



ReactTITE EP-980

ReactTITE EP-980 is an emulsion polymer isocyanate system (EPI) developed specifically to meet AC05 and ASTM D 7446 for use in the manufacture of Structural Insulated Panels (SIPs) comprised of OSB or mineral board with EPS core. It should be used with conventional cold press equipment. ReactTITE EP-980 emulsion is mixed with Hardener 200, a polymeric isocyanate, at 100 parts emulsion to 15 parts Hardener 200. This adhesive has no-added formaldehyde and offers a long working time, as well as exceptional heat, water and solvent resistance, making it ideal for demanding applications. ReactTITE EP-980 is also characterized by good spreader stability and low foam production when compared with traditional EPI adhesives.



PHYSICAL PROPERTIES

ReactTITE EP-980

Chemical family description: polyvinyl acetate emulsion adhesive

Appearance: White colored liquid

Specific gravity: 1.27

Weight solids (%): 49.3 - 52.2

pH: 7.0 - 8.0

Suggested minimum use temperature: 46°F/7°C

Typical viscosity (cps): 4900 - 8800

Mixed viscosity (cps): 9000 - 16000 when mixed; 26000 - 36000 at one hour

Hardener 200

Chemical family description: Polymeric MDI

Appearance: Brown colored liquid

Typical viscosity at 25°C (cps): 170 - 230

Specific gravity: 1.22

KEY PRODUCT FEATURES

- Emulsion polymer isocyanate system (EPI) developed specifically to meet AC05 and ASTM D 7446 for use in the manufacture of Structural Insulated Panels (SIPs)
- Meets requirements of Norma Ch2148 and approved for residential use in Chile
- Low foaming EPI adhesive with good spreader stability and long assembly time
- Recommended for applications requiring water, heat and solvent resistance
- Excellent for cold pressing
- Low film formation temperature, which allows it to be used at a wide range of plant temperatures
- Meets the definition of NAF for CARB and TSCA Title VI
- Tested according to reference method EN 16516 and meets German formaldehyde emission requirements for wood-based materials

POT LIFE

The pot life of these systems is in excess of one hour at 77 degrees Fahrenheit (25 degrees Celsius), but will vary depending on temperature. However the viscosity of the mix will increase as it ages, and foam will be generated.

MIXING INSTRUCTIONS

ReactTITE EP-980 resin is mixed with Hardener 200 at a ratio of 100 parts resin to 15 parts Hardener by weight or 6.45 parts resin to one part Hardener by volume. Avoid mixing for long periods of time or with excessive agitation as pot life is affected by mixing time and speed. Product can be easily mixed by hand. Substrates glued with older material will have less water resistance, a characteristic common to most EPI adhesives. Therefore, it is recommended that fresh adhesive be mixed only when it is to be immediately used. EPI adhesives also generate foam during the reaction process; so it is best to have the material continually moving.

PERFORMANCE PROPERTIES

Bonding Strength (ASTM D 7446 screening)

Exceeds ASTM D 905 block shear strength requirement on Douglas-fir

| Exposure | Test results | | | | Requirements |
|-----------------------|------------------------|------------------------|--------------------------|--------------------------|---|
| | Strength (psi) Average | Strength (psi) Minimum | Wood failure (%) Average | Wood failure (%) Minimum | Strength (psi) Average |
| Dry, (bonded) | 1907 | 1311 | 79 | 50 | 1020 |
| Dry (solid) | 1750 | 819 | 100 | 100 | NA |
| Soak/Re-Dry, (bonded) | 1564 | 807 | 79 | 30 | 80% of soak/re-dry strength for solid** |
| Soak/Re-Dry, (solid) | 1643 | 753 | 100 | 100 | NA |

*Douglas fir Franklin Laboratory results 17626

**1314 psi for test case

Exceeds ASTM C 297 tensile strength test on oriented strand board to rigid cellular polystyrene

| Exposure | Test results | | | | Requirements | |
|-------------|------------------------|------------------------|-------------------------------|-------------------------------|------------------------|-------------------------------|
| | Strength (psi) Average | Strength (psi) Minimum | Bond line failure (%) Average | Bond line failure (%) Maximum | Strength (psi) Average | Bond line failure (%) Maximum |
| OSB-EPS-OSB | 21 | 15 | 1 | 10 | 15 | 10** |

* Franklin Laboratory results 17626

**Individual specimen requirement

Chilean Standard NCh 2148 of 89 Shear strength, failure rate in wood and delamination.

| Shear Strength and % Wood Failure | Min. | Max. | Average | % Moisture Content |
|-----------------------------------|-------------|-------------|-------------|--------------------|
| Wood Failure (%) | 80 | 100 | 87 | 8.65 |
| Required Wood Failure (%) | >70% | >70% | <70% | <12% |
| Shear Strength (Mpa) | 8.84 | 9.62 | 9.19 | 8.65 |
| Required Shear Strength (Mpa) | >6.7 | >6.7 | >6.7 | <12% |
| RESULTS | PASS | PASS | PASS | PASS |

| Delamination | Delamination | Requirement | Results |
|----------------|--------------|-------------|-------------|
| Min. | 0% | <5% | PASS |
| Max. | 0% | <5% | PASS |
| AVERAGE | 0% | <5% | PASS |

Chilean Standard NCh 3393 Insulating Structural Panels, Tensile Test SIP OSB-EPS-OSB Panel

| Tensile Strength and % EPS Failure | Min. | Max. | Average |
|--|-------------|-------------|-------------|
| EPS failure (%) | 100 | 100 | 100 |
| Required EPS Failure (%) | >80% | >80% | <80% |
| Tensile Strength (kgf/cm ²) | 1.01 | 1.39 | 1.12 |
| Required Tensile Strength (kgf/cm ²) | ≥1.0 | ≥1.0 | ≥1.0 |
| RESULTS | PASS | PASS | PASS |

APPLICATION GUIDELINES

Spread rate: EPI adhesives have superior gap filling properties due to their higher percent solids content. Spread rates of 270 - 370 g/m² are recommended for larger area applications requiring longer working times, such as SIP manufacture, but optimal spread rates should be verified by plant trials. Generally, 200 g/m² of glue line is adequate for millwork applications. Roller spreaders are commonly used in gluing applications. In general, verify that adequate coverage exists by evaluating squeeze-out along the glue lines of pressed panels.

Clamping pressure: Pressure is dependent upon the materials being glued. Direct contact of the gluing surfaces must be made to obtain maximum strength. Typical pressures used during SIP manufacture are 5 - 7 psi. See EPS manufacturers for specific information regarding acceptable pressures used with EPS cores.

Press/clamp time: It is recommended that optimum press times be determined in actual plant conditions, recognizing that seasonal changes may lead to variable requirements. Press times generally vary from 30–60 minutes, under ideal conditions at factory temperatures of 68 degrees Fahrenheit/20 degrees Celsius. Longer press times may be required for colder factory temperatures. A Franklin representative can set up a trial to evaluate the appropriate minimum press time required for a specific manufacture facility.

At 70°F and 50% relative humidity, based on spread rate of 270 – 370 g/m²:

Open Assembly Time – 3 minutes per panel for best results

Closed Assembly Time – 30 minutes per load for best results

Working pauses: The spreader should be kept running during pauses in production for lunch breaks, etc. to help extend the working life of the adhesive.

Clean-up: The foaming and cross-linking characteristics of EPI may cause blockages in the wastewater plumbing. Furthermore, there may be disposal concerns with the mixed product. It is recommended that the excess glue from the spreader and mixing containers be poured into a container and disposed of properly. Avoid sealing the container for at least 24 hours to permit EPI components to finish reacting. Glue pans and rollers may then be washed in warm water.

HANDLING AND STORAGE

Shelf life: Best if used within nine months of date of manufacture. Product is freeze-thaw stable. If it becomes frozen, allow to warm to ambient temperature and thoroughly mix until a homogenous, smooth mixture is obtained.

Storage of Hardener: Hardener 200 is very susceptible to moisture. We recommend that it be kept in a sealed container. A desiccant or nitrogen blanket is recommended.

Safety and disposal: Hardener 200 is a polymeric isocyanate. Use of nitrile gloves and local exhaust ventilation are required. Consult SDS before use for additional information.

For additional questions, Franklin's technical service team is available at 1.800.877.4583. 24/7 technical service is available online at www.franklinadhesivesandpolymers.com.

IMPORTANT NOTICE TO CUSTOMER:

The recommendations and data contained in this Product Data Sheet for use of this product are based on information Franklin believes to be reliable. They are offered in good faith without guarantee, as conditions and methods of use of our product by Customer are beyond Franklin's control. Customer should determine the suitability of the product for a particular application before adopting it on a commercial scale. Discoloration and checking of wood veneer materials may occur with use of the product. These occurrences range in appearance, color and may also vary depending upon the species of wood veneer to which the product is applied. Such discoloration and checking may appear during or after the manufacturing process which utilizes the product. Environmental conditions in some manufacturing plants and end-use locations can contribute to discoloration and checking. Because such discoloration and checking are attributable to conditions beyond Franklin's control, Franklin cannot assume any responsibility or liability for any discoloration and/or checking problems that might occur.

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