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Initial Approval

January, 2002

Re-Approved

March, 2018

See all **Pei ES** Listings at: www.p-e-i.com**Report Owner****The Dow Chemical Company**1881 West Oak Parkway
Marietta, GA 30062**Approved Manufacturing Locations****The Dow Chemical Company**1881 West Oak Parkway
Marietta, GA 30062**Product****Voramer MB 3022** Polyol Two-Part Urethane
Foam Adhesive**Evaluation Report Information**www.dow.com**DOW** Contact: Rebekah Patton - (678) 269-1392**General Details**

Voramer MB 3022 adhesive is used to bond wood framing to gypsum in ceiling and wall construction without the use of mechanical fasteners. The manufacturing location listed above has an approved Quality Assurance Manual to manufacture the **Voramer MB 3022** Polyol Two-Part Urethane Adhesive and is inspected quarterly by *Progressive Engineering Inc. (Pei)*.

Product Description

Voramer MB 3022 is a two-part foaming polyurethane foam adhesive system. It is applied by pumping two components at a 1 to 1 volumetric ratio under pressure through heating equipment to produce one continuous bead. The two components are comprised of "**Voramer MB 3022** Polyol" and "Voramer ME 3044 Isocyanate". The Voramer ME 3044 ISO is a pre-mixed standard material shipped from a supplier and the **Voramer MB 3022** Polyol is manufactured by **The Dow Chemical Company**. This adhesive does not off-gas Formaldehyde into the air.

Containers and Storage

The A & B components are shipped in 250 gallon disposable totes, 55 gallon steel drums and 350 returnable tanks. Storage of these containers shall be in an indoor conditioned place between 70°F. and 90°F. Unopened containers will have a storage life of up to six months in these conditions.

General Product Use and Limitations

The gypsum board being used shall be clean and dry with loose dust blown off and free from liquids, oil, grease, etc. Recommended gypsum temperature is greater than 50°F. **Voramer MB 3022** Polyol adhesive shall be applied in an ambient temperature range of 50°F to 100°F. The adhesive is applied along the intersection of the vertical plane of the wooden member and the horizontal plane of the gypsum board according to **The Dow Chemical Company** Application Instructions. The adhesive temperature at the heater block should be between 90°F. and 115°F. After the last bead is applied, the structure shall not be moved for a minimum of two minutes. The structure shall stay in the same ambient conditions for the first 24 hours.

Voramer MB 3022 adhesive can be used on 24" and 16" o.c. framing in the walls and ceiling. The fillet beads produced shall be sized per Figure 1 and per Table 1, Note 1 for wall shear design values. A bead shall never be greater than 1" in size. The adhesive beads are applied along one side of field framing and along both sides at gypsum seams.

- The **Voramer MB 3022** adhesive shall be installed according to **The Dow Chemical Company** Application Instructions. A copy of these instructions must be made easily available at the assembly areas.
- This Evaluation is for **Voramer MB 3022** to be applied in an indoor manufacturing facility and is not meant to be applied in an outdoor uncontrolled environment.
- **Voramer MB 3022** adhesive is to be manufactured at **The Dow Chemical Company** plant in Marietta, GA following their approved quality assurance program with unannounced inspections by *Progressive Engineering Inc. (Pei)*.
- The use of **Voramer MB 3022** adhesive in a fire rated assembly is not within the scope of this **PER**.
- A vapor barrier cannot be used between the adhesive and the substrates.
- **Voramer MB 3022** is to be applied to the back side standard raw gypsum and is not intended for other gypsums such as foil backed, moisture resistant or water resistant gypsums.
- Construction of assemblies using **Voramer MB 3022** and their design values shall be as described in the following test reports.
- Gypsum board may be installed in both non-structural finish material and structural applications within the limits of this **PER**. All gypsum board must be in compliance to ASTM C1396.

Building Code Compliance

Must be used with an approved thermal barrier not less than 1/2" (12.7mm) gypsum wallboard or approved material equivalent in compliance with the requirements of the 2006 IRC, Section R314.4 and the 2009, 2012, and 2015 IRC, Section R316.4.

Must be used with an approved thermal barrier not less than 1/2" (12.7mm) gypsum wallboard or approved material equivalent in compliance with the requirements of the 2006, 2009, 2012, and 2015 IBC, Section 2603.4

Meets or exceeds the requirements of the 2006, 2009, 2012, and 2015 IBC, Section 2603.9 based on large-scale tests and acceptance criteria of UL-1715.

October, 2016 Texas Industrialized Housing and Buildings Administrative Rules - Section: 70.103. (c) (2)

NC Residential Code, 2012 Edition - Section R316.6

ASTM E84-01 - Class A Fire Rating: Flame Spread Index - 20 and Smoke Development Index - 145

Meets or exceeds Acceptance Criteria of UL-1715 for use with 3/8" Gypsum Wallboard after 15 Minute Exposure Requirements, where flames shall not extend to the extremities or through the doorway opening of the tested specimen.

Meets or exceeds Acceptance Criteria of UL-1715 for use with 1/2" Gypsum Wallboard after 15 Minute Exposure Requirements, where flames shall not extend to the extremities or through the doorway opening of the tested specimen.

Meets or exceeds Acceptance Criteria of UL-1715 for use with 5/8" Gypsum Wallboard after 15 Minute Exposure Requirements, where flames shall not extend to the extremities or through the doorway opening of the tested specimen.

Tested to

Pei Standard No. 89-1 - Simple Span Ceiling or Roof Diaphragm Shear Resistance Test Procedure for Manufactured Homes

Pei Standard No. 93-7 - Performance Requirements for Fastening Gypsum Board to Wood Framing using a Two-Part Urethane Adhesive

Pei Standard No. 93-8 - Ceiling Board Dead Load Test Procedure

Pei Standard No. 94-9 - Large Scale Ceiling Board Dead Load Test Procedure

ASTM C 557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing

ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction

ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials

UL-1715 - UL Standard for Safety Fire Test of Interior Finish Material

Test Reports for Voramer MB 3022 Adhesive

TABLE 1: Wall Shear Designs^{1,2}

Framing				Gypsum Orientation	Gypsum Brand	Single or Double Sided	Ultimate Load PLF ³	Test Report #
Top Plate	Bott. Plate	Studs	Stud Spacing					
1x3	1x3	2x3	16" o.c.	5/16" Vertical	GA-Pacific	Single	460.7	2000-2123
					Gold Bond	Single	529.4	2001-0631
2x4	2x4	2x4	16" o.c.	7/16" Vertical	OSB	Single	1250.0	2001-0666

Notes:

1. Bead sizes as described in each test report.
2. Tested in Accordance to ASTM E72 - Static Wall Racking Tests
3. Ultimate load does not include any required safety factors

Design Values

Ceiling Diaphragm Design Load = **219 plf** (11' 8" minimum width x 52'-0" Maximum diaphragm span)

Ceiling Dead Load Resistance = **11.7 psf**

Note:

Ceiling Diaphragm and Dead Load Resistance testing is valid for all gypsum boards listed below, as long as the gypsum manufactured maintains a third party product listing showing compliance to ASTM C1396.

Gypsum Brands Tested for ceiling use

- 5/16" Georgia-Pacific Gypsum Board
- 5/16" Gold Bond Gypsum Board
- 5/16" USG SHEETROCK® MH Gypsum Ceiling Panels
- 1/2" Georgia-Pacific Gypsum Board
- 1/2" American Gypsum Ceiling Board
- 1/2" USG Fiberock Brand MH Gypsum Fiber Board
- 1/2" CertainTeed ProRoc Interior Ceiling Board
- 5/8" USG SHEETROCK® Brand Firecode Type X Gypsum (Dead Load use only)

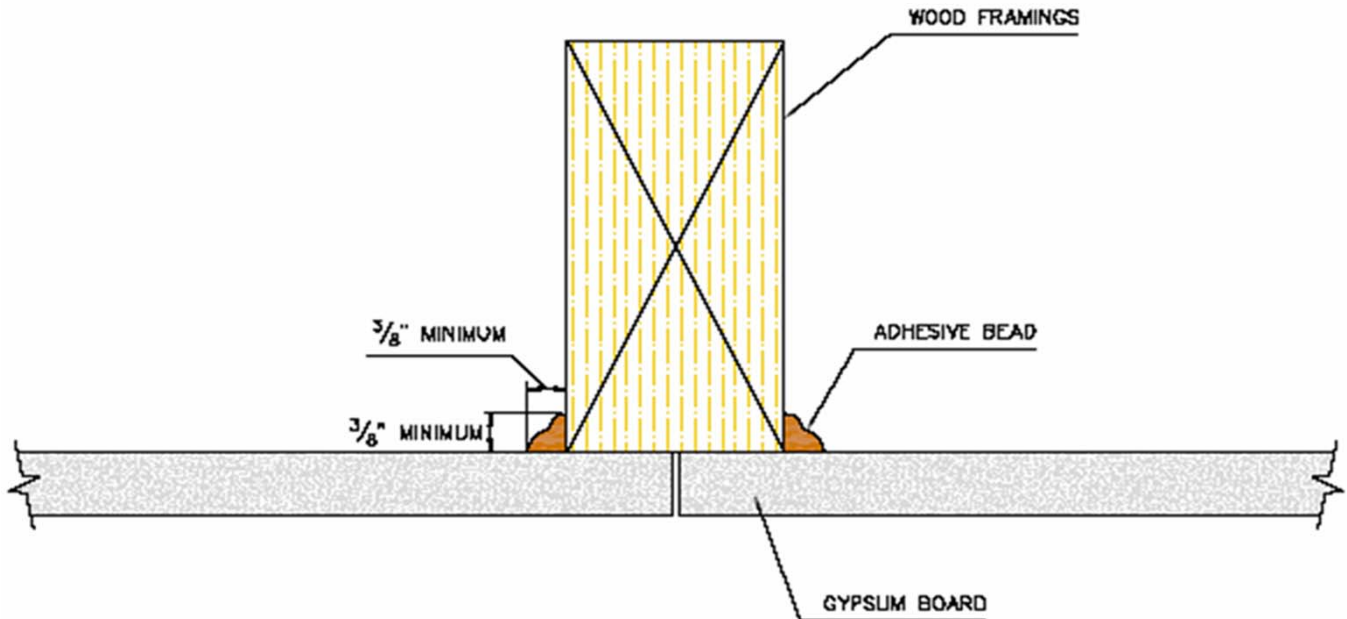


FIGURE 1: Ceiling use bead sizes

Product Labeling

Each cylinder shipped of **Voramers MB 3022** that is covered by this **PER** must have a label attached with at least the following information:

1. [The Dow Chemical Company](#) Name and Address
2. Date of manufacture or Lot No.
3. Shelf life information
4. This **PER** Number & *Pei* **ES** Logo
5. Component name

Acceptable Evaluation Marks**Product Documentation**

A Product Evaluation Service Agreement between *Pei Evaluation Service*[®] and [The Dow Chemical Company](#)
 A Follow-up Inspection Service Agreement between *Progressive Engineering Inc.* and [The Dow Chemical Company](#)
 Voramers™ Industrial Adhesive User Manual - Dated: January, 2002
 A SDS sheet for **Voramers™ MB 3022** Polyol - Dated: 3/25/2016
 A SDS sheet for Voramers™ ME 3044 Isocyanate - Dated: 6/11/2015
 Opinion Letters Dated: July 24, 2000 April 16, 2001 April 15, 2005

Ceiling Diaphragm Test Reports

A *PEI* test report no. 2000-0886 - Full Scale Cathedral Ceiling Diaphragm Test on an 11'-8" x 52'-0" Ceiling using Voramers™ MB 3022 / Voramers™ ME 3044 Adhesive - Revised: 2/1/2013
 A *PEI* test report no. 2000-0887 - Full Scale Ceiling Diaphragm Test on an 15'-6" x 52'-0" Flat Ceiling using Voramers™ MB 3022 / Voramers™ ME 3044 Adhesive - Revised: 6/26/2001
 A *PEI* test report no. 2000-0888 - Full Scale Cathedral Ceiling Diaphragm Test on an 15'-6" x 52'-0" Ceiling using Voramers™ MB 3022 / Voramers™ ME 3044 Adhesive - Revised: 6/26/2001

Ceiling Dead Load Test Reports

A *PEI* test report no. 2000-1032 - Ceiling Dead Load Test using Voramers™ MB 3022 / Voramers™ ME 3044 and 5/8" Gypsum - Revised: 6/26/2001
 A *PEI* test report no. 2000-1502 - Ceiling Dead Load Test using Voramers™ MB 3022 / Voramers™ ME 3044 and 5/8" Gypsum - Revised: 6/26/2001

Ceiling Sag Test Report

A *PEI* test report no. 2001-0955(D) - Ceiling Sag Test using 1/2" American Gypsum and Voramers™ MB 3022 / Voramers™ ME 3044 Two-Part Adhesive - Dated: 6/18/2001

PEI Standard No. 93-7 Test Report

A *PEI* test report no. 2000-1501 - PEI Standard No. 93-7 Test on Voramers™ MB 3022 / Voramers™ ME 3044 Adhesive - Revised: 6/26/2001

ASTM E84 Test Report

A test report file no. FH-1321 - Surface Burning Characteristics ASTM E84-01 Dow Chemical Corporation - Voramers MB 3022 / Voramers ME 3044 - Dated: 6/4/2002

UL-1715 Test Reports

A test report no. RCB 0305 - UL-1715 Fire Test of Interior Finish Material - using 3/8" Gypsum - The Dow Chemical Company - Dated: 11/13/2003
 A test report no. RCB 0303 - UL-1715 Fire Test of Interior Finish Material - using 1/2" Gypsum - The Dow Chemical Company - Dated: 11/12/2003
 A test report no. RCB 0502 - UL-1715 Fire Test of Interior Finish Material - using 5/8" Gypsum - The Dow Chemical Company - Dated: 5/4/2005