Bob Behnke

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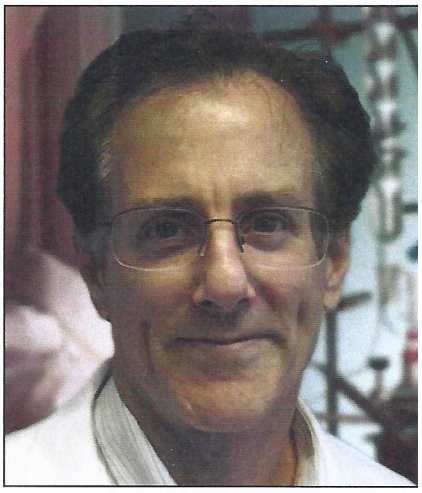

Bob is Franklin International's Technical Service Manager for the Construction Division, handling all technical aspects of the Titebond branded product line of wood glues, construction adhesives, wood flooring adhesives, and sealants. Bob manages a group tasked with handling all calls to the company's 800 number, along with technicians tasked with testing competitive products and new substrates. Bob has worked for more than 30 years in the adhesives and sealants industry with experience in the development of emulsion polymers, scale up from bench to production of a range of adhesive technologies, and development of breathable technology for organic and inorganic fabrics.

Tips for Successful Gluing

DO A DRY FIT

Clamp pieces without glue to make sure the joints come together tightly. Test for choice of clamps and blocks. Make blocks, strips, or pads to protect the wood from clamping pressure. Use double-sided tape to keep blocks, strips, and pads in place. Fix joints that are too tight or too loose. Water-based wood glues don't fill gaps, so loose joints may require an epoxy adhesive. For easy clean-up, put masking tape on all joints then cut apart to disassemble. Bridge edge-to-edge joints with a clamp to keep seams from creeping. Check moisture content of all wood to ensure all parts are within 1% moisture content. Clean away any residual sawdust or contamination that may keep joints from fitting tightly.

PREPARE THE GLUE, BRUSHES, TOOLS

Determine the correct glue for the project requirements. Be sure glue is in good condition by mixing with a small stick. If glue has settled, stir in settled material before proceeding. If unsure of glue, test on scrap piece of wood, clamp 24 hours, then break with hammer. Clean glue bottle applicator tip. Clean glue brushes and remove any loose bristles. Coat or mask any iron pipes to avoid black stains. Arrange and orient clamps from the dry fit for easy access

PREPARE CLEAN-UP ITEMS

For water-based wood glues, have a bucket of water handy for spills. Spread plastic sheeting over work surface to protect against drips.

GLUE UP

Be sure the shop and substrate temperatures are above the chalk point of the adhesive. Consider gluing in stages to reduce open and total assembly time. A threaded rod works well as a tool to spread the correct amount of glue. Wipe joints with acetone before gluing, especially for oily tropical woods. Apply approximately 6 mil we film or 250 sq.ft. per gallon. Peel off any masking tape when glue is slightly rubbery. Use wax paper under clamps if in contact with any glue squeeze-out. Allow squeeze-out to dry for 10-20 minutes, then remove with a putty knife. After gluing, remove cap from bottle and clean out glue replace with clean cap.

DRYING

Allow joints to dry for at least 2-3 hours before unclamping. Best to leave for 24 hours. Allow edge-to-edge joints to dry for several days before sanding or planing smooth.

Titebond Product Name	Type	Solids	Viscosity (cps)	pH	VOC (g/L)	Chalk Point (°F)	Open Time (min.)	Total Assembly (min.)	Strength RT (psi), (WF%)	Strength 150°F (psi), (WF%)	Dry Film Color	Features	Official Shelf Life	Sizes	Freeze Thaw Stable
Titebond Liquid Hide Glue	Protein	52%	4,000	6.5	0.0	N/A	10	20-30	3,591 (72%)	3,207 (59%)	Amber	HR,S, WS	12 months	4,8,16,5G	Yes
Titebond White Glue	PVA	45%	5,600	4.7	10.7	50	5	10-15	3,550 (50%)	1,600 (15%)	Clear	S, WS	24 months	G,5G,55G	Yes
Titebond Carpenter's Glue	PVA	46%	5,400	4.7	10.7	50	5	5	3,400 (45%)	1,550 (15%)	Cream	HR,S, WS	24 months	G,5G,55G	Yes
Titebond Original	M-PVA	46%	3,200	4.0	10.7	50	5	10-15	3,600 (77%)	1,600 (10%)	Cream	S	24 months	4,8,16,Q,G,5G,55G	Yes
Titebond Original Extend	M-PVA	42%	3,500	4.8	3.1	40	15	20-25	3,510 (81%)	3,120 (61%)	Cream	HR,S, WS	12 months	16,G,5G,55G	Yes
Titebond II	X-link PVA	48%	4,000	3.0	5.5	55	5	10-15	3,750 (72%)	1,750 (6%)	Orange	WR,S,RF	24 months	1.25,4,8,16,Q,G,5G,55G	Yes
Titebond II Dark	X-link PVA	48%	4,000	3.0	5.5	55	5	10-15	3,750 (72%)	1,750 (6%)	Brown	WR,S,RF	24 months	8,16,G,5G	Yes
Titebond II Extend	X-link PVA	49%	3,500	3.0	3.8	60	15	20-25	3,844 (48%)	1,820 (6%)	Orange	WR,S	12 months	16,G,5G,55G	Yes
Titebond II Fluorescent	X-link PVA	48%	4,000	3.0	5.5	55	5	10-15	3,750 (72%)	1,750 (6%)	Orange	WR,S,RF	24 months	16,G,5G,55G	Yes
Titebond III	X-link PVA	52%	4,200	2.5	5.6	47	10	20-25	4,000 (57%)	800 (0%)	Brown	WR,S	24 months	1.25,4,8,16,Q,G,5G,55G	Yes
Titebond No Run, No Drip	PVA	60%	36,500	4.8	9.8	50	3-5	10-15	3,000 (7%)	650 (0%)	Clear	Thick,S,WS	24 months	8,G	Yes
Titebond Translucent	PVA	45%	5,600	4.7	10.7	50	5	10-15	3,550 (50%)	1,600 (15%)	Clear	S, WS	24 months	G,5G,55G	Yes
Titebond Melamine Glue	M-PVA	57%	12,000	4.0	3.0	40	5	10-15	329 (100%)	No data	Clear	Bonds melamine	24 months	16,G,5G,55G	No
Titebond Cold Press for HPL	M-PVA	42%	4,500	4.9	3.2	50	15	15-20	2,711 (32%)	1,890 (1%)	Clear	Bonds HPL	12 months	5G,55G	Yes
Titebond Cold Press for Veneer	M-PVA	42%	4,500	4.9	2.0	50	15	15-20	2,508 (6%)	656 (0%)	Brown	No bleed through	12 months	Q,G,5G,55G	Yes
Titebond Quickset 1000	EVA	61%	3,600	4.5	2.4	35	7	5-10	N/A	N/A	Clear	Fast set	12 months	5G,55G	No
Titebond Quickset 2000	EVA	63%	4,350	4.5	2.4	35	5	5	N/A	N/A	Clear	Fast set	12 months	5G,55G	No
Super Titebond	M-PVA	43%	3,500	4.5	2.2	40	5	15-20	3,976 (85%)	3,090 (75%)	Clear	HR,S, WS	12 months	5G,55G	Yes
Titebond Dowling Glue	PVA	51%	1,500	4.5	10.2	50	5	5	3,650 (68%)	1,250 (1%)	Clear	Fast set	12 months	5G	Yes
Titebond Dowling Glue L.V.	PVA	44%	140	4.7	9.6	45	5	5	2,711 (32%)	1,890 (0%)	Clear	Low viscosity	12 months	5G	No
Titebond MH-101	PVA	41%	3,500	4.7	3.36	35	2	10	3400 (70%)	1400 (15%)	Off White	Fast set	12 months	1G,5G,55G	Yes
Titebond Polyurethane Glue	PU	100%	8,500		0.0	N/A	N/A	20-25	3,500 (60%)	3,000 (50%)	Yellow	WR,S	12 months	4,8,12	Yes
Titebond HiPURformer WW30	PU	100%	7,600		0.0	N/A	0.5	0.5	1,360	No data	White	WR	15 months	50 gram cartridge	Yes
Titebond HiPURformer WW60	PU	100%	12,000		0.0	N/A	1	1	1,480	No data	White	WR	15 months	50 gram cartridge	Yes
Titebond HiPURformer MP75	PU	100%	9,500		0.0	N/A	1.25	1.25	900	No data	White	WR	15 months	50 gram cartridge	Yes
Titebond HiPURformer MP300	PU	100%	11,000		0.0	N/A	5	5	1,016	No data	White	WR	15 months	50 gram cartridge	Yes
Titebond Instant Bond-Thin	E-CA	100%	5		20.0	N/A	5 sec.	8 sec.	3,500	No data	Clear	Fast set	24 months	2,4,8	Yes
Titebond Instant Bond-Medium	E-CA	100%	120		20.0	N/A	7 sec.	12 sec.	3,500	No data	Clear	Fast set	24 months	2,4,8	Yes
Titebond Instant Bond-Thick	E-CA	100%	2,400		20.0	N/A	10 sec.	18 sec.	3,500	No data	Clear	Fast set	24 months	2,4,8	Yes
Titebond Instant Bond-Gel	E-CA	100%	60,000		20.0	N/A	30 sec.	50 sec.	3,500	No data	Clear	Fast set	24 months	2,4,8	Yes
TB GC Neoprene+ Contact Cement	Neoprene	55%	2,000		0.0	60		2 hours	N/A	No data	Beige	Contact Bonding	18 months	Q,G,5G,55G	No

Clamp Pressure - 100-125 psi for softwood, 125-175 psi for medium woods, 175-250 psi for hardwoods

Coverage - 6 mils or 250 sq.ft. per gallon

HR - Heat Resistant, WR - Water Resistant, WS - Water Sensitive, S - Excellent Sandability, RF - Radio Frequency Curable

Strength values tested as per ASTM D-905 hard maple block shear

For information about Titebond glues, including technical information and suggested ways to apply the adhesive to maximize bonding refer to the Titebond technical resourses webpage at:

www.titebond.com/Index.aspx