

Starting Formulation

SF 4011 Heat Epoxy Adhesive 828 3234 and Aromatic Amines Heat Cure Epoxy Adhesive for Aluminum

EPON™ Resin 828 / EPIKURE™ Curing Agent 3234 and Aromatic Amines

Introduction This elevated temperature cure adhesive was designed for bonding aluminum to aluminum.

- Features**
- Good physical strength properties
 - Good chemical resistance
 - Good strength retention after elevated temperature aging

Formula	<u>Material</u>	<u>Supplier</u>	<u>Pounds</u>	<u>Gallons</u>
Part A				
	EPON Resin 828	Hexion	100.0	10.40
	Alumina T-60/T-64 (ground tabular alumina)	Alcoa World Chemicals	<u>230.0</u>	<u>7.40</u>
		Total A	330.0	17.80
Part B				
	Aromatic Amine Eutectic		12.0	1.26
	EPIKURE Curing Agent 3234	Hexion	<u>5.0</u>	<u>0.60</u>
		Total B	17.0	1.86
		Total Part A & B	347.0	19.66

Mixing Instructions Part A

For high shear mixers heat resin to approximately 40°C to lower viscosity for improved mixing. Pre-heating is not necessary for planetary mixers but may be beneficial.

While mixing, add and disperse filler in steps until all filler has been added. Continue mixing until a smooth, uniform paste has been achieved.

Part B

Charge aromatic amine eutectic into high shear mixer and begin stirring at medium speed.

Slowly add EPIKURE Curing Agent 3234 while mixing. Continue mixing for several minutes to assure a uniform blend has been achieved.

This formulation is a basic starting point and can be modified with other filler types, depending on cost/performance requirements.

Pigment may be incorporated into either or both portions for the purpose of color coding. As with all pigments, their effect on the performance of the final, cured product should be

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investigated prior to production approval.

Typical Handling Table 1 / Handling Properties
Properties

	<u>Units</u>	<u>Value</u>
Resin : Curing Agent mix ratio	by weight	19.4 : 1.0
	by volume	9.6 : 1.0
Expected Working Life @ 25°C		
454 grams	hrs	1 - 2
Form / Viscosity @ 25°C		
Part A		Paste
Part B	P	10 – 20

Application Instructions All surfaces to be bonded should be free of dirt, grease, oil or other contaminants to ensure maximum adhesion. For optimum adhesion it is recommended to roughen bonding surfaces. This can be accomplished with abrasive media appropriate for the materials being bonded (such as medium grit emery paper, abrasive disks, grit blasting, wire brushes, etc.). Abrasion should always be followed by degreasing to remove contaminants and loose particles. Chemical etching is another method to provide a rough surface for improved adhesion.

Thoroughly mix the adhesive components and apply by spreading a thin film over the surface to be bonded. Maintain light pressure during cure for optimum bonding.

<u>Cure Schedule</u>	<u>Temperature, °C (°F)</u>	<u>Time, minutes</u>
	121 (250)	100
	149 (300)	60
	204 (400)	10

Typical Cured State Table 2 / Adhesive Properties - Aluminum to Aluminum Alloy
Properties

<u>Test Property</u>	<u>ASTM</u>	<u>Units</u>	<u>Value</u>
Tensile Shear Strength @ 23°C	D-1002		
Cured 10 minutes @ 204°C		psi	2250
Cured 100 minutes @ 121°C		psi	2300
Cured 100 minutes @ 149°C		psi	2200

Storage Recommendations regarding storage conditions can be obtained by visiting our web site at www.hexion.com

General Information

These are starting formulations and are not proven in the user's particular application but are simply meant to demonstrate the efficacy of the products and to assist in the development of the user's own formulation. It is the user's responsibility to fully-test and qualify the formulation, along with the ingredients, methods, applications or equipment identified herein ("Information"), by the user's knowledgeable formulator or scientist, and to determine the appropriate use conditions and legal restrictions, prior to use of any Information.

Safety, Storage & Handling

Please refer to the MSDS for the most current Safety and Handling information.

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