



PRODUCT INFORMATION

HIGH TECHNOLOGY MATERIALS

METADUCT 1202

SILVER ADHESIVE AND CEMENT

INTRODUCTION

METADUCT 1202 is a silver filled, solvent-free, room temperature curing, electrically and thermally conductive epoxy paste for adhesive and coating applications. It is used for bonding electrical and electronic devices where soldering is not practical and electrical conductivity is a requirement. The excellent adhesion, temperature, moisture and corrosion resistance of epoxies are combined with silver to give stable cured properties, extremely high conductivity, high strength and heat resistance and low outgassing.

METADUCT 1202 provides good adhesion to aluminum, nichrome, steel, glass, ceramics, Ga/As, and most plastic (including conductive plastic) substrates. It is a two-component adhesive; curing can be accomplished overnight at room temperature or in a few minutes at elevated temperature. Low temperature curing avoids loss of sensitive components due to thermal damage.

APPLICATIONS

- Lead attachments for LED's potentiometers, filters, wave guides, crystals and other frequency controls.
- Cold "soldering" of discrete components such as resistors, flat packs, antenna, hybrids and other miniaturized circuits.
- Chip bonding and "die" attachment.
- Adaptable to brush, spray or screen print coatings for RF shielding and electrically conductive patterns.
- Solderable conductive coatings for tantalum capacitors.

FEATURES

- No solvent ... 100% active
- Non-bleeding ... Useful from -55° to 175°C
- Thixotropic ... No drip or sag
- Complete cure ... Low outgassing

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FORM 1105 REV. 0

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GENERAL INFORMATION

METADUCT 1202 can be cured in 16 hours at room temperature. Faster cure and improved conductivity are obtained with a three hour cure at 65°C. The following table compares the conductivity of **METADUCT 1202** with that of some familiar substances.

<u>Substance</u>	<u>Electrical ohm·cm</u>	<u>Thermal cal/sec·cm·°C</u>
Silver	1 x 10 ⁻⁶	1.000
Nichrome	1 x 10 ⁻⁴	0.032
METADUCT 1202	1 x 10 ⁻³	0.028
Standard Epoxy	1 x 10 ¹⁵	0.0003
Aluminum Oxide	1 x 10 ¹⁵	0.084
Beryllium Oxide	1 x 10 ¹⁶	0.550

TYPICAL PRODUCT PROPERTIES

	<u>ACTIVATOR</u>	<u>BASE</u>
Color	Pale Yellow	Silver
Form	Clear Liquid	Soft Paste
Viscosity (25°C), cP	450	1.5 x 10 ⁶
Sp Gr (25°/25°C)	0.9	3.1
Flash Point, °F	140	470

PRODUCT USER DATA

Mix Ratio (by weight)	4 phr
Viscosity (25°C)	5 x 10 ⁵ cP
Specific Gravity (25°/25°C)	2.8
Pot Life (25°C)	1 hour
Gel Time (100 g mass, 25°C)	1.5 hour
Linear Shrinkage	0.005

Curing Schedules

1. Hours at 25°C	24
2. Hours at 65°C	2
3. Minutes at 100°C	75
4. Minutes at 120°C	45
5. Minutes at 130°C	30
6. Minutes at 150°C	15

Coverage at 0.001 inch, cm ² /2 av oz kit	8275
in ² /2 av oz kit	1280

MIXING INSTRUCTIONS

1. Prepare only an amount that can be used in 1 hour or less.
2. For measuring, mixing and dispensing use only inert equipment such as polyethylene, polypropylene and stainless steel. Do NOT use wax coated paper containers or wooden mixers.
3. By weight, measure four parts of **METADUCT 1202 ACTIVATOR** for 100 parts of **METADUCT 1202 BASE**. Mix very thoroughly.
4. Deaerate in vacuum.

ADHESIVE APPLICATIONS

Butter on or spread the mixture prepared above to the desired thickness with a spatula, knife, screen or syringe. Join parts, avoiding air pockets. Pressure is not required, but is it desirable to keep parts in a fixture until the adhesive is gelled. Finally cure according to one of the schedules shown under Product User Data on page 2.

THIN FILM APPLICATIONS

Springily, add toluol to obtain the proper consistency. Never add more than 10%. Mix thoroughly after each incremental addition. Brush, roll, screen or spray onto substrate. Remove most of the solvent (by air drying at room temperature or by heating 2 hours at 50°C) before curing. NOTE: After the correct amount of solvent is ascertained in initial trials, the solvent may be added directly to the ACTIVATOR for routine use.

TYPICAL CURED STATE PROPERTIES (after 3 hours at 65°C)

General

Color	Silver
Form	Solid

Mechanical

Tensile Strength, psi	8500
Flexural Strength, psi	12,200
Compressive Strength, psi	12,000
Lap Shear Strength, psi	800
Hardness (Shore D)	80
Specific Gravity (25°/25°C)	2.8

Chemical

Water Immersion (30 days 27°C)	
Weight Gain, %	0.23

Thermal

Conductivity	
BTU·in/hr·ft ² ·°F	10
CAL/sec·cm·°C	0.0034
Linear Expansion Coefficient, 10 ⁻⁵ /°C	1.6
Weight Loss (1000 hr at 175°C), %	0.4
Operating Range, °C	-55 to 175
Deflection Temperature Under Load	
(264 psi), °C	93
Vacuum Outgassing (24 hr at 125°C), %	
Total Mass Loss	0.54
Collected Volatile	0.01
Condensables (25°C)	

Electrical

Volume Resistivity (25°C), ohm·cm	0.001
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STORAGE

A. Two-component Kit Packaging

Store all products inside in 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.

B. Premixed frozen packaging.

Syringes are sealed, boxed and packed with dry ice in an insulated overpack. Buyers should alert receiving personnel not to open these overpacks unless they can be immediately placed in storage at -40°F or below. When stored properly, the warranted shelf-life is 3 months.

HANDLING PRECAUTIONS

READ MATERIAL SAFETY DATA SHEET BEFORE HANDLING.

METADUCT 1202 ACTIVATOR is a liquid amine with an ammoniacal odor and corrosive properties somewhat like ammonia. It is a combustible liquid (OSHA IIIA). Contact with skin, eyes and mucosae causes irritation and burns. Ingestion may cause nausea and vomiting. Avoid contact and breathing of vapors which might cause sensitization. Avoid heat, sparks or flame.

METADUCT 1202 BASE is a silver filled epoxy resin with a mild odor. It is a combustible liquid (OSHA IIIB). 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 industry use only.

PACKAGING

This MEREKO system is available as a two-component kit consisting of separate containers of **BASE** and **ACTIVATOR**. Standard packaging is in 2,4, 8, 16 and 32 ounce kits. Other kit sizes are available on special order.

This product is also available in a premixed form which is degassed and frozen (-40°F) at the factory. This form requires frozen syringes and prompt action at receiving platforms to ensure that package contents do not thaw. Standard packaging is in 1, 3, 5, 10 and 30cc syringes.