ECCOBOND™ 56 C
Silver Filled, Electrically Conductive Epoxy Adhesive

www.emersoncuming.com

Key Feature:	Benefit:
• Silver filled	• Ultimate electrical and thermal conductivity
• High electrical conductivity	• Replace soldering operation for temperature sensitive components
• Good bond strength	• Provides reliable and strong electrical connections

Product Description:

ECCOBOND 56 C is a silver filled, electrically conductive epoxy adhesive resin. It cures to yield very high electrical and thermal conductivity. ECCOBOND 56 C bonds well to metals, glass, ceramics, and plastics. It is supplied in a paste form and will not flow when applied.

Applications:

ECCOBOND 56 C was designed to make electrical connections where hot soldering is impractical or to make electrical connections to conductive plastics at locations which can not be subjected to high temperatures.

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.

Some separation of components is common during shipping and storage. For this reason, it is recommended that the contents of the shipping container be thoroughly mixed prior to use.

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.

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
Chemical Type			Epoxy
Appearance	Visual		Silver, thixotropic paste
Density	TP-13	g/cm^3	3.50

Choice of Curing Agents		
Curing agent	Catalyst 9	Catalyst 11
Description	General purpose with good chemical resistance and physical strength.	Long pot life, excellent chemical resistance, good physical and chemical properties at elevated temperatures.
Type of cure	Room	Heat
Viscosity Pa.s cP	0.080 to 0.105 80 to 105	0.035 to 0.060 @ 65 °C 35 to 60 @ 65 °C

Properties of Material As Mixed:

Property	Test Method	Unit	Value	
			Catalyst 9	Catalyst 11
Mix Ratio-Amount of Catalyst per 100 parts of ECCOBOND 56 C		By Weight	2.5	3.5
Working Life (100 g @ 25°C)	ERF 13-70		45 minutes	>4 hours
Density	TP-13	g/cm^3	3.3	3.3

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	Cure Time	
°C	**Catalyst 9**	**Catalyst 11**
65	60 minutes	
80	45 minutes	8 hours
100	30 minutes	2 hours
120		1 hour

Properties of Material After Application:

Property	Test Method	Unit	Value	
			Catalyst 9	Catalyst 11
Flexural Strength	ASTM-D-790	mPa psi	84 12,200	84 12,200
Tensile Lap Shear Strength aluminum to aluminum @ 25°C	TP-21	mPa psi	5.5 800	5.5 800
Coefficient of Thermal Expansion	TMA	10^{-6}/°C	36	36
Thermal Conductivity	ASTM-D-2214	W/m.K Btu-in/hr-ft^2-°F	7.2 50	7.2 50
Temperature Range of Use		°C	-40 to +130	-55 to +155
Outgassing[1] TML CVCM	NASA OUTGASSING	 % %	 0.23 0.01	
Volume Resistivity @ 25°C	TP-296	Ohm-cm	0.0002	0.0002

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 30 minutes @ 25°C plus 1 hour @ 60 °C.

Storage and Handling:

The shelf life of ECCOBOND 56 C 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 56 C, 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.

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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