



## **Hysol® EA 9258.1 with EA9689 Film Adhesive**

### **Adhesive Bonding Primer**



**Authorized Distributor**

1-800-375-0605

[www.rudolphbros.com](http://www.rudolphbros.com)

#### **Description**

Hysol EA 9258.1 is a water-borne chromated adhesive bonding primer for 350°F/177°C service. It is designed to offer at least twice the improvement in peel strength toughness over current 350°F/177°C service film adhesives. It is applied with current aerospace primer spray equipment, and provides low VOCs of 142 g/liter. It may be cured 45-60 minutes 350°F (177°C) for optimum performance. The data contained herein were obtained with the companion film adhesive Hysol EA 9689.

#### **Features**

##### **Improves Production Rates**

Excellent storage and out time stability.

12 months @ 40°F/5°C. (Do not freeze)

Worklife of 30 days @ 77°F/25°C or 10 days @ 90°F/30°C

Capable of applying up to 0.1 mil (0.0025 mm) per box coat.

Application and flash rates similar to solvent borne primers.

May be stored for 6 months after primer cure when protected.

Primer reactivation not required for second-stage bonding. (Surface preparation for rebondability is MEK wipe, light hand abrade [Scotch-Brite®] and MEK clean).

##### **Cost Effective**

20% solids improves effective coverage versus conventional 10% solids solvent-based primers.

No special application equipment is required. Specifically developed for maximum transfer efficiency with high volume low pressure (HVLP).

##### **Enhanced Health & Safety - Environmental Compliance**

Meets latest South Coast Air Quality Management District (SCAQMD) Rule 1124 requirements effective January 2002.

142 grams per liter VOC.

Flash point >200°F/95°C.

Low odor.

Easy equipment clean-up with water when primer is wet.

##### **High Performance**

350°F/177°C thermal aging stability.

Improved toughness helps prevent shop handling delaminations.

Corrosion inhibiting.

### Uncured Adhesive Properties

	<u>One Part</u>
Color	Green
Solids	20%
Weight per gallon	8.7 lbs (1.04 kg/l)
Corrosion Inhibition Package	Chromates
Warranty (from date of shipment)	
@ 40°F/5°C	12 months
@ 77°F/25°C	1 months
Volatile Organic Compounds (VOC)	142 g/l**

\*\* SCAQMD Rule 1124 (less water)

### Handling

Store @ 40°F/5°C. DO NOT FREEZE.

This product is a one-component primer which is used as received after warming to room temperature (77°F/25°C) and mixing well. Since the primer contains insoluble pigments, COMPLETE MIXING AND CONTINUOUS AGITATION IS REQUIRED! Observe all necessary precautions for the proper and safe use of primers.

### Application

**Applying** - Bonding surfaces should be clean, dry and properly prepared. For optimum surface preparation consult the Hysol Surface Preparation Guide. The primer should be sprayed after mixing well (15 minutes using shaker or 60 minutes using paint roller) using the following procedure. Hysol EA 9258.1 should be cured for 45-60 minutes @ 350°F/177°C detail temperature for optimum performance.

The following procedures were used in preparing laboratory test panels at 0.2-0.4 mils (0.005-0.010 mm) dried film thickness (DFT).

### *Air Atomization*

Gun:	Devilbiss Model JGA-502 #30 Air Cap AV-16-EX Fluid Tip JVA 402 DEX Fluid Needle Valve
Line Pressure:	100 PSI (0.69 N/mm <sup>2</sup> )
Pressure at Gun:	40-50 PSI (0.28-0.34 N/mm <sup>2</sup> )
Fan Pattern:	Full Spray
Volume Control:	As necessary to apply 0.1-0.2 mils (0.0025-0.005 mm) DFT per box coat. Suggest starting at 3/4 turns from off position.
Distance to Panels:	8-12 inches (20-30 cm) at 45°
Number of Coats:	One box coat per 0.1-0.2 mils (0.0025-0.005 mm) DFT
Interval Between Coats:	30-60 seconds
Flash-Off Conditions:	30-60 minutes at ambient temperature

### ***HVLP (High Volume Low Pressure) Application***

System:	Devilbiss HVLP System 89™
Gun:	Model JGA-510 #57 Air Cap JGA 4046-22 Fluid Tip & Needle Valve
Line Pressure:	100 psi (0.69 N/mm <sup>2</sup> )
Pressure at Gun:	10 psi (0.07 N/mm <sup>2</sup> )
Fan Pattern:	Full Spray
Volume Control:	As necessary to apply 0.1-0.2 mils (0.0025-0.005 mm) DFT per box coat. Suggest starting at two full turns from off position.
Distance to Panels:	8-12 inches (20-30 cm) at 45°
Number of Coats:	One box coat per 0.1-0.2 mils (0.0025-0.005 mm) DFT
Interval Between Coats:	30-60 seconds
Flash-Off Conditions:	15-30 minutes at ambient temperature

***Open Assembly Time*** - Parts, which have been primed and cured, may be stored for up to 6 months. They should be protected from gross contamination during storage. Just prior to the adhesive application, the surfaces to be bonded should be wiped with a ketone solvent.

***Cleanup*** - Overspray must be removed prior to curing the primer. Uncured primer may be removed with a ketone solvent in a well-ventilated area. Saturate a clean cloth or industrial wiper with solvent and apply just enough to do the job. Consult your solvent supplier's information pertaining to the safe and proper use of flammable solvents. Uncured wet primer may be cleaned up with water.

### ***Bond Strength Performance***

#### ***Tensile Lap Shear Strength***

Tensile lap shear strength tested per ASTM D1002 after curing 1 hour @ 350°F/177°C. Adherends are 2024-T3 bare aluminum treated with phosphoric acid anodizing per ASTM D3933.

#### **Tensile Lap Shear Strength – Dry and Heat Aging Testing**

Specimen Conditioning	Test Temp.	EA 9689 Adhesive Type	EA9689 /EA9258.1	
			Avg. (psi)	Avg. (MPa)
None	-67°F (-55°C)	0.10GK	3828	26.4
		0.10NK	3877	26.9
	75°F (23°C)	0.10GK	4117	28.4
		0.10NK	4084	28.2
	250°F (121°C)	0.09NK	3481	24.0
	300°F (149°C)	0.10GK	3599	24.8
		0.10NK	3552	24.5
	350°F (180°C)	0.10GK	3253	22.4
		0.10NK	2959	20.4

1000 Hours at 350°F	75°F (23°C)	0.10GK	<b>3759</b>	<b>25.9</b>
	300°F (149°C)		<b>3132</b>	<b>21.6</b>
3000 Hours at 350°F	75°F (23°C)	0.10GK	<b>3162</b>	<b>21.8</b>
	300°F (149°C)		<b>2953</b>	<b>20.4</b>
6000 Hours at 350°F	75°F (23°C)	0.10GK	<b>2639</b>	<b>18.2</b>
	300°F (149°C)		<b>2260</b>	<b>15.6</b>

### *Honeycomb Sandwich Performance*

Honeycomb sandwich strength tested after curing 1 hour @ 350°F/175°C. Adherends are 2024-T3 bare aluminum with aluminum core.

### *Honeycomb Climbing Drum Peel Strength*

<p style="text-align: center;"><b>Hysol EA 9258.1</b></p> <p style="text-align: center;"><b>Average Summary Results</b></p> <p style="text-align: center;"><b><u>Honeycomb Climbing Drum Peel</u></b></p> <p style="text-align: center;">Number of Test Specimens Per Test = 9</p>							
Reference Code	Test Temp.	Specimen Conditioning	EA 9689 Adhesive Type	EA9689/EA9258.1		EA9689/EA9258.1	
						Min. Individ.	Min. Avg.
				m.N/m		(in-lb/3in)	
Note <sup>1</sup>	75°F (23°)	None	0.10GK	32.6	<b>34.1</b>	22	<b>23</b>
Note <sup>2</sup>			0.10NK	89.0	<b>93.4</b>	60	<b>63</b>
Note <sup>3</sup>			0.10NK	134.9	140.8	91	<b>95</b>

#### Core Type:

Note 1: 5052-003N, 4.2 lb/ft<sup>3</sup>, 3/8" cell size, 0.625" thick.

Note 2: 5052-004N, 7.9 lb/ ft<sup>3</sup>, 1/4" cell size, 0.625" thick.

Note 3: 5052-002N, 8.1 lb/ ft<sup>3</sup>, 1/8" cell size, 0.625" thick.

## Flatwise Tension – Dry and Heat Aging Testing per ASTM C297

Specimen Conditionin g	Test Temp.	Reference Code	EA 9689 Adhesive Type	EA9689/EA9258.1	
				Avg. Psi	Avg. MPa
None	-67°F (-55°C)	Note <sup>1</sup>	0.10GK	1050	7.2
		Note <sup>2</sup>	0.10NK	1054	7.3
	75°F (23°C)	Note <sup>1</sup>	0.10GK	995	6.7
		Note <sup>3</sup>		1426	9.8
		Note <sup>2</sup>	0.10NK	850	5.9
	250°F (121°C)	Note <sup>3</sup>	0.09NK	1118	7.7
	300°F (149°C)	Note <sup>1</sup>	0.10GK	790	5.4
	350°F (180°C)	Note <sup>1</sup>	0.10GK	597	4.1
		Note <sup>3</sup>		866	6.0
		Note <sup>2</sup>	0.10NK	544	3.8
1000 Hours at 350°F	75°F (23°C)	Note <sup>1</sup>	0.10GK	905	6.2
	300°F (149°C)			675	4.7
3000 Hours at 350°F	75°F (23°C)	Note <sup>1</sup>	0.10GK	861	5.9
	300°F (149°C)			642	4.4
6000 Hours at 350°F	75°F (23°C)	Note <sup>1</sup>	0.10GK	823	5.7
	300°F			548	3.8

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Users should review the Materials Safety Data Sheet (MSDS) and product label for the material to determine possible health hazards, appropriate engineering controls and precautions to be observed in using the material. Copies of the MSDS and label are available upon request.



Core Type:

Note 1: 5052-003N, 4.2 lb/ft<sup>3</sup>, 3/8" cell size, 0.625 thick.

Note 2: 5052-003N, 5.4 lb/ft<sup>3</sup>, 3/8" cell size, 0.50" thick.

Note 3: 5052-004N, 7.9 lb/ft<sup>3</sup>, 1/4" cell size, 0.50" thick.

Thermally aged specimen were drilled through each cell wall with a 0.10 inch (2.5mm) diameter drill for thermal exposure.

**Edge Strength**

Reference Code	Specimen Conditioning	Test Temperature	EA 9689 Adhesive Type	Min. Indiv N/25mm	Min. Avg.	Min. Indiv. lbs/inch	Min. Avg.
Note <sup>1</sup>	None	250°F (121°C)	0.09NK	462.6	578.2	104	<b>130</b>

Core Type:

Note 1: 5052-002N, 5.7 lb/ft<sup>3</sup>, 3/16" cell size, 0.625" thick.

**Handling Precautions**

Do not handle or use until the Material Safety Data Sheet has been read and understood.  
For industrial use only.

**General:**

As with most epoxy based systems, use this product with adequate ventilation. Do not get in eyes or on skin. Avoid breathing the vapors. Wash thoroughly with soap and water after handling. Empty containers retain product residue and vapors so obey all precautions when handling empty containers.

**WARNING!** This material contains a small amount of strontium chromate, a carcinogen, for corrosion protection. Avoid all skin contact. Causes eye irritation and may cause skin irritation such as allergic dermatitis.

Hysol<sup>®</sup> is a registered trademark of Henkel Corporation.  
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