LOCTITE

Technical Data Sheet

# PC18M

April 2013

## PRODUCT DESCRIPTION

PC18M provides the following product characteristics:

| | |
|---|---|
| **Technology** | Urethane |
| Appearance | Clear amber |
| Product Benefits | • Reworkable<br>• Solvent resistant<br>• Room temperature cure<br>• Resistance to discoloration<br>• Fluorescent under UV light<br>• No cracking or crazing with vibration<br>• Superior toughness and abrasion resistance<br>• Provides environmental and moisture protection |
| Operating Temperature - Continuous | up to 110°C |
| **Cure** | Heat cure and Room temperature cure |
| **Application** | Conformal coating |
| Dried Film Thickness | adjustable from 0.001 to 0.003 inches |
| Typical Assembly Applications | Printed circuit board coating |

PC18M is a solvent based one component urethane coating which may be cured at room temperature. This material retains its light color after long exposure to elements.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

| | |
|---|---|
| Free TDI content, % | <1 |
| NCO content, % | 4.0 |
| Solids Content by Weight, % | 50 |
| Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP): | |
| Spindle 2, speed 20 rpm, | 350 |
| Specific Gravity @ 25ºC | 1.01 |
| Shelf Life , Unopened @ 25°C (from date of manufacture), days | 548 |
| Flash Point , ºC | 32 |

## TYPICAL CURING PERFORMANCE

### Cure Schedule

2 hours @ 60°C

### Alternative Cure Schedule

Air Dry @ room temperature, @ average relative humidity of 30 to 50%:

| | |
|---|---|
| Tack-free, hours | 1 to 4 |
| Semi-hard film, days | 1 |
| Optimum properties, days | 7 |

Place an open container of distilled water in the oven if relative humidity is below 30% and allow to equilibrate at 60°C prior to placing the coated parts in the oven.

Drying of the coating depends upon solvent evaporation. For optimum performance, boards should be dried at least 30 to 45minutes at 25°C to remove solvents before final drying in oven (or before applying additional coats).

Drying and curing of the coating depends upon evaporation of the solvent and subsequent reaction of the polymer with moisture in the air at elevated or room temperature. Optimum physical and electrical properties can be obtained with room temperature cure but moisture must be present in the air, at a minimum relative humidity level of 30 %.

The above cure profiles are guideline recommendations. Cure conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties

| | | |
|---|---|---|
| Extractable Ionic Content, , ppm: | | |
| Chloride (Cl-) | | 38 |
| Sulfate (SO4) | | 10 |
| Phosphate (PO4) | | 28 |
| Nitrate (NO3) | | 5 |
| Nitrogen Dioxide (NO2) | | N/D |
| Bromine (Br) | | N/D |

### Electrical Properties

| | | |
|---|---|---|
| Insulation Resistance , ohms (0.0254 to 0.0762 mm film): | | |
| Cycle 1 | 25°C/50% R.H. | $1\times10^{15}$ |
| Cycle 4 | 65°C/95% R.H. | $4\times10^{10}$ |
| Cycle 7 | 65°C/95% R.H. | $5\times10^{10}$ |
| Cycle 10 | 65°C/95% R.H. | $2\times10^{10}$ |
| 24 hrs after Cycle 10 | 25°C/50% R.H. | $2\times10^{13}$ |
| Leakage Rate: | | |
| Before thermal shock, microamperes | | <10 |
| After thermal shock, microamperes | | <10 |
| Dielectric withstand at 1,500 volts, 50Hz: | | |
| Before thermal shock and moisture exposure | | Pass |
| After thermal shock and moisture exposure | | Pass |
| Dielectric Constant / Dissipation Factor @ 25ºC: | | |
| @ 100KHz | | 4.2 / 0.01 |
| Volume Resistivity, ohm-cm | | $2\times10^{13}$ |
| Dielectric Strength, volts/mil | | 1,200 |

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## TYPICAL ENVIRONMENTAL RESISTANCE

| Miscellaneous | |
|---|---|
| Fungus Resistance per ASTM G21 | Non nutrient |
| Appearance of film (after thermal and moisture resistance testing): | |
| Blistering | None |
| Wrinkling | None |
| Cracking | None |
| Peeling | None |
| Discoloration | None |
| Flexibility: | |
| Cracking over diameter mandrel | None |

## GENERAL INFORMATION

**For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).**

## DIRECTIONS FOR USE

1. Allow material to reach room temperature prior to opening the container and before use.
2. Applications should be performed in a well-ventilated area .
3. Complete cleaning of the substrates or other objects to be coated should be cleaned in accordance with accepted industry pratices. Isopropyl alcohol, P.S. freon or Methylethylketone (MEK) have been found satisfactory as cleaning agents.
4. Cleanliness of the substrate is paramount in promoting adhesion and preventing under-film corrosion of copper conductors.
5. Keep polymer containers closed to avoid contamination.
6. Moisture may cause polymerization.
7. Contents may solidify. If this occurs, warm to 49 °C until clear and then thoroughly mix before using.

### Application:

1. Apply by brush, dip or spray for a 1 to 2 mil film.

### Viscosity:

1. Viscosity may be reduced when desired with Hysol AC0305 thinner.
2. Other solvents such as methoxy propyl acetate, methyl ethyl ketone, xylene and toluene can be used alone or as a mixture depending on how coating will be applied and drying time desired.
3. Dilutions of 15 to 20 % will generally be sufficient for most applications.

### Cleaning

1. Uncured PC18M may be cleaned up with ketones or the solvents listed above.

### Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

### Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

**Optimal Storage : 25 °C**

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

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### Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

### Disclaimer

**Note:**

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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