



## One-part Adhesive Comparison Chart

	Electrical		Thermal	General	
Uncured Working Properties	9410	9400	9460	9310	9300
Working Time	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Viscosity	Thixotropic	Thixotropic	Thixotropic	Semi-thixotropic	Semi-thixotropic
Minimum Full Cure	60 min @90 °C	120 min @70 °C	45 min @100 °C	30 min @100 °C	60 min @70 °C
Optimal Full Cure	60 min @90 °C	30 min @80 °C	45 min @100 °C	30 min @100 °C	25 min @90 °C
Shelf Life @22 °C	6 months <sup>a)</sup>	6 months	9 months	12 months	12 months

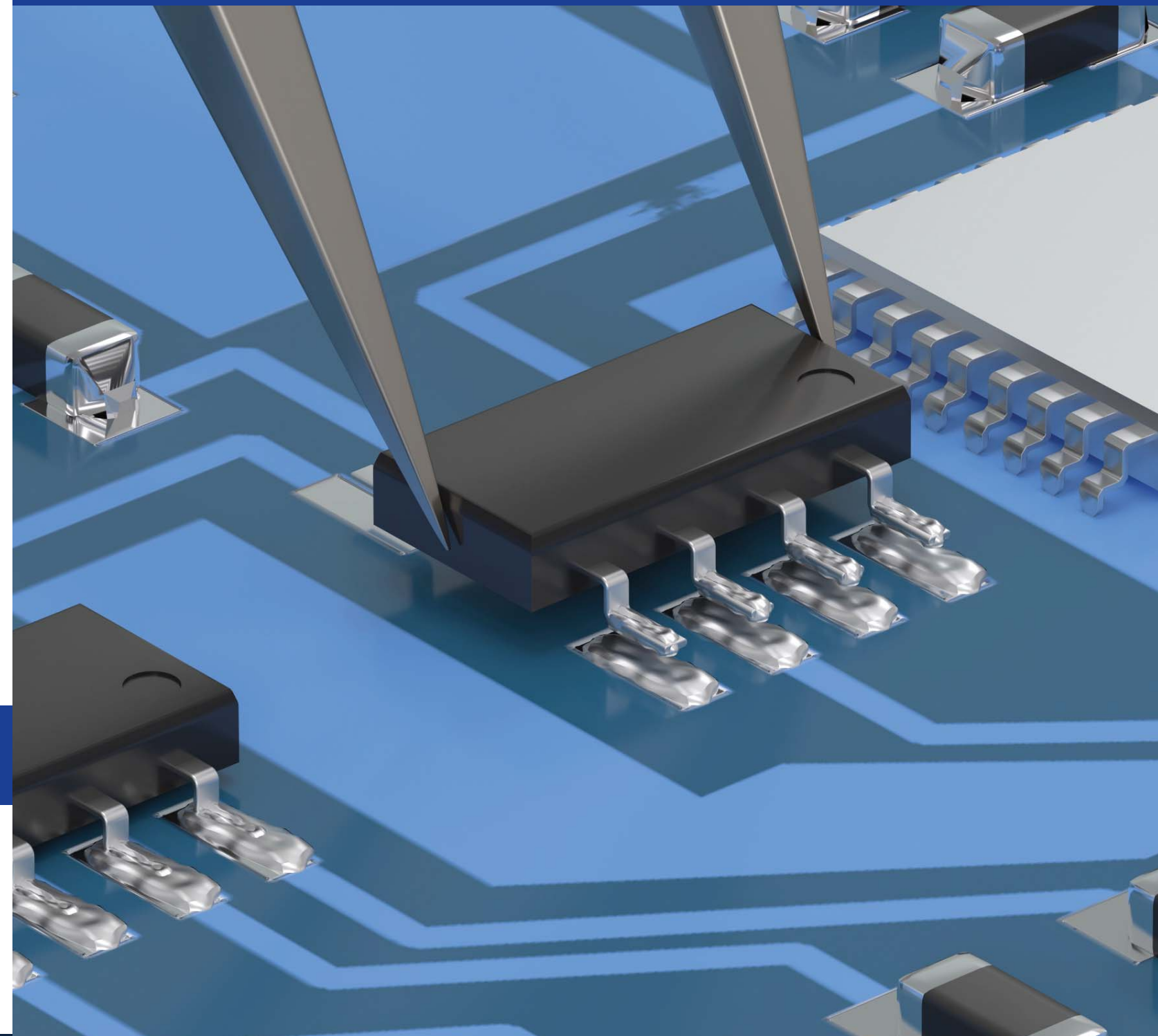
Cured Properties	9410	9400	9460	9310	9300
Color	Silver grey	Silver grey	Black	Amber	Amber
Hardness	82D	74D	90D	84D	80D
Mechanical Properties					
Tensile Strength	N/A	2.9 N/mm <sup>2</sup>	5.8 N/mm <sup>2</sup>	9.4 N/mm <sup>2</sup>	4.7 N/mm <sup>2</sup>
Compressive Strength	24 N/mm <sup>2</sup>	18 N/mm <sup>2</sup>	64 N/mm <sup>2</sup>	103 N/mm <sup>2</sup>	91 N/mm <sup>2</sup>
Lap Shear Strength, Aluminum	1.6 N/mm <sup>2</sup>	3.2 N/mm <sup>2</sup>	4.2 N/mm <sup>2</sup>	6.2 N/mm <sup>2</sup>	6.2 N/mm <sup>2</sup>
Lap Shear Strength, Stainless Steel	1.8 N/mm <sup>2</sup>	2.9 N/mm <sup>2</sup>	11 N/mm <sup>2</sup>	8.5 N/mm <sup>2</sup>	7.9 N/mm <sup>2</sup>
Electrical Properties					
Volume Resistivity	3.2 x 10 <sup>-4</sup> Ω·cm	3.1 x 10 <sup>-4</sup> Ω·cm	8.1 x 10 <sup>12</sup> Ω·cm	9.3 x 10 <sup>12</sup> Ω·cm	3.4 x 10 <sup>12</sup> Ω·cm
Volume Conductivity	3 140 S/cm	3 240 S/cm	1.2 x 10 <sup>-13</sup> S/cm	1.1 x 10 <sup>-13</sup> S/cm	2.9 x 10 <sup>-13</sup> S/cm
Surface Resistivity	0.018 Ω/sq	0.018 Ω/sq	N/A	N/A	N/A
Breakdown Voltage	N/A	N/A	N/A	41.6 kV	47.8 kV
Dielectric Strength	N/A	N/A	N/A	8.6 kV/mm	13 kV/mm
Thermal Properties					
Glass Transition Temperature (T <sub>g</sub> )	120 °C	36 °C	117 °C	113 °C	22 °C
CTE prior T <sub>g</sub>	76 ppm/°C	76 ppm/°C	57 ppm/°C	56 ppm/°C	49 ppm/°C
CTE after T <sub>g</sub>	94 ppm/°C	100 ppm/°C	134 ppm/°C	185 ppm/°C	197 ppm/°C
Thermal Conductivity @25 °C	3.0 W/(m·K)	4.7 W/(m·K)	0.76 W/(m·K)	0.24 W/(m·K)	N/A
Thermal Diffusivity @25 °C	1.5 mm <sup>2</sup> /s	2.2 mm <sup>2</sup> /s	0.41 mm <sup>2</sup> /s	0.15 mm <sup>2</sup> /s	N/A
Specific Heat @25 °C	0.6 J/(g·K)	0.7 J/(g·K)	0.71 J/(g·K)	1.4 J/(g·K)	N/A

N/A=Not available

a) 9410-30ML requires refrigeration

# ONE-PART EPOXY ADHESIVES

Low Cure Temperature  
Up to 12 months storage at room temperature\*



## Available Packaging



MG Chemicals One-Part Epoxy Adhesives are heat cured, thixotropic bonding agents with unlimited working time at room temperature and no need of frozen storage\*. They can be used in manual, pneumatic and robotic dispensing processes.

\* 9410-30ML requires refrigeration

Features and Benefits:

- No mixing required
- Unlimited working time
- Low cure temperature
- Extended shelf life at room temperature

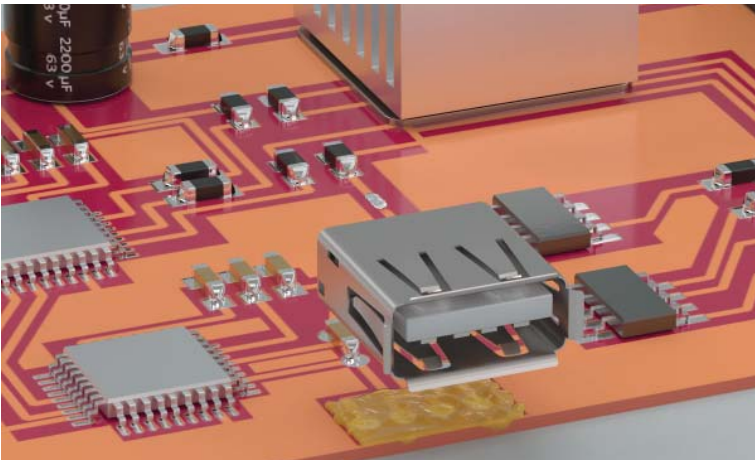
Applications:

- Repairs, maintenance and manufacturing of:
- Consumer Electronics
  - Telecommunications equipment
  - Medical devices
  - Automotive components

Three types of One-Part Epoxy Adhesives are available

General Purpose Adhesives

9300 and 9310 are MG Chemicals' one-part epoxy general purpose adhesives. They are designed for use in electronic assembly operations, especially bonding SMD's to PCB's. They offer excellent adhesion to FR4, common PCB substrates and housings, glass, ceramics, metals, engineered thermoplastics, and thermoset laminates.



9300 - Low Tg

- Minimum cure temperature: 70 °C [158 °F]
- Tg: 22 °C {72 °F}
- Electrically and thermally insulating
- Excellent adhesion to common electronics substrates and components
- Shelf life: 12 months at room temperature
- Color: amber

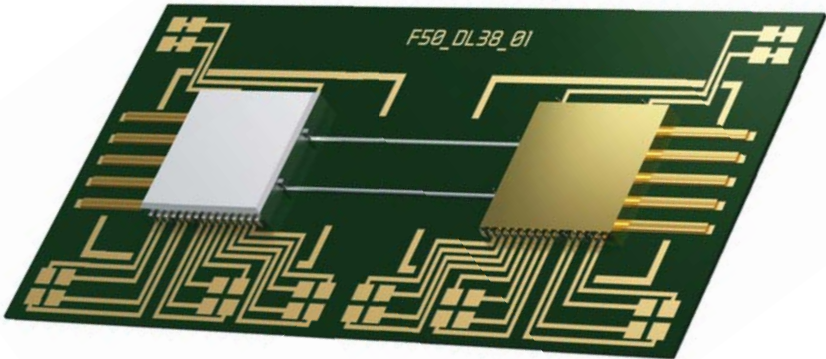
9310 - High Tg

- Minimum cure temperature: 100 °C [212 °F]
- Tg: 113 °C {235 °F}

Cat. Number	Packaging	Net Volume		Net Weight	
9300-10ML	Syringe	10 mL	0.33 fl oz	11.6 g	0.41 oz
9300-300ML	Cartridge	300 mL	10.1 fl oz	350 g	12.3 oz
9310-10ML	Syringe	10 mL	0.33 fl oz	11.6 g	0.41 oz
9310-300ML	Cartridge	300 ml	1.69 fl oz	344 g	12.1 oz

Electrically Conductive Adhesives

9400 and 9410 are MG Chemicals' one-part epoxy electrically conductive adhesives, formulated with pure silver powder combined with organic binders to produce electrically conductive paths over a variety of substrates. They are ideal for applications where simple handling, fast curing and reliability are needed. These products are specially designed for semi-conductor flip chip packaging, hybrid micro-electronic substrate attachment, and lid-sealing in electronics assembly operations. They work especially well as a die attachment for small chips, LED's and diodes.



9400 - Low Tg

- Minimum cure temperature: 70 °C [158 °F]
- Tg: 36 °C {97 °F}

9410 - High Tg

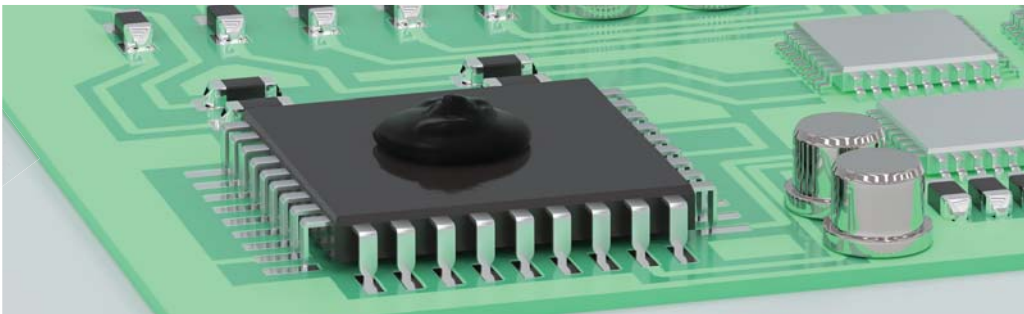
- Minimum cure temperature: 90 °C [194 °F]
- Tg: 120 °C [248 °F]

- Extreme electrical conductivity
- Shelf life of 6 months at room temperature\*
- Color: silver grey

Cat. Number	Packaging	Net Volume		Net Weight	
9400-3ML	Syringe	3 mL	0.1 fl oz	9.42 g	0.33 oz
9400-30ML	Cartridge	30 mL	1.0 fl oz	94.2 g	3.32 oz
9410-3ML	Syringe	3 mL	0.1 fl oz	10.3 g	0.36 oz
9410-30ML	Cartridge	30 ml	1.0 fl oz	103 g	3.64 oz

Thermally Conductive Adhesive

9460 is MG Chemicals' one-part epoxy thermally conductive adhesive, offering superior heat dissipation for a wide range of electronic applications. It is the ideal agent for bonding heat-generating electronics components and cooling devices. It offers versatile heat cure schedules in controlled production environments. It can be used to fill in thermally insulative air gaps to maximize heat transfer efficiency, and to improve device reliability and extend longevity.



9460 - High Tg

- Minimum cure temperature: 100 °C [212 °F]
- Tg: 117°C {243 °F}

- High thermal conductivity
- Electrically insulating
- Excellent adhesion to common electronic substrates and components
- Shelf life of 9 months at room temperature
- Color: black

Cat. Number	Packaging	Net Volume		Net Weight	
9460-10ML	Syringe	10 mL	0.33 fl oz	21.5 g	0.75 oz
9460-300ML	Cartridge	300 ml	10.1 fl oz	644 g	1.42 lb