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BUILDINGS BULLETIN 2013-018
OTCR

Supersedes: None

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Issuance Date: December 26, 2013

Purpose: This document establishes acceptance criteria for phase change material (PCM) as an alternative material not prescribed in the 2008 NYC Construction Codes.

Related Code/Zoning Section(s):

BC	109.3.4	BC	719	AC	28-113.4
BC	703	BC	803	1 RCNY	101-14

Subject(s): Thermal mass storage, phase change material; Interior, thermal efficiency, phase change material; Interior surface, phase change material; Noncombustible construction, phase change material; Combustible construction, phase change material; Concealed construction, phase change material; Exposed construction, phase change material; Fire-resistance-rated construction, phase change material; Flame spread index, phase change material; Smoke developed index, phase change material; Walls, phases change material; Ceiling, phase change material

Background: Phase change material (PCM) is a thermal mass storage product. The code does not address thermal mass storage products, therefore PCM is an alternative material. This bulletin establishes acceptance criteria for PCM.

Description: PCM can be made from bio-based materials, petroleum based products, inorganic salts, or any material acceptable to the commissioner. PCM acts as thermal mass in buildings by absorbing heat when it melts (phase change from solid to gel or solid to liquid) and releasing heat when it solidifies (phase change from gel to solid or liquid to solid). When PCM's are placed in a building, they absorb heat as temperatures rise (cooling effect) and release heat when temperatures drop (heating effect). When these phase change materials are placed in quantity into the structure of a building, they will absorb heat (air condition) during the day and release heat (heat effect) into the building at night.

Evaluation Scope: 2008 NYC Construction Codes

Evaluation Criteria: Pursuant to section AC 28-113, the Office of Technical Certification and Research recognizes phase change materials complying with the following provisions from the New York City Building Code:

- Section BC 803 when incorporated into interior surface materials.
- Flame spread and smoke developed indices in accordance with:
    - Section BC 719.1.1 for noncombustible construction.
    - Section BC 719.1.2 for combustible construction.
    - Section BC 719.2 for Concealed construction.
    - Section BC 719.3 for exposed construction, including applicable toxicity requirements.
- Section BC 703 when installed within fire-resistive rated construction.

Uses: PCM's are used to improve thermal efficiency in interior spaces. PCM's are installed in walls, above ceilings, and may also be incorporated into building materials such as drywall, etc.

Restrictions: PCM shall not be used for calculating and evaluating acceptable R-values per the 2011 New York City Energy Conservation Code.

Conditions of Acceptance: Phase change material shall comply with the 2008 NYC Construction Codes and the following applicable provisions:

A. Design

1. PCM installation in new and existing construction shall comply with the requirements of this bulletin.
2. Installation of PCM on suspended acoustical ceiling systems must consider additional loading conditions.
3. PCM installation shall satisfy permit requirements in accordance with section AC 28-105 and 1 RCNY 101-14.

B. Installation Requirements

1. Installation requirements shall be in accordance with the manufacturer's instructions, and conditions specified in applicable conformance statements required under the Evaluation Criteria section of this bulletin.

C. Inspections

1. Pursuant to section BC 109.3.4, the installation of PCM shall be subject to progress inspections requirements when applicable.

D. Labeling

1. PCM shall be labeled as per section AC 28-113.4. If tested in accordance with ASTM E84[1], the product shall be labeled with smoke-developed and flame spread indices obtained from testing. All shipments and deliveries of materials shall be accompanied by a certificate or label certifying that the materials shipped or delivered are equivalent to those tested and approved.

Referenced Standards: ASTM E84-01, *"Test Methods for Surface Burning Characteristics of Building Material."*