

UL Evaluation Report

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UL Category Code: ULEX

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DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION

Sub-level 2: 07 20 00 – Thermal Protection

Sub-level 3: 07 21 00 – Thermal Insulation

Sub-level 4: 07 21 23 – Loose Fill Insulation

Sub-level 4: 07 21 26 – Blown Insulation

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1. SUBJECT:

K-13, CELBAR SPRAY, AND CELBAR LOOSE-FILL THERMAL INSULATION MATERIALS; URE-K SPRAY THERMAL BARRIER; AND CELBAR RL SPRAY APPLIED FIRE RESISTIVE MATERIAL (SFRM)

2. SCOPE OF EVALUATION

- 2015, 2012 and 2009 *International Building Code*® (IBC)
- 2015, 2012 and 2009 *International Residential Code*® (IRC)
- 2015, 2012 and 2009 *International Mechanical Code*® (IMC)
- NFPA 70 *National Electric Code*®, 2016 Edition
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated December 2012



The products were evaluated for the following properties:

- Surface Burning Characteristics (ANSI/UL723, ASTM E84)
- Physical Properties (ASTM C739)
- Thermal Resistance (ASTM C739, ASTM C518)
- Fireblocking
- Fire-Resistance Rated Construction (ANSI/UL263)
- Ignition Barrier – Attics
- Thermal Barrier
- Plenum Installation

3. REFERENCED DOCUMENTS

- ANSI/UL723 (ASTM E84), Test for Surface Burning Characteristics of Building Materials
- ANSI/UL263 (ASTM E119), Fire Test of Building Construction and Materials
- ASTM C739, Standard Specification for Cellulosic Fiber Loose Fill Thermal Insulation
- ASTM C518, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- ASTM C1015, Standard Practice for Installation of Cellulosic and Mineral Fiber Loose Fill Thermal Insulation
- ASTM C840, Standard Specification for Application and Finishing of Gypsum Board
- CPSC 16CFR Part 1209, Interim Safety Standard for Cellulose Insulation
- CPSC 16CFR Part 1404, Cellulose Insulation
- Gypsum Standard GA-216, Application and Finishing of Gypsum Panel Products
- NFPA 275, Standard Method of Fire Tests for the Evaluation of Thermal Barriers
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated December 2012

4. USES

K-13, Celbar Spray, Ure-K Spray, and Celbar Loose-fill are nonstructural thermal and sound insulation materials used in buildings of all types of construction.

Celbar RL is a spray applied fire resistive material (SFRM) for use in specific fire-resistance rated construction for vertical wall assemblies in accordance with [IBC Section 703](#), as described in Section 6.3.

Celbar Spray, Celbar Loose-fill insulation and Celbar RL (SFRM) are recognized for use as a fire blocking in accordance with [IBC Section 718.2.1](#) and [IRC Sections R302.11.1](#) and [R602.8 IRC](#), and may be used as alternatives to the fireblocking materials required in [Section R302.11.1 of the 2009 IRC](#), as described in Section 6.2.

K-13, Celbar Spray and Celbar Loose-fill insulation may be used as an ignition barrier over foam plastics in accordance with [IRC Section R316.5.3](#), as described in Section 6.5.

Celbar Loose-fill and Celbar Spray are permitted on or within floors/ceiling or roof/ceiling assemblies, walls, attics, crawl spaces, plenums and partitions.

K-13 and Ure-K are self-supported spray applied insulation used as interior finish and for exposed applications and for use within plenums.

Ure-K Spray is an approved Thermal Barrier in accordance with [IBC Section 2603.4](#) and [IRC Section R316.4](#), as described in Section 6.4.

5. PRODUCT DESCRIPTION

5.1 General:

K-13, Celbar Spray, Ure-K Spray, Celbar Loose-fill and Celbar RL (SFRM) consist of a uniform low-density mixture of cellulosic fibers and fire retardant chemicals. The materials have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ANSI/UL 723 (ASTM E 84) in accordance with the requirements set forth in [IBC Section 720](#) and [IRC Section 302.10](#). Celbar Spray & Celbar Loose-fill meet the requirements of CPSC 16CFR parts 1209 & 1404. Refer to Table 1 for thermal characteristics.

5.2 K-13:

K-13 fiber and SK-2000 adhesive emulsion are simultaneously applied to a surface in separate streams by a specially designed nozzle provided by International Cellulose Corporation. K-13 spray applied insulation is used for exposed applications as an interior finish sprayed on metal, concrete, gypsum board and wood surfaces, as described in 6.6. The insulation has a nominal density of 3.5 pcf. K-13 is installed by applicators licensed and trained by International Cellulose. When used as an ignition barrier over foam plastics, see 6.5.

5.3 Celbar Spray:

Celbar Spray is applied into wall or ceiling cavity's and has an average dry density of 3.3 pcf. Fibers are combined with a dry adhesive during the manufacture of the fibers. The material is spray applied with water through a specially designed nozzle to activate the dry adhesive in the fire retardant treated fibers.

5.4 Ure-K Spray:

Ure-K is spray applied directly to exposed applications of foam plastic insulation as a Thermal Barrier, as described in 6.4. Ure-K is sprayed to an average thickness of 1.25 inches and has a nominal dry density of 4.4 pcf. Ure-K is installed by applicators licensed and trained by International Cellulose. Ure-K may also be used for exposed applications as an interior finish sprayed on metal, concrete, gypsum board and wood surfaces, as described in 6.6.

5.5 Celbar Loose-fill:

Celbar Loose-fill insulation is installed within concealed spaces of walls, partitions and roof/ceiling or floor/ceiling assemblies, or is exposed on horizontal or sloped attic floors having a maximum slope of 5:12 (41.7 percent slope). The insulation has a nominal design density of 1.4 pcf when installed on attic floors, and a nominal density of 3.5 pcf when installed within enclosed spaces.

5.6 Celbar RL:

Celbar RL (SFRM) is a sprayed applied fire resistive material. Fibers are combined with a dry adhesive during the manufacture of the fibers. The material is spray applied with water through a specially designed nozzle to activate the dry adhesive in the fire retardant treated fibers. Celbar RL (SFRM) is installed within limited load -bearing fire-rated assemblies, as described in Section 6.3 to a minimum dry density of 4.3 pcf. by applicators trained by International Cellulose.

Table 1 –Thermal Resistance

INSULATION TYPE	THERMAL CONDUCTIVITY K-VALUE (Btu-in./Ft. ² •hr•°F)	R-VALUE (per Inch of thickness)
Celbar Loose Fill	0.29	3.6
Celbar Spray	0.27	3.7
K-13	0.27	3.7
Ure-K	0.28	3.6

6. INSTALLATION

6.1 General:

Installation of K-13, Celbar Spray, Ure-K Spray, Celbar Loose-fill and Celbar RL (SFRM) must comply with this report, the manufacturer's published installation instructions, and ASTM C1015, as applicable. Celbar Spray, Celbar Loose Fill and Celbar RL (SFRM) are only installed by professional contractors. K-13 and Ure-K are only installed by professional contractors that are licensed by International Cellulose and have the proper equipment and have been trained for the installation of these materials. The manufacturer's published installation instructions must be available at the jobsite.

When K-13, Celbar Spray, Ure-K Spray or Celbar RL (SFRM) are installed within a plenum, the installation must be in accordance with [IMC Section 602](#). Installation is not permitted in the area from the exit of the cooling coil to the downstream end of the drain pan in accordance with [IMC Section 604.13](#).

Installation must be in accordance with CPSC 16 CFR 1404, [IRC Section E4004](#) and NFPA 70 (NEC) 410.116.9 when installation is above or adjacent to recessed luminaries (lighting fixtures) or other heat-producing elements. A permanent barrier of steel wire mesh or sheet metal is necessary to maintain a 3 inch (76 mm) clearance between the item and the insulation, unless the recessed luminaire is identified as Type IC and is listed in accordance with the applicable code for direct contact with insulation, or the heat-producing element is listed for zero clearance to combustibles. The insulation is limited to areas where the temperature will not exceed 194°F (90°C) in accordance with [IRC Section E4003.2](#).

The code official may require an approved vapor retarder to be installed in accordance with [IBC Section 1405.3](#) or [IRC Section R702.7](#), as applicable.

Attic ventilation, when required by the code, must not be blocked by the application of the insulation when installed in accordance with [IRC Section R806.3](#).

Insulation should not be installed in areas where there is prolonged exposure to water or to heat in excess of 194 F (90 C).

The surfaces to receive sprayed material must be clean, dry and free from dust, grease, rust oil or any other agent tending to reduce adhesion. The material is sprayed to the required thickness in a one-pass operation, covering all projections and surfaces.

6.2 Fireblocking:

Celbar Spray and Celbar Loose-fill insulation and Celbar RL (SFRM) may be used as fireblocking materials in accordance with [IBC Section 718.2.1](#), [IRC Sections R302.11.1](#) and [R602.8](#), and may be used as alternatives to the fireblocking materials required in [Section R302.11.1 of the 2009 IRC](#).

The insulation may be placed in concealed spaces of wood or steel stud walls and partitions of combustible construction with stud spacing up to 24 inches (610 mm) on center. When the walls and partitions have existing insulation in the spaces between the studs, access holes measuring from 1 inch (25.4 mm) in diameter to 6 inches (152 mm) square are cut in the wall covering at each space between studs, and the plugs are removed. The existing insulation is cut and pushed away to form a space with a minimum height of 16-inches (406 mm) above the floor level. Insulation is then installed into the open space, filling from the floor a full 16-inch (406 mm) (or greater) height, and contacting all surfaces. After installation has been completed, the plugs are replaced and the wall covering is repaired with tape and joint compound in accordance with ASTM C840 or GA 216.

When there is no insulation in the wall or partition, insulation must completely fill the stud cavity to a minimum depth of 16 inches (406 mm).

6.3 Fire-Resistance:

6.3.1 Calculated Fire-Resistance

The fire-resistance rating of wood-stud walls is increased by 15 minutes when calculating fire-resistance in accordance with [IBC Table 722.6.2\(5\)](#), when the spaces between wood studs are completely filled with cellulose insulation having a nominal density not less than 2.6 pcf.

6.3.2 Fire-Resistance Ratings

Celbar RL (SFRM) is permitted within the UL Fire Resistance rated wall assemblies described in Table 2 complying with [IBC Section 703.2](#). Refer to the UL Fire Resistance Certification information for File R5499 ([CCAZ Link](#)) for applicable design coverage and details of the fire-resistance rated Wall assemblies covered by this report. Fire-resistance ratings are only applicable when the assemblies are constructed in accordance with the published designs.

Table 2 – Fire-Resistance Designs

Product Designation	Applicable Fire-Resistive Design(s)
Celbar RL (SFRM)	U023, U032, U036, U305, U309, U311, U317, U321, U326, U330, U331, U333, U338, U339, U340, U341, U342, U344, U354, U355, U356, U395, U398, U403, U411, U412, U420, U425, U426, U428, U429, U434, U435, U436, U438, U440, U460, U462, U463, U465, U466, U467, U469, U470, U471, U477, U478, U495, U498, U499, U528, U622, U646, U647, U648, U651, V310, V401, V410, V414, V416, V421, V425, V455, W405, W419

6.4 Thermal Barrier:

Ure-K Spray, when applied directly at an average thickness of 1.25 inch with a minimum thickness of 1.0 inch and an average sprayed density of 4.4 pcf to exposed, spray-applied polyurethane foam plastic insulation and to either faced or unfaced, rigid polyisocyanurate foam plastic insulation is an approved Thermal Barrier separating foam plastic from a building interior as described in [IBC Section 2603.4](#) or [IRC Section R316.4](#). As a thermal barrier, the URE-K Spray is limited to application to foam plastic with a flame spread index of not more than 75 and a smoke-developed index of not more than 450. Installation shall be in accordance with the manufacturer's published instructions and this report.

6.5 Installation in Attics when used as a Prescribed Ignition Barrier:

K-13, Celbar Spray and Celbar Loose-fill insulation may be used as an ignition barrier over foam plastics in accordance with [IRC Section R316.5.3](#) when applied at a minimum thickness of 1 ½ inches (38.1 mm) and a minimum installed density of 2.6 lbs/ft³ (43.0 kg.m³). Installation shall be in accordance with the manufacturer's published instructions and this report.

6.6 Interior Finish:

K-13 and Ure-K Spray may be used as Class A interior finish materials in accordance with [IBC Section 803](#).

7. CONDITIONS OF USE

7.1 General:

The products described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

7.2 Installation must comply with this report, the manufacturer's published installation instructions, and the applicable code. If there is a conflict between this report and the manufacturer's published installation instructions, this report governs.

7.3 K-13, Celbar Spray, Ure-K Spray, Celbar Loose-fill and Celbar RL (SFRM) may be installed in Type I or II construction in applications as described in [IBC Section 603.1](#).

7.4 Spray applied insulation must be protected from weather during and after installation.

7.5 K-13, Celbar Spray, Ure-K Spray, Celbar Loose-fill and Celbar RL (SFRM) are manufactured under the UL LLC Classification and Follow-Up Service Program in Houston, TX, which includes audits in accordance with ICC-ES Acceptance Criteria for Quality Documentation, AC10.

8. SUPPORTING EVIDENCE

8.1 Manufacturer's published installation instructions.

8.2 UL test reports and Classification in accordance with the following:

- Surface Burning Characteristics in accordance with ANSI/UL 723 (ASTM E84). See UL Product Certification Category for Sprayed Fiber ([BNST Link](#))
- Surface Burning Characteristics in accordance with ANSI/UL 723 (ASTM E84). See UL Product Certification Category for Loose Fill Materials ([BPHX Link](#))
- Physical properties testing in accordance with ASTM C739. See UL Product Certification Category for Loose Fill Materials ([BPHX Link](#))
- Fire Resistance in accordance with ANSI/UL 263 (ASTM E119). See UL Product Certification Category for Sprayed Fiber ([CCAZ Link](#))

8.3 Reports of physical property testing in accordance with CPSC 16CFR Part 1209

8.4 Reports of thermal barrier testing in accordance with NFPA 275

8.5 Reports of fireblocking testing

8.6 Documentation of quality system elements described in AC10

9. IDENTIFICATION

The products described in this evaluation report are identified by a marking bearing the report holder's name (International Cellulose Corporation), the product name, the address of the manufacturing plant, the date of manufacture, the UL Classification Mark, and the evaluation report number UL ER5499-01. Additionally, each package must bear a label with information required by FTC 16 CFR Part 460, and CPSC 16 CFR, Parts 1209 and 1404.

The validity of the evaluation report is contingent upon this identification appearing on the product or UL Classification Mark certificate.

Jobsite labeling for the insulation must comply with [IRC Section N1101.12.1.1](#) and [Section N1101.12.2](#).

10. USE OF UL EVALUATION REPORT

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