PRODUCT DESCRIPTION

Hysol® PC18M is a solvent based one component urethane coating which may be cured at room temperature. It is especially recommended for printed board coating.

PC18M is a stable, clear material suitable for continuous operation up to 110ºC. It may be applied by brush, dip or spray to electrical parts for improved moisture and environmental protection. Components and joints may be repaired, by heating the coating with a soldering iron, for easy removal. When fully cured, PC18M exhibits superior toughness, and abrasion and solvent resistance. Even after long exposure to the elements, the coating retains its very light color. PC18M is qualified to meet requirements of MIL-I-46058C, Type PUR, and is listed on the QPL 46058.

TYPICAL UNCURED PROPERTIES

Color, maximum Gardener 2
Color Amber
Free TDI content, % <1
NCO content, % 3.8 – 4.2
Flash point, ºC 32
Solids content, %, weight 50
Specific gravity @ 25ºC 1.01
Viscosity @ 25ºC, Brookfield RVF Spindle 2, Speed 20, cps, max. 300-400
Shelf Life @ 25ºC, months from date of manufacture (unopened) 18

TYPICAL CURED PROPERTIES

Values are not intended for use in the preparation of specifications. All determinations are conducted in accordance with MIL-I-46058C and ASTM procedures. All measurements are taken at 25ºC, unless otherwise noted.

Appearance – No blistering, wrinkling, cracking or peeling of film. No discoloration of printed conductors or substrate after thermal shock, or after moisture resistance testing.

Flexibility – No cracking over 1/8” diameter mandrel.

Ruggedization – No cracking or crazing with vibration.

Film Thickness – Adjustable from 0.001 to 0.003 inches.


Fluorescent – when viewed under ultraviolet light (black light).

Ionic Content: Chloride 38ppm
Bromine below detection limit
Sulfate (SO₄) 10ppm
Phosphate (PO₄) 28ppm
Nitrogen (N₂) 5ppm
Nitrogen (NO₂) below detection limit

CURED ELECTRICAL PROPERTIES

Per Mil-I-46058C
Insulation resistance, ohms (1-3 mil film)
Initial (25ºC-50% R.H.) 1 x 10¹⁵
4th Cycle (65ºC-95% R.H.) 4 x 10¹⁰
7th Cycle (65ºC-95% R.H.) 5 x 10¹⁰
10th Cycle (65ºC-95% R.H.) 2 x 10¹⁰
24 Hrs after 10th Cycle (25ºC-50% R.H.) 2 x 10¹³

Dielectric withstand at 1,500 volts, 50 Hz – no flash over or breakdown before or after thermal shock and moisture exposure.

Leakage Rate: Less than 10 microamperes before and after thermal shock and moisture exposure.

Dielectric Constant @ 25ºC
100 kHz 4.2
Dissipation Factor @ 25ºC
100 kHz 0.010
Volume Resistivity 2 x 10¹³
Dielectric Strength, volts/mil 1,200

HANDLING

Printed circuits or other objects to be coated should be cleaned in accordance with accepted industry practices. Isopropyl alcohol, P.S. freon or methyl ethyl ketone have been found satisfactory as cleaning agents.

Applications should be performed in a well-ventilated area. It is also recommended that Hysol bulletin entitled “Suggested Precautions for Handling HYOSOL Liquid Products” be read.

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%.

Air-dry coated boards at least 30 minutes at 25ºC (77ºF) to remove solvents before curing in oven or before applying additional coats.

CURE SCHEDULE

Air-dry coated boards for 30-45 minutes prior to curing.
Recommended cure – 2 hrs at 60ºC (140ºF) in an oven.

Place an open container of distilled water in the oven if relative humidity is below 30% and allow to equilibrate at 60ºC (140ºF) prior to placing the coated parts in the oven.

Alternate cure – at room temperature and average relative humidity to (30% to 50%):

Tack free, hours 1 to 4
Semi-hard film, days 1
Optimum properties, days 7
Some variation in listed values may occur; customer should determine whether cure other than recommended cure above will give satisfactory results.

Apply by brush, dip or spray for 1 to 2 mil film. Cleanliness of the substrate is paramount in promoting adhesion and preventing under-film corrosion of copper conductors. Viscosity may be reduced when desired with Hysol® AC0305 thinner. Other solvents such as methyl ethyl ketone, methoxy propyl acetate, xylene, and toluene, can be used alone or as a mixture, depending on how coating will be applied, and drying time desired. The evaporation rate of some recommended solvents starting with the fastest are as follows: methyl ethyl ketone – toluene – xylene – Hysol® AC0305 – methoxy propyl acetate. Dilutions of 15-20% will generally be sufficient for most applications.

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

Keep prepolymer containers closed to avoid contamination; moisture may cause polymerization. Contents may solidify, if this occurs, warm to 49ºC (120ºF) until clear and thoroughly mix before using. Store in dry place at 21ºC to 32ºC (70ºF to 90ºF).

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

STORAGE
Liquid Storage – Liquids should be stored at 23ºC or below, in closed containers. If stored below 23ºC, the material MUST be allowed to come to room temperature, in the sealed container, to avoid moisture contamination.

DATA RANGES
The data contained herein may be reported as a typical value and/or range values based on actual test data and are verified on a periodic basis.

Note
The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits. The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.