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Standard Practice for the CONTROL OF THE APPLICATION OF STRUCTURAL FASTENERS WHEN ATTACHED BY HOT MELT ADHESIVE¹

This standard is issued under the fixed designation D 3932; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal.

1. Scope

1.1 This method covers the controls necessary for the use of hot melt adhesive when used to attach structural fasteners, structural fasteners being classified as any attachment intended to carry a load. This method confines itself to the technique for proper use of the adhesive and does not recommend either the type fastener or the hot melt adhesive to be employed. The areas to be defined are surface preparation in its various forms, and methods for the application of the "hot melts." Several types of tooling required for the application are described.

2. Applicable Documents

2.1 ASTM Standards:

D 897 Test for Tensile Properties of Adhesive Bonds²

D 907 Definitions of Terms Relating to Adhesives²

3. Description of Terms

3.1 *clean surface*—a surface that is free of foreign material both visible and invisible. A clean surface can be determined by the standard water break test.

3.2 *water break test*—any surface that is chemically clean can be tested by the use of a drop of water, distilled water preferred. If the surface is clean, the water will break and spread; a contaminated surface will cause the water to bead. A clean surface is essential for maximum bond strength.

3.3 For Definitions of other terms, refer to Definitions D 907.

4. Apparatus for Surface Preparation and Hot Melt Adhesive Application

4.1 The apparatus required falls into two categories, cleaning materials and application tools.

4.1.1 Cleaning Materials

4.1.1.1 Chemical Scrub:

- (a) Lintless tack rag,
- (b) Corrosion resistant, steel wool,
- (c) Chemical solvent compatible with surface under preparation,
- (d) Abrasive power cleaner, and
- (e) Distilled water.

4.1.1.2 *Abrasive Cleaning*—Abrasive cleaning can be accomplished in two ways:

- (a) Sanding with sandpaper of different grades, using a hand or a power sander, and
- (b) Sandblasting can be used if the area is adaptable. Use clean sand or grit. All residue is to be removed.

4.1.1.3 *Machining (Material Removal)*—Machining requires suitable equipment that can be employed on the area to be cleaned. The exact amount of material to be removed is to be minimal as defined by engineering drawing or manufacturing outline.

4.1.2 *Application Tools*—Hot melt adhesive can be applied in two ways:

4.1.2.1 A hot melt applicator supplies the adhesive (in a liquid form) on demand to a

¹ This practice is under the jurisdiction of ASTM Committee D-14 on Adhesives and is the direct responsibility of Subcommittee 14.80 on Metal Bonding Adhesives.

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² Annual Book of ASTM Standards, Part 22.