

Starting Formulation

SF 4001

Rapid Setting, Room Temperature Cure Adhesive EPON™ Resin 8111 / EPIKURE™ Curing Agent 3270 and 3271

Introduction This silica-filled epoxy adhesive system offers the convenience of an equal volume combining ratio of resin portion to converter portion, coupled with rapid bond strength development and good adhesion to a variety of substrates.

Suggested Uses General purpose bonding of:

- Metals
- Concrete
- Glass and many rigid plastics.

- Features**
- Equal volume mix ratio
 - Rapid gel times, less than 4 minutes for 100 gram mass
 - Rapid bond strength development
 - Good water resistance
 - Thixotropic paste

Formula	<u>Material</u>	<u>Supplier</u>	<u>Pounds</u>	<u>Gallons</u>
Part A				
	EPON Resin 8111	Hexion	100.0	10.57
	Cab-O-Sil M-5 Silica (Fumed amorphous silica)	Cabot Corp.	5.0	0.28
	Novacite 1250 (Ground quartz silica)	Malvern Minerals Co.	<u>75.0</u>	<u>3.40</u>
		Part A	180.0	14.25
Part B				
	EPIKURE Curing Agent 3270	Hexion	80.0	9.90
	EPIKURE Curing Agent 3271	Hexion	5.0	0.58
	CAB-O-SIL M-5 Silica (Fumed amorphous silica)	Cabot Corp.	5.0	0.28
	NOVACITE 1250 (Ground quartz silica)	Malvern Minerals Co.	<u>77.0</u>	<u>3.49</u>
		Part B	167.0	14.25
		Total Part A & B	347.0	28.5

Mixing Instructions Disperse the CAB-O-SIL® M-5 into a portion of the EPON Resin 8111 using a high shear dispersing technique (note that EPON Resin 8111 is shear sensitive. Excessive shear energy may cause premature gellation.). Add the remaining EPON Resin 8111 and NOVACITE® 1250 to the resulting dispersion and mix, using conventional mixing equipment, until all the NOVACITE® 1250 has been wetted and a uniform consistency is attained.

Blend the EPIKURE Curing Agent 3270 and EPIKURE Curing Agent 3271 together.

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Disperse the CAB-O-SIL® M-5 into this blend using high shear agitation. Add the NOVACITE® 1250 and continue mixing using high shear agitation until all the NOVACITE® 1250 has been wetted and a uniform consistency is attained.

This formulation is a basic starting point and can be modified with other filler types, such as aluminum powder, talc, alumina, wollastonite, or calcium carbonate. Modification with silane coupling agents improves bonds to concrete and glass. Pigment may be incorporated into either or both portions for the purpose of color coding.

Typical Handling Properties Table 1 / Handling Properties

	<u>Units</u>	<u>Value</u>		
Resin/Converter Combining Ratio	by weight	100 : 93		
	by volume	1 : 1		
Viscosity at 25 °C		A	B	
	at 1 rpm	cP	8,000	179,000
	at 5 rpm	cP	6,200	73,600
	at 10 rpm	cP	5,520	52,900
	at 50 rpm	cP	5,200	38,800
Pounds/Gallon				
Part A	lbs/gal	12.63		
Part B	lbs/gal	11.72		
Part A and B	lbs/gal	12.18		
Gel Time at 25 °C , 100 gram mass	sec	225		
Bondline Thickness	mil	45		

Application Instructions Surfaces to be bonded should be clean and free of dust, dirt, grease, or other contaminants. It is also recommended to roughen bonding surfaces 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. Mix the adhesive components and apply immediately by spreading a thin film over the surface to be bonded. Maintain light pressure during cure for optimum bonding.

Typical Adhesive Properties Table 2 / Adhesive Properties

Substrate	Cure Schedule	Tensile Shear Strength at 25 °C
Aluminum Alloy 2024T3, acid etched	1 hour at 25 °C	100 psi
	2 hours at 25 °C	370 psi
	4 hours at 25 °C	760 psi
	24 hours at 25 °C	2800 psi
	1 day at 25 °C followed by 2 hours at 100 °C	4000 psi
	7 days at 25 °C followed by 7 days water soak	3300 psi
Cold-rolled Steel, solvent-wiped	1 day at 25 °C followed by 2 hours at 100 °C	1600 psi

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

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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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