

Titebond Imperial

Titebond Imperial is a high-performance, aliphatic resin emulsion adhesive with excellent heat and solvent resistance. It is best used in edge and face gluing. Titebond Imperial was developed to withstand the extreme temperatures of heat embossing.



PHYSICAL PROPERTIES

Chemical family description: Polyvinyl acetate emulsion adhesive

Appearance: Yellow colored

Typical viscosity at 83°F (cps): 2800 - 4000 (LVF/#3/12RPM/83°F)

Weight solids (%): 37.5 - 42.0

pH: 3.7 - 5.0

Specific gravity: 1.15 **Weight pounds per gallon:** 9.60

Suggested minimum use temperature: 35°F/ 2°C

KEY PRODUCT FEATURES

- Most heat-resistant aliphatic resin
- Moderately fast setting rate
- Formulated for heat embossing
- High solvent resistance
- Meets the definition of NAF for CARB and TSCA Title VI

PERFORMANCE PROPERTIES

- Meets European Standard DIN EN 204 Sequence 1
- Meets DIN EN 14257 WATT 91 Heat Testing

| Method | Temperature (°C) | Minimum required average value (N/mm ²) | Average value (N/mm ²) | Wood Failure (%) |
|------------------------|------------------|---|------------------------------------|------------------|
| DIN EN 204, Sequence 1 | Room Temperature | ≥ 10 | 11.1 | 100 |
| DIN EN 14257 (WATT 91) | 80 | ≥ 7 (Recommended Standard) | 10.2 | 100 |

*Rosenheim reports 505 44211/4e 9/21/2010 and 505 44211/1e 9/21/2010

APPLICATION GUIDELINES

Moisture content: Six to eight percent is the recommended moisture content for the gluing stock. High moisture content will dramatically increase the clamp time needed. Panel shrinkage may occur resulting in stress cracks or end-joint delamination.

Stock preparation: The preparation of the stock to be glued is extremely important. Joints cut from rip saws should be free of saw marks. They should also be straight and square. Moulded or jointed stock should be free of knife marks. Glazed or burnished joints will prevent adhesive penetration and should be guarded against.

Gluing stock should be uniform in thickness. Variation in thickness should not exceed ± 0.005 inches/0.12 mm. Sanding to thickness should be performed using higher than 50 grit abrasives. When possible, glue joints should be prepared and glued the same day.

Spread: Generally, 35-50 pounds of adhesive per 1,000 square feet or 170-250 grams per square meter of glue line is adequate. Verify adequate glue coverage by monitoring for squeeze out along the glue line once the panels are under pressure. A Web-based spread calculator can be found at www.franklinadhesivesandpolymers.com.

Pressure: Pressure is dependent upon the species or material to be glued and joint preparation. Direct contact of the gluing surfaces is required to obtain maximum strength. The use of a compressometer will aid in accurately measuring the amount of pressure being applied to the gluing area. Suggested clamp locations for various wood densities are eight to fifteen inches (20-38 cm) apart and two inches (five cm) from the end of the panel to evenly distribute pressure along the entire length of the glue line. A Web-based pressure calculator can be found at www.franklinadhesivesandpolymers.com.

Recommended clamping pressures:

| <i>Species</i> | <i>Clamping pressure</i> | <i>Example</i> |
|---------------------------------|---|---------------------------|
| <i>Low density wood species</i> | <i>100-150 psi or 7-10 kg/cm²</i> | <i>Pine, Poplar</i> |
| <i>Medium density species</i> | <i>125-175 psi or 9-13 kg/cm²</i> | <i>Rubberwood, Cherry</i> |
| <i>High density species</i> | <i>175-250 psi or 13-18 kg/cm²</i> | <i>Oak, Maple</i> |

Assembly time: The assembly time is influenced by many factors some of which include glue spread, moisture content of the stock, porosity of the stock, environmental conditions and adhesive choice. Assembly times of 5 to 20 minutes are approximate. It is desirable to see a bead of adhesive squeeze out around the perimeter of the bottom panel of the stack.

At 70°F and 50% relative humidity, approximately 6 wet mils:
 Open Assembly Time – 5 minutes
 Total Assembly Time – 15 minutes

Press/ clamp time: Press times are dependent on the adhesive used, gluing stock type, moisture content of the stock, and environmental conditions. Press times can range from a minimum press time of 30 minutes to greater than two hours. Shorter times are required under ideal conditions when using soft wood species at moisture content slightly less than eight to ten percent and factory temperatures of 68 degrees Fahrenheit/ 20 degrees Celsius. Longer press times will be required for higher density species, higher moisture contents and colder factory temperatures. It is recommended that optimum press times be determined in actual plant conditions recognizing that seasonal changes may lead to variable requirements.

Machining/ post process conditioning: After the minimum clamping time period, the panel stack will develop enough strength and can be removed from the press. Twenty-four hours of cure is recommended before further machining. Three or four days may be required to eliminate sunken joints caused by residual moisture in the glue line.

Minimum use temperature: Curing temperatures should be higher than the minimum use temperature of the adhesive. This includes the temperature of the stock to be glued as well as the air and adhesive temperatures. If the temperatures are below the minimum use temperatures you will see a white, chalky appearance of the glue line. These bonds are usually weak.

Clean-up: For easy removal of adhesive from equipment, clean up while it is still wet with warm water (this includes the glue roller and pans). For dried glue, steam and or hot water are the most effective. Using glue release agents on equipment will also allow for easier clean up.

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