



# Building Standards and Codes

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## TECHNICAL BULLETIN

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**Code Effective Date:** October 3, 2016

**Source Document:** Uniform Fire Prevention and Building Code

**Topic:** **Use of Factory-Applied Two-Part Polyurethane-Structural Adhesive Attachment of Gypsum Board**

**Background;**

When modular companies first started construction of modular buildings in factories, gypsum wallboard was attached to ceilings and walls by nailing the gypsum board to the wood structure. Later, the industry began using screws in lieu of nails to attach the gypsum board. Over time, the screw attachment method progressed to adding adhesive to ease labor and enhance the screw type connection. The industry has evolved to utilizing adhesive-only methods for attachment of gypsum board panels in the practice of modular construction. Accordingly, some questions have arisen as to this method of acceptability within the allowances of the 2016 Uniform Codes. The following describes provisions which need to be addressed by manufacturers to demonstrate code compliance.

- 1) **Prescriptive Provisions-** the 2015 International Residential Code (IRC) ( as referenced by the 2016 Uniform Code) , does not allow for adhesive-only fastening of gypsum board, as is indicated in **Table R702.3.5**. The nature of the IRC is that of a Prescriptive document, and the code relies solely on mechanical fasteners, or a combination of mechanical fasteners and adhesive for gypsum board attachment of wall and ceiling construction. The 2015 IRC contains an allowance for *engineered design*, as described in Section R301.1.3. The 2015 International Building Code (IBC) ( as referenced by the 2016 Uniform Code), contains allowances for the attachment of Gypsum Board using adhesive attachment only, under specific conditions, as described in *Engineered Design*.
- 2) **Adhesive product acceptance.** The 2016 Uniform Code Supplement, Section 103.3 describes the process for the Authority Having Jurisdiction (DOS) to determine in writing that an alternative material, design or method of construction is code compliant and acceptable. Evaluation Reports produced and listed by the ICC Evaluation Service, (and their equivalent) are used by the Authority Having Jurisdiction (DOS) to verify the compliance of such alternative products, materials, design and method of construction. Actual product acceptance of specific products used in specific application is based upon this method.
- 3) **Limitation on the use of adhesive-only attachment :** In several instances, adhesive only attachment of Gypsum Board is not allowed, or allowed with specified limits;
  - a. R302.4 Dwelling Unit Rated Assemblies; Use of adhesive-only fastening of gypsum is non-compliant for use within fire-rated assemblies per R302.4, R316 and the ASTM, UL, NFPA and FM standards referenced therein.
  - b. Encased, Laminated or Coated Gypsum Board Products; Use of adhesive-only fastening of gypsum board is not approved for use with pre-finished (vinyl-wrapped), foil-backed, moisture or water-resistant gypsum wall board per evaluation report criteria provided by adhesive manufacturer.

- c. High wind designs. All high wind designs are understood, by definition, to be those in excess of 140 mph. In these cases, the IRC requires *Engineered Design* by one of the referenced standards listed in **R301.2.1**. Shear wall design is predicated primarily on wood structural sheathing panels, including minimum length of wall panel, as dictated by the engineering method chosen. Specific calculated fastening of gypsum board (where required to provide supplemental shear resistance) would be included within that specifically submitted *Engineered Design*.
  - d. In New York State Climate Design Zones 5 and 6, vapor retarders are required. Since adhesive-only applications require bonding gypsum board directly to the wood member, a sheet-type vapor barrier, attached directly to stud or joist, is not acceptable. In this case the type and class of vapor retarders is to be carefully considered and coordinated with the method of fastening. If using liquid-applied vapor retarder on the interior face (warm-side) of the finish, there are several products which conform to the perm rating of Class II vapor retarders. The use of Class III vapor retarders is both acceptable by code and is encouraged. These conform to newer air tightness ratings for the building envelope blower-door test, and do not impact the attachment of the finish to the structure. Refer to the IRC-2015 R702.7.1, and IBC 1405.3.2 for specific requirements for the use of Class III Vapor retarders.
- 4) **The 2015 International Building Code allows for adhesives only** fastening of gypsum board attachment for wall and ceiling construction, when meeting the requirements of GA-216-2013 (Gypsum Association Application and Finishing of Gypsum Panel Products). This Referenced standard is found in the 2015 IBC, Table 2506.2. The Gypsum Association Standard GA-216-2013 allows for adhesive-only-attachment of gypsum board to wood framing as defined in Section 7.6 of GA-216. This Standard gives product application and assembly instructions in accordance with the Manufacturers installation instructions. Acceptance of this method of attachment is based on fulfillment of the **specific requirements** contained within Section 7 of GA-216-2013, in addition to the Manufacturers product(s) installation instructions, and is limited in application where noted in paragraph #3 above. The code path to 2015 IBC, Table 2506.2, and subsequently GA-216-2013 is found in the 2015 IRC Engineered Design, R301.1.3.
- 5) **It is essential** to adhere to the Manufacturer's installation instructions and product limitations provided within the product test and certification data, as well as Manufacturer's instructions and statements of product limitation.

For questions or clarifications on the Technical Bulletin, please contact the Department of State, Building Standards and Codes at (518)-474-4073, or by email at [codes@dos.ny.gov](mailto:codes@dos.ny.gov)

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