

937 ADHESIVE BONDING MATERIAL SYSTEMS FOR STRUCTURAL APPLICATIONS.

(REV 9-18-00) (FA 12-14-00) (7-01)

SECTION 937 (Pages 873-875) is deleted and the following substituted:

**SECTION 937
ADHESIVE BONDING MATERIAL SYSTEMS
FOR STRUCTURAL APPLICATIONS**

937-1 General Requirements.

Adhesive bonding material systems for structural applications shall consist of 2-part chemical components, pre-packaged to automatically proportion and mix the materials for use. Manual proportioning of the components will not be permitted. The material systems shall be specifically intended for use in structural applications for bonding anchors and dowels to hardened concrete. Applications are limited to anchors and dowels installed in positions ranging from vertically downward to horizontal.

937-1.1 Type V Adhesives: Use Type V adhesive bonding materials for vertical installations and installations inclined vertically downward at angles up to and including 45 degrees to the vertical. For Type V adhesives installed within these limits, the horizontal orientation test requirement of FM 5-568 shall be omitted.

937-1.2 Type HV Adhesives: Use Type HV adhesive bonding materials for horizontal installations and installations inclined vertically downward at angles up to and including 45 degrees to the horizontal. Type HV adhesives may be substituted for Type V adhesives.

937-2 Qualified Products List.

Manufacturers of adhesive bonding material systems may apply for inclusion of individual products on the Qualified Products List. The application shall be made in accordance with 6-1 and shall include certified test reports from an independent testing laboratory which shows the material system meets all the requirements specified herein.

937-3 Minimum Performance Requirements (FM 5-568).

When tested in accordance with FM 5-568, the adhesive bonding material system shall meet the following requirements:

Uniform Bond Stress

Confined Tension	2,290 psi [15.8 MPa]
Damp-Hole Installation	1,680 psi [11.6 MPa]
Elevated Temperature	2,290 psi [15.8 MPa]
Horizontal Orientation	2,060 psi [14.2 MPa]
Short Term Cure	1,710 psi [11.8 MPa]
Specified Bond Strength	1,080 psi [7.5 MPa]

Maximum Coefficient Of Variation for Uniform Bond Stress 20%

Long Term Load (Creep):

- (1) The rate of displacement shall decrease during the 42 day application of load.
- (2) At 42 days the total displacement due to creep (with load still applied) shall be less than 0.03 inch [0.75 mm] and during the last 14 days of the 42 day load duration, the total displacement due to creep shall be less than 0.003 inch [0.075 mm].
- (3) After removal of the 42 day load, the uniform bond Stress from a subsequent Confined Tension Test shall not be less than 1,826 psi [12.6 MPa].

937-4 Product Identification (Fingerprint) Properties (FM 5-569).

References for comparison including Infrared Absorption, Density or Average Weight, Gel Time or Setting Time, and Bond Strength shall be determined in accordance with FM 5-569.

937-5 Packaging and Marking.

The adhesive bonding material system shall be delivered to the project site in original unopened containers with the manufacturer's label identifying the product. Each package shall be clearly marked with the following information:

- Manufacturer's name and address
- Product Name
- Date of Manufacture
- Expiration Date
- Lot Identification Number
- Storage and Handling Requirements

Each package shall include the manufacturer's instructions for anchor and dowel installation. The instructions shall include the following information:

- Diameters of drilled holes for applicable anchor and dowel sizes.
- Cleaning procedure for drilled holes, including a description of permitted and prohibited equipment and techniques.
- Allowable temperature ranges for storage, installation and curing.
- Identification of acceptable mixing/dispensing nozzles.
- Fabrication requirements for anchors and dowels.
- Description of tools permitted or required for installation.
- Method of identifying properly proportioned and mixed adhesive materials.
- Time and temperature schedule for initial set and full-strength cure.

Special requirements for special installation conditions such as damp holes, or horizontal or near horizontal orientation of the anchor or dowel.