



PRODUCT INFORMATION

HIGH TECHNOLOGY MATERIALS

MEREKO 3180

HEAT SINK FOR COMPONENT ENCAPSULATING

INTRODUCTION

MEREKO 3180 is a casting resin system with thermally conductive electrically insulative properties. It is formulated to be the best and most logical engineering choice where excellent electrical characteristics, high thermal conductivity, low coefficient of expansion, good adhesion to a wide range of materials and low shrinkage during cure are vital.

MEREKO 3180 acts as an electrically insulating and thermally conductive heat sink for bonding heat sensitive devices. It is excellent for potting small and large magnetic coils, power supplies, bushings and insulators and for encapsulating heat-emitting individual components: transformers, random-wound field coil and form coil motors, resistor elements, torroid coils and silicon controlled rectifiers. It has excellent chemical and solvent resistance. Heat and thermal shock resistance permit use from -75° to 205°C (-103° to 400°F).

GENERAL INFORMATION

MEREKO 3180 Base and Activator are used in the weight ratio of 4 to 5 parts Activator for each 100 parts of Base. Curing requires heat. Recommended curing temperatures are from 75°C (167°F) to 125°C (257°F). Pot-life is 4 hours at 25°C (77°F).

TYPICAL PRODUCT PROPERTIES

	<u>ACTIVATOR</u>	<u>BASE</u>
Color	Brownish-red	Black
Form	Liquid	Viscous, pourable
Viscosity, (25°C), cP		1 000 000
(40°C), cP	20	
Sp. Gr. (25°/25°C)	1.1	2.5
Flash Point, °F	200	164

PRODUCT USER DATA

Mix Ratio (by weight), phr	4.5
Viscosity (25°C), cp	70,000
Specific Gravity (25°/25°C)	2.4
Pot Life (25°C), hours	4
Gel Time (25°C), hours	24

Technical information and recommendations made by Mereco Division and Metachem Resins Corporation concerning products and uses or applications thereof, are based on reliable laboratory tests and are believed to be accurate. No warranty, however, is expressed or implied, nor is any warranty expressed or implied as to results to be obtained from use of said materials, whether used singly or in combination with other products. No statements made are to be construed as constituting a license under any existing patent.

FORM 1105 REV. 0

Cure Schedules, hours	
1. at 75°C	16
2. at 100°C	2
3. at 125°C	1
Post-cure, hours at 150°C	4

INSTRUCTIONS FOR USE

Preparation

1. Preheat **MERECO 3180 ACTIVATOR** and **BASE** in their original shipping containers to 74°C (165°F). If necessary, stir the contents of each container until uniformity is achieved.
2. When molds are to be used, wiping with silicone-based **META-PART 7521** allows easy demolding.
3. Molds and parts to be encapsulated may also be warmed to 74°C (165°F). This pre-heating will aid filling and bubble release.

Mixing

1. By weight, measure 4 to 5 parts of **MERECO 3180 ACTIVATOR** for each 100 parts of **BASE**.
2. Add **ACTIVATOR** to **BASE** and blend thoroughly.
3. Pour into mold. Vacuum deaerate, if necessary.
4. Cure using any of the schedules under **PRODUCT USER DATA** above.
5. For optimum high temperature properties, post-cure 4 hours at 150°C (300°F).

TYPICAL CURED STATE PROPERTIES

(After 16 hours at 75°C plus 4 hours at 150°C)

Mechanical

Tensile Strength, psi	8450
Compressive Strength, psi	14 250
Elastic Modulus, 10 ⁶ psi	1.3
Flexural Strength, psi	13 400
Flexural Modulus, 10 ⁶ psi	2.0
Izod Impact, ft ³ lb ³ in ⁻¹ notch	0.3
Shore Durometer, D Scale	92
Linear Shrinkage	0.001
Specific Gravity (25°/25°C)	2.3
Machineability	poor

Thermal

Operating Range, °C	-75 to 205
Deflection Temperature Under Load (264 psi), °C	275
Weight Loss (1000 hr at 175°C), %	0.38

Chemical

Water Immersion (30 da, 27°C) Weight Gain, %	0.1
--	-----

Electrical	
Dielectric Constant (1000 Hz)	5.0
Dissipation Factor (1000 Hz)	0.01
Volume Resistivity, ohm·cm	
25°C	5×10^{18}
150°C	1.3×10^{12}
Dielectric Strength, kV·in ⁻¹	450

STORAGE

MERECO 3180 ACTIVATOR is an amine liquid. It is hygroscopic, absorbing moisture which alters the viscosity and reactivity. It is also basic, absorbing carbon dioxide which destroys the reactive amine group. The product is uniform when packaged, but may crystallize if subjected to cold temperatures or seeding by ordinary dust particles. Liquid state uniformity is restored by application of low heat (120° to 140°F) and stirring until all crystals are dissolved.

MERECO 3180 BASE is an epoxy resin. The product is uniform when packaged, but may crystallize if subject to cold temperatures or seeding by ordinary dust. There is solid particle content to the product which may settle over long periods to time. Liquid state uniformity is restored by application of low heat (120° to 140°F) and stirring.

Store all products inside a cool well-ventilated location. Avoid outdoor or other high humidity areas. Avoid storage over 100°F. Avoid acids, bases and oxidizers. When kept tightly closed in the original containers at temperatures from 50° to 90°F, the warranted shelf- life is 6 months.

HANDLING PRECAUTIONS

Consult Material Safety Data Sheet before handling. Keep containers closed when not in use. Check uniformity of contents before using. These products are chemicals. Observe good industrial hygiene practices. Avoid breathing vapors. Irritation may result from repeated skin contact. Prevent eye contact. Effective ventilation, goggles and protective clothing are recommended for personnel. In case of accidental skin contact, wash the affected areas with soap and water. In case of eye contact, flush eyes thoroughly with soap and water and consult a physician. Contaminated clothing should be promptly removed and not worn until thoroughly cleaned. Discard contaminated leather. Wash thoroughly after handling and before eating, drinking, smoking or using the toilet.

MERECO 3180 ACTIVATOR is a modified liquid amine with a mildly aromatic odor. It is a combustible liquid (OSHA IIIB). Contact with skin, eyes and mucosae causes irritation. Overexposure may also cause cyanosis or temporary liver damage. Tumors have been observed in some animals exposed to the amine class.

MERECO 3180 BASE is a modified epoxy resin with a mild odor. It is a combustible liquid (OSHA IIIA). Contact with skin, eyes and mucosae causes irritation and may cause sensitization and dermatitis. Avoid contact. Do not inhale. Avoid heat, sparks or flame.

All products are for industrial use only.

AVAILABILITY

A. PACKAGING

MERECO 3180 is supplied as a two-component kit consisting of separate containers of epoxy resin and curing agent. Standard packaging is in half-pint, pint, quart, gallon, five gallon and 55 gallon containers. Other kit sizes are available on special order. It is also available in a premixed form which is degassed and frozen (-40°C) at the factory. This form requires frozen storage and prompt action at receiving platforms to ensure that package contents do not thaw. The standard packaging is in 3, 5, 10 and 30cc syringes.

B. COLOR

MERECO 3180 ACTIVATOR is brownish-red. Available **BASE** colors are as listed below. When cured, the color is the same as the **BASE** color.

<u>PRODUCT</u>	<u>COLOR</u>	<u>PRODUCT</u>	<u>COLOR</u>	<u>PRODUCT</u>	<u>COLOR</u>
3180	Unpigmented	3183	Black	3186	Blue
3181	White	3184	Red	3187	Green
3182	Brown	3185	Orange	3188	Yellow

AUXILIARIES

For a room temperature curing hard product, use kits with **MERECO HARDENER 10**. For a room temperature curing product with high impact resistance, use kits with **MERECO HARDENER 43**. For a coarser grained product (higher thermal conductivity and compressive strength) use **MERECO ECN-809**. For a rubbery modification use **MERECO XLN-589**.

Clean hands with waterless **METATERGE 1421**. Clean uncured **MERECO** resins from utensils and equipment with isopropyl alcohol or with formulated **METATERGE 1405** (not flammable or corrosive; water soluble).

Soften cured **MERECO** resins to salvage valuable components with **META-STRIP 701** (liquid or gel). It is an effective non-corrosive solvent. For vigorous stripping of stubborn, cured resins, use **META-STRIP 705**. It is a highly active, corrosive solvent.

For air release, use **MERECO XLN-760** (non-silicone).