Metalset® A4

Aluminum Filled Epoxy Resin Cement

www.smooth-on.com

PRODUCT OVERVIEW

Metalset® A4 is a powerful epoxy adhesive that has been used for years by all branches of the U.S. Military as well as every major airline and auto manufacturer in the world. **Metalset® A4** is used for hundreds of industrial bonding applications and offers excellent adhesion to porous or non-porous surfaces. It can be applied to vertical surfaces without sagging and cures overnight with negligible shrinking. Once cured, **Metalset® A4** offers good machining qualities (sanding, drilling, tapping), and resists alkalies, dilute acids and solvents. Applications include stopping leaks in pipes, valves and tanks (i.e. car gas tanks), bonding like and unlike surfaces, filling metal joints, dents, etc., anchoring bolts in wood, concrete, and repairing metal surfaces.

TECHNICAL OVERVIEW

Mix Ratio: 1A : 1B by weight or volume

Mixed Viscosity, Paste-like

Specific Gravity, g/cc: 1.43

Specific Volume, cu. in./lb.: 19.5

Pot Life: 22 minutes (73°F/23°C)

Cure time: 16 hours (73°F/23°C)

Color: Metallic

Barcol 935 Hardness: 71

Tensile Strength, psi: 3,600

Elongation @ Break: 1.2%

Sag Resistance: 1/4"

Modulus of Elasticity in Tension, psi: 165,000

Modulus of Elasticity in Compression, psi: 160,000

Compressive Strength, psi: 7,500

Heat Distortion Temp: 180°F / 83°C

* All values measured after 7 days at 73°F/23°C

PROCESSING RECOMMENDATIONS

PREPARATION...

Safety - Use in a properly ventilated area ("room size" ventilation). Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk.

Store and use material at room temperature (73°F/23°C). This product has a limited shelf life and should be used as soon as possible.

A clean, dry surface is essential for successful adhesive bonding. Porous materials are simple to bond, provided they are dry. The surface should be sanded till clean followed by wiping surface with solvent (acetone, MEK, mineral spirits). Let solvent evaporate fully before applying A4.

Non-porous surfaces (metals, plastics, coated woods) should be sanded, sandblasted or chemically etched. If sanding or sandblasting, follow with solvent wash. Let solvent evaporate fully before applying A4. Epoxy adhesives do not perform well on metals such as nickel, chromium, tin or zinc or on soft thermoplastics like polyethylene. An option would be to try a polyurethane adhesive (such as URE-BOND® from Smooth-On).

Because no two applications are quite the same, a small test application to determine suitability for your project is recommended if performance of this material is in question.

MEASURING & MIXING...

Measuring & Mixing - Metalset® A4 is mixed one part A to one part B by weight or volume. If dispensing from tubes, squeeze out equal amounts from each tube. Try to be as accurate as possible. Mix thoroughly with clean stirring stick for at least three minutes until components are blended to a uniform light gray color – be sure to blend away any streaks. Apply to substrate surface.

APPLYING, CURING & PERFORMANCE...

Metalset® A4 will cure in 16 hours at room temp. (73°F/23°C). Applying mild heat will cure A4 faster–150°F/65°C for 2 hours.

Post Curing - After A4 has cured at room temperature, heating the epoxy to 150°F (65°C) for 4 to 8 hours will increase physical properties and performance. Let cool to room temp. before moving bonded substrates, machining, etc.

Safety First!

The Material Safety Data Sheet (MSDS) for this or any Smooth-On product should be read prior to use and is available upon request from Smooth-On. All Smooth-On products are safe to use if directions are read and followed carefully.

Keep Out of Reach of Children

BE CAREFUL - Metalset® A4 Part-A is irritating to the eyes and skin. Avoid prolonged or repeated skin contact to prevent possible sensitization. Use only with adequate ventilation. If contaminated flush eyes with water for 15 minutes and seek medical attention. Remove from skin with waterless hand cleaner then soap and water. Refer to MSDS. Metalset® A4 Part-B causes burns to the eyes. May burn the skin and cause sensitization. Vapors irritate the respiratory tract. If contaminated, flush eyes with water for 15 minutes and seek medical attention. Remove from skin with soap and water. Use only with adequate ventilation.

IMPORTANT - The information contained in this bulletin is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained from the use thereof, or that any such use will not infringe upon a patent. User shall determine the suitability of the product for the intended application and assume all risk and liability whatsoever in connection therewith.

ADHESIVE PROPERTIES

(Tensile Shear Adhesion - ASTM D1002)

Substrate	Exposure	Test Temp	Value, psi
AL 2024-T-3	None	-50°C	2300
AL 2024-T-3	None	25°C	2400
AL 2024-T-3	None	80°C	800
AL 2024-T-3	30 days in tap water @ 25°C	25°C	3100
AL 2024-T-3	7 days in 100% RH @ 65°C	25°C	3100
Cold Rolled Steel	None	25°C	4300

MILITARY AND OTHER SPECIFICATION NUMBERS

Metalset® A4 is certified to: **Bell Helicopter Spec Number 299-947-099** Rev. D. Metalset® A4 is certifiable to other specifications including:

Military Specification:	MMM-A-1754 MMM-A-132 TYPE 1 CLASS 3
Northrop Grumman Corporation:	GM4004C
Bell Spare Parts System:	B-212 ASW Helicopter Spare Parts
NATO Stock Numbers:	8040-01-298-2978 8040-00-944-7297
FSCM:	90414

Certification - Smooth-On's quality control procedure for each batch of Metalset® A4 epoxy adhesive (Parts A and B) is to certify to the Bell Helicopter Specification 299-947-099. Each batch of either Part A or Part B is assigned a lot number, mixed in the prescribed amount with the other component and certified to Bell Helicopter Specification 299-947-099 for relevant values. Results are documented and available to all end users in the form of a Certificate of Compliance (C of C). Certification to other specifications will require lab fees starting at $3,200.

Lot Matching / Certificate Of Analysis Request - If a certificate of analysis report is required for testing specifically matched lots of Parts A and B, there is a minimum $1,850 testing fee. Report results will be available within seven days following receipt of payment for the test.

Call Us Anytime With Questions About Your Application.

Toll-free: **(800) 381-1733** Fax: **(610) 252-6200**

The new **www.smooth-on.com** is loaded with information about mold making, casting and more.