



ECCOBOND™ 104 A/B

High Temperature Resistant, Epoxy Adhesive

www.emersoncuming.com

Key Feature:	Benefit:
<ul style="list-style-type: none"> High temperature properties 	<ul style="list-style-type: none"> Allow bonded assemblies to operate up to 230°C
<ul style="list-style-type: none"> High strength 	<ul style="list-style-type: none"> Provides structural bonding to a wide variety of substrates
<ul style="list-style-type: none"> Excellent chemical resistance 	<ul style="list-style-type: none"> Bonded assemblies withstand severe chemical exposure

Product Description:

ECCOBOND 104 A/B is a two component, heat cured, long pot life epoxy adhesive. It features excellent chemical resistance to a wide variety of chemicals. ECCOBOND 104 A/B exhibits high shear strength even when continuously exposed to 230°C and can withstand short term exposures up to 280°C.

Applications:

ECCOBOND 104 A/B was designed for bonding metals, glass, ceramic and thermoset plastics in applications requiring very high temperature exposures.

Instructions For Use:

Thoroughly read the information concerning health and safety contained in this bulletin before using. Observe all precautionary statements that appear on the product label and/or contained in individual Material Safety Data Sheets (MSDS).

To ensure the long term performance of the bonded assembly, complete cleaning of the substrates should be performed to remove contamination such as oxide layers, dust, moisture, salt, and oils which can cause poor adhesion or corrosion in a bonded part. For information on proper substrate preparation, refer to the reprint "Good Adhesive Bonding Starts With Surface Preparation" available from Emerson & Cuming.

Accurately weigh resin and hardener into a clean container in the recommended ratio. Weighing apparatus having an accuracy in proportion to the amounts being weighed should be used.

Blend components by hand, using a kneading motion, for 2-3 minutes. Scrape the bottom and sides of the mixing container frequently to produce a uniform mixture. If possible, power mix for an additional 2-3 minutes. Avoid high mixing speeds which could entrap excessive amounts of air or cause overheating of the mixture resulting in reduced working life.

Apply the adhesive to all surfaces to be bonded and join together. In most applications only contact pressure is required.

Properties of Material As Supplied:

Property	Test Method	Unit	Value - Part A	Value - Part B
Chemical Type			Epoxy	Anhydride
Appearance	Visual		Black liquid	White powder
Density	TP-13	g/cm ³	1.35	-
Brookfield Viscosity	TP-10 or TP-11	Pa.s cP	25 25,000	-

Properties of Material As Mixed:

Property	Test Method	Unit	Value
Mix Ratio - Amount of Part B per 100 parts of Part A		By Weight	64
Working Life (100 g @ 25°C)	ERF 13-70	hours	>12
Density	TP-13	g/cm ³	1.40

Cure Schedule:

Cure at any one of the recommended cure schedules. For optimum performance, follow the initial cure with a post cure of 2 - 4 hours at the highest expected use temperature.

Temperature °C	Time (hour)
120	6
150	3
175	2
200	1

Properties of Material After Application:

Property	Test Method	Unit	Value
Hardness	TP-311	Shore D	90
Tensile Lap Shear Strength aluminum to aluminum @ 25°C	TP-21	mPa	12.4
		psi	1,800
aluminum to aluminum @ 150°C		mPa	11.7
		psi	1,700
aluminum to aluminum @ 230°C		mPa	9.7
		psi	1,400
Coefficient of Thermal Expansion	TMA	10 ⁻⁶ /°C	60
Glass Transition Temperature	DSC / TMA	°C	>225
Temperature Range of Use		°C	-25 to +230
Outgassing ⁽¹⁾	NASA OUTGASSING		
TML		%	0.52
CVCM		%	0.08
Dielectric Strength	TP-297	kV/mm	15.7
		V/mil	400
Volume Resistivity @ 25°C	TP-183	Ohm-cm	10 ¹⁵

TPs are internal test procedures typically derived from ASTM or other norms. Copies of these test procedures can be obtained upon request.

⁽¹⁾ per NASA Reference Publication 1124. Sample tested was cured for 6 hours @ 120°C.

Properties After Immersion*:

Chemical	% Weight Change	Chemical	% Weight Change
30% H ₂ SO ₄	+0.19	10% NaCl	+0.21
3% H ₂ SO ₄	+0.26	5% Phenol	+0.23
10% NaOH	+0.11	Distilled H ₂ O	+0.20
1%NaOH	+0.22	10% HNO ₃	+0.23
95%C ₂ H ₅ OH	+0.7	10% HCl	+0.22
50%C ₂ H ₅ OH	+0.18	5% CH ₃ COOH	+0.24
Acetone	+0.06	10% NH ₄ OH	+0.76
Ethyl Acetate	+0.00	2% Na ₂ CO ₃	+0.22
CCl ₄	+0.04	3% H ₂ O ₂	+0.23
Toluene	+0.04	10% Citric Acid	+0.22
Heptane	+0.02	Oleic Acid	+0.09
JP-4	+0	JP-5	0

*Typical Solvent and Chemical Resistance Percent Weight Change After 7 Days Immersion at 24°C

Storage and Handling:

The shelf life of ECCOBOND 104 Part A and Part B is 6 months at 25°C. For best results, store in original, tightly covered containers. Storage in cool, clean and dry areas is recommended.

Health and Safety:

The ECCOBOND 104 Part A, like most epoxy compounds, possesses the ability to cause skin and eye irritation upon contact. Certain individuals may also develop an allergic reaction after exposure (skin contact, inhalation of vapors, etc.) which may manifest itself in a number of ways including skin rashes and an itching sensation. Handling this product at elevated temperatures may also generate vapors irritating to the respiratory system.

The ECCOBOND 104 Part B, like many industrial compounds, possesses the ability to cause severe skin and eye irritation upon contact. Certain individuals may also develop an allergic reaction after exposure (skin contact, inhalation of vapors, etc.) which may manifest itself in a number of ways

including skin rashes, itching sensations and breathing difficulties. Handling this product at elevated temperatures may also generate vapors irritating to the respiratory system.

Good industrial hygiene and safety practices should be followed when handling this product. Proper eye protection and appropriate chemical resistant clothing should be worn to minimize direct contact. Consult the Material Safety Data Sheet (MSDS) for detailed recommendations on the use of engineering controls and personal protective equipment.

This information is only a brief summary of the available safety and health data. Thoroughly review the MSDS for more complete information before using this product.

Attention Specification Writers:

The values contained herein are considered typical properties only and are not intended to be used as specification limits.

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