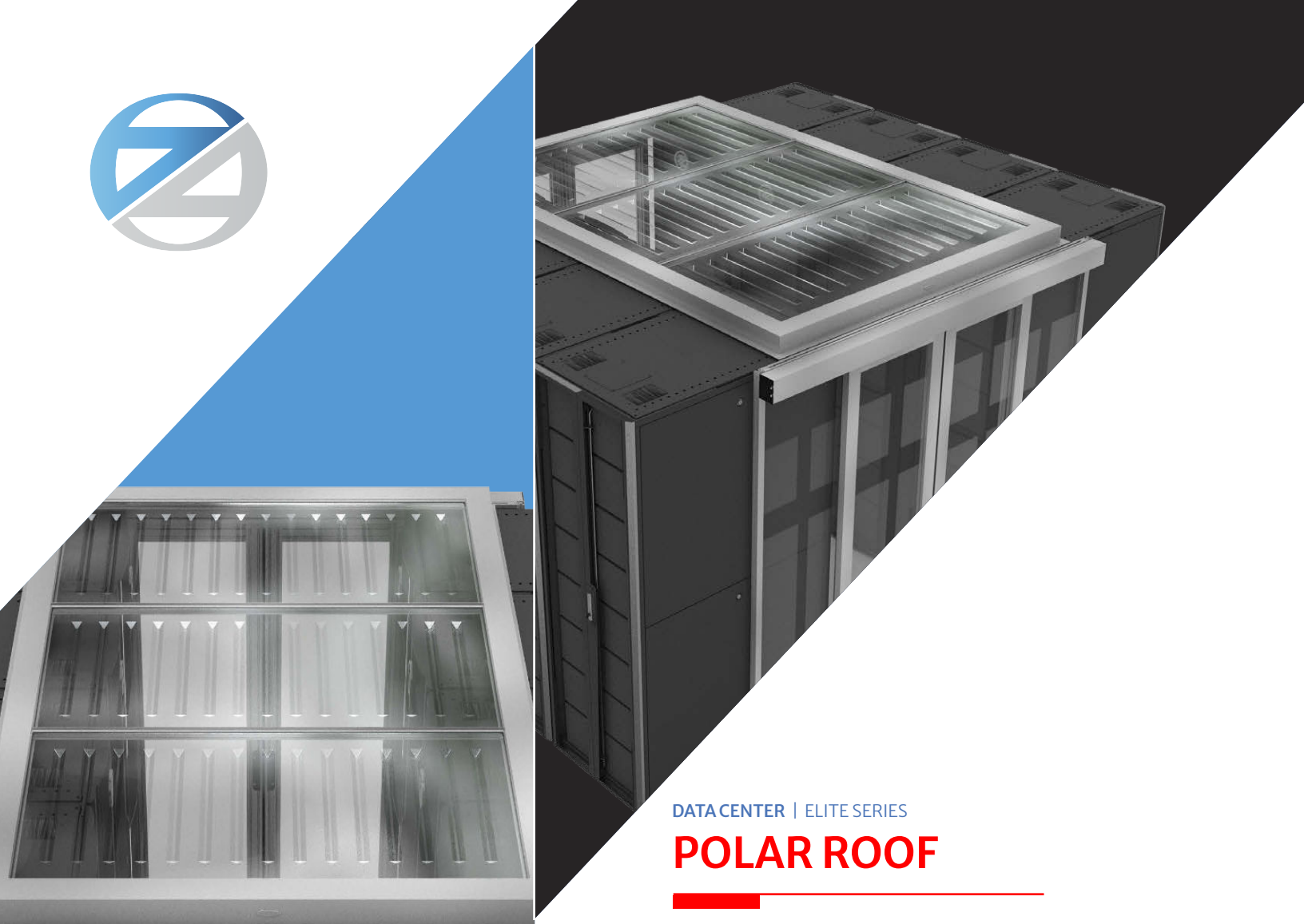


DATA CENTER | ELITE SERIES

POLAR ROOF

A Light Weight Drop Panel Roof System

The Subzero Engineering Polar Roof system is uniquely designed to work under the fire suppression system by utilizing specially designed translucent panels.

In the event of a fire, the panels shrink and drop away to preserve the fire sprinkler pattern. The lightweight drop-in panels have a thickness of only 0.013" [0.33mm] and are completely clear, allowing in the light from overhead lighting systems. The panels can be easily customized according to specific length and width.

As the Polar Roof containment system is modular in design, it can be easily attached to cabinets, doors, side wall systems, and even vinyl. The roof is also designed to attach to vinyl or hard wall material for missing cabinets or gaps. This makes it easy to install into almost any area in a data center. Additionally, they can be removed for easy access for overhead maintenance.

POLAR ROOF

Key Features & Options

- Custom Sizes
- Clear or Black Finish
- Lightweight
- Modular Design
- Clear Panels
- Fire Rated
- Drop Panels

Product Specifications

Frame

Property	Material	Result
Physical Properties		
Tensile Strength	Aluminum	22,000 psi
Features		
Typical size of 55.5” W x 79.50” L (1409.7mm W x 2019.3 mm L)		
Frame attaches to top of server cabinets.		

Shipping

Property	Result
Physical Properties	
Weight	25-50 lbs. approx (11.34kg - 22.68kg)
Components	5 Major Components

Clear Panels*

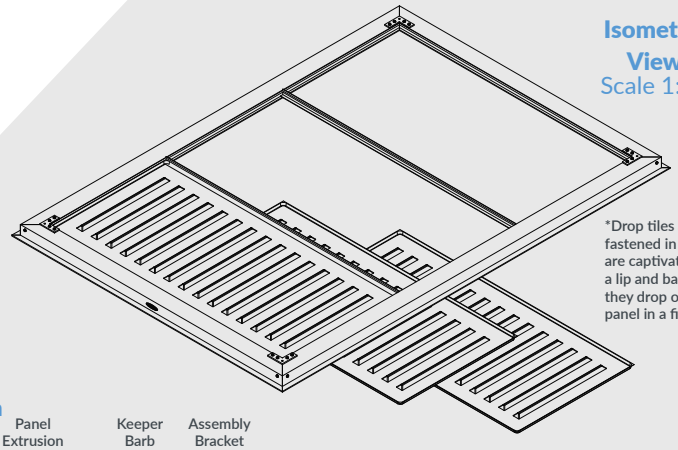
Property	Units	Result
Physical Properties		
Thickness	Mills	15 Mil
Material	—	Polyvinyl Chloride
Light Transmittance	—	87.67%

Property	Test	Result
Flammability		
Smoke Dev.	ASTM E84	125
Flame Spread	ASTM E84	20
Clear Drop Away Panel Code Listings		
UL Listed		
FM Approved		
California Fire Listing No. 2200-1622:0100		
UES Listing No. UEL-5021		

*Clear drop-away panels provided by OEM.
For list of OEMs visit – www.subzeroeng.com/OEM

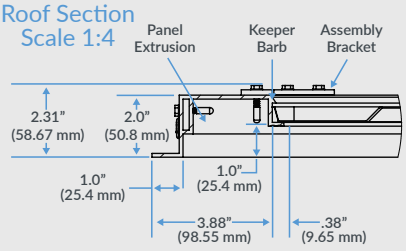
Drawings

Isometric View
Scale 1:20

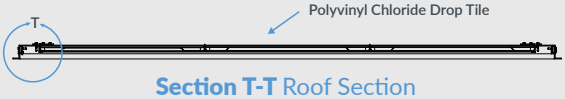


*Drop tiles are not fastened in place. They are captivated between a lip and barb to ensure they drop out of the panel in a fire event.

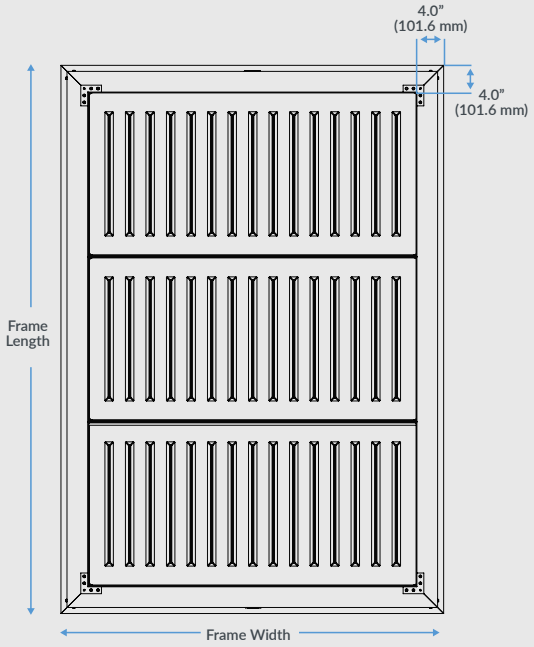
Detail T
Roof Section
Scale 1:4



Front View
Scale 1:20



Section T-T Roof Section
Scale 1:18



Top View
Scale 1:20

Underwriters Laboratories Inc.®

BLME.R4036

Ceiling Panels for Use Beneath Sprinklers

See General Information for Ceiling Panels for Use Beneath Sprinklers

EMPIRE WEST INC, DBA
EMPIRE WEST PLASTICS
9270 GRATON RD
PO BOX 511
GRATON, CA 95444 USA

R4036

Molded plastic in the form of translucent panels.

	Type 1 Panel	Type 2 Panel
Flame spread	15-20*	25*
Smoke developed	125*	350*

*May be used beneath sprinklers, subject to the authorities having jurisdiction.

Last Updated on 2002-10-07

This page and all contents are Copyright © 2005 by Underwriters Laboratories Inc.®

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Listed and covered under UL's Follow-Up Service. Always look for the Mark on the product.

UL permits the reproduction of the material contained in the Online Certification Directory subject to the following conditions: 1. The Guide Information, Designs and/or Listings (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from the Online Certifications Directory with permission from Underwriters Laboratories Inc." must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "Copyright © 2005 Underwriters Laboratories Inc.®"

An independent organization working for a safer world with integrity, precision and knowledge.

FM Approval Guide

Approval Guide

FM Approvals

Walls and Ceilings (FM Approval Class Numbers 4411, 4650, 4651, 4840, 4880, 4881, 4882)

Under this section an FM Approved product/assembly will only be located/reference for its' Primary Class of Work as detailed below:

Primary Class of Work	Subsections/ Approval Guide Location(s)	Approval Includes
4880	Interior Use Only (Class 4880)	4880
4881	Interior and Exterior Use (Class Number 4881)	4880 and 4881
4882	Smoke Sensitive Occupancies Interior Use Only (Class 4882)	4880 and 4882
	Smoke Sensitive Occupancies Interior and Exterior Use (Class 4882)	4880, 4881, and 4882
4651	Suspended Plastic Ceilings	4651

The heading of the subsections (shown above) details all acceptable uses/applications for the Approved product/assembly. One or multiple uses maybe listed and would included the following;

- Interior use,
- Exterior use,
- Smoke Sensitive Occupancies,
- Suspended Plastic Ceilings

See each subsections and listing detail for additional installation requirements and ratings.

The listed assemblies are not intended as long-term fire walls or barriers since fire endurance was not evaluated. See SPECIFICATION TESTED PRODUCTS, ASTM E119 Standard, for hourly rated systems.

Suspended Plastic Ceilings (Class Number 4651)

Plastic suspended ceilings of translucent or opaque panels are used to conceal ducts, sprinkler piping, lighting fixtures or for decorative purposes. All products are of low combustibility. Because they are designed to be heat sensitive, promptly moving out of their setting, they will not significantly interfere with the operation of automatic sprinklers located above. When other building components and occupancy do not require sprinkler protection, these products may be used without creating such a need.

Restraining clips must not be used to hold the panels in their metal suspension frame. Clips which have been tested and FM Approved may be used for this purpose. Painting or coating the panels is prohibited since this may insulate and therefore hinder the immediate drop-out response to the early stage of a fire. However, panels which have been tested and FM Approved with a factory-applied coating may be used. Suspended plastic ceilings must be installed in accordance with all of the recommendations described in FM Global Loss Prevention Data Sheet 1-12.

The polystyrene ceiling tiles listed in Section B are expanded from the modified grade bead resins produced by the manufacturers listed in Section A. These products have met the fire test requirements of FM Approval Standard No. 4651.

Unless otherwise indicated in the listings, all polystyrene panels are nominal 1.0 lb/ft^3 (16.0 kg/m^3) density.

Panels (Class Number 4651)

Ceilume Ceiling Tiles & Panels

Ceilume Ceiling Tiles & Panels. Polyvinyl chloride plastic (PVC/vinyl) panels. 15 mil (0.381 mm) max thickness with optional dust covers. Min 2x2 ft (0.6x0.6 m) Tile/panels.

Ceilume Tile/Panel Styles Including but not limited to the following:

AcoustaTherm (dust cover/back panel) , Anza, Apollo, Aristocrat, Astral, Circle Star, Catalina, Contempo, Convex, Dart, Diamond Plate, Domino, Doric, Dots, Electra, Fargo, Florentine, Four Square, Franciscan, Gradiant, Grange, Grecian Square, Harlequin, Herman, Ivanhoe, Juniper, Medallion, Memo, Metro, Modulelux, Monterey, Moorish, Neptune, Orange, Orb, Petal, Plaza, Pluto, Polyline, Polysquare, Primitive, Regency, Ripple, Roman Circle, Roman Square, San Anselmo, Saturn, Septaline, Skyens, Southland, Stratford, Teahouse, Victorian, Wedgewood, Westchester, Westminster, Woodward, Zee

Company Name:	Empire West Inc DBA Ceilume the Smart Ceiling Tile
Company Address:	9270 Graton Rd, Box 511, Graton, California 95444, USA
Company Website:	http://ceilume.com
New/Updated Product Listing:	No
Green Product:	No
Listing Country:	United States of America
Certification Type:	FM Approved
Class of Work:	4651-Plastic Ceiling Panels

ONLINE CERTIFICATIONS DIRECTORY

BLME.GuideInfo
Ceiling Panels for Use Beneath Sprinklers

View Listings Page Bottom

[Building Materials] (Surface-burning Characteristics) Ceiling Panels for Use Beneath Sprinklers

See General Information for Surface-burning Characteristics

GENERAL

This category covers ceiling panels certified with respect to surface-burning characteristics as indicated in the individual certifications.

Ceiling panels are intended to be installed beneath sprinklers without significantly affecting the suppression characteristics of the sprinkler system when the panels are installed in accordance with the installation instructions provided with each package of panels. Unless otherwise noted in the individual certifications, drop-out ceiling panels are intended for use with standard-response sprinklers only.

Ceiling panels consist of either the drop-out or the open-grid type. The drop-out panels have demonstrated, through test, the ability to fall from the suspended-ceiling-grid system when exposed to fire conditions beneath the grid system, and do not significantly affect sprinkler response and distribution characteristics when investigated to UL Subject 723S, "Outline of Investigation for Drop-Out Ceilings Installed Beneath Automatic Sprinklers." Certifications based upon this test method utilize standard-response sprinklers rated 165°F. The open-grid panels either comply with the opening requirements included in ANSI/NFPA 13, "Installation of Sprinkler Systems," or have demonstrated, through test, not to significantly affect sprinkler response and distribution characteristics.

Authorities Having Jurisdiction should be consulted before installation.

PRODUCT IDENTITY

The following product identity appears on the product:

Ceiling Panel for Use Beneath Sprinklers

ADDITIONAL INFORMATION

For additional information, see Surface-burning Characteristics (BIKT) and Building Materials (AABM).

REQUIREMENTS

The basic standard used to investigate products in this category is ANSI/UL 723, "Test for Surface Burning Characteristics of Building Materials."

UL MARK

The Certification Mark of UL on the product or package of products is the only method provided by UL to identify products manufactured under its Certification and Follow-Up Service. The Certification Mark for these products includes the UL symbol, the words "CERTIFIED" and "SAFETY," the geographic identifier(s), and a file number.

Additional Certification Markings

Products covered under this category are additionally marked with the following information:

For drop-out ceiling panels:

AS TO SURFACE-BURNING CHARACTERISTICS
+
WHEN INSTALLED IN ACCORDANCE WITH INSTALLATION INSTRUCTIONS PROVIDED WITH EACH CARTON, MAY BE USED BENEATH SPRINKLERS SUBJECT TO THE AUTHORITIES HAVING JURISDICTION

+ Flame-spread and smoke-developed values applicable to the product

For open-grid ceiling panels:

AS TO SURFACE-BURNING CHARACTERISTICS
+
MAY BE USED BENEATH SPRINKLERS, SUBJECT TO THE AUTHORITIES HAVING JURISDICTION

+ Flame-spread and smoke-developed values applicable to the product

Alternate UL Mark

POLAR ROOF

BLME Guide Info

The Classification Mark of UL on the product or package of products is the only method provided by UL to identify products manufactured under its Classification and Follow-Up Service. The Classification Mark for these products includes the UL symbol, the word "CLASSIFIED" above the UL symbol (as illustrated in the Introduction of this Directory), and the following additional information:

CEILING PANELS FOR USE
BENEATH SPRINKLERS
SURFACE BURNING CHARACTERISTICS
+
Control No.

+ Flame spread and smoke developed values applicable to the product

The Classification Mark will also include one of the following statements:

- **For Drop-Out** — "When installed in accordance with installation instructions provided with each carton, may be used beneath sprinklers subject to the Authorities Having Jurisdiction."
- **For Open Grid** — "May be used beneath sprinklers, subject to the Authorities Having Jurisdiction."

****

UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. UL shall not incur any obligation or liability for any loss, expense or damages, including incidental or consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Guide Information.

Last Updated on 2013-05-16

Questions? Print this page Terms of Use Page Top

© 2017 UL LLC

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL's Follow-Up Service. Always look for the Mark on the product.

UL permits the reproduction of the material contained in the Online Certification Directory subject to the following conditions: 1. The Guide Information, Assemblies, Constructions, Designs, Systems, and/or Certifications (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from the Online Certifications Directory with permission from UL" must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "© 2017 UL LLC".

POLAR ROOF

Fire Protection Listing

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING - BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No. 2200-1622:0100

CATEGORY: 2200 -- CEILING SUSPENSION SYSTEMS/PANELS

LISTEE: EMPIRE WEST PLASTICSPO Box 511, 9720 Graton Road, Graton, CA 95444
Contact: Rachel Larman (707) 823-1190 Fax (707) 823-8531
Email: rachel@empirewest.com

DESIGN: Model *Ceilume Polyvinyl chloride plastic single and double sheets to form 2' x 2' to 2' x 4' nominal ceiling panels. Type I, single sheet; Type II, nested or welded sheets: Type III and IV, nested or welded double sheets with a laminated top sheet; Type V, top and bottom sheet mechanically laminated to a flexible vinyl center sheet. Refer to listee's data sheet for detailed product description and operational considerations.

RATING: Flame Spread; Type I: 20; Type II: 25; Type III: 35; Type IV: 20; Type V: 25
Smoke Developed; Type I: 150; Type II: 350; Type III: 400; Type IV: 350; Type V: 350

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: *Cartons imprinted "Ceilume The Smart Ceiling Tile" , and bearing the UL File Number R-4036 label.

APPROVAL: Listed as a ceiling panel having a Class I or II rating.

NOTE: Formerly 2180-0174:001, 2200-0174:001

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other

Date Issued: **July 01, 2021** *Listing Expires* **June 30, 2022**

12-14-06 kv

Authorized By: ***DAVID CASTILLO,**, M.E., F.P.E.*

Fire Engineering Division

This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other

Date Issued: **July 01, 2021** *Listing Expires* **June 30, 2022**

Authorized By: ***DAVID CASTILLO,**, M.E., F.P.E.*

Fire Engineering Division

POLAR ROOF

UES Listing Report

LISTING REPORT Number: UEL-5021

Originally Issued: 11/21/2018 **Revised: 08/09/2021** **Valid Through: 11/30/2022**

EMPIRE WEST, INC.
9270 Graton Road
PO Box 511
Graton, California, 95444
(707) 823-1190
www.empirewest.com

CEILUME DROP-OUT CEILING TILES AND PANELS

CSI Section:
09 54 00 Specialty Ceilings

1.0 SCOPE OF LISTING:

Empire West, Inc's Ceilume Ceiling Tiles and Panels recognized in this listing report have been tested for use as interior lay-in drop-out tiles and/or panels for ceilings in accordance with FM 4651. Empire West, Inc.'s Ceilume Ceiling Tiles and Panels are also recognized in a Uniform Evaluation Service Report ER-310 for interior finish classification, thermal stability, and physical properties. This listing recognizes Ceilume Ceiling Tiles and Panels as complying with the criteria of:

- Factory Mutual Approval Standard No. 4651 - Plastic Suspended Ceiling Tiles

2.0 LIMITATIONS

Empire West Ceilume Ceiling Tiles and Panels are recognized as conforming with FM 4651 with the following limitations:

2.1 The ceiling tiles and panels are manufactured, identified and installed in accordance with ER-310, the applicable codes, this report and the Empire West installation instructions. In the event of a conflict, the more restrictive governs.

2.2 The ceiling tiles and panels are limited to use as a nonstructural component in non-fire-resistance-rated floor-ceiling or roof-ceiling assemblies.

2.3 Where translucent ceiling tiles and panels are used as light diffusers, installation shall comply with IBC Section 2606.7.

2.4 The 0.013 inch thick (0.33 mm) and the 0.030 inch thick (0.76 mm) tiles and panels are limited to use with quick response (release) or standard-response sprinklers rated at 135°F (57.2°C) or above when used with sprinkler systems.

2.5 Drop-out ceilings shall not be installed below extended coverage sprinklers unless specifically listed for that application.

2.6 Piping installed above drop-out ceilings shall not be considered concealed piping.

2.7 Tiles and panels shall remain unpainted or otherwise uncoated, unless approved otherwise.

2.8 Drop-out tiles and panels may be used in conjunction with dry-pipe sprinkler systems.

2.9 Quick-response (release) sprinklers rated at 135°F (57.2°C) or above shall be installed no less than 1 inch (25.4 mm), and no more than 5 feet (1524 mm) above the drop-out ceiling tiles and panels, when installed above the tiles and panels

2.10 Standard-response sprinklers rated at 135°F (57.2°C) or above shall be installed no less than 1 inch (25.4 mm), and no more than 5 feet (1524 mm) above the drop-out ceiling tiles and panels, when installed above tiles and panels.

2.11 Accessories for use with the ceiling tiles and panels are limited to those noted in Section 3.2 of this report.

2.12 The Ceilume Ceiling Tiles and Panels recognized in this report are produced in Graton, California.

3.0 PRODUCT USE

3.1 General: Ceilume Ceiling Tiles and Panels are for use in approved suspended ceiling framing systems in non-fire-resistance-rated floor-ceiling or roof-ceiling assemblies.

3.2 FM 4651: Empire West, Inc's Ceilume vinyl ceiling tiles and panels comply with the intent of Factory Mutual Approval Standard No. 4651 in any profile, perforated or solid, with a thickness of either 0.013 or 0.030 inches meet the requirements of FM 4651 for plastic suspended ceiling tiles when installed as follows:

a. Under wet or dry sprinkler systems
b. With or without uplift prevention clips
c. With or without AcoustoTherm® or Soniguard™ Insulation and/or EZ-ON Grid Covers.

3.3 Installation:

Ceilume Ceiling tiles and panels shall be installed only in a horizontal arrangement in suspended ceiling systems in accordance with the manufacturer's published installation instructions. All installations shall be in approved suspended ceiling framing systems in non-fire-resistance-rated floor-ceiling or roof-ceiling assemblies.

The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provisions of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with IBC Section 104.11. This report shall only be reproduced in its entirety.

Copyright © 2021 by International Association of Plumbing and Mechanical Officials. All rights reserved. Printed in the United States. Ph: 1-877-4IESRPT • Fax: 909.472.4171 web: www.uniform-es.org • 4755 East Philadelphia Street, Ontario, California 91761-2816 – USA

LISTING REPORT Number: UEL-5021

Originally Issued: 11/21/2018 **Revised: 08/09/2021** **Valid Through: 11/30/2022**

The suspended ceiling framing system shall comply with and be installed in accordance with Sections 808.1.1 and 2506.2.1 of the 2015, 2012 IBC and 2009 IBC, and Sections 803.9.1.1 and 2506.2.1 of the 2006 IBC. Suspended ceilings located in Seismic Design Categories B, C, D, E. or F, shall comply with design and installation requirements set forth in Section 13.5.6 of ASCE 7. The tiles and panels shall be installed in the framing members of suspended ceiling systems without the use of restraining clips that would impede or affect their downward movement. Uplift prevention clips are permitted but not required. The space above the tiles and panels shall not be used as an air circulation plenum.

Installation of drop-out ceiling tiles and panels is prohibited in exits such as corridors, stairways, horizontal exits, pressurized enclosures and exit passageways as defined in Chapter 10 of the 2015 and 2012 IBC.

When automatic sprinklers are installed above this product, the tiles and panels shall comply with requirements in IBC Section 2606.7 and may be installed as drop-out ceiling tiles and panels in light hazard and Group 1 ordinary hazard occupancies, as defined in NFPA 13.

The sprinklers shall be installed above the ceiling in accordance with NFPA 13, including separation from obstructions.

4.0 PRODUCT DESCRIPTION

The Empire West Ceilume Ceiling Tiles and Panels recognized in this listing comply with the intent of Factory Mutual Approval Standard No. 4651 for Suspended Plastic Ceilings. Plastic suspended ceilings of translucent or opaque tiles or panels are used to conceal ducts, sprinkler piping, lighting fixtures or for decorative purposes. ER-310 provides more information for code recognition. Ceiliume Ceiling tiles and panels are designed to move out of their settings when exposed to heat from below before actuation of the automatic sprinklers, so as to allow the sprinkler system to function without interference. The tiles and panels may be used in buildings with and without automatic sprinkler systems. Ceilume Ceiling Tiles & Panels are made of Polyvinyl chloride plastic (PVC/vinyl), with a nominal thicknesses of 0.013 inch (0.33 mm) and 0.030 inch (0.76 mm), in white, opaque, various colors & finishes (Better Than Tin & Faux Wood), and may be installed with or without uplift prevention clips, soniguard and acoustotherm back panels, and EZ-ON grid covers. Ceiling grid widths may be standard width, nominal 1" wide, or slim line width, nominal 9/16" (14.3 mm) wide.

5.0 IDENTIFICATION

A label shall be affixed on at least one of the following: product, packaging, installation instructions or descriptive literature. The label shall include the company name or trademark, model number, and the IAPMO Uniform ES Mark of Conformity, the name of the inspection agency QCC, LLC., and the Listing Number (UEL-5021) to identify the products recognized in this report. A die-stamp label may also substitute for the label. Either Mark of Conformity may be used as shown below:

or

IAPMO UES UEL-5021

6.0 SUBSTANTIATING DATA

6.1 Report from Southwest Research Institute in accordance with Factory Mutual Approval Standard No.4651, report dated July 27, 2018

6.2 IAPMO Uniform Evaluation Service Evaluation Report ER-310.

6.3 Test reports are from laboratories in compliance with ISO/IEC 17025.

7.0 STATEMENT OF RECOGNITION

This listing describes the results of research carried out by IAPMO Uniform Evaluation Service on Empire West Inc.'s Ceilume Ceiling Tiles and Panels to assess conformance to the standards shown in Section 1.0 of this report and serves as documentation of the product certification. Products are manufactured at locations noted in Section 2.12 of this listing under a quality control program with periodic inspection under the supervision of IAPMO UES.

For additional information about this listing report please visit www.uniform-es.org or email us at info@uniform-es.org