

ULC Evaluation Report

ULC ER-R40655-R1.0

Issued Date: **2021-11-10**
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UL Category Code:
ULEX7 - Thermal Protection for Canada

CSI MasterFormat®
DIVISION: 07 21 00 THERMAL INSULATION
Sub Level : 07 21 19 – Foamed-In-Place Insulation

COMPANY:

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1. SUBJECT

Comfort Lock HFO

2. SCOPE OF EVALUATION

2015 National Building Code of Canada, NBCC (Sept. 28, 2018)
Clause 1.2.1.1.(1)(a) Compliance with this Code (Acceptable Solution from Division B)

Part 5 – Environmental Separation
Article 5.9.1.1 Compliance with Applicable Standards

Part 9 – Housing and Small Buildings
Clause 9.25.2.2.(1)(h) Insulation Materials
Article 9.25.2.5 Installation of Spray-Applied Polyurethane

The product was evaluated for the following properties:

- Surface Burning Characteristics (CAN/ULC-S102)
- Physical Properties (CAN/ULC-S705.1)



3.0 REFERENCED DOCUMENTS

CAN/ULC:

CAN/ULC-S102	Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
CAN/ULC-S705.1	Standard for Thermal Insulation, Spray Applied Rigid Polyurethane Foam, Medium Density – Material Specification
CAN/ULC-S705.2	Standard for Thermal Insulation, Spray Applied Rigid Polyurethane Foam, Medium Density – Application
CAN/ULC-S774	Standard Test method for the Determination of Volatile Organic Compound Emissions from Polyurethane Foam

4.0. USES

The Shunda Polyurethane Ltd. **Comfort Lock HFO** spray-applied, rigid polyurethane medium density foam is intended for use as a building thermal insulation or for other purposes in building and non-building applications in both site-built construction and building prefabrication process.

This Report does not cover Comfort Lock HFO for use in exterior roofing applications, radon resistance systems, fire resistive construction, or exterior wall application. Additional evaluations and testing required to meet these and other applications.

5.0 PRODUCT DESCRIPTION

The product is a spray applied, rigid polyurethane medium density foam insulation. The site sprayed 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 and is applied at a minimum density of 35 kg/m³ (2.18 pcf). The colour of the final product is **sky blue**.

The Comfort Lock HFO elements are under a UL quality audit program where UL/ULC Field Engineering staff audit material manufacturing facilities, details of the product are on file at ULC and are described by Comfort Lock HFO, Revision 2.

6.0 PERFORMANCE CHARACTERISTICS

The Comfort Lock HFO thermal insulation was evaluated for the performance characteristics as reported below in Table 1 Performance Characteristics with testing in accordance with sections of the following test standards:

CAN/ULC S705.1-15-REV1, Standard for Thermal Insulation, Spray Applied Rigid Polyurethane Foam, Medium Density – Material Specification

Table 1: Performance Characteristics		
Properties	Requirements	Results
Density (minimum site specified density)	≥ 28 kg/m ³	35 kg/m ³
Air Permeance	≥ 0.02 L/(s·m ²)@75Pa	Pass
Compression Strength	≥170 kPa	183 kPa
Properties	Requirements	Results

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Dimensional Stability 28 d at -20±3°C, ambient humidity 28 d at 80±2°C, ambient humidity 28 d at 70±2°C, 97±3% R.H	≥ -2/+5% ≥ -2/+8% ≥ -2/+14%	-1% +2% +6%
Fungi Resistance	No Growth	Pass
Long Term Thermal Resistance @ 50mm thickness	≥ 1.80 m ² ·K/W	1.87 m ² ·K/W
Open-Cell Content	≤10%	5 %
Surface Burning Characteristics Flame Spread Rating	220	390
Tensile Strength	≥ 200 kPa	216 kPa
Time to Occupancy	Days	24 hours
Water Absorption by Volume	≤ 4.0 %	0.7 %
Water Vapour Permeance @50mm thickness	≤ 60 ng/(Pa·s·m ²)	47 ng/(Pa·s·m ²)

7.0 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 available at the jobsite at all times during installation.

- A. The specified minimum site density must comply with the above requirement, as measured on-site in accordance with CAN/ULC S705.2.
- B. Installation must be by a licensed installer in accordance with the manufacturer's directions and follow CAN/ULC S705.2.
- C. The time to re-occupancy during retrofit construction is a minimum one day (24 hours).

8.0 CONDITIONS OF USE

The Comfort Lock HFO material described in this Report has been evaluated in accordance with code sections listed in Section 2.0, subject to the following conditions:

- A. 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, the manufacturer shall be consulted.
- B. This product is manufactured in Yantai City, Shandong Province, China under UL's audit of quality elements.
- C. This product is combustible. Based on the flame spread, this product may require additional protection from fire.

9.0 SUPPORTING EVIDENCE

SHUNDA Polyurethane Ltd. has submitted technical documentation for ULC's review. Testing was conducted at laboratories recognized as ISO/IEC 17025 compliant. The test data submitted for this product is summarized below.

- A. Sample Selection of Comfort Lock HFO test materials at the Yantai City, Shandong Province, China facility by an ISO 17025 accredited test lab.

- B. Data in accordance with CAN/ULC S705.1, compliant test report from an ISO/IEC 17025 accredited test lab.
- C. Data in accordance with ASTM E2178, compliant test report from an ISO/IEC 17025 accredited test lab.
- D. CAN/ULC-S774 VOC test report by an ISO/IEC 17025 accredited test lab.
- E. CAN/ULC-S102 / S127 test report by an ISO/IEC 17025 accredited test lab.
- F. Human Health Risk Assessment of Volatile Organic Compound by a Diplomate of the Board of Toxicology (DABT).
- G. Caliber Quality Solutions Inc. (Certification Organization / SQAP / site inspections).

10.0 IDENTIFICATION

Comfort Lock HFO thermal insulation described in this evaluation report is identified by a marking bearing the report holder's name (SHUNDA Polyurethane Ltd.) and the evaluation report number **ULC ER-R40655-R1.0**. The validity of the evaluation report is contingent upon this identification appearing on the product drums.

11.0 CLIENT LOCATIONS / CONTACT

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Standard 17025 by the International Accreditation Service (IAS) or by any other accreditation body that is a signatory to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA). The scope of the laboratory's accreditation shall include the specific type of testing covered in the test report. As the accuracy of any non-UL data is the responsibility of the accredited laboratory, UL does not accept responsibility for the accuracy of this data.