

Starting Formulation

SF 4025 One-Package Adhesive 828 Dicyandimide One-Package Adhesive EPON™ Resin 828 / Dicyandiamide

Introduction This is general purpose, filled one-package epoxy adhesive especially suited for metal – metal bonding which will yield a shelf life of at least 6 months at 25°C (77°F).

Suggested Uses

- Cost sensitive applications where a one-component adhesive is desired and the substrates to be bonded are capable of withstanding the high temperature cure conditions. Typical substrates are metals, ceramics, glass and carbon fiber composites.

Features

- One Pack
- Economical
- Good shelf life at room temperature
- Service temperatures up to 150°C (302°F)

Formula	Material	Supplier	pbw	Pounds	Gallons
	EPON Resin 828	Hexion	100	64.13	6.61
	Bentone 34 (ground bentonite clay - thixotrope)	Elementis Specialties, Inc.	25	16.02	1.13
	Alumina T60/64 (ground tabular alumina – filler)	Alcoa World Chemical	25	16.02	0.55
	Dyhard 100SF (micronized dicyandiamide)	Degussa Corporation – Fine Chemicals Division	<u>6</u>	<u>3.83</u>	<u>0.33</u>
		Total	156	100.00	8.62

Mixing Instructions A high speed mixer (such as Cowles) can be used; however, care should be taken to keep temperature as low as possible. Temperatures should be kept below 45°C (115°F).
Alternatively, a planetary mixer or three-roll mill can be used.
Load EPON Resin 828, Bentone 34 and Dyhard 100SF then blend until all powders are dispersed.
Add Alumina T60/64 and continue dispersing until a smooth, uniform paste is achieved.

This formulation is a basic starting point and can be modified with other types, such as talc, ground silica, wollastonite, or calcium carbonate.

Typical Handling Properties Table 1 / Handling Properties

	<u>Units</u>	<u>Value</u>
Expected Working Life @ 25°C (77°F), 100 grams	months	6
Form / Viscosity @ 25°C, Blend		Thixotropic Paste

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Density @ 25°C, Blend Fast
lb/gal 11.6

Application Instructions All surfaces to be bonded should be clean and free of dust, dirt, grease, oil or other contaminants. 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.

Apply by spreading a thin film approximately 0.005 inch thick over the surface to be bonded. Maintain light pressure during cure for optimum bonding.

Cure Schedule 1 hour @ 177°C (350°F); Not less than 50 minutes @ 177°C.

Typical Cured State Properties Table 1 / Adhesive Properties – Aluminum to Aluminum

<u>Test Property</u>	<u>Substrate</u>	<u>ASTM</u>	<u>Units</u>	<u>Value</u>
Tensile Shear Strength @ 25°C (77°F)	Aluminum to Aluminum	D-1002	psi	3,500

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.

Exposure to these materials should be minimized and avoided, if feasible, through the observance of proper precautions, use of appropriate engineering controls and proper personal protective clothing and equipment, and adherence to proper handling procedures. None of these materials should be used, stored, or transported until the handling precautions and recommendations as stated in the Material Safety Data Sheet (MSDS) for these and all other products being used are understood by all persons who will work with them. Questions and requests for information on Hexion Inc. ("Hexion") products should be directed to your Hexion sales representative, or the nearest Hexion sales office. Information and MSDSs on non-Hexion products should be obtained from the respective manufacturer.

Contact Information

For product prices, availability, or order placement, please contact customer service:

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For literature and technical assistance, visit our website at www.hexion.com

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