Passionate Stuff Industries (Pty) Ltd

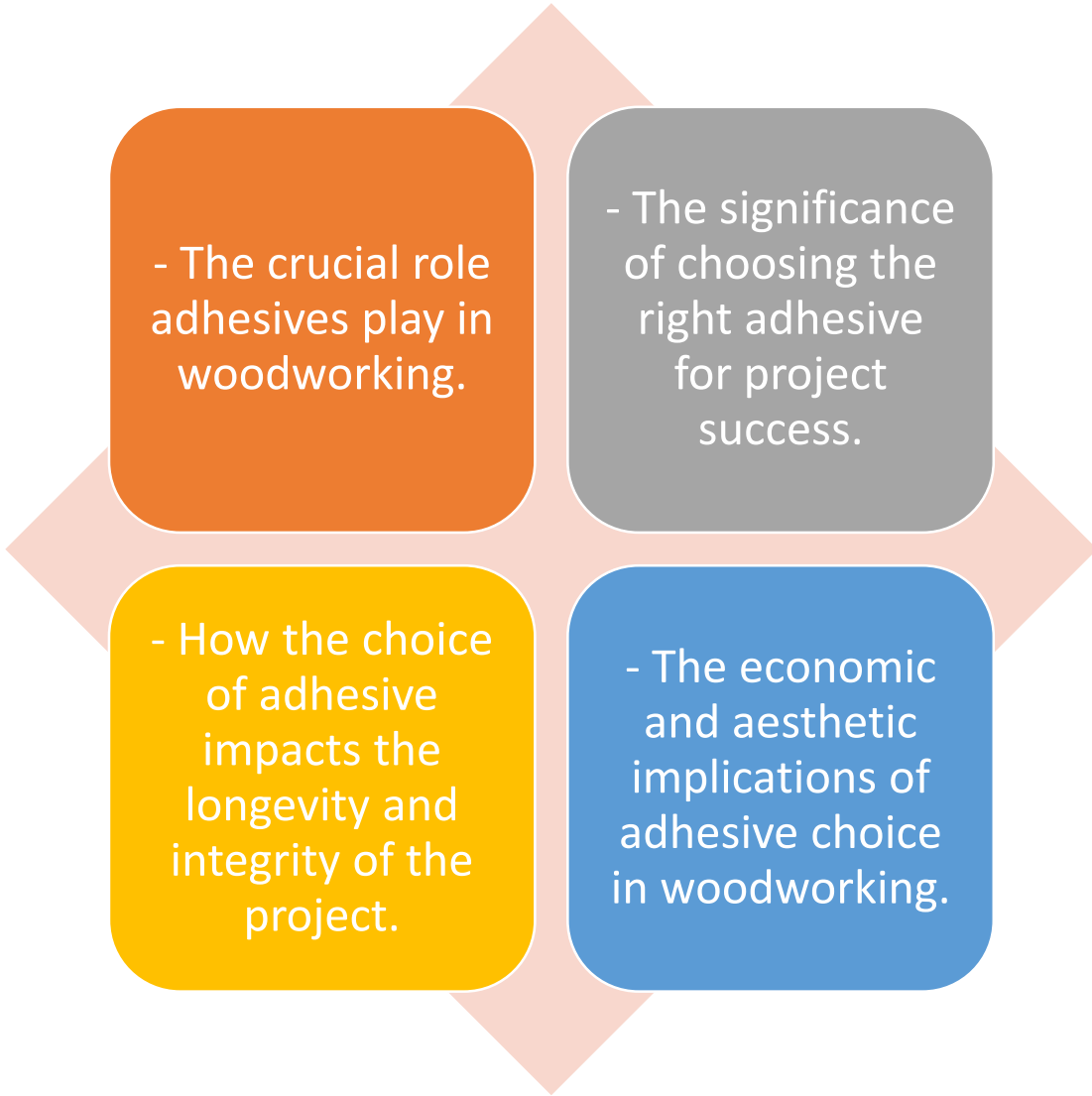
We Make Stuff

You and Glue

1. Sticking to It

- Why glue your project
- There are several different woodworking adhesives.
- What is the relevance of adhesive choice in woodworking projects.
- We will have a look at a variety of adhesives such as PVA, PU, CA and STP

2. Importance of Adhesives in Woodworking



3. Types of Adhesives

We will have a look at an overview of the main categories of adhesives.

The application of each type of adhesive.

And which adhesive is suitable for you and your project.

4. PVA (Polyvinyl Acetate) Glue

- Commonly known as:
  - Wood glue, school glue, paper glue, craft glue
- In our case it is suitable for wood-to-wood bonding.
- Variations are:
  - water-resistant, extended open time, viscosity, non-toxic or food safe
- First discovered in 1912 by the German chemist Fritz Klatte and became popular with woodworkers in the 1940s

5. Polyurethane Glue (PU)

- **VERSATILE and TEMPERATURE RESISTANT:** Easily bonds wood, stone, metal, ceramic, foam, glass, concrete
- **GAP FILLING:** Expands three times into the materials to form an incredibly strong bond
- **100% WATERPROOF:** Doesn't break down when exposed to outdoor elements
- First developed in the 1930s by Otto Bayer in Germany. Commercialised in the 1950s.

6. Epoxy Adhesives

- Epoxy has exceptional strength, durability, and versatility.
- It has high resistance to water, chemicals, and temperature extremes(up to 177°C).
- Used largely in the boating industry and more recently in the building of river tables.
- Developed in the 1930s by Dr. Pierre Castan of Switzerland and Dr. S.O. Greenlee of the United States.

7. Cyanoacrylate (CA) Glue

- Known as *super glue*. Sticks to everything. Just about!
- Quick-bonding and fast-drying is a major characteristics of CA glue.
- Typically used in small repairs and projects.
- Frequently used in combination with other adhesives in woodworking.
- Comes in thin,medium and thick as well as black.
- Discovered in 1942 by Harry Coover and Fred Joyner, researchers at Eastman Kodak. Commercialised in the 1950s.
- Use with CAUTION.

8. Melamine Glue

- Bonds Melamine and Vinyl coated products to porous materials. Also used for veneers.
- A resin adhesive made from melamine and formaldehyde. Is thick and dries clear.
- Is typically cured with heat or pressure.
- First developed in the 1930s. It was commercialised in the 1940s.

9. Contact Adhesive

- Perfect for bonding rubber, leather, carpet tiles, resin laminates, ***wood***, hardboard, metal, canvas, linoleum, felt, cork, ceramics etc..
- It has a unique application process where it is applied to both surfaces and allowed to dry before joining.
- A general-purpose adhesive which offers superior bond strength without requiring clamping or sustained pressure.
- First developed in the early 1900s by BFGoodrich. After the invention of the wheel comes the invention of contact adhesive.

10. Hide Glue

- Hide glue is a traditional adhesive made from animal collagen so it is protein based.
- It is the grandfather of glues, but it is still used in antique restoration and fine woodworking.
- A strong and durable adhesive that is also reversible. This means that the glue can be melted and reapplied, which is useful for making repairs. Hide glue is also non-toxic and biodegradable.
- The earliest known evidence of hide glue use dates back to ancient Egypt.

11. Hot-Melt Glue

- Hot-melt glue is a thermoplastic adhesive, which means that it melts when heated and solidifies when cooled.
- Has quick and temporary bonding properties.
- Is used to hold pieces in place during assembly.
- Traced back to the early 1900s, when it was used in the shoemaking industry to bond leather and other materials.

12. Cyanoacrylate Accelerators

- Accelerators work in conjunction with CA glue.
- The main purpose of accelerators is to speed up the curing process.
- In woodworking accelerators are useful where clamping is difficult.
- Cyanoacrylate accelerators were first developed in the early 1960s.

13. Urea-formaldehyde UF (Cascamite) Glue

- A low effective cost, at low cure temperatures, resistance to microorganisms and abrasion, and light color. It does not creep
- Supplied as a fine white powder which is mixed with half its weight of cold water for use
- Waterproof when dry and has excellent gap filling properties
- UF was first synthesized in 1884 by Dr Hölzer

14. Silane-Terminated Polymers

- STPs are very elastic, which makes them ideal for applications where the adhesive needs to be able to withstand vibration and movement.
- Has high strength, flexibility, and moisture resistance.
- STPs are suitable for modern woodworking projects but have not yet been fully tested for the wood industry.
- Silane-terminated polymers (STPs) were first discovered in the late 1980s by researchers at Dow Chemical and 3M.

15. Aliphatic resin

- Commonly known as:
  - also known as *carpenter's glue* and *yellow glue*
  - has excellent creep resistance*(turners)*
  - best glue for stressed joints e.g. chair legs
  - dries with a tan line
- It is more heat- and water-resistant than polyvinyl acetate
- First discovered in 1912 by the German chemist Fritz Klatte as a PVA and then evolved into aliphatic resin

15. The D1-D4 categories:

D1 (Interior Use with Low Moisture Exposure):

Most basic glues, suitable for interior use only where moisture exposure is minimal. Examples: assembling furniture for dry environments or adhering decorative elements.

D2 (Interior Use with Occasional Moisture Exposure):

Offer increased moisture resistance compared to D1 and can handle occasional contact with water or humidity. Suitable for interior applications like kitchen cabinets or bathroom vanities in areas with moderate moisture levels.

D3 (Interior Use with High Moisture Exposure):

These glues are ideal for interior applications with frequent or prolonged moisture exposure. They can withstand high humidity environments like bathrooms or laundry rooms.

D4 (Exterior Use):

These are the strongest and most water-resistant glues, formulated to withstand outdoor elements like rain, snow, and temperature fluctuations. They're suitable for building outdoor furniture, decks, or other exterior wood structures.

16. Factors to Consider When Choosing Adhesives

Look at essential factors like wood type, environmental conditions, and load-bearing capacity.

Note the importance of following manufacturer recommendations for the best results.

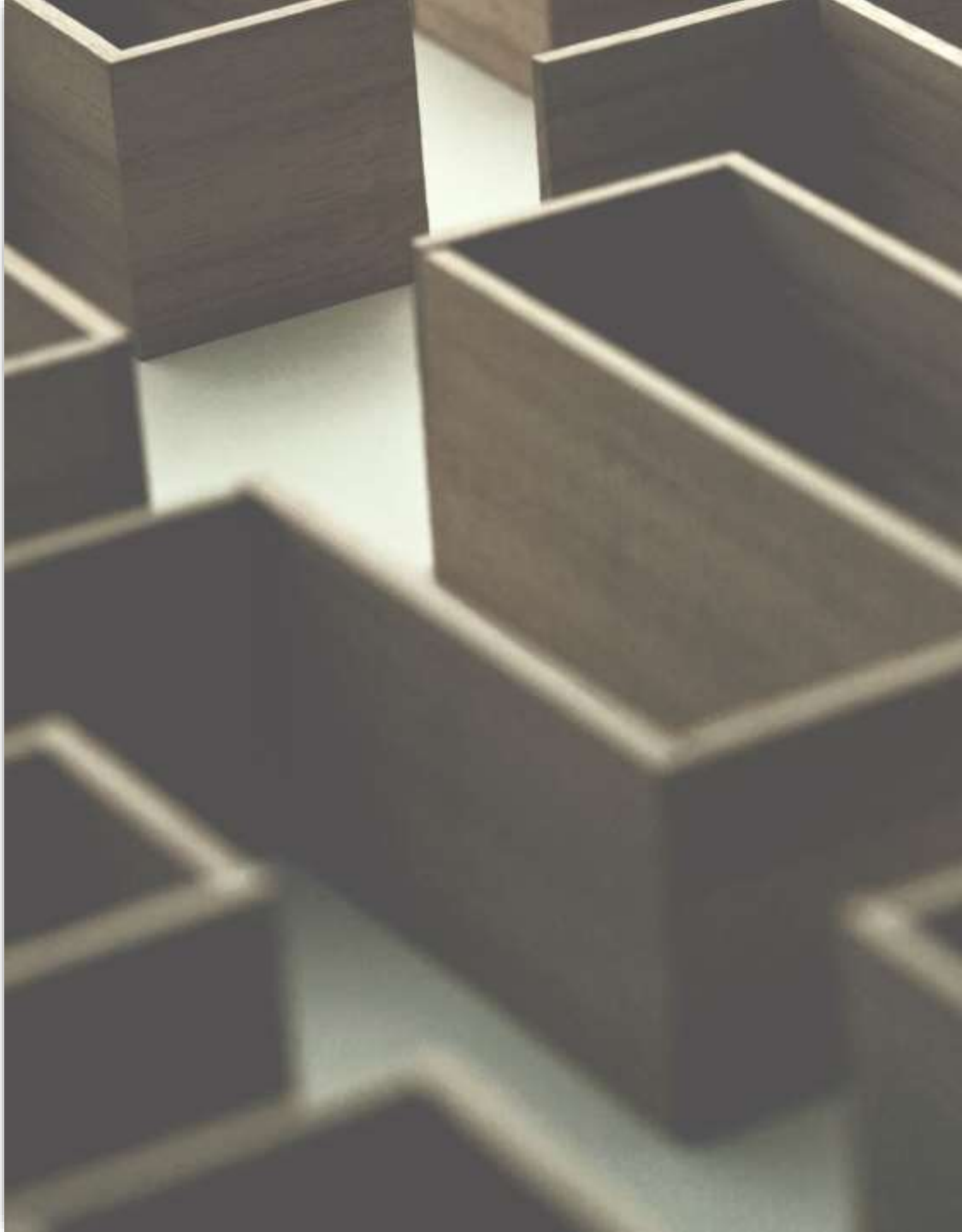
Look at practical guidance for choosing the right adhesive for specific woodworking projects.

17. Safety Precautions

- Consider the significance of safety when working with adhesives.
- Practice common safety measures, including ventilation and personal protective equipment.
- Read the safety instructions for the glue you are using.

18. Conclusion

- Do not underestimate the importance of selecting the right adhesive for successful woodworking projects.
- I encourage you to apply this newfound knowledge in your woodworking endeavors.



19. Questions and Discussion

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