ENCLOSURE SOLUTIONS TECHNICAL BULLETIN ES-09A

FOAMULAR® NGX® ADHESIVE COMPATIBILITY

Why Use Adhesives

FOAMULAR® NGX® XPS insulation is a lightweight, rigid foam insulation board that is used in a variety of applications that may be installed loose-laid, by compression fit, by mechanical fastener, or using compatible adhesives. The applications include but are not limited to foundation walls, exterior cavity walls, and roofs.

Please see Owens Corning® FOAMULAR® NGX® Installation Instructions for more information:
FOAMULAR® NGX® Commercial Walls Installation Instructions
FOAMULAR® NGX® Commercial Roofs Installation Instructions
FOAMULAR® NGX® Commercial Foundations Installation Instructions

Types of Adhesives Used with FOAMULAR® NGX®

There are typically three types of adhesives that can be used with FOAMULAR® NGX® XPS insulation. Selection will depend on the application and may also depend on preference.



Tube

This adhesive is available in a variety of tubes or sausages and applied using a caulk or sausage gun.



Spray

This adhesive is available in canisters and applied using a spray gun or wand. The adhesive is aerosolized and used mostly for larger, smooth-surface application.



Foam

This low-expansion one- or two-part foam adhesive is also available in canisters and applied using a gun to control the application. When installing XPS on this product, it is recommended to press the FOAMULAR® NGX® XPS INTO THE FOAM, then pull away followed by again pressing the FOAMULAR® NGX® XPS back into place.

While Owens Corning **does not approve or recommend any specific adhesives**, the below adhesives exhibited no visual appearance change in surface, cross-sectional, and glued cross-section on June 15, 2024 by Owens Corning Science & Technology. Adhesion was not tested, and it is recommended to contact the adhesive manufacturer for minimum expected adhesion.

- 3M 74
- 3M 78
- DAP DYNA Grip*
- DuPont Great Stuff*
- Elmer's Spray
- Glu-Down Weather Grip*
- Glu-Down
- Gorilla Heavy Duty*
- Gorilla Spray
- Liquid Nails Extreme*
- Loctite PL300*
- Loctite Premium*
- OSI-QB300*
- Owens Corning ComfortSeal™ Gun Foam Sealant*
- Sta'Put*

*It is known that exposure to heat and solar energy may increase reaction to incompatible adhesives. Owens Corning S&T exposed these indicated adhesives to a light table for 20 minutes at 170–180°F after application to the FOAMULAR® NGX® and determined the following did not exhibit visual appearance of incompatibility.

Adhesive Recommendations

Owens Corning recommends the use of non-solvent-based adhesives that do not contain chemicals that react with polystyrene foam. There are many chemicals that should be avoided due to marginal or unsatisfactory compatibility with polystyrene, including but not limited to **acetone, benzene, chlorine, Dimethyl Ether (DME), Methyl Acetate, hexane, toluene, and xylene**. This is by far not a complete list. **A product should not be considered compatible simply because it does not contain these chemicals**. It should also be noted that the amount of chemical present may affect the level of compatibility.

Because the list of adhesives compatible with polystyrene foam is ever-changing and adhesive manufacturers may alter formulas with no notice, Owens Corning does not perform exhaustive testing on adhesives or make specific brand or product recommendations. Most adhesive manufacturers will state the product is suitable for polystyrene foam on package and in published literature if compatible. It is recommended that specifiers and installers verify compatibility of the selected adhesive using the adhesive manufacturer's resources such as packaging, data sheets, SUIS, websites, technical bulletins, and even letters of compatibility. Conducting an Internet search using the terms "adhesives compatible with polystyrene" is an effective way to find relevant products and manufacturer information. Best practice also includes testing for satisfactory performance once on the job site prior to continuing with installation.

ASTM C794 Adhesion Testing

When evaluating adhesion of liquid adhesives/sealants, many manufacturers will test to *ASTM C794 Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants*. This test method attempts to peel 21-day cured adhesive from substrates such as wood sheathing, concrete, steel, gypsum sheathing, and polystyrene at a 180° angle. Four specimens of each test are created and measured with the average reported. Specimens are also immersed in water for 7 days and then tested within 10 minutes of removal. Additional specimens may be exposed to other conditions such as UV radiation or heat. The following ASTM C794 test results have been conducted by others and submitted to Owens Corning:

Product	Surface Preparation	Results	Report Date	Contact Regarding Testing
Pecora 890NST	Isopropyl alcohol, two cloth method	Pass >5.0 lbf, <25% adhesive failure	August 20, 2024	techservices@pecora.com, 1-800-355-8817
Pecora 895NST	Isopropyl alcohol, two cloth method	Pass >5.0 lbf, <25% adhesive failure	August 20, 2024	techservices@pecora.com, 1-800-355-8817

ASTM D4541 Adhesion Testing

When evaluating liquid adhesives/sealants, many other manufacturers will test *ASTM D4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers*. This test measures pull-off strength (adhesion) according to one of five different methods in which the adhesive/sealant is applied and cured to a substrate and the force required to pull the adhered specimen off is reported. The following ASTM D4541 test results have been conducted by others and submitted to Owens Corning:

Product	Surface Preparation	Results	Report Date	Contact Regarding Testing
Prosoco R-Guard FastFlash	21-day cured specimens with epoxy applied to foam face	56 psi & 51 psi cohesive failure of foam	July 26, 2016	AMT Laboratories 1-888-376-3600
Prosoco R-Guard FastFlash	21-day cured specimens with epoxy applied to foam face	39 psi cohesive failure of foam	July 26, 2016	AMT Laboratories 1-888-376-3600
Prosoco R-Guard Joint & Seam Filler	21-day cured specimens with epoxy applied to foam face	62 psi & 60 psi cohesive failure of foam	July 26, 2016	AMT Laboratories 1-888-376-3600
Prosoco R-Guard Cat 5	21-day cured specimens with epoxy applied to foam face	63 psi & 59 psi cohesive failure of foam	July 26, 2016	AMT Laboratories 1-888-376-3600
Prosoco R-Guard Cat 5	21-day cured specimens with epoxy applied to foam face	38 psi cohesive failure of foam	July 26, 2016	AMT Laboratories 1-888-376-3600

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