



# PRODUCT INFORMATION

## HIGH TECHNOLOGY MATERIALS

### METREGRIP 303 SERIES EPOXY ADHESIVES

#### PRODUCT DESCRIPTION

Mereco **Metregrip 303** series is a unique class of room temperature curing epoxy adhesives specifically designed for difficult bonding operations with most engineering materials. **Metregrip 303** series has excellent wetting and penetrating ability due to the presence of highly polar groups within the molecule. **Metregrip 303** is a two-component system available in four different viscosities. The product designations in the series are distinguished by their different consistencies ranging from a very thin syrup to a thick paste.

Match the type of adhesive to the job and select the consistency you need from this table.

<u>Adhesive</u>	<u>Viscosity (cps)</u>	<u>Description</u>
303	1,000,000*	Thick Paste
303MV	100,000	Medium Paste
303LV	25,000	Syrup
303VLV	4,000	Thin Syrup

\* Thixotropic, Anti-Slump

**Metregrip 303** series forms strong bonds with a variety of engineering materials:

<u>HARD</u>	<u>SOFT</u>
Alnico	ABS
Aluminum	Buna rubber
Brass	Nylon ® 6-6
Ceramics	Polycarbonate
Copper	Polyester
Glass	Polyethylene
Inconel ®	Polypropylene
Iron	Rulon
Lead	Tedlar ®
Rhodium	Teflon ®
Stainless Steel	Vinyl
Zinc	Wood

Bonds formed using **Metregrip 303 Series** are tough, tenacious, resilient, and resistant to water and a variety of other chemicals. With **Metregrip 303**, shrinkage stresses are minimized, resulting in a stronger and more durable bond. The **Metregrip 303 Series** is ideal for applications where close tolerances are required.

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.

The **Metregrip 303 Series** Epoxy adhesives can also be cured via heat acceleration. Using heat will generally result in an improvement in temperature and chemical resistance. These systems have outstanding resistance to most solvents, weak acids, and alkaline systems.

**Metregrip 303 Series** is easy to use in original assembly operations and for field repairs. The noncritical mix ratio and room temperature curing capability avoid the need for special handling and curing equipment.

#### FEATURES

- ⇒ Easy 1-1 mix ratio for standard systems
- ⇒ Can be flexibilized by adding Activator in greater proportions
- ⇒ Excellent solvent resistance
- ⇒ Excellent adhesion to most substrates
- ⇒ Good balance of physical and mechanical properties
- ⇒ Available in four different viscosities
- ⇒ A Mereco standard product, always in stock and available for fast shipment

#### GENERAL INFORMATION

**Metregrip 303 Series** is typically mixed at a ratio of 1 part Base to 1 part Activator. However, to improve impact resistance and flexibility, and to obtain as low as a Short A 80 durometer material, the system can be mixed to concentrations of 45 parts Base to 125 parts Activator. The gel time (the time at which the viscosity doubles) and exothermic temperature rise is dependent on the size of the mixed batch, the ratio of activator to base, and the mixing temperature. Cure at room temperature depends to a large extent on the exothermic temperature rise. In thin (2 mil) sections an overnight cure is required for the composition to achieve handling strength. Mereco recommends an adhesive thickness of 2-5 mil to achieve ultimate bond strength.

In addition to room temperature cure capability, the **Metregrip 303 Series** may be cured rapidly at elevated temperatures. Review the user data section of this bulletin for more information.

FORM 1105 REV. 0

**TYPICAL PRODUCT PROPERTIES OF UNCURED METREGRIP 303 SERIES BASE AND ACTIVATOR**

PROPERTY	303 ACTIVATOR	303 BASE	303 MV ACTIVATOR	303 MV BASE	303 LV ACTIVATOR	303 LV BASE	303 VLV ACTIVATOR	303 VLV BASE
<b>FORM</b>	Thick Paste	Thick Paste	Thick Cream	Paste	Thick Syrup	Syrup	Very Light Syrup	Thin Syrup
<b>Appearance</b>	Tan	Tan	Amber	Tan	Amber	Clear	Clear	Clear
<b>Sp. Gravity</b>	1.06	1.06	0.97	1.12	0.97	1.16	0.97	1.13
<b>Viscosity, cps</b>	900,000	900,000	50,000	900,000	50,000	8,000	17,000	600
<b>Flash point ° C</b>	262	252	262	252	262	197	184	73

**PRODUCT USER DATA**

**Directions for Use:**

1. Select the appropriate Metregrip 303 Adhesive
2. By weight or volume, measure equal amounts of Activator and Base
3. Mix *thoroughly*. Deaerate if necessary @ 27 inches of Mercury.
4. Apply the adhesive in 2-5mil thickness to one surface. Make joint, fixture and place if necessary.
5. Cure according to cure schedules listed in table below.

**Curing Schedule**

<u>Time (hr:min)</u>	<u>Temp. ° C / ° F</u>
16:00	25/77
9:00	43/109
7:00	57/135
2:30	74/165
1:30	102/216
0:20	149/300
0:05	204/400

If initial cure is at room temperature ( 25° C), Mereco **Metregrip 303 Series** should be post-cured to achieve optimal properties as follows:

1. 2 weeks at 25° C or:
2. 2 hours at 100° C

Post curing the **Metregrip 303 Series** at elevated temperatures after room temperature cure will result in superior heat and chemical resistance.

**TYPICAL CURED STATE PROPERTIES**

Not to be used for specification purposes

**General**

Appearance  
 Metregrip 303 & 303MV Opaque, Tan  
 Metregrip 303LV Clear, Amber  
 Metregrip 303VLV Clear, Straw

Form Solid

Specific Gravity (25° / 25° C) 1.05

**Thermal**

Operating Temp. Range, °C -65 to +145  
 °F -85 to +293

Heat Deflection Temp. Under Load (264 psi), °C / °F 72 / 162

Glass Transition Temp., °C / °F +65 / +149

Linear Expansion Coefficient to 130° C, (length/unit length/°C) 86 x 10<sup>-6</sup>

Thermal Conductivity (BTU · in/hr · ft<sup>2</sup> · °F) 2.4

Weight Loss in Air 24 hours at 150° C, %  
 Metregrip 303 0.21  
 Metregrip 303 MV 0.25  
 Metregrip 303 LV 0.05

**Chemical**

Moisture Absorption, %  
 Metregrip 303 MV  
 24 hour immersion 0.59  
 2 hour boil 0.80

**TYPICAL CURED STATE PROPERTIES** cont'd

**Mechanical**

Ultimate Tensile Strength (psi)	6,000
Modulus of Elasticity	300,000
Elongation, %	20
Lap Shear Strength, psi	2,100

**Aluminum to aluminum**

-54 °C	1,850
25 °C	2,100
82 °C	1,500
121 °C	600

**Aluminum to Brass**

-54 °C	1,700
25 °C	2,600
82 °C	1,150

**Copper to Copper**

25 °C	1,400
82 °C	800

**Cold Rolled Steel to Cold Rolled Steel**

-54 °C	1,575
25 °C	2,800
82 °C	1,500

**Glass to Glass**

25 °C	glass fails
82 °C	glass fails

**Nylon to Nylon**

25 °C	1,200
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**Aluminum to Teflon**

25 °C	185
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**Electrical Properties**

Dielectric Constant (10 <sup>6</sup> Hz)	
Metregrip 303 MV	3.42
Metregrip 303 LV	3.41

Dissipation Factor (10 <sup>6</sup> Hz)	
Metregrip 303 MV	0.019
Metregrip 303 LV	0.018

Volume Resistivity, ohm-cm

Metregrip 303 MV:	
25 °C	4.5 x 10 <sup>14</sup>
66 °C	6.4 x 10 <sup>11</sup>
93 °C	1.3 x 10 <sup>11</sup>
130 °C	8.0 x 10 <sup>9</sup>
150 °C	< 10 <sup>9</sup>

Dielectric Strength (volts/mil)	440
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**SAFETY, STORAGE, AND HANDLING**

Before using any of the materials referred to in this bulletin, consult the applicable Material Safety Data Sheets for appropriate handling procedures and protective equipment.

**AVAILABILITY AND ORDER INFORMATION**

**Packaging** These Mereco systems are available as a two-component kit consisting of separate, equal weight containers of epoxy resin and curing agent. Standard packaging is in half-pint, pint, quart, gallon, five-gallon and 55 gallon containers. This product is also available in collapsible tubes in 2 oz. and 4 oz. sizes.

Bulk packaging is available for customers that do not use the standard 1:1 ratio.

On special order, Metregrip 303MV, LV and VLV can also be packaged in dual-pouch mixing packages, and in dual-syringes. In both, the two components are premeasured, kept separate until needed, and do not need freezing.

Also, Metregrip 303 is available in premixed syringes and plastic cups which are degassed and frozen (-40°C) at the factory. This package requires frozen storage and prompt action at the receiving platforms to ensure that package contents do not thaw prematurely.

**Color** The standard colors are as follows:

METREGRIP 303	Opaque Tan
METREGRIP 303MV	Opaque Tan
METREGRIP 303LV	Clear Amber
METREGRIP 303VLV	Clear Straw

Other colors are available on special order.

**Ordering** Specify the name, number, letter designation, color, quantity, container size and packaging form. The order should be placed with the Mereco Order Entry Department at 1-800-556-7164 or by mail to Mereco Division, Mereco Technologies Group Companies, 1505 Main Street, West Warwick, RI 02893-2992. The minimum order size is \$ 100.00. Evaluation kits are available on request for \$ 40.00. The \$ 40.00 fee will be credited against the first order for the product.

## **PRODUCT MODIFICATIONS**

**Metregrip 303 XLN-647:** Nonsagging sealant with improved spreadability and air release  
**Mereco XLN-547:** Paste adhesive, 100,000 cps  
**Mereco XL-364:** Liquid Adhesive, 20,000 cps  
**Mereco XL-354:** Liquid Adhesive, 15,000 cps  
**Mereco XLN-648 Base:** To increase viscosity of Metregrip 303LV. Retains liquid form.

## **AUXILIARY PRODUCTS**

**Metapart 7523:** Silicone release agent  
**Mereco D-AIR XLN-760:** Air release agent  
**Metaterge 1421:** Waterless hand cleaner  
**Metaterge 1405:** For cleaning uncured epoxy resins. Non-flammable, non-corrosive  
**Meta-Strip 702:** Liquid or gel to soften cured epoxy resins. Non-corrosive

## **RELATED LITERATURE**

### **Applications Bulletins:**

**TSB 3-638:** Vapor pressure and thermal stability of Metregrip 303 Series  
**TSB 3-634:** Resistance to Various Environments  
**TSB 3-625:** Bonding Plastics  
**TAB 3-626:** Bonding Miscellaneous Surfaces  
**TSB 3-627:** Bonding Steel  
**TSB 3-628:** Bonding Teflon and Rulon  
**TSB 3-632:** Mereco Adhesives

### **Product Information Bulletins:**

**Mereco XL-354:** Intermediate Viscosity Liquid Adhesive  
**Metregrip 303 XLN-647:** Easy Spreading Sealant  
**Metaterge 1405:** Uncured Epoxy Remover  
**Metaterge 1421:** Power Hand Cleaner  
**Meta-Strip 702:** Cured Resin Stripper  
**Mereco D-AIR XLN-760:** Air Release  
**Metapart 7523:** Silicone Mold Release  
**Metapart 7582:** non-CFC Fluorocarbon Mold Release