwent evaluation for the following properties:

- Air barrier material
- Air barrier system
- Exterior wall assembly fire performance

#### 3. Referenced documents

CAN/ULC-S134	Standard Method of Fire Test of Exterior Wall Assemblies
CAN/ULC-S741	Standard for Air Barrier Materials - Specification
CAN/ULC-S742	Standard for Air Barrier Assemblies – Specification

#### 4. Uses

The BASF Canada Inc. **BASF HP+™ CFR** exterior wall assembly is intended for use as air barrier systems in building envelope assemblies in both site-built construction and building prefabrication process. The assembly may be used where the exterior wall assembly is required to meet CAN/ULC-S134 fire performance.

This Report does not cover the BASF HP+<sup>™</sup> CFR wall assembly for structural / seismic applications, areas of high humidity levels (pools, saunas, museums etc.), or below grade / floors-on-grade applications. Additional evaluations and testing other than noted in this Report are typically required to meet these and other applications.

#### 5. Product description

The **BASF HP+™ CFR** wall assembly consist of WALLTITE v.5 SPUF applied to the interior surface of exterior gypsum board secured to metal stud wall assembly consisting of vertical studs with thermally separated horizontal angles. See typical construction details available from the BASF website <u>BASF HP+Wall Systems CFR –</u> <u>Architectural Drawings</u>.

The WALLTITE® v.5 spray-applied polyurethane foam (SPUF) serves as the primary resistance to airflow when installed at a minimum thickness of 25 mm, with a secondary role of thermal insulation. The WALLTITE® v.5 SPUF foam system consists of two components, isocyanate and resin. The two components are mixed on site by qualified installers with a fixed-ratio positive displacement equipment. The WALLTITE® v.5 material is applied at a minimum density of 32.5 kg/m<sub>3</sub> (2.03 pcf). The SPUF is installed by CAN/ULC-S705.2 accredited installers. The BASF WALLTITE v.5 installed colour is purple.

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The BASF HP+™ CFR wall assembly was evaluated for air barrier performance characteristics in accordance with CAN/ULC-S742 Standard for Air Barrier Assemblies - Specification. Wall sections with and without penetrations (window, pipe and electrical penetrations, various substrates, accessories, etc.) were subjected to sustained, cyclic, and gust wind loading (design hourly wind pressure  $Q_{1/50} \le 1000$  Pa for building height maximum of 20m) with post conditioning assembly air leakage evaluation at both +20°C and -20°C.

Table 1 – Air leakage rate of wall assemblies					
Wall type	Air leakage requirement	Air leakage rate after wind	Air leakage rate after wind		
	classification	loading at	loading at		
	(CAN/ULC-S742)	+20°C @ 75Pa	-20°C @ 75Pa		
HP+™ CFR	A1 ≤ 0.05 L/(s·m²)	0.04L/(s·m²)	0.05 L/(s⋅m²)		

The BASF HP+™ CFR wall assembly was evaluated for fire performance in accordance with CAN/ULC-S134 Standard Method of Fire Test of Exterior Wall Assemblies for use with combustible materials within exterior walls. See NBCC Article 3.1.5.6 (1)(b) Combustible Components in Exterior Walls for code application requirements.

The BASF WALLTITE® v.5 material was evaluated for the performance characteristics in accordance with CAN/ULC-S741 Standard for Air Barrier Materials - Specification. Test specimens maintained an air leakage performance of less than 0.02 L/(s m<sup>2</sup>) @ 75 Pa after both UV and heat exposure for non-accessible air barrier materials.

The BASF WALLTITE® v.5 material was evaluated for the performance characteristics in accordance with CAN/ULC-S705.1 Standard for Thermal Insulation, Spray Applied Rigid Polyurethane Foam, Medium Density -Material Specification. See ULC Evaluation Report ULC-R41037 avaiable on UL Product iQ for technical details.

#### 6. Installation

Installation of the insulation must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions are to be always available at the jobsite during installation.

- Exterior wall construction to be completed by experienced trades personnel in accordance with regional code requirements.
- WALLTITE® v.5 must be installation by a licensed installer in accordance with the manufacturer's • directions and follow CAN/ULC-S705.2 requirements.
- The time to re-occupancy during retrofit construction is a minimum 25 hours. .
- See construction details at BASF HP+Wall Systems CFR Architectural Drawings available on the BASF website.
- See BASF WALLTITE® v.5 Application Guidelines, avaiable at https://walltite.basf.ca/home/downloads
- Manufactures installation instructions not to contravene the NBCC, provincial or regional code requirements.

### 7. Condition of use

The **BASF** Canada Inc. materials described in this Report has been evaluated in accordance with code sections listed in Section 2.0, subject to the following conditions:

- Materials and methods of installation must comply with this report and the manufacturer's published installation instructions. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.
- This product is manufactured in Blackie AB, and Toronto, ON, manufacturing facilities are under UL Solution audit of quality elements.

- This product is combustible as defined by Code. Based on the flame spread characteristics this product may require additional protection from fire, consult the Authority Having Jurisdiction.
- The WALLTITE® v.5 elements remain under a UL quality audit program where UL/ULC Field Engineering staff audit material manufacturing facilities.

#### 8. Supporting evidence

BASF has submitted technical documentation for UL Solutions review. Testing was conducted at ISO/IEC 17025 accredited laboratories. The test data submitted for this product is summarized below:

- Sample Selection of test materials at the BASF Toronto manufacturing facility by an ISO/IEC 17025 accredited testing laboratory.
- Data in accordance with CAN/ULC-S134 test report
- Data in accordance with CAN/ULC-S741 test report
- Data in accordance with CAN/ULC-S742 (ASTM E2357) test report

#### 9. Identification

The BASF **WALLTITE® v.5** thermal insulation described in this evaluation report is identified by a marking bearing the report holder's name (BASF Canada Inc.), the plant identification and the evaluation report number **ULC ER41037-03**. The validity of the evaluation report is contingent upon this identification appearing on the product drums.

#### 10. Client location/contact

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#### 11. Use of UL Solutions Evaluation Report

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## **GENERAL NOTES**

- 1. THE MENTION OF "ABS" BETWEEN BRAKETS NEXT TO COMPONENT OF THE DRAWINGS MEANS THAT THIS COMPONENT IS ONLY REQUIRED WHEN THE WALLL SYSTEM IS USED AS AN AIR BARRIER SYSTEM AS TESTED PER CAN/ULC-S742.
- 2. IN ORDER TO ACHIEVE A 90 MINUTES FIRE-RATING PER CAN/ULC-S101, 2 LAYERS OF 5/8" TYPE X GYPSUM ARE REQUIRED.
- 3. IT IS UP TO THE DESIGNER TO DETRMINE THE NEED OF A WEATHER BARRIER OH THE EXTERIOR FACE OF THE EXTERIOR SHEATING. THIS WALL SYSTEM HAS BEEN TESTED WITH THE JOINTS OF THE EXTERIOR SHEATING TAPED, AS SHOWN ON DRAWINGS.
- 4. THE UNDERSLAB INSULATION CONFIGURATION SHOWN IS ONE OF THE VARIOUS WAY TO ACHIEVE A RADON PROTECTION. REFER TO CCMC 14152-R FOR ADDITIONAL INFORMATION ON RADON CONTROL.

## TESTING

- FIRE TESTING CAN/ULC-S134: THE HP+ CFR WALL SYSTEM HAS BEEN TESTED TO CAN/ULC-S134 AND SUCCESSFULLY PASSED THE ACCEPTANCE CRITERIA OF ARTICLE 3.1.5.6. OF THE NATIONAL BUILDING CODE (NBC). REFER TO INTERTEK DESIGN NO. BASF/SI 25-01. MAXIMUM THICKNESS OF WALLTITE IS 152 MM.
- FIRE TESTING CAN/ULC-S101: THE HP+ CFR WALL SYSTEM HAS A FIRE-RESISTANCE RATING OF 90 MINUTES WHEN TESTED TO CAN/ULC-S101. REFER TO INTERTEK DESIGN NO. BASF/SI 90-01. MAXIMUM THICKNESS OF WALLTITE IS 152 MM.
- 3. AIR BARRIER SYSTEM TESTING CAN/ULC-S742: THE HP+ CFR WALL SYSTEM MEETS THE REQUIREMENT OF CAN/ULC-S742 AND ASTM E2357. IT ALSO MEETS THE ABAA REQUIREMENTS FOR AIR LEAKAGE OF AIR BARRIER ASSEMBLIES. MINIMUM THICKNESS OF WALLTITE IS 113 MM.
- 4. EFFECTIVE R-VALUE THERMAL MODELING: WHEN UTILIZING 5.5" OF WALLTITE, HP+ CFR HAS AN EFFECTIVE R-VALUE OF R23, TAKING INTO ACCOUNT GENERIC METAL CLADDING AND AIR FILMS. THE MODELING APPROACH USED IS PER THE PROCEDURE OUTLINED IN CSA Z5010:21 BRIDGING CALCULATION METHODOLOGY, AND THE METHODOLOGY PUT FORWARD FOR ASHRAE 1365-RP AND THE BUILDING ENVELOPE THERMAL BRIDGING GUIDE (BETB) 2021.

**IMPORTANT NOTE:** ALL TESTING OF THIS PATENTED SYSTEM WERE COMPLETED USING WALLTITE, BASF'S PROPRIETARY SPRAY FOAM. THEREFORE, TESTING RESULTS OF HP+ CFR APPLY TO BASF'S FOAM ONLY, AND NO OTHER FOAM CAN BE SUBSTITUTED FOR WALLTITE.

IMPORTANT: THE INFORMATION, DATA AND PRODUCTS PRESENTED HEREIN ARE BASED UPON INFORMATION REASONABLY AVAILABLE TO BASE CANADA AT THE TIME OF PUBLICATION, AND ARE PRESENTED IN GOOD FAITH, BUT ARE NOT TO BE CONSTRUED AS GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED, REGARDING PERFORMANCE, RESULTS TO BE OBTAINED FROM USE, COMPREHENSIVENESS, MERCHANTABILITY, OR THAT SAID INFORMATION, DATA OR PRODUCTS CA BE USED WITHOUT INFRINGING PATENTS OF THIRD PARTIES. YOU SHOULD THOROUGHLY TEST ANY APPLICATION AND INDEPENDENTLY DETERMINE SATISFACTORY PERFORMANCE BEFOR COMMERCIALIZATION.

HP+ CFR WALL GENERAL NOTES				We create chemistry		
rawing Number:	Scale:	Project no:	Date:	Designed by:	Drawn by:	Checked by:
R0-01	NOT TO SCALE	SH22 HP+ CFR	JUNE 07 2023	I.H.	E.L.	F.D.



















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STEP 2 INSTALL A MEMBRANE ON THE WALL TO COVER THE LOWER HALF OF THE PIPE.



#### STEP 3

INSTALL A SECOND MEMBRANE ON THE WALL TO COVER THE UPPER PART OF THE PIPE AND OVERLAP WITH THE LOWER MEMBRANE. SEAL THE PERIMETER AND ALL THE MEMBRANE JOINTS.

PENETRATION - 3D DETAIL		HP+ CFR WALL			<b>BASF</b> We create chemistry	
Drawing Number:	Scale:	Project no:	Date:	Designed by:	Drawn by:	Checked by:
WS-10	NOT TO SCALE	SH22 HP+ CFR	JUNE 07 2023	I.H.	E.L.	F.D.