Armstrong Products Division PRODUCT DATA

Resin Technology Group, Inc. ☐ 28 Norfolk Ave., S. Easton, MA 02375 ☐ (508) 230-8070 Fax (508) 230-2318

ARMSTRONG A-12T EPOXY ADHESIVE

GENERAL DESCRIPTION: Armstrong A-12T Adhesive is an epoxy based formulation exhibiting a wide range of properties and applications. It is a 2-part system (Part A and Part B), having a convenient and non-critical mixing ratio. High strength, permanent bonds are obtained by curing this adhesive either at room temperature or slightly elevated temperatures.

The two components of the A-12T system are different colors, providing a visual indication of proper and complete mixing. Part A is dark brown, Part B is light gray.

The most frequently used ratio is equal parts by weight. This is changed to vary the flexibility of the cured adhesive, with a ratio of 2 parts A to 3 parts B most common for flexible materials, or extreme vibration applications. In cryogenic applications the ratio may be as high as 1 part A to 4 parts B. A rigid glue line results from a mixture of 3 parts A to 2 parts B. This also provides the highest strength in the 130° - 170° F. range and is recommended where maximum chemical and solvent resistance is required or where high compressive forces exist.

The A-12T system provides the same basic properties as the A-12 system but is a thixotropic paste, useful where a non-flowing adhesive is required.

TYPICAL APPLICATIONS: The A-12T has an extremely broad range of applications. Low shrinkage, combined with excellent wetting characteristics, result in high strength bonding of almost all rigid to semi-flexible materials—including ceramics, glass, plastic laminates, hard rubber, all metals, wood, thermosetting plastics, many thermoplastics, etc.

Case histories indicate there is no deterioration of the bond strength of the adhesive from aging. A few applications, representative of its versatility, are as follows:

- Aluminum structural bonding on trailers
- Polyester glass laminates to aluminum in missile and rocket cases
- Hermetic sealing of switch contacts
- Sealing solid fuel fuses
- Bonding and sealing PVC to copper for liquid nitrogen lines
- Phenolic wear plates to cast iron ways
- Ceramic and stone to concrete (architecture)
- Sealing food conveyors in processing plants

TYPICAL PHYSICAL PROPERTIES

	Part A	Part B
Viscosity @ 25° C. poise	Paste	Paste
Specific Gravity	1.37	1.21
Color	Brown	Gray
Shelf Life	>1 Year	>1 Year
Working Life	90 min.	
Mixed Viscosity (1:1)	Paste	
Tensile Shear Al/Al	1:1 mix ratio cured 2 hr. at 165° F. — 4130 P.S.I.	
Tensile Shear Al/Al	2:3 mix ratio cured 2 hr. at 165° F. — 4380 P.S.I.	

SPI CLASSIFICATION (2)

FOR INDUSTRIAL USE ONLY! CAUTION! May cause skin irritation. Avoid skin contact. If contact occurs, wash with soap and water at the first opportunity. HARMFUL IF SWALLOWED! KEEP OUT OF REACH OF CHILDREN!

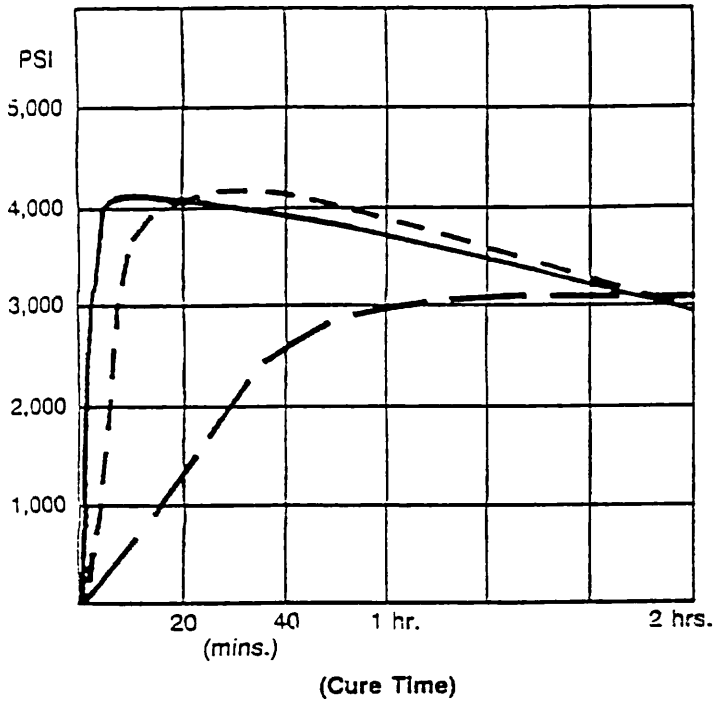
SUGGESTED CURE SCHEDULES FOR ARMSTRONG A-12

	Elevated Temperature		Room Temperature	
Mix Ratio	Optimum	Fast*	Optimum	Fast*
3/2	30 mins. @ 200° F.	5 mins. @ 300° F.	1 week	Overnight
1/1	1 hour @ 200° F.	5 mins. @ 300° F.	1 week	Overnight
2/3	2 hrs. @ 165° F.	20 mins. @ 300° F.	2 weeks	Overnight

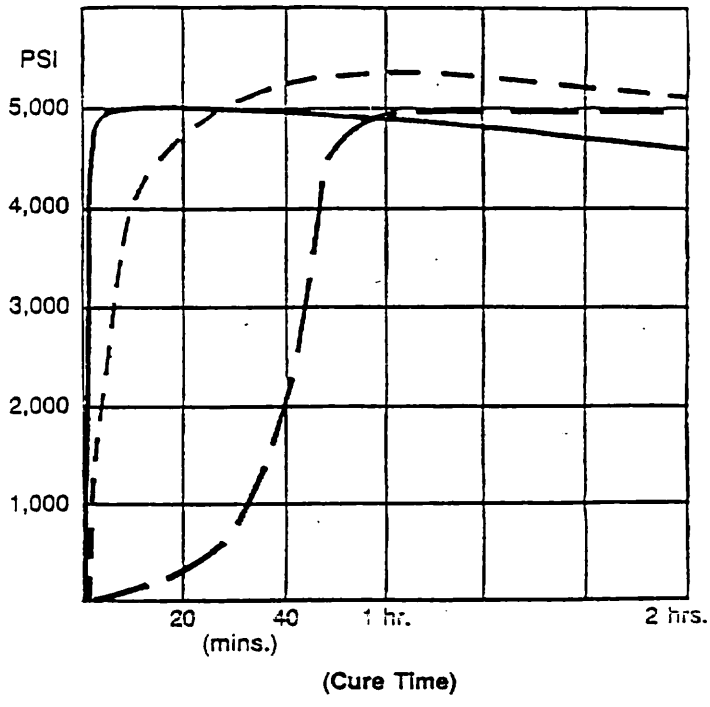
*Cure required to develop handling strength.

CURE SCHEDULE CURVES FOR A-12 (Based on Tensile Shear Tests, Al./Al.)

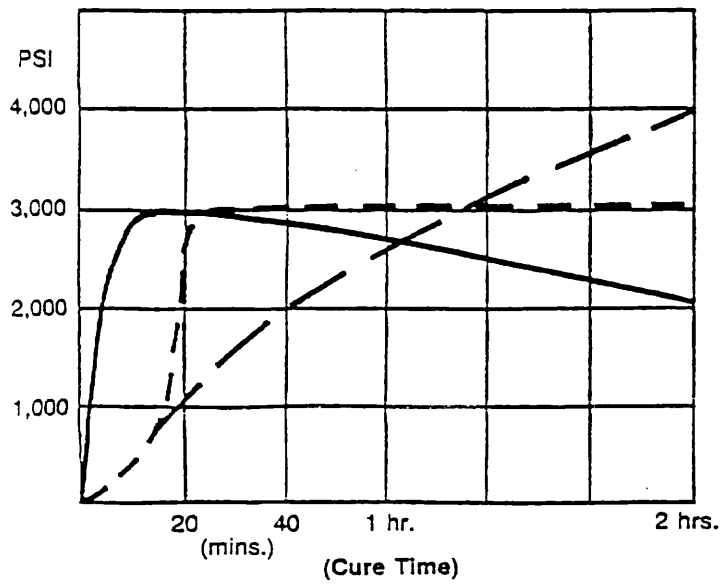
Mix Ratio — 3 Parts A/2 Parts B

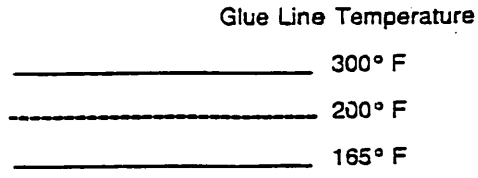


Mix Ratio — 1 Part A/1 Part B



Mix Ratio — 2 Parts A/3 Parts B





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Armstrong Products

PRODUCT DATA

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ARMSTRONG PRODUCT
General Purpose Epoxy

Armstrong A-12 Epoxy Resin Adhesive
General Purpose Epoxy

Description
Armstrong A-12, one of Armstrong's most popular general purpose adhesives, combines low toxicity with good physical properties. This two-part adhesive has a non-critical mixing ratio with 1:1 used most frequently. The mix ratio can be varied to obtain a more flexible or more rigid bond by increasing or decreasing respectively, the concentration of Part B. For cryogenic applications, the ratio may be as high as 1 part A to 4 parts B. The two components of A-12 are different colors, providing a visual indication of proper and complete mixing.

Applications
Almost all rigid to semi-flexible materials can be bonded with A-12 - including ceramics, metals, woods, plastics, etc.

Storage and Shelf Life
Shelf life is one year when stored below 90°F out of sunlight and in original unopened containers of pints or greater. Shelf life will vary with specialty packages.

Instructions
1. The surfaces to be bonded should be clean and dry (for critical applications refer to our suggested surface preparation procedures - Bulletin No. 964)
2. Thoroughly mix the A-12 Part B with the A-12 part A in a clean discardable container using correct mix ratio.
   Avoid the introduction of excess air.
3. Apply the adhesive to surfaces to be bonded (preferably both surfaces) and press together. Light clamping may be used to keep parts in position during curing.

Typical Physical Properties

	Part A	Part B	
Viscosity @77°F (poise)	400 – 1,000	500 – 1,000	
Specific Gravity	1.30 - 1.45	1.20 - 1.35	
Color	Brown	Grey	
Mixed Systems (Part A/Part B)			
Mix Ratio (wt or vol)	3/2	1/1	2/3
Mix Viscosity (poise)	800	800	800
Minimum Working Life			
(100 gms @77°F)	2 hrs	2 hrs	2 hrs
(1# @ 77°F)	1 hr	1 hr	1 hr

Typical Physical Properties of Cured System
(Part A / Part B)

	3/2+	1/1*	2/3*
Specific Gravity @ 77°F	1.31	1.32	1.33
Tensile Shear (psi)(al./al.)			
@77°F	4200	5000	4000
@180°F	2000	700	500
@-60°F	2500	2500	3000
Bond Strength (psi)	2500	2000	1800
Tensile Strength (psi)	2500	5000	2900
Elongation (%) (Maximum)	6	8	30
Thermal Coefficient of Expansion			
(in/in/°F.) (x 10^{-5})	3.5	3.8	4.0
Cleavage (psi)	1600	1500	2000

+Cured 20 min @ 200°F *Cured 2 hours @165°F

4. Cure as desired. (Refer to suggest cure schedule)

SUGGESTED CURE SCHEDULES FOR ARMSTRONG A-12

	Elevated Temperature		Room Temperature	
Mix-Ratio	Optimum	Fast*	Optimum	Fast*
3/2	30 min/200°F	5 min/ 300°F	1 week	Overnight
1/1	1 hr/200°F	5 min/ 300°F	1 week	Overnight
2/3	2hrs/165°F	20min/ 300°F	2 weeks	Overnight

*Cure required to develop handling strength

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