

# Multibond X-016

## PRODUCT DESCRIPTION

**Multibond X-016** is a highly water-resistant, 2-part crosslinking polyvinyl acetate emulsion adhesive. It is recommended for applications requiring ASTM D5572 wet use performance and DIN EN 204 D4 water resistance. When mixed with Catalyst A, it develops a water-resistant bond with a light-colored glue line. Multibond X-016 is an excellent choice for finger jointing, cold press, radio-frequency and hot-press applications.

## PHYSICAL PROPERTIES <sup>1</sup>

**Chemical Family Description:** Crosslinking polyvinyl acetate emulsion adhesive

**Appearance:** White colored liquid

**Specific Gravity:** 1.09

**Weight Solids (%):** 50.9-53.4

**pH:** 4.5 – 5.0

**Typical Viscosity (cps):**

Uncatalyzed: 1690 - 2600

Catalyzed: 1350

**Suggested Minimum Use Temperature:** 7°C

**Freeze/Thaw Stable:** Yes

## APPLICATION GUIDELINES

**Mixing Instructions:** The normal recommended portion of catalyst to resin is 5% by volume. A reduced proportion can be used under certain conditions such as burning in a radio frequency press. Mixes containing less than 2½% by volume should be avoided. Place the resin in mixer and slowly add catalyst while stirring. Continue mixing for five minutes after all the catalyst has been added to ensure a uniform mixture.

**Moisture Content:** Six to eight percent is the recommended moisture content of the gluing stock. High moisture content will slow down glue line cure and cause weaker than normal adhesive bonds. Additionally, panel shrinkage may occur resulting in stress cracks or end delamination.

### Edge and Face Gluing

**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 glue penetration and should be guarded against. When possible, glue joints should be prepared and glued the same day. The stock should be machined on both top and bottom surfaces to allow even contact with radio frequency platens.

**Spread:** Generally, 200-245 g/m<sup>2</sup> of glue line is adequate. Lower adhesive spreads require better stock tolerances and shorter assembly times. Commonly, a mechanical glue spreader is used to apply a uniform spread to the gluing surfaces.

**Pressure:** Pressure is dependent upon the species or material to be glued and joint preparation. Direct contact of the gluing surfaces must be made to obtain maximum strength. Suggested pressures for various wood densities are: low 7.0-10.5 Kg/cm<sup>2</sup>; medium 8.8-12.3 Kg/cm<sup>2</sup>; high 12.3-17.6 Kg/cm<sup>2</sup>. Clamps for edge gluing should be spaced 20-40 cm apart and 5 cm from the end of the panel to evenly distribute pressure along the entire length of the glue line.

**RF Cure Time:** Radio frequency cure times will vary from machine to machine. Machine manufacturers suggest that machines will cure about 645 cm<sup>2</sup> of glue line per minute per kilowatt. Glue joints should feel warm immediately after the cure cycle. Cure times should be determined through plant trials.

### Finger Jointing

The finger jointing of lumber is increasingly popular as a method of reducing wood waste and providing maximum wood utilization resulting in lower raw material costs. Structural and non-structural finger jointed products have gained wide acceptance throughout the wood industry. The preparation of these joints, as well as the adhesive, play a critical role in the quality of finger jointed products. Most failures of finger jointed lumber are caused by poorly machined and poorly fitted dry joints. The adhesive plays a role in finger joint back off, heat and water resistance.

## APPLICATION GUIDELINES (Continued)

**Equipment Check.** Be sure to check overall knife stack for accuracy. Keep cutterheads in pairs and properly cleaned. Cutterheads should be sharpened as a set. Knife set should cut only .3 mm to .8 mm of wood. Knives should be sharpened after running approximately 70 m<sup>3</sup> (wood species may cause this to vary). Make sure cutterhead spindle is set vertically with no wear or play in the bearings. Chain carrier lugs should be squared with the trim saws and cutterheads. Make sure trim saws are set true. Check bed rails for wear on a regular basis. Check hold down pressure to provide sufficient pressure to prevent movement of stock while cutting the joint.

**Joint Assembly.** Pressure should be held constant until joint is cured. End pressure should be set to provide 10-14 Kg/cm<sup>2</sup> pressure for non-structural joints. Crowder wheels should be aligned to match fingers accurately.

**Adhesive Application.** Sufficient adhesive spread will provide a uniform coverage that should cover 1/2-2/3 the length of the finger on both sides in a thin continuous film. Make sure fingers aren't skipped and that the adhesive is applied to the whole joint, not just the tips of the fingers. Excess adhesive squeeze-out can cause arcing in a Radio Frequency tunnel. It also causes adhesive build-up and poor adhesive efficiency. Too much adhesive can cause a hydraulic effect in finger joint back off.

## PERFORMANCE PROPERTIES

**Meets or exceeds the following industry standards:**

- NWWDA 1.S. 1-87 Type I and Type II with Catalyst A
- ANSI/HPMA 1994 Type I and Type II water resistance with Catalyst A
- D-5572 Wet Use (Finger Joint)
- European Standard DIN EN 204 D4 (formerly DIN 68602 B4)
- European E-1 formaldehyde emission standard

ASTM D-905 Bond Strength (hard maple)

	<u>lb/in<sup>2</sup></u>	<u>Wood failure%</u>
25°C	3,720	34
65°C Overnight	1,720	05

Room Temperature Speed of Set<sup>5</sup>: 0.74 with Catalyst A. (Very Slow)  
EN 204 Durability Class D4 Performance:

<u>Conditioning Sequence</u>	<u>Minimum value</u>	<u>Multibond X-016 (6% Catalyst A)</u>	<u>WF %</u>
1 (7 d. cure tested dry)	≥ 10	15.3 N/mm <sup>2</sup>	100
3 (7 d. cure, 4 d. H <sub>2</sub> O soak; tested wet)	≥ 4	7.3 N/mm <sup>2</sup>	0
5 (7 d. cure, 6 hr. boiling; 2 hr. cold H <sub>2</sub> O; tested wet)	≥ 4	5.2 N/mm <sup>2</sup>	0
6 (7 d. cure, 6 hr. boiling; 2 hr. cold H <sub>2</sub> O; 7 d. dry tested dry)	≥ 8	13.7N/mm <sup>2</sup>	100



## HANDLING AND STORAGE

Store in tightly closed original container. Protect from freezing. Storing at temperatures above 25°C will reduce the maximum storage time. Prolonged storage will result in a gradual increase in viscosity. If thickening, separation or settling occurs, the adhesive should be thoroughly mixed and will then be ready to use again.

**Note:**

Discoloration of wood veneer products occurs occasionally. This phenomenon is very infrequent and ranges in appearance, color and may vary with the species of the veneer. Discoloration may appear during or after the manufacturing process. Among other things, environmental conditions in some manufacturing plants can contribute to discoloration. If veneer discoloration occurs, our representatives are prepared to visit and assist you in attempting to identify the causes of the staining and possible solutions. Because such discoloration is attributable to conditions beyond our control, Franklin International can assume no responsibility of liability for any discolorations that might occur.

<sup>1</sup> All numerical values represent typical properties.

<sup>2</sup> If product has been frozen, contact Technical Service for instructions.

<sup>3</sup> Measured by Franklin's film formation test. Gluing conditions will affect minimum use temperature.

<sup>4</sup> Performed according to ASTM D-905 on hard maple.

<sup>5</sup> Measured by Franklin's torsion speed of set tester on hard maple @ 3 minutes clamp time. The higher the value, the faster the speed of set.

**Important Notice to Purchaser:** Our recommendations, if any, for use of this product are based on tests believed to be reliable. The greatest care is exercised in the selection of our materials and in our manufacturing operations. However, we make no recommendation to use this product in any manner which conflicts with existing laws and/or patents and WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, REGARDING THIS PRODUCT OR ITS USE, INCLUDING MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, THE MANUFACTURER IS NOT LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES OF ANY KIND. Revised 11/21/08

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