

One Component, Fast Curing, Thixotropic, Electronic Grade Epoxy Adhesive

Description:

Polymark A171 is a black, filled, one component epoxy with a very fast elevated temperature cure schedule. The viscosity and thixotropy of A171 have been specifically developed to meet the needs of electronic manufacturers where a fast curing adhesive is to be dispensed in a bead. A171 will not self-level on a horizontal surface. It may be applied by pneumatic powered syringe. Polymark A171 has outstanding adhesion to a variety of materials. Typically it is cured in an elevated temperature circulating air oven. It should not be used for masses larger than 25 grams. See gel and cure time information under Handling Properties.

Polymark A171 is a one component material which requires no mixing, and it has excellent shelf stability. It offers good thermal shock and moisture resistance.

Polymark A171 is prepared under vacuum and contains no entrapped air or solvent contents. It cures quickly leaving no pits or voids on its smooth surface.

Polymark A171 has a mild, non-offensive odor.

Typical Properties:

The values listed below are averages and they are not intended for specification purposes. Contact Polymark when establishing specifications. In the interest of achieving optimum properties, the cured physical properties were developed by using a cure schedule of one hour at 150°C. The choice of cure schedule will vary with the application and users must establish their own optimum cure schedule.

Handling Properties:

| | |
|------------------|---------------|
| Mix Ratio | One Component |
|------------------|---------------|

Viscosity @ 25°C, Brookfield RVT, Spindle No. 7

| | |
|------------|---------------------|
| @ 2.5 RPM | 250,000-500,000 cps |
| @ 5.0 RPM | 140,000-280,000 cps |
| @ 10.0 RPM | 110,000-200,000 cps |

Typical Gel Times in Minutes, in Oven

| Mass | 100°C | 120°C | 135°C | 150°C |
|-------|-------|------------------------|-------|-------|
| 0.05g | 40 | 13 | 7 | 3 |
| 0.25g | 40 | 13 | 6 | 3 |
| 0.50g | 49 | 13 | 5 | 2 |
| 1.0g | 37 | 12 | 4 | 2 |
| 5.0g | 32 | 11 | 5 | 4 |
| 10.0g | 28 | 11 | 7 | 6 |
| 25.0g | 23 | Not Recommended | | |

Typical Cure Times in Minutes, in Oven

| Mass | 100°C | 120°C | 135°C | 150°C |
|-------|-------|------------------------|-------|-------|
| 0.05g | 160 | 52 | 28 | 12 |
| 0.25g | 160 | 52 | 24 | 12 |
| 0.50g | 160 | 52 | 20 | 8 |
| 1.0g | 148 | 48 | 16 | 8 |
| 5.0g | 128 | 44 | 20 | 16 |
| 10.0g | 112 | 44 | 28 | 24 |
| 25.0g | 92 | Not Recommended | | |

Physical Properties:

| | |
|-------------------------------------------------------------------------|------------|
| Hardness (Shore D) (ASTM D 2240) | 88 |
| Specific Gravity | 1.51 |
| Color | Black |
| Tensile Strength ASTM D 638 | 8,200 psi |
| Tensile Elongation ASTM D 638 | 1.7% |
| Tensile Shear Strength (Al to Al, 2 hrs. @ 121°C) ASTM D 1002 | >2,000 psi |
| Water Absorption ASTM D 570 | 0.05% |

Important Notice to Users: Typical properties are shown in this technical bulletin and should not be used or taken as specifications. Contact Polymark prior to establishing specifications. The information given for product description, handling properties and cured physical properties are offered solely to assist the purchaser's own testing. Polymark, its sales agents and distributors make NO WARRANTY OF MERCHANTABILITY OF THE PRODUCT OR THE FITNESS OF THE PRODUCT FOR ANY PARTICULAR PURPOSE. This product and all information supplied in connection with it is used at the purchaser's own risk, conditions of use being beyond Polymark's knowledge or control. The purchaser assumes all risk of use or handling of the product, whether in accordance with directions or not.

Physical Properties: con't

| | |
|--------------------------------------------------------------|----------------------------------------------------------------|
| Thermal Shock | -55°C to 130°C |
| Thermal Conductivity | 10×10^{-4} (Cal x Cm)/(Sec x Cm ² x °C) |
| Glass Transition Temperature (Tg) | 140°C |
| Coefficient of Linear Thermal Expansion ASTM D 696 | 35×10^{-6} in/in/°C |

Electrical Properties:

| | |
|-----------------------------------------------------------|--------------------|
| Dielectric Constant (1 KHz) (ASTM D 150) | 4.2 |
| Dissipation Factor (1 KHz) (ASTM D 150) | 0.0080 |
| Volume Resistivity @ 25°C (ohm-cm) (ASTM D 257) | 7×10^{15} |

Clean-Up:

It is recommended that customers use disposable containers and utensils when working with epoxies. However, when

disposable materials are impractical, uncured epoxy can be removed by cleaning equipment with solvent. Observe appropriate precautions when using flammable solvents. Solvent-cleaned utensils should be thoroughly dried before reuse. Any remaining solvent can contaminate the next mixture.

Shelf Life:

Polymark A171 has a shelf life of three months at 25°C, six months at 4°C. Beyond these times, a change in viscosity and thixotropy may render the material unusable for the specific application.

Care should be taken to avoid storage of A171 in warm areas such as out of doors in the hot sun, non-ventilated exterior structures or near ovens or hot plates. Elevated temperatures shorten A171's shelf life.

Handling Precautions:

The labels on containers of Polymark materials contain current information on the hazards associated with each particular product. Most epoxy resins and hardeners are skin and eye irritants and some may actually be corrosive to the skin and eyes.

Other problems, such as skin sensitization or serious health hazards, may exist. Further information on each product is contained in the Material Safety Data Sheet which will be sent upon request.

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