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RESEARCH REPORT: RR 25898
(CSI # 13030)

Expires: December 1, 2022
Issued Date: February 15, 2021
Code: 2020 LABC

GENERAL APPROVAL - Renewal and Clerical Modification - Duracold Refrigeration Panels for Walk-in Coolers and Freezers.

DETAILS

Duracold Refrigeration panels are manufactured up to 46 inches wide and in a thickness of 4 inches with metal facings consisting of 26-gage (0.019-inch base metal thickness) steel complying with ASTM A653 CS Type A that are textured to a stucco embossed galvanized finish. The 2.3-pcf density core material consists of BASF two-part component polyurethane Autofroth® 9300A Isocyanate /Autofroth® 98-B-0411 Resin. The panels are framed around the perimeter with BASF 11-pcf high-density foam rails made of two-part component polyurethane Autopour® 931-2113 Isocyanate/Autopour® 9594 Resin. The panels have tongue and groove edges and are connected together by the use of cam-locking devices.

The T-Wall Panel is manufactured up to 10 ft in height with dimensions of 23 inches by 13½ inches and consists of three cam-lock fasteners at each top and bottom for ceiling and floor panel connections. The Corner Panel is manufactured up to 10 ft height with dimensions of 13½ by 13½ inches (exterior to exterior) and consists of two cam-lock fasteners at each top and bottom for ceiling and floor panel connections.

The foam core insulation itself has a smoke density and flame spread ratings of 246 and 23, respectively, when tested in accordance with ASTM E84. The panels, when tested as a finished product in accordance with ASTM E84, have a smoke density and flame spread ratings of 210 and 5, respectively. In addition, the foam core when tested in accordance with ASTM D1929 has a self-ignition and flash ignition temperatures of 920°F and 640°F, respectively.

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The approval is subject to the following conditions:

1. The cooler and freezers shall be limited to locations where combustible construction is permitted by the 2020 Los Angeles City Building Code.
2. The panels shall be fabricated in a shop of a licensed fabricator approved by the Los Angeles City Building & Safety Department. Fabrication in unlicensed shops will invalidate this approval.
3. Materials for the panel construction shall be as specified above. Test data by a Los Angeles City approved testing agency shall be submitted upon request.
4. Complete plans and design calculations bearing the signature of a civil or structural engineer registered in the State of California shall be submitted to the structural plan check for their approval for each job. Wall panel shall be connected to the supporting structure with fasteners complying with the building code or approved by a current Los Angeles City Research Report and shall be detailed on the approved plans.
5. The seismic anchors and continuous backing used to attach wall panels to concrete slab as shown on the attached detail shall be designed and detailed on approved plans by California licensed structural or civil engineer.
6. The foam plastic shall be protected from the interior of the freezer or cooler and from the room in which it is placed by use of ½ inch thick gypsum wallboard, or other approved thermal barrier material meeting requirements specified in section 2603.4 of the 2020 Los Angeles City Building Code.
7. An approved fire-retardant roof covering (Class “A” or “B”) shall be placed over the panels when used as exterior roof panels.
8. A separate approval from the Electrical Testing Laboratory shall be required for electrical installations within the panels.

9. Design of a building utilizing the panels shall be in accordance with the requirements of the 2020 Los Angeles City Building Code and the design date specified below:

a. Panel use limitations:

| | |
|---|---------|
| Maximum Height for Shear and Bearing Walls | 10 feet |
| Maximum Horizontal Span for Ceiling Loading | 10 feet |

b. Loading:

| | |
|---|------------------|
| Maximum Uniform Load | 25 psf |
| Maximum Concentric Axial Loading | 601 lb/lineal ft |
| Maximum Ceiling Diaphragm Shear (with cam-locks at 23-inch spacing) | 127 lb/ft |
| Maximum Panel Racking Shear* | 97.6 lb/ft |

*Note: Maximum 1:1, height to width ratio, with minimum four cam-lock fasteners at each connection interface, spaced at maximum 34½ inches apart.

c. Maximum Allowable Loading on Cam-Lock Fasteners (Kason Model 1156 B):

Cam-lock Fastener Allowable Connection Strength¹

| Connection Type | Tensile (lb _f) | Shear (lb _f) |
|--|----------------------------|--------------------------|
| A single cam-lock for Wall-to-Wall, Ceiling-to-Ceiling, Floor-to-Floor, T-Wall Panel to Wall, Corner Panel to Wall connections | 197 | 244 |
| A single cam-lock for Ceiling to Wall panel connection | 197 | 244 |
| T-Wall Panel to Ceiling/Floor ² | 633 | 1,033 |
| Corner Panel to Ceiling/Floor ³ | 394 | 686 |

Table Footnotes: 1) The allowable values tabulated above were based on the average ultimate loads of minimum five tested connection assemblies per connection type, and dividing by a safety factor of 3.

2) The T-Wall tensile and shear connection strength values are based on the three cam-locks as configured at the top or bottom.

3) The Corner panel tensile and shear strength values are based on the two cam-locks as configured at the top or bottom.

- d. Locations of connectors must be detailed on approved plans.
- e. No increase in allowable stresses is allowed for the values indicated above for short duration of loads due to wind or seismic forces.
- f. All design values and methods not included in this report shall be in accordance with the requirements of the 2020 Los Angeles City Building Code.

DISCUSSION

The clerical modification is to change the contact information and update the report to the 2020 Los Angeles City Building Code.

The report is in compliance with the 2020 Los Angeles City Building Code.

The approval is based on the foam per requirements of Section 2603 of the 2020 Los Angeles City Building Code, tests conducted in accordance with ASTM E-84 on the finished panels, and load tests conducted in accordance with ASTM E-72.

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this department has determined that all conditions of this approval have been met in the project in which it is to be used.

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Attachment: Panel Connection Detail (5 Pages)