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APPROVAL REPORT

Project No: 3060607
Class: 4431
Product Name: Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1,
Model CE2 3P1C2, Model CE2 3P2C1, Model CE2 3P1C1
Product Type: Skylight
Name of Listing Company: VELUX America LLC
Address of Listing Company: 1418 Evans Pond Rd
PO Box 5001
Greenwood SC 29648-5001
United States
Customer ID: 141895-1
Customer website: www.veluxusa.com

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4/19/2017

Date of Approval

1 INTRODUCTION

1.1 VELUX America LLC requested Approval of their Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 Skylights listed in Section 1.4 to determine if it meets the Approval requirements of the standard listed in Section 1.3.

1.2 This report may be freely reproduced only in its entirety and without modification.

1.3 Standards

Title	Number	Issue Date
Approval Standard for Skylights	4431	September, 2006

1.4 Listing

The product will appear in the Approval Guide, an on-line resource of FM Approvals, as follows:

Skylights for Roofs

Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, Model CE2 3P1C1

VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights are provided in the following sizes***:

2 x 4 ft (0.6 x 1.2 m)	3 x 3 ft (0.9 x 0.9 m)	4 x 4 ft (1.2 x 1.2 m)	5 x 5 ft (1.5 x 1.5 m)
2 x 8 ft (0.6 x 2.4 m)	3 x 5 ft (0.9 x 1.5 m)	4 x 5 ft (1.2 x 1.5 m)	5 x 6 ft (1.5 x 1.8 m)
	3 x 6 ft (0.9 x 1.8 m)	4 x 6 ft (1.2 x 1.8 m)	5 x 8 ft (1.5 x 2.4 m)
	3 x 8 ft (0.9 x 2.4 m)	4 x 8 ft (1.2 x 2.4 m)	

***Different sizes of any Velux Model skylight are identified through a specific naming convention. For example, a 5 ft. x 8 ft. CD2 3P1C2 skylight will be properly identified as CD2 6096 3P1C2, where 6096 stands for 60in. x 96in., which equals 5 ft. x 8ft.

The skylights are available with polycarbonate glazed double domes with multiple color and finish options. See the table below for exact model and dome descriptions.

Model	Double Dome Description
CD2 3P1C2	0.118" Dynamic Polycarbonate Clear Outer Dome, 0.118" Dynamic Prismatic Polycarbonate White Inner Dome
CD2 3P2C1	0.118" Dynamic Polycarbonate White Outer Dome, 0.118" Dynamic Prismatic Polycarbonate Clear Inner Dome
CD2 3P1C1	0.118" Dynamic Polycarbonate Clear Outer Dome, 0.118" Dynamic Prismatic Polycarbonate Clear Inner Dome
CE2 3P1C2	0.118" Dynamic Polycarbonate Clear Outer Dome, 0.118" Dynamic Prismatic Polycarbonate White Inner Dome
CE2 3P2C1	0.118" Dynamic Polycarbonate White Outer Dome, 0.118" Dynamic Prismatic Polycarbonate Clear Inner Dome

CE2 3P1C1	0.118" Dynamic Polycarbonate Clear Outer Dome, 0.118" Dynamic Prismatic Polycarbonate Clear Inner Dome
<p>"CD" Denotes mill finish aluminum frames "CE" Denotes powder coated aluminum frames with gray finish</p>	

VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights meet the FM Approvals requirements for a 1-105 psf (5.03 kPa) Wind Rating when secured to a 1.5 in (38 mm) curb by using #8 x 1.75" or larger stainless steel fasteners at a maximum 12 in (305 mm) o.c. Fasteners are secured on all four sides of the frame through pre-drilled holes.

VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights meet the FM Approvals requirements for a Severe Hail (SH) rating as tested with 2.0 in. (51 mm) diameter frozen ice balls.

VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights meet the FM Approvals requirements for flame spread from an exterior source for Class A at a slope of 5 in 12.

All other products are Approved as described in Approval Guide. Formulations, drawings, and specifications are on file at FM Approvals.

2 DESCRIPTION

The VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights are described as follows:

FM Approved VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights are provided in sizes up to 5 ft. (1.5 m) in width and up to 8 ft. (2.4 m) in length. The skylights are available in double-dome glazing options with 0.118 in. thick outer domes and 0.118 in. thick inner domes. For both the CD2 and CE2 models, the outer domes are available as dynamic polycarbonate clear and dynamic polycarbonate white, and the inner domes are available as dynamic prismatic polycarbonate white and dynamic prismatic polycarbonate clear. CD2 models are mounted on mill finish aluminum frames and CE2 models are mounted on powder coated aluminum frames with gray finish.

3 EXAMINATIONS AND TESTS

- 3.1 Samples were submitted for examination and testing. The samples were considered to be representative of standard production and were examined or tested as indicated below. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.
- 3.2 Samples of the plastic sheets used to form the skylight domes were witnessed by an FM Approvals representative on November 10, 2016.
- 3.3 The manufacturing process for the VELUX skylight test samples was witnessed by an FM Approvals representative on January 5, 2017.

- 3.4 All testing and analysis considered appropriate was conducted and verified to be in compliance with the Standard defined in Section 1.3.

Table 1

Standard Number	Section	Test Name	Justification/Comments
4431	4.1	Spread of Flame Test for Skylights from an Exterior Ignition Source	Included: <u>Passed</u> Class A at 5 in 12 Slope
4431	4.2	Simulated Hail Resistance Test Using Freezer Ice Balls	Included: <u>Passed</u> SH Rating using 2.0 in. (51 mm) Diameter Freezer Ice Balls
4431	4.3	Simulated Impact Test for Skylights	Included: <u>Passed</u> *NR
4431	4.4	Simulated Wind Uplift Resistance Test for Skylights	Included: <u>Passed</u> 1-105 PSF Wind Rating
4431	4.5	Windborne Debris Rating (Approval Standard 4350)	Optional: Not Included
*NR = No Rating			

4 MARKING

- 4.1 The manufacturer shall mark each skylight with the manufacturer's name and product trade name. In addition, each item must be marked with the Approval Mark of FM Approvals.
- 4.2 Markings denoting Approval by FM Approvals shall be applied by the manufacturer only within and on the premises of manufacturing locations under the FM Approvals Surveillance program.
- 4.3 The manufacturer agrees that use of the FM Approvals name or Approval Mark is subject to the conditions and limitations of the Approval by FM Approvals. Such conditions and limitations must be included in all references to Approval by FM Approvals.
- 4.4 Product intended for use in Canada shall be provided with caution and warning labels in both English and French.

5 REMARKS

- 5.1 Continued Approval is based upon fabrication and construction of VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights in accordance with this Approval Report, satisfactory field experience and continued use of acceptable quality control procedures as determined by Surveillance Audits.
- 5.2 Additional guidance for the use of Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights is outlined in FM Global Property Loss Prevention Data Sheets 1-10.

6 SURVEILLANCE AUDIT

The manufacturing facilities at the following location shall be visited on a routine basis. The facility processes and quality control procedures in place have been determined to be satisfactory to manufacture products identical to that tested and Approved. An FM Approved Products Revision Request Form shall be submitted to FM Approvals for requests to manufacture products at any additional or alternate manufacturing facilities which are not listed below.

Audit Location

VELUX America LLC
1930 Emerald Rd.
Greenwood SC 29649
United States

7 MANUFACTURER'S RESPONSIBILITIES

- 7.1 Documentation that is applicable to this approval is on file at FM Approvals and listed in the Documentation File, Section 8, of this report. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The FM Approved Products/Specification Tested Revision Request Form shall be forwarded to FM Approvals as notice of proposed changes.
- 7.2 When a VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights are to be erected for an FM Global insured, the manufacturer shall forward all submittals required by this Approval Report to the appropriate FM Global Operations Center for review and acceptance.
- 7.3 The manufacturer shall supply all instructions, materials, equipment, and assistance necessary for the complete, proper and satisfactory erection and testing of the skylight.
- 7.4 In accordance with the Master Agreement, the manufacturer shall make full and immediate disclosure to FM Approvals of all information concerning any defect in, or potential hazard of, the product or service manufactured or provided by the Customer which is Approved by, or being examined by, FM Approvals. The manufacturer shall make all necessary arrangements for the investigation of complaints / anomalies applicable to this approval and shall keep records of all complaints / anomalies including actions taken.

8 DOCUMENTATION

The following document describes the VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights and is on file at FM Approvals.

Document Title	Issue Date
Surveillance Audit Manual for VELUX America LLC, Greenwood, SC	April 2017

9 CONCLUSION

The VELUX America LLC Model CD2 3P1C2, Model CD2 3P2C1, Model CD2 3P1C1, Model CE2 3P1C2, Model CE2 3P2C1, and Model CE2 3P1C1 skylights described in section 1.4 meets FM Approvals requirements. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

PROJECT DATA RECORD: 3060607