



## TECHNICAL INFORMATION

### HARDMAN® Machineable Epoxy DOUBLE/BUBBLE® Yellow Package #04002

#### PRODUCT DESCRIPTION

HARDMAN Machineable Epoxy is a two-component, room temperature cure epoxy system designed as a machineable tooling and/or body-patching adhesive. This epoxy, when set, can be machined, sanded, drilled and tapped. The system displays excellent adhesion to metal, wood and hard plastic tooling. The system contains no solvents and is virtually non-shrinking, making it an excellent gap filler.

HARDMAN Machineable Epoxy is recommended for the following substrates:

<u>Metal</u>	<u>Plastic</u>	<u>Other</u>
Stainless Steel	Phenolic	Stone
Aluminum	Polyester	Wood
	Fiberglass	Glass
		China
		Leather

#### TYPICAL USES

HARDMAN Machineable Epoxy can be used for patching and filling voids and scratches in plastic and metal tooling, patterns and furniture.

#### PACKAGING

The DOUBLE/BUBBLE package is a handy, dual-pouch, one-shot, job-size packaging concept. It reduces the waste typically associated with the use of larger quantities of two-component adhesives. This unique packaging ensures that DOUBLE/BUBBLE adhesives are always factory fresh and accurately portioned for optimum adhesive performance.

HARDMAN Machineable Epoxy is also available in poly bottles, 1-gallon cans, 5-gallon pails and 55-gallon drums.

#### HOW TO USE

Surface must be clean and dry before application. Remove all chemicals, dirt wax and oil.



FOLD

SNIP

SQUEEZE

MIX/APPLY

Fold the DOUBLE/BUBBLE package along the center seal, snip the end, squeeze out the contents, mix thoroughly and apply.

#### TYPICAL UNCURED PROPERTIES

	<u>Part A</u>	<u>Part B</u>	<u>Mixed</u>
Color	Aluminum	Amber	Aluminum
Viscosity @ 25 °C, cps.	75,000	60,000	60,000
Weight per Gallon, lbs.	12.9	9.7	12
Specific Gravity @ 25 °C	1.55	1.16	1.44
Flash Point, PMCC, °C	93	121	---
Work time, minutes	---	---	25
Tack free time, minutes	---	---	60
Handling Strength, hours	---	---	4
Shelf Life, months	24	24	---

#### TYPICAL CURED PHYSICAL PROPERTIES

(Tested at 25 °C unless otherwise indicated)

<u>Test</u>	<u>Result</u>
Hardness, Shore D	88
Impact Strength, ft.-lbs.	3.5
Maximum Service Temp.	150° C (300 °F)
Water Resistance	Excellent

#### Lap Shear Strength (acid-etched aluminum to aluminum)

Cure Schedule @ 25 °C	3 hours	24 hours	72 hours	2 weeks
Shear Strength, psi	500	1,500	2,350	2,400

#### Hardness: (cure schedule 7 days @ 25 °C)

Test Temperature	25 °C	66 °C	93 °C	121 °C	149 °C
Hardness, Shore D	88	80	50	35	30



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### TYPICAL CHEMICAL RESISTANCE PROPERTIES

(Tested at 25 °C unless otherwise indicated)

<u>Total Immersion In:</u>	<u>Immersio</u>	<u>% Weight</u>	<u>Comments</u>
	<u>n</u>	<u>Gain</u>	
	<u>Time,</u>	<u>(Loss)</u>	
	<u>Days</u>		
Water	1	0.20	
	8	0.50	
Ethyl Alcohol 50% Solution	1	1.34	
	8	3.40	
Hydrochloric Acid (2N)	1	2.15	Surface
	8	4.45	discoloration Degradation occurs
Gasoline	1	(0.01)	
	8	0.02	
Sulfuric Acid, 30% Solution	1	2.58	Surface
	8	11.80	discoloration Degradation occurs
Toluene	1	0.66	
	8	2.35	
1,1,1 Trichloroethane	1	0.20	Specimen softens
	8	10.93	
VM+P Naphtha	1	(0.02)	
	8	(0.03)	

### ADDITIONAL INFORMATION

Visit our web site at:

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

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#### NOTE

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### STORAGE AND HANDLING

Store DOUBLE/BUBBLE adhesives at room temperature in a dry environment. Extreme low temperatures may cause crystallization. Extreme high temperatures may degrade the properties.

A wide variety of cleaning solutions are available for cured and uncured epoxies and polyurethanes.

### SAFETY

These materials are intended for commercial and industrial use only, and the practices of good housekeeping, safety and cleanliness should be followed before, during and after use.

Although the system contains low volatility materials, care should be taken in handling. Use adequate ventilation in the work area.

These materials may cause dermatitis in susceptible individuals. Keep off skin and out of eyes. In case of accidental skin contact, wash thoroughly with soap and water. In case of eye contact, flush eyes thoroughly with water and consult a physician immediately.

Refer to Material Safety Data Sheet for additional information.