WHICH **GLUES** TO CHOOSE

WHAT ADHESIVE WORKS BEST FOR YOUR APPLICATION

Definition

Glue/Adhesive [gloo]/[ad-hee-siv, -ziv] **noun:**

1. A material used to stick two substrates or parts together.
2. A substance capable of holding materials together by surface attachment.

TYPES OF ADHESIVES

SYMBOL KEY

Substrates (what's getting glued)

Fabric · Glass · Metal · Paper · Plastic · Rubber · Wood

Characteristics (features of the adhesive)

Fast Cure · Medium Cure · Slow Cure · Water-like Consistency · Honey-like Consistency · Holds Outdoors · Holds in Varied Temps · Weak Bond Strength · Strong Bond Strength · Can be Exposed to Chemicals · Can be Exposed to Water · Thermal & Electrical Properties Available

Robots available for adhesive application automation.

ACRYLIC:

A structural adhesive capable of bonding a broad range of substrates with good flexibility.

CHARACTERISTICS

WORKS BEST BONDING

ANAEROBIC:

One-part adhesive that cures only in the absence of air. Designed for locking screws, nuts, bolts and/or retaining bearings.

CHARACTERISTICS

WORKS BEST BONDING

CYANOACRYLATE:

One-part adhesive that cures instantly on contact with matted surfaces. Excellent adhesion to a variety of substrates.

CHARACTERISTICS

WORKS BEST BONDING

EPOXY:

Epoxies provide high strength bonds on a wide variety of substrates.

CHARACTERISTICS

WORKS BEST BONDING

HOT MELT:

A thermal plastic melted and applied in a molten state, wetting the surface. As it cools, it solidifies forming a bond.

CHARACTERISTICS

WORKS BEST BONDING

POLYURETHANE:

Superior bonds with minimal surface prep for high performance thermoplastics. Cures via a catalyst, heat or air evaporation.

CHARACTERISTICS

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SILICONE:

One component adhesive that cures to a tough, rubbery solid upon exposure to moisture in the air.

CHARACTERISTICS

WORKS BEST BONDING

SOLVENT-BASED:

One-part solvent evaporation system with a rubber or plastic base. Good product for laminating or covering a large surface.

CHARACTERISTICS

WORKS BEST BONDING

WATER-BASED:

One-part evaporation system. Water-based adhesives can be used in a wide variety of non-structural bonding applications.

CHARACTERISTICS

WORKS BEST BONDING

5 STEPS TO ENSURE OPTIMUM PERFORMANCE

1. **Joint Design** - proper design can maximize performance.
2. **Surface Preparation** - amount of preparation should be consistent with your requirements.
3. **Application Methods** - manual, pneumatic, automated, metering and mixing.
4. **Heat Curing Equipment** - many methods available.
5. **Pressure Equipment** - must provide uniform pressure over the entire bonded area.

STRESSES

One of the primary benefits of an adhesive is that it holds something together resisting the stress trying to pull it apart.

Tensile stress is exerted equally over the entire joint straight and away from the adhesive bond.

Shear stress is across the adhesive bond. The bonded materials are forced to slide over each other.

Cleavage stress is concentrated at one edge and exerts a prying force on the bond.

Peel stress is concentrated along a thin line at the bond's edge. One surface is flexible.

BONDED JOINTS

LAP JOINT

BUTT JOINT

CYLINDRICAL JOINT

ANGLE JOINT

CORNER JOINT

Infographic created by

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Global Distributor of Adhesives & Specialty Chemicals

Questions? Ask the Glue Doctor® at ellsworth.com