TMP Manufacturing Company, Inc.
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Research Report: RR 26223
(CSI #13030)

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Code: 2020 LABC

GENERAL APPROVAL – General Approval – TMP Manufacturing Company, Inc. Refrigeration Panels for Walk-In Coolers and Freezers.

DESCRIPTION

The panels are manufactured utilizing 26 ga. galvanize/galvalume or 22 ga. stainless steel or 0.040 thick white embossed aluminum skin with NCFI 23-026 TMP system consisting of 2 parts, NCFI A2-000 AND NCFI B-23-026 TMP, foamed-in – place, core system. The panels are fabricated in a thickness of 4 inches with typical width of 46 inches and connected with Cam Lock (Panel fastener and strike assembly). The panel core material has a density of 2.3 pcf.

The panels are approved as structural wall and ceiling panels for use in interior and exterior walk-in coolers and freezers. The allowable loads for exterior panels subjected to wind loads shall be evaluated on a case-by-case basis.

TMP Manufacturing Company, Inc refrigeration panels for walk-in coolers and freezers described above are subjected to the following conditions:

1. The panels are approved for us in accordance with Section 2603 of the 2020 Los Angeles Building Code and shall comply with all requirements therein.

2. Use of the panels shall be limited to locations where combustible materials/construction is permitted by the 2020 Los Angeles Building Code.

3. Flame spread and smoke development ratings for the panel per ASTM E84 are 25 or less and 450 or less respectively.

4. Panels shall be fabricated in the shop of a licensed fabricator approved by the Los Angeles City Building Department. Each panel shall be identified by the manufacturer's name. Fabrication in unlicensed shops will invalidate this approval.

5. Materials for the panel shall be as specified in the DESCRIPTION section above. Test data by an approved testing agency shall be submitted to the Department upon request to verify materials' specifications.

6. Complete plans and design calculations bearing the stamp and signature of a civil or structural engineer or architect registered in the State of California, shall be submitted to the structural plan check engineer for approval of each job.

7. An approved fire-retardant roof covering (class "A" or "B") shall be placed over the panel when used as exterior roof panels.

8. No permanent loads, equipment or storage loads shall be carried by the ceiling/roof panels with the exception for the evaporator. If evaporator is supported from the top panel, it must be accounted for in calculations for ceiling panel loads. For equipment loads, calculations demonstrating that the applied loads are less than the maximum allowable loads must be submitted to the structural plan check section for each project. The calculations must be prepared by a California registered Civil Engineer or Architect.

9. The polyurethane foam utilized in the panels has a minimum self-ignition temperature of 940˚F (504˚C) and a minimum flash-ignition temperature of 730˚F (388˚C).

10. A factor of safety of 3.0 is included in all the allowable loads listed below. Design of buildings utilizing the panels shall be in accordance with the requirements of the 2020 Los Angeles Building Code and the design data specified.

11. The maximum allowable ceiling spans shall be as follows:

Panel Thickness	Dead Load (psf)	26 ga. Galvanized Steel Skin Transverse Span Chart **CEILINGS** **Allowable Imposed Load (psf)**									
		10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
4"	2.5	15'-2"	11'-4"	9'-1"	7'-6"	6'-3"	5'-3"	4'-5"	3'-7"	3'-0"	2'-5"

12. The maximum allowable axial load for wall panels shall be as follows:

Panel Height (ft)	**Allowable Axial Load (plf)[1]**
20	492

[1] *Provide Unity Check for Axial and Transverse Load.*

$$R_{unity} = \frac{Axial_{actual}}{Axial_{allow}} + \frac{Transverse_{actual}}{Transverse_{allow}} \leq 1.0$$

13. The maximum allowable wall spans shall be as follows:

Panel Thickness	Dead Load (psf)	26 ga. Galvanized Steel Skin Transverse Span Chart **WALLS** Allowable Imposed Load (psf)											
		5	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**
4"	2.5	20'-8"	17'-2"	15'-00"	13'-7"	12'-5"	11'-5"	10'-8"	9'-8"	9'-3"	8'-8"	8'-2"	7'-9"

[1] *Provide Unity Check for Axial and Transverse Load*

$$R_{unity} = \frac{Axial_{actual}}{Axial_{allow}} + \frac{Transverse_{actual}}{Transverse_{allow}} \leq 1.0$$

14. Maximum allowable shear load of panels:

Height to Width Ratio	**Allowable Shear Load (plf)**
0.5 to 1	213
1 to 1	183
2.0 to 1.0	97
3.0 to 1.0	80

15. The maximum allowable loads for cam-locking devices:

Connection Type	**Tension Strength (lbf)**	**Shear Strength (lbf)**	
		In-Plane	**Out-of-Plane**
Wall Panel to Wall Panel	119	120.3	141.3
Ceiling Panel to Ceiling Panel			
Wall Panel to Ceiling Panel	150.7	136.3	129.7
Wall Panel to Floor Panel			

16. Locations of connectors must be detailed on approved plans, the spacing of connections shall be calculated for each job but not less than two per width of panel (Width of panel = 46").

17. Each panel shall be stamped with the company name, surface burning characteristics of the product on the panel edge using an indelible ink.

18. No increase in allowable stresses is allowed for the values indicated above for short duration of loads due to wind or seismic forces.

19. Wall panel to floor attachment shall be designed utilizing approved fasteners.

20. A separate approval from the Electrical Testing Laboratory shall be required for electrical installations within the panels. Plumbing and waste line may extend at a right angle through the wall panels but are not permitted vertically within the core.

21. In a non-sprinklered buildings, the panel foam shall be separated from the interior of the freezer or cooler and from the room in which it is located by use of ½-inch gypsum wallboard, ½-inch plaster or other approved thermal barrier meeting the requirements specified in Section 2603.4 of the 2020 Los Angeles Building Code may be utilized where applicable.

    EXCEPTION: The thermal barrier is not required if the cooler or freezer floor area does not exceed 400-square feet.

22. All design values and methods not included in this report shall be in accordance with requirements of the 2020 Los Angeles Building Code.

DISCUSSION

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

The approval is based on tests 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. Standard test method for determining ignition temperature of plastics is in accordance with ASTM D-1929.

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

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.

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