

# Technical Data Sheet

## Armstrong™ A-12

7/07/2020

### **DESCRIPTION:**

ResinLab® Armstrong™ A-12 is a two-part general purpose adhesive that combines low toxicity with good physical properties. A-12 can be used at several ratios. For cryogenic applications, the ratio can be as high as 1A:4B.

A-12 can be used in almost all rigid to semi-flexible materials including ceramics, metals, wood, and plastics.

A-12 at 1A:1B ratio can be obtained certified to the below Military Specifications:

- MIL-A-47074 A
- A-A 56015 A
- MIS 13894 B
- HMS 16-1720 H

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### **TYPICAL PROPERTIES:**

All properties given are at 25 °C unless otherwise noted.

<b>Property:</b>	<b>Value: 3A:2B</b>	<b>Value: 1A:1B</b>	<b>Value: 2A:3B</b>	<b>Test Method or Source:</b>
<b>Color – Part A</b>	Brown, opaque	Brown, opaque	Brown, opaque	Visual
<b>Color – Part B</b>	Gray, opaque	Gray, opaque	Gray, opaque	
<b>Color – mixed</b>	Tan, opaque	Tan, opaque	Tan, opaque	
<b>Mix Ratio</b>	Part A to Part B	Part A to Part B	Part A to Part B	Calculated
<b>By weight</b>	3 to 2	1 to 1	2 to 3	
<b>By volume</b>	3 to 2	1 to 1	2 to 3	
<b>Cure Schedule</b>	24 hours @ 25 °C 7 days @ 25 °C 30 min @ 100 °C 5 min @ 150 °C	24 hours @ 25 °C 7 days @ 25 °C 1 hour @ 100 °C 5 min @ 150 °C	24 hours @ 25 °C 7 days @ 25 °C 2 hours @ 75 °C 20 min @ 150 °C	24 hrs @ 25 °C will not develop full cure properties
<b>Viscosity – Part A</b>	56,000 cps @1/s	56,000 cps @1/s	56,000 cps @1/s	Rheometer parallel plate
<b>Viscosity – Part B</b>	62,000 cps @1/s	62,000 cps @1/s	62,000 cps @1/s	25mm
<b>Viscosity – Mixed (estimated)</b>	58,000 cps @1/s	59,000 cps @1/s	59,000 cps @1/s	455300006291
<b>SG – Part A</b>	1.46	1.46	1.46	Calculated
<b>SG – Part B</b>	1.27	1.27	1.27	
<b>SG – Mixed</b>	1.35	1.37	1.35	
<b>Gel Time</b>	80 minutes/100cc sample	52 minutes/100cc sample	93 minutes/100cc sample	455300005339/Gardco Hot Pot Gel Timer
<b>Hardness</b>	85 Shore D	80 Shore D	80 Shore D	455300006287/ASTM D2240
<b>Tensile Properties:</b>				Extrapolated from Henkel LDS
<b>Strength</b>	2,500 psi	5,000 psi	2,900 psi	3A:2B/ Cured 20min@ 93 °C
<b>Elongation</b>	6%	8%	30%	1A:1B/cured 2 hrs@ 74 °C 2A:3B/cured 2 hrs@ 74 °C

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<b>Lap Shear Strength</b> <b>0.0050" bond line Al to Al</b>	4,200 psi @ 25 °C 2,000 @ 82 °C 2,500 @ -51 °C	5,000 psi @ 25 °C 700 @ 82 °C 2,500 @ -51 °C	4,000 psi @ 25 °C 500 @ 82 °C 3,000 @ -51 °C	Extrapolated from Henkel LDS 3A:2B/ Cured 20min@ 93 °C 1A:1B/cured 2 hrs@ 74 °C 2A:3B/cured 2 hrs@ 74 °C
<b>Coefficient of Thermal Expansion by TMA</b>	35ppm/ °C below Tg	38ppm/ °C below Tg	40ppm/ °C below Tg	455300005340/ASTM E831 TMA, 5 °C/min
<b>Operating Temperature Range</b>	-40 to 150 °C**	-40 to 150 °C**	-40 to 150 °C**	
<b>Relative Thermal Index (RTI)</b>	90 °C **	90 °C **	90 °C **	UL746B, Table 7.1 Generic Value Based on Composition

\* Asterisk denotes values considered typical to associated resin systems or extrapolated from other test results.

\*\* Operating Temperature Range is based on average design requirements and is not intended as a guarantee of suitability for all applications operating at that temperature.

### **INSTRUCTIONS:**

1. Bring both components to room temperature prior to mixing. When bonding parts, surfaces should be clean and dry.
2. Cartridge format: Mixer should be attached keeping the cartridge vertical and any air pocket purged this way. After the mixer contains material, the mixer tip can be dropped to dispense pre-bleed amount. Attach a new static mixer with each cartridge, then pre-bleed the first 3 inches of dispensed material or until a uniform color is obtained. Maintain adequate velocity during dispensing to ensure complete mixing.
3. Bulk format: weigh and mix parts A and B accurately and thoroughly, scraping sides of container often. Do not pour from mixing container, transfer to a new container as residual unmixed material may cause a tacky spot on the surface of the casting. Maintain adequate velocity during dispensing to ensure complete mixing.
4. Allow to cure undisturbed until product is fully gelled or tack-free to the touch.
5. Clean up uncured resin with suitable organic solvent such as MEK, acetone or other organic solvent.

### **SHELF LIFE AND STORAGE:**

12 months at 25 °C  
Specialty packaging may be less.

Many epoxy resin systems are prone to crystallization as epoxy resin is a super-cooled fluid. This condition may give the product a gritty or grainy appearance (or hazy in clear products). Products in this state will not usually cure to normal and expected properties. In extreme cases it may appear solid and cured. Fluctuating temperatures (within 5 to 50 °C) aggravate this phenomenon. Heating the individual component to 50 to 60 °C while stirring can usually restore products to original state. Storage at 25 +/- 10 °C is optimum for most products.