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Better Gluing Guide

Adhesives for Industrial Woodworking Applications

Who We Are

We are an industrial adhesive company dedicated to the needs of the Wood Products Industry. We provide adhesive products, equipment and value-added services to customers world-wide. Our goal is simple. We follow the concepts pf Better Gluing, that is we begin by focusing on the problem, then we provide the best possible products, equipment or services to solve the problem.

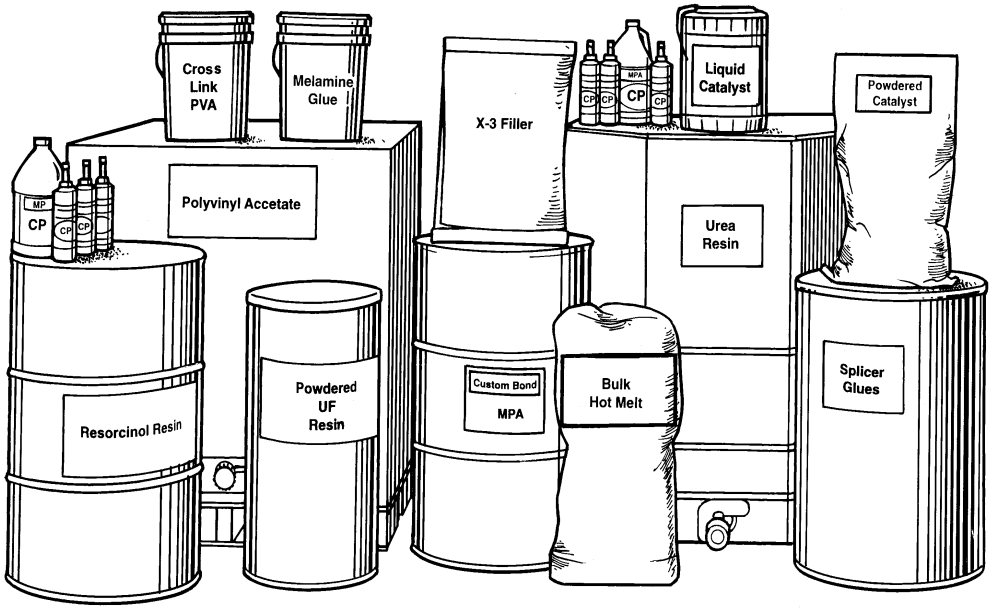

Table Of Contents

Choosing The Right Adhesive

There are three overarching considerations when deciding on an adhesive: *Work-ability*, *Bond-ability* and *Price*.

- **Work-ability**: includes important factors like open time, pot life, clamp time, minimum use temperature, etc.
- **Bond-ability**: refers to the final bond characteristics of the glue line. These include bond strength, color, degree, if any, of bleed through, sandability, water and heat resistance, etc.
- **Price**: obviously important, however, price should be third on the checklist <u>after</u> determining your needs based on the first two components.

Panel Manufacturing

Hot press–Single Opening

CP-0501 + Catalyst (UF)

A "workhorse" hot press urea resin. Compatible with a range of catalysts designed to address specific needs. Depending on the catalyst used, CP-0501 can offer increased open times, reduced bleed through, increased wet-ability on hard to wet out species, increased "craze" resistance and increased water and heat resistance. It may also be fortified with melamine to yield Type I bonds.

CP-0502 + Liquid Catalyst (UF)

CP-0502 is a liquid-liquid urea resin system designed for use in automated mixing machines like the Cam 2000, Burkle, Willamette Valley, etc.

CP-0200 (X-link PVA)

A one part, pre-catalyzed, cross-link PVA with a new technology homopolymer that allows better penetration on dense species.

CP-0201(X-link PVA)

A one part, pre-catalyzed, cross-link PVA formulated to help reduce bleed through issues.

CP-0204 (X-link PVA)

Used for manufacturing of "Fire-Rated" Panels (often used on "Duraflake" core)

Hot Press–Multi Opening

CP-0501 + Catalyst (UF)

A "workhorse" hot press urea resin. Compatible with a range of catalysts designed to address specific needs. Depending on the catalyst used, CP-0501 can offer increased open times, reduced bleed through, increased wetability on hard to wet out species, increased "craze" resistance and increased water and heat resistance (up to and including Type I door bonds).

CP-0502 + Liquid Catalyst (UF)

CP-0502 is a liquid-liquid urea resin system designed for use in automated mixing machines like the Cam 2000, Burkle, Willamette Valley, etc.

Membrane Press

CP-0502 + CP-2011 Catalyst (UF)

A urea resin that offers a long open time specifically suited for membrane pressing with high initial tack.

CP-0501 + Catalyst (UF)

A "workhorse" hot press urea resin. Compatible with a range of catalysts designed to address specific needs. Depending on the catalyst used, CP-0501 can offer increased open times, reduced bleed through, increased wetability on hard to wet out species, increased "craze" resistance and increased water and heat resistance (up to and including Type I door bonds).

Cold Press

CP-0100 (PVA)

A good, middle of the road PVA. Decent open time, fairly short clamp time and high strength.

CP-0200 (X-link PVA)

A one part, pre-catalyzed cross-link PVA. It offers good heat resistance and excellent water resistance.

CP-0500 + Catalyst (UF)

A liquid Urea Resin with a rigid, thermoset glue line that will not "creep" under pressure. While it has a short clamp time for a Urea Resin, it is still very long compared to a PVA.

CP-0120 (for HPL) (PVA)

An economical, yet high performing laminate PVA.

CP-0204 (X-link PVA)

Used for manufacturing of "Fire-Rated" Panels (often used on "Duraflake" core)

Nip Rolling (or J-roll)

CP-0114 (Modified PVA)

A new technology adhesive with an exceptionally high green strength that offers significant advantages over contact cement. It is solvent free, offers some "positioning" time and results in a dramatically stronger final bond. It requires some dead stacking time before machining

"Bulk" Contact Cement

A high performance, proven technology. Offers quick flash off in brush or spray contact cement. Available in flammable, nonflammable and waterborne form. Please refer to our *Contact Cement Guide* for specific products.

Pressurized Canister based Contact Adhesive

High performance contact adhesive in portable, disposable pressurized canisters that do not require air or power. Available in aerosol can, 11# & 38# Canister, and 355# Jumbo returnable sizes. Please refer to our *Contact Cement Guide* for specific products.

Vacuum Bag Press

CP-0503 (UF powder)

A precatalyzed Urea Resin in powder form that is reconstituted with water prior to use. This provides it with a long shelf life & economical shipping costs, while still offering all the characteristics of a Urea Resin.

CP-0106 (PVA)

A high value, high strength PVA filled with shell flour to reduce bleed through. One part makes it easy to use. Like all PVA's, it may "creep" under pressure, and has a shorter open time.

CP-0200 (X-link PVA)

A one part, pre-catalyzed, cross-link PVA with a new technology homopolymer that allows better penetration on dense species.

Finger Jointing

Interior

CP-0100 (PVA)

A general purpose finger jointing glue for use in most applications. Provides a strong interior quality bond.

Exterior

CP-0800 (Melamine)

A melamine resin for use in producing exterior bonds in hardwood finger joints. Provides a structural type one bond but must be heated with RF or by other means to cure. Ideal for mass production runs.

Better Gluing Tip:
When finger Jointing, be careful to avoid "hydraulic" spring back of fingers. This can occur in two ways. First, spring back can occur when too much adhesive is applied. Second, it happens when insufficient clearance is allowed at the base of the fingers to accommodate the adhesive.

Veneer Splicing

Whether you are using a longitudinal or cross-feed splicing machine, your splicing needs will be determined by three characteristics.

- Carry time –the delay time between adhesive application and splicing.
- Color—the type of veneer you are using.
- Water resistance—the potential for splice line exposure to moisture.

Please refer to the Quick Splice Veneer Splicing Adhesive Brochure for product selection

Better Gluing Tip:
The key to good, thin, nearly invisible splice lines is precise control of adhesive spread. Applying too much adhesive will squeeze out on the veneer surface, and appears as a thick splice line which is very visible. The new precision roller applicators are superior to spray application in controlling adhesive spread.

Veneer Checking

Checking of face veneers is a phenomenon that has been prevalent in the plywood industry since its inception. Basically, it is caused by loss of moisture in the face veneer resulting in shrinkage of this component. As the dimensions of the veneer change, stresses are set up between the face and the core. Actually such stresses are nothing more than a restraining action of the more stable core. When these forces reach the point where they exceed the structural strength of the veneer, a rupture of the fiber takes place. This, in effect, shows up as a check or minute split on the surface. These checks naturally follow the weak zones such as lathe checks, pores or splices in the veneer.

Serious veneer checking can be greatly reduced and, in some instances, eliminated by controlling the manufacturing techniques during panel production. Conditioning of the panels subsequent to manufacture should not be underestimated and care should be exercised in carrying out this part of the process. The more important factors which affect the degree of checking in face veneers are veneer species, type, thickness and moisture content, as well as, type of core material and construction methods such as number of plies, adhesive, moisture and spread, assembly time and pressing conditions. The role of each of these variables will be considered individually as to its relationship to veneer checking.

Edge/ Face Gluing

Clamp Carrier

CP-0100 (PVA)

A "workhorse" adhesive for clamp carriers that combines a 10-15 minute open time with a relatively short clamp time. Low cost easy clean up with water.

CP-0200 (X-link PVA)

A one part cross-linking adhesive that offers increased water resistance.

CP-0107 (PVA)

Offers one of the shortest clamp times in the industry, while sacrificing only a small amount of open time.

RF (Radio Frequency)

CP-0200 (X-link PVA)

A one part cross-linking adhesive well suited for RF edge gluing. Offers high shear strength on hardwoods and exceeds Type II water resistance. Offers a Type I bond with the addition of catalyst.

CP-0501 + Catalyst (UF)

An excellent RF urea resin that combines low cost with a rigid, high heat resistant and high water resistant bond. However, it requires mixing.

CP-0503 (UF powder)

A capable, RF urea resin in a convenient, powder form.

Equipment Spotlight:

The power of radio frequency—hand held.

Radio frequency is merely a way of accelerating the cure time of adhesives without the addition of heat. We offer the Workrite handheld RF units that dramatically change the production and process capability for traditional assembly applications. Utilizing radio frequency curing allows clamp time to go from hours to seconds, and eliminates the need for pin nailing or stapling.

Can't find what you need? Not a problem! The applications and adhesives listed in this guide are merely typical examples. We supply complete solutions. We offer in excess of a hundred adhesive formulations and we commonly provide formulas customized for your specific needs. We always recommend contacting us directly at 800.454.4583, or on the web at www.custompak.com to further narrow and fine tune your adhesive and equipment solution.

Panel Mint/ Flow

CP-0501 + Catalyst (UF)

A very low free formaldehyde urea resin that offers the rigid, thermoset bond required in the panel mint and panel flow manufacturing process.

CP-0503 (UF powder)

A capable, RF urea resin in a convenient, powder form.

Adhesive myth:

Aliphatic resins are better adhesives than regular PVA's. The term "aliphatic" refers to a particular chemical group that includes PVA polymers. Just as all baseball players are athletes, but not all athletes are baseball players, all PVA's are "aliphatic", but not all aliphatics are PVA's. Consequently, again, its important to evaluate the working & bonding characteristics of an adhesive.

Hand Clamps

CP-0100 (PVA)

A general purpose aliphatic PVA specifically designed for wood to wood edge, face and end grain gluing. Offers decent open time and moderate clamp time.

CP-0107 (PVA)

Offers one of the shortest clamp times in the industry, while sacrificing only a small amount of open time.

CP-0108 (PVA)

Offers one of the longest open times available, with only a moderate increase in clamp time.

Adhesive myth:

"yellow glue" is better than "white glue". While there are a large range of PVA's with varying working & bonding characteristics, these characteristics are not related to the color of an adhesive. A particular yellow glue typically begins as a white glue with yellow dye added to it. Consequently, when deciding on an adhesive, evaluate its working & bonding characteristics, rather than its color. Unless, of course, final glue line color is an important facet of your desired results.

General Assembly

Mitre Folding

A procedure often used in speaker cabinet manufacturing. This involves laminating a substrate with vinyl or paper and then mitering bevels through the substrate but not the laminate. Glue is then added to the resulting miters and the substrate is folded into a box.

CP-0608 (PUR Hot Melt)

A reactive polyurethane hot melt that offers high strength, short clamp time, and good control over squeeze out. Offers a 1 minute open time.

CP-0603 (PUR Hot Melt)

A reactive polyurethane hot melt that offers high strength, short clamp time, and good control over squeeze out. Offers up to 3 minutes of open time.

Drawer Bottom

CP-0315

An economical general assembly bulk form hot melt. Useful for drawer bottom sealing.

Dowelling

CP-0109 (PVA)

A low viscosity PVA specifically formulated for easy insertion in dowel holes.

CP-0100 (PVA)

Offers dowelling capability in addition to other assembly applications.

Better Gluing Tip:

To determine the correct pressure to use when edge gluing or panel pressing, look for a thin, uniform bead of squeeze out at all points. Copious amounts of squeeze out indicate too much adhesive or too much pressure. Conversely, no squeeze out indicates too little adhesive, insufficient pressure, or uneven joints.

Biscuit

CP-0100 (PVA)

A General purpose adhesive well suited for use with biscuits.

Common Joinery

CP-0100 (PVA)

A medium open time, medium clamp time adhesive.

CP-0107 (PVA)

A general purpose adhesive with a 15 minute clamp time and 5 minutes of open time.

CP-0108 (PVA)

Assembly adhesive offering up to 20 minutes of open time with only a moderately increased clamp time of around 2 hours.

CP-0503 (UF Powder)

When used in conjunction with a Workrite Handheld RF unit, this adhesive offers all the unique advantages of a urea resin (long open time, etc.), with a clamp time only a few seconds long.

CP-0608 (PUR Hot Melt)

A reactive polyurethane hot melt that offers high strength, short clamp time, and good control over squeeze out. Offers a 1 minute open time.

CP-0603 (PUR Hot Melt)

A reactive polyurethane hot melt that offers high strength, short clamp time, and good control over squeeze out. Offers up to 3 minutes of open time.

Equipment Spotlight:

Pizzi Glue Application System

Having the right adhesive for general assembly is only a small piece of the puzzle. Using it correctly and consistently can be a tough requirement to fulfill. The pizzi line offers the ability to apply the correct amount of adhesive in just the right places time after time. The applicators range from a portable, manual tank to semi-auto and fully automatic systems. Please refer to our *Glue Systems* Brochure for more information

General Assembly

Cabinet Door

CP-1351 (EVA)

For use where a non porous (Melamine, Prefinished, etc.) surface is glued to a wood/mdf surface.

CP-0100 (PVA)

A traditional PVA with decent assembly time and 1 hour set time. Typically used when pin nailing.

CP-0608 (PUR Hot Melt)

A Reactive Polyurethane hot melt that eliminates the need for pin nailing and/or reduces clamp time significantly. Also offers an exceptionally high degree of heat and water resistance and better control over squeeze out. Offers 1 minute of open time.

CP-0603 (PUR Hot Melt)

A Reactive Polyurethane hot melt that eliminates the need for pin nailing and/or reduces clamp time significantly. Also offers an exceptionally high degree of heat and water resistance and better control over squeeze out. Offers 3+ minutes of open time.

Interior Door

CP-1351 (EVA)

For use where a non porous (Melamine, Prefinished, etc.) surface is glued to a wood/mdf surface.

CP-0100 (PVA)

A traditional PVA with decent assembly time and 1 hour set time. Typically used when pin nailing.

CP-0108 (PVA)

Assembly adhesive offering up to 20 minutes of open time with only a moderately increased clamp time of around 2 hours

CP-0608 (PUR Hot Melt)

A Reactive Polyurethane hot melt that eliminates the need for pin nailing and/or reduces clamp time significantly. Also offers an exceptionally high degree of heat and water resistance and better control over squeeze out. Offers 1 minute of open time.

CP-0603 (PUR Hot Melt)

A Reactive Polyurethane hot melt that eliminates the need for pin nailing and/or reduces clamp time significantly. Also offers an exceptionally high degree of heat and water resistance and better control over squeeze out. Offers 3+ minutes of open time.

Exterior Door

CP-0200 (X-link PVA)

A one-part pre-catalyzed cross-linking PVA that offers a Type II bond capability.

CP-0203 (X-link PVA)

A 1 part cross-linking adhesive that offers a Type I bond capability.

CP-0701 (PUR Liquid)

A next generation, one-part Polyurethane adhesive. It offers exceptional water resistance, and bonds many difficult species as well as many non-porous substrates.

CP-0603 (PUR Hot Melt)

A Reactive Polyurethane hot melt that eliminates the need for pin nailing and/or reduces clamp time significantly. Also offers an exceptionally high degree of heat and water resistance and better control over squeeze out. Offers 3+ minutes of open time.

Molding & Decorative Parts

CP-0600

A Reactive Polyurethane Adhesive combining quick grab of Hot Melt and durability and strength of PUR.

CP-1401

Quick-set cyanoacrylate adhesive formulated to avoid over penetration of the surface.

Better Gluing Tip:

CONTROLLING MOISTURE CONTENT IS THE KEY

As the moisture content in wood changes, wood expands or contracts and this in turn causes a variety of problems. The moisture content of wood is measured as a ratio between the weight of the water in the wood and the weight of the wood itself. This ratio is stated as a percentage.

Freshly forest-cut "green" wood may have a moisture content of 30% to more than 200%, depending on the species. Before using any wood, it needs to be dried to reduce its moisture content.

The "ideal" moisture content depends upon the use of the wood and the annual average relative humidity at the place where the wood is to be used. It is critical that the wood you work with be dried down to an MC within 2 percentage points of the equilibrium moisture content (EMC) of the in-use location. The EMC of air is numerically equal to the MC that will eventually be attained by any piece of wood when stored indefinitely at a particular humidity. Temperature has no direct effect on MC or EMC.

The relative humidity (RH) in most homes and offices in the U.S. (except in coastal areas and the exceptionally dry areas like the desert Southwest) averages 30 to 40% RH. This is 6 to 7% (see Figure 1), which means that wood in interior locations will average 6 to 7% MC. Therefore, lumber intended for interior use should be dried to 6 to 7% MC and should be kept at this MC prior to and during manufacturing.

Edge Banding

Automatic Machine

KL-782.0 (Hot Melt)

A high performance cartridge hot melt developed in conjunction with Holz-Her specifically for use in their cartridge edge band machines. It features a slide coating that acts to reduce maintenance of the machine. Also available in pellets without slide coating.

CP-0303 (Hot Melt)

Medium viscosity, premium hot melt. Especially designed for primed HPL. Also suitable for solid wood, Veneer, PVC and resinated paper edge bands.

CP-0302 (Hot Melt)

Medium viscosity, economical for edge banding veneer, resin impregnated paper edge bands, PVC and similar.

CP-0312 (Hot Melt)

A high performance, unfilled edge banding hot melt, yielding higher spread rates and dries to a translucent color.

Manual

CP-0608 (PUR Hot Melt)

A high performance polyurethane hot melt suitable for manual edge banding of veneer or solid wood. It offers sufficient open time for repositioning as well as exceptional degrees of water and heat resistance unusual in edge banding.

CP-0100 (PVA)

A standard, premium "yellow glue" that may be used for edge banding in conjunction with taping for veneer and pneumatic air or manual clamps for veneer or solid wood.

Curved Laminations

CP-0501 + CP-2019 (UF)

This 2-part urea resin system provides all the benefits of urea for curved laminating: namely a rigid glue line that will not creep under the stress of the curve. In addition, the separate application catalyst provides a quick set up that allows clamp times as short as 15 minutes.

CP-0200 (X-link PVA)

A cross-link PVA that offers both sufficient strength for curved laminations and the convenience of a one-part system.

Structural

Laminated Beams/ Trusses/ Joists

CP-0900 (Resorcinol)

A Resorcinol resin that offers compliance to the widest variety of industry, Government and military specifications.

Marine

CP-0900 (Resorcinol)

A Resorcinol resin that offers compliance to the widest variety of industry, Government and military specifications.

Miscellaneous Allied

We offer a wide variety of adhesive related products. Listed here, however, are a few products commonly used in the manufacturing plant.

CP-0133

A resin emulsion formulated to seal the pores of wood in preparation for subsequent gluing and finishing operations. Used primarily to control bleed-through and allows for a more consistent finish.

CP-2104

A solution used to treat veneer (especially crotch and burl) to prevent cracking, splitting and checking when bending or flattening . This temporarily plasticizes the wood cells.

CP-2118

A hot press release agent formulated to reduce rejects dramatically by keeping excess adhesive from adhering to the platen.

Famowood—Wood Filler

The industry standard in wood filler. Offered in both flammable and solvent free. Available in these tones:

- Ash
- Birch
- Light birch
- Red birch
- Cherry
- Fir/Maple
- Mahogany
- Natural
- Oak
- Gold oak
- Red oak
- Pine
- Teak
- Walnut
- White