

FREQUENTLY ASKED QUESTIONS

What is the difference between Titebond Original and Titebond II?

These products have basically two differences

Titebond II

Much more water resistance
Orange but clear

TB Original

Will bond at a lower temperature (45F for TB Original, 55F for TB II)
Better sandability

How long do I need to clamp my joints?

Clamping is designed to hold the pieces being glued tightly while the adhesive builds strength.

With dry, flat pieces of wood, warm temperatures and well fitted joints, the bonds should develop about 15% of their strength in one hour and can be unclamped.

If the wood is higher in moisture than 6-8%, if the surrounding air is high in humidity or cooler than 70°F, or if the joint is not tightly fitted, clamping times may need to be extended.

For instance, the rule of thumb for cool temperatures says that clamp times need to be doubled for each 10°F drop from 70°F.

Finally, if the wood has been bent into position, the glue may need to reach 50% strength or more before unclamping

For this type of job, a much longer clamp time is necessary.

When has the glue reached full strength?

In normal conditions, most wood glues will reach full strength in about 16-24 hours.

Strength buildup will be delayed by thick glue lines, cool temperatures, wood which is low in porosity or high in moisture and other factors

What is the shelf life of our glues?

12 Month Shelf Life

TB Liquid Hide Glue

Titebond Liquid Hide Glue can be tested by placing a thin film on paper. Dry paper in oven at 140°F. When dry, if film cracks, adhesive is still good

TB Original Extend

TB Cold Press for HPL

TB Cold Press for Veneer

TB Super Titebond

TB II Extend

TB Polyurethane Glue

TB Doweling Glue

TB Doweling Glue L.V.

TB Quickset 2000

15 Month Shelf Life

TB HiPURformer WW30, WW60, MP75, MP300

24 Month Shelf Life

TB III

TB II Will turn into a bright orange gel when it is beyond useful life

TB II Fluorescent

TB II Dark

TB Original

TB No Run, No Drip (formerly TB Molding and Trim)

TB White Glue

TB Translucent (Same as White Glue)

TB Melamine Glue

Titebond Instant Bond Wood Glues (Thin, Medium, Thick, Gel, Activator)

TB Wood Filler

Why are my glue joints turning white?

This is a sign that the glue is drying too cool. Each water dispersed wood glue has a chalk point, a temperature below which the glue particles will not knit together.

When the wood being bonded is below the chalk point the glue dries white, and the bond has essentially no strength.

Will Freezing harm wood glues?

Each of the Titebond wood glues are designed to withstand five cycles of freezing down to 0°F and thawing without losing function.

This treatment may, however, make the glues thicker or occasionally somewhat lumpy.

If you believe that your glue was frozen, stirring or agitating it should restore the original consistency.

For the squeeze bottles, kneading the bottle like you would squeeze a toothpaste tube is generally effective.

Will Titebond II work with biscuits?

Yes, Titebond II is a water dispersed glue, and will properly swell the biscuits. After it dries, however, it is nearly unaffected by water.

What is type II water resistance?

This testing involves bonding thin veneer into a plywood specimen, then cycling the specimens by soaking them for four hours under water, then drying them in an oven for nineteen hours.

After three such cycles, there can be essentially no separation or delamination.

How can I clean up or remove dried glue?

First, it is often best to use a damp cloth and remove excess glue before it has dried.

Once the glue has dried, scraping or sanding works well for most glues.

Steam or warm vinegar can also be effective on dried glues, but keep in mind that the moisture will tend to swell the wood temporarily.

For dried Hide Glue, water alone will dissolve the dried glue.

Mixture of water/acetone/vinegar will soften PVA based adhesives quickly

How can I take apart a joint?

Disassembly requires wakening the bond so that the glue becomes weaker than the wood.

Then when pressure is applied, the joint will give, and not the wood.

For Titebond wood glues, heat is the best tool.

Raising the glue temperature to 150F reduces the glue's strength by more than half, and may be sufficient to open the joint.

For Titebond wood glues, moisture will also help and steam is the best approach.

For Hide Glue, application of a few drops of water to the edge of the joint will allow the glue to absorb the moisture and weaken.

Can glues be stained?

No. Furthermore, the glues tend to be absorbed into the pores of the wood.

If they block the pores of the wood, the stain will not be absorbed, and the areas where the glue has been smeared will not stain properly.

To avoid this problem, the glue which is squeezed out of the joint needs to be cleaned or sanded off completely.

For small projects, taping along the joints, much like you might mask for painting can prevent any problems.

Can I glue oily woods like teak, or woods high in tannic acid like cedar or redwood?

Because a surface layer of oil or tannic acid tends to build up on these species, they can present a problem.

For either type of wood, planing, jointing, or sanding shortly before bonding will remove the contaminating layer, and allow successful bonding.

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Otherwise, the surface being bonded will need to be wiped with something like acetone to remove the layer. Acetone is particularly effective because it dries quickly and allows bonding almost immediately after the surfaces have been wiped.

Can I bond surfaces which have been painted or stained?

This is never recommended for two reasons.

First, the glue has been designed to bond to wood, and may not bond well to these materials.

Even if it bonds well, the bond may not be strong because most stains and sealers are not well anchored to the wood.

If the glue does hold well, when the joint is stressed the glue will likely pull off a layer of stain or paint.

Second, the stain or paint tends to seal the surface of the wood, and will consequently prevent the glue from drying.

Thus, clamp times will be greatly extended as will the time required for the glue to build strength.

What cause sunken joints to appear several days after I have completed my gluing and finishing?

In the gluing process, the wood along the joint picks up some moisture from the glue and swells somewhat.

If the piece is run through a planer or jointer soon afterward, some of this swollen wood is removed.

When the moisture levels drop back to those of the rest of the piece, the area along the joint is sunken.

Since the glue does not shrink as much as the wood, a ridge can sometimes be felt on the glue line.

What is Gorilla Glue?

This is a European glue which is a one part polyurethane.

Titebond offers a version of this glue called Titebond Polyurethane Glue

Polyurethane glues dry and build strength quickly and will do a moderately good job of filling gaps when the fit of the joint is poor.

Polyurethane glues react with moisture in the air and wood to chemically react and build strength.

In the reaction process it produces carbon dioxide and foam which is much weaker than un-foamed glue.

Therefore it is still good to have as tight fitting joints as possible and clamp tightly to reduce foam generation in the bond line.

The cost of polyurethane glues are higher than water based wood glues with bond strengths on hard maple 10-30% weaker.

How long can you keep woodworking glue (the regular old white and yellow varieties) around your shop before they go bad?

I have not found any "best if used by" dates as I would if the glue was a food product. Are there any tests or guidelines you can provide to me?

Most companies will put an "Official" shelf life on their products to limit liability in case product goes "bad" due to poor storage conditions.

The typical "Official" shelf life is between one and two years. If kept in good storage conditions, which I like to call "basement" conditions, white

and yellow glues (water based Polyvinyl alcohol stabilized polyvinyl acetate adhesives) can be "expected" to last up to 10 or more years.

As you get adhesives which are water resistant or fast grabbing, their "expected" shelf life will be a bit less due to increased chemical reactions between glue particles.

When we look at bad storage conditions, the worst is freezing followed by thawing, and heat. Most wood glues are designed to withstand a minimum of 5 freeze/thaw cycles. With each cycle, the glue will form gels. These gels can easily be broken up by mixing, but each subsequent freezing and thawing will cause the gels to be harder to break up until the gels will no longer be able to be broken up and the glue will remain solid.

Heat will cause any chemical reactions to speed up. The chemical reactions can cause clumping of the microscopic particles of adhesive suspended in the water or cause the polyvinyl acetate to lose the acetate group causing the polymer to clump and gel.

The rule of thumb for testing if wood glue is still good: First: If it comes out of the bottle, that is a very good sign. Second: the glue must "wet" out the joint smoothly. It must not look pasty, stringy or want to stick to itself better than the wood substrate. If either of these occurs, it is time for a new bottle.

If not, the glue should bond as well as the day it was produced.

If the above testing is good, but the adhesive is a bit thick, 5% water can be added to thin out the adhesive.

So, the short of it is, there is no "best if used by" there is only best if stored correctly.

Why do I have black glue lines?

Iron can contaminate the glue and cause it to turn dark. Do not use iron tools, pipes, pumps or use sand paper that has also been used to sharpen metal tools.

The iron contamination will not adversely affect the strength of the glue.

How many clamps do I need?

Clamps should be positioned a minimum of 1.5 to 2.0 inches from the sides and evenly spaced 8-12 inches throughout the piece. Care should be taken to ensure a tight fit between wood pieces with no saw marks and no burnishing of the surfaces to be glued. Clamp time is dependent on wood species, moisture content and environmental conditions. For edge gluing, 2-4 hours of clamp time is sufficient and full cure is about 16 to 24 hours. Clamping pressures will vary by wood type. Softwoods such as pine need 100-150 psi, medium density woods such as cherry and soft maple need 150-200 psi and hardwoods such as oak and birch need 200-300 psi. All times based on wood between 6-8% moisture content, 70°F and 40-50% relative humidity.

What causes veneer checking (development of small cracks in veneer that appear as uniformly spaced hairline cracks parallel with the grain direction)?

Veneer checks are formed when stress failures occur in the face veneer caused by differential shrinkage or swelling between the face veneer and the panel substrate to which it is applied. Veneer and substrate should be dried to the conditions for final product usage at the time of pressing. If a high water content adhesive is applied to the veneer with a long assembly time, the veneer can pick up considerable moisture before pressing. Avoid high water content adhesives, thick glue spreads and long assembly times. Allow two days to allow moisture content to reach equilibrium.

How does Titebond III compare to D4 PVA Glues?

An answer to this question will require additional details about the specific use for the adhesive. However, in general there are several conditions under which the bond strength of a wood-to-wood bond can be measured. The four most common are:

- 1) Room temperature dry strength (most common)
- 2) Room temperature soak, tested wet
- 3) Boiling water soak, tested wet
- 4) High temperature

When a supplier claims that their adhesive passes "D4", it means that it should have been tested according to European standards and it would be fair for you to ask them for a certificate prepared by an independent laboratory showing the test results for the adhesive they use.

IFT Rosenheim (German window and door technology laboratory) is commonly used for such testing. Assuming you do receive a D4 certificate in response to your request that shows the adhesive passes all conditions of the test, you can be assured that your adhesive will have good bond strength for use in non-structural applications for conditions noted in 1), 2) and 3) above. There is a separate test called WATT 91 in Europe that pertains to heat resistance and the D4 test guarantees little with regard to this property. Heat resistance correlates well with creep resistance and is an important property for avoiding visual defects caused by joint movement (creep) over time and seasonal cycles of high and low humidity. Both the D4 and WATT 91 testing is performed on *fagus sylvatica* (beech) lumber but the results should more or less parallel those for oak.

Titebond III as it pertains to "D4" and WATT 91 testing by IFT Rosenheim, passes conditions 1) and 4). It fails conditions 2) and 3) by a small margin. So, if the adhesive used by the oak panel supplier is truly "D4", it will likely have somewhat better water durability than Titebond III does.

This is probably a good place to note that there are one component and two component D4 adhesives. The one component adhesives that do actually pass often do so marginally, while the two component D4 adhesives provide superior results. It might be worth asking the oak panel supplier if they are using a one or two component adhesive.

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If your primary concern is for room temperature bond strength and heat resistance, it is unlikely there will be significant difference between Titebond III and the D4 glue.

As a side note, Franklin International – the manufacturer of Titebond III – supplies a range of adhesives to the manufacturers of wood products. Our range includes D4 adhesives in the two component category. Minimum packaging sizes for these products is 20 liters. The range of products we supply to retail customers has been selected to offer the best compromise of properties, not least of which includes storage stability which becomes a challenge for single component D4 adhesives.

Do your wood glue adhesives contain gluten?

Some of our products contain corn starch which technically contain a gluten type protein. This answer is from our corn starch supplier: Gluten can sometimes be used as a generic name for plant proteins – especially from grains. Today, most people are concerned about gluten as it pertains to wheat allergies or celiac's disease/gluten-free diets. This gluten comes exclusively from wheat, barley, rye, oat, and their hybrids. The gluten in these grains is formed by the interaction of gliadin and glutenin proteins which create the sensitivity for some people.

The protein in corn is colloquially referred to as corn-gluten, however is scientifically inaccurate since it does not contain the same proteins. Therefore, the proteins in corn, even though they're inappropriately named gluten, do not affect people in the same way as those from wheat, barley, rye and oat. The FDA does not consider corn gluten as an allergen. Our corn starches do have a residual amount of protein in them. These vary depending on modification type, but all should be less than 0.4%. Thus, our cornstarch contains <0.4% gluten, but this is corn-gluten protein and not the same as wheat originated gluten.