



METALSET™ A4

Aluminum Filled Epoxy Resin Cement

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. 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, A4 offers good machining qualities (sanding, drilling, tapping), and resists alkalis, 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

Key Values: ~*Mixing Ratio:* One to One by volume or weight ~ *Pot Life:* 22 minutes (1/4 pint)
 ~*Sag Resistance:* 1/4" ~*Color:* Metallic ~*Barcol 935 Hardness:* 71

<u>Properties</u>	<u>Viscosity</u>	<u>G/CC</u>	<u>Sp. Vol.</u>	<u>Elongation At Break</u>	<u>Tensile Strength</u>
A+B Mixed	Paste-like	1.43	19.5	1.2%	3600 psi
			Modulus of Elasticity in Tension	165,000 psi	Compressive Strength 7,500 psi F
			Modulus of Elasticity in Compression	160,000 psi	Heat Distortion Temp. 180° F / 83° C

Adhesive Properties (Tensile Shear Adhesion – ASTM D1002)

<u>Substrate</u>	<u>Exposure</u>	<u>Test Temp.</u>	<u>Value(psi)</u>
AL 2024-T-3	None	-50C	2300
“	None	25C	2400
“	None	80C	800
“	30 days in tap water @25C	25C	3100
“	7 days in 100% RH @ 65C	25C	3100
Cold Rolled Steel	None	25C	4300

Preparation Of Surfaces For Adhesive Bonding

Materials should be stored and used in a warm environment (72° F / 22° C). This product has a limited shelf life and should be used as soon as possible. Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk. 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.

Mixing & Curing Metalset A4™

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.

Metalset A4 will cure in 16 hours at room temp. (72° F / 22° 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.

Metalset A4™ Military And Other Specification Numbers:

MILITARY SPECIFICATION:	MMM-A-132 TYPE 1 CLASS 3
BELL HELICOPTER SPEC:	299-947-099
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) conforms 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 tested according to Bell Helicopter Specification 299-947-099 for pot life and tensile strength values. Results are documented and available to all end users in the form of a Certificate of Compliance (C of C).

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 \$1,600 testing fee. Report results will be available within seven days following receipt of payment for the test.

Safety First!

Safety First!

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.

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 this accuracy, the results to be obtained from the use thereof, or that any such will not infringe a patent. User shall determine beforehand the suitability of this product for the intended application and assume all risk and liability in connection therewith.

Ask about our other industrial adhesives:

Super Instant 5 Minute. EA-40 Low Viscosity Clear. MT-13 Premium Performance. URE-BOND Urethane Adhesive.

Feel free to call or fax us any time with your questions.

Toll-free: (800) 762-0744 Outside The U.S.: (610) 252-5800

Fax: (610) 252-6200

Or visit the Smooth-On Website at: www.smooth-on.com