



AEROSPACE RECOMMENDED PRACTICE

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Superseding ARP5256

Mixing Resins, Adhesives, and Potting Compounds

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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1. SCOPE:

This SAE Aerospace Recommended Practice (ARP) describes and gives general guidelines on use and applicability of the standard method for mixing resins, adhesives, and potting compounds.

1.1 Purpose:

The purpose of this document is to provide a standard method for mixing resins, adhesives, and potting compounds that may be referenced in repair documents produced by airlines or airframe and engine manufacturers. It is intended that this document be one of a number of ARPs that will cover other aspects of the techniques required to perform composite repairs. This will provide a suite of available repair techniques that are acceptable for use throughout the commercial aircraft industry.

2. REFERENCES:

2.1 Applicable Documents:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications: Available from SAE, Commonwealth Drive, Warrendale, PA 15096-0001.

ARP4916 Masking and Cleaning of Epoxy and Polyester Matrix Thermosetting Composite Materials
ARP4977 Drying of Thermosetting Composite Materials
AIR4844 Composites and Metal Bonding Glossary.

2.1.2 Applicable References:

Original Equipment Manufacturers (OEM) Manuals

Engineered Materials Handbook Volume 1 - Composites ASM International Handbook Committee ISBN 0-87170-279-7 (v.1)

Handbook of Composites edited by George Lubin Van Nostrand Reinhold

3. GENERAL:

Repairs cured below 212 °F (100 °C) usually require the use of two part laminating resins, adhesives, and potting compounds. The two part systems are made up of a base resin and a hardener. The base resin and the hardener can be in paste or liquid form, and are always supplied in separate air tight containers. To aid mixing, some resins and hardeners have different colors. A homogeneous (uniform) mixture is an important factor for the quality of the bonding.

3. (Continued):

The resin and hardener should be stored in a cool dry environment. The storage temperature depends on the specific type of material. Some can be stored at room temperature while others require refrigeration at 40 °F (4 °C) or freezer storage at 0 °F (-18 °C). Refer to the manufacturers storage instructions and the procurement specification for the appropriate storage conditions.

Depending on the resin/adhesive viscosity and the application, a viscosity control additive might be needed. The resin/adhesive should be mixed first with the hardener before adding the viscosity control additive to have a homogeneous (uniform) mixture.

Some manufacturers have pre-measured kits such as sem-kits or blister packs. These offer the advantage of not having to weigh each of the components, but the mixing procedure is just as important as non pre-measured kits. Several mixing machines are also available to assist in the mixing. Follow the manufacturers directions for the mixing procedures. Mixing or blending equipment should produce a smooth, workable mixture that is essentially free from lumps and entrapped air.

4. HEALTH AND ENVIRONMENTAL:

General guidelines are given throughout this document regarding the hazards to the user and the environment of the materials and equipment listed. However, the user shall obtain the Material Safety Data Sheet (MSDS) from the supplier prior to using any of the materials. The relevant environmental health and safety organizations shall be consulted regarding safe use of the material. Material suppliers are also a good source of information in the safe use of their materials.

4.1 Personal Protective Equipment:

Personal protective equipment required to handle a specific material safely is identified in the supplier's Material Safety Data Sheet (MSDS).

The areas of the body most likely to be affected when working with resins are the skin, eyes, and respiratory tract. Guidance is given on the kinds of personal protective equipment that may be required and typical uses.

Before using any type of personal protective equipment, training shall be given to ensure that the equipment is used safely and correctly.

- a. Exhaust Systems: When mixing resins and adhesives in a shop environment, a fume cabinet with local extraction should be used. Control of the emissions shall be in accordance with local and national regulations. Local exhaust systems shall be capable of providing a good flow of fresh air to personnel. The system shall be air operated or use flameproof motors if it is to be used in areas where flammable vapors may be present. A local exhaust system may be used as a method of providing a safe environment keeping fume concentrations below the allowable limits in confined spaces where vapors may accumulate.