Technical Data Sheet

Hysol® PC20M

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PRODUCT DESCRIPTION

Hysol® PC20M is a stable, clear material, suitable for continuous operation from -65ºC to 125ºC. This material may be applied by brush, spray, or dip to electrical parts for improved moisture and environmental protection. Component and joints may be repaired by heating the coating with a soldering iron for easy removal, or the entire coating may be removed with a suitable solvent. When fully cured, PC20M exhibits superior toughness and abrasion resistance. Even after long exposure to the elements, the coating retains its very light color.

Military grades are qualified to meet the requirements of MIL-I-46058C, Type AR.

SPECIFICATION OF PRODUCTS

Color, maximum	Gardener 2
Color	Amber
Solids content, %	45
Flash point, ºC	11
Specific gravity @ 25ºC	0.94
Viscosity @ 25ºC, Brookfield RVF	
Spindle 4, Speed 20, cps, max.	1500-2500
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.
Film Thickness – Adjustable from 0.001 to 0.004 inches.
Fungus Resistance – Non-nutrient per ASTM G21.
Fluorescent – when viewed under ultraviolet light (black light).

CURED ELECTRICAL PROPERTIES

Per Mil-I-46058C

Insulation resistance, ohms (1-3 mil film)	
Initial (25ºC-50% R.H.)	$>2.3 \times 10^{14}$
4th Cycle (65ºC-95% R.H.)	5×10^{11}
7th Cycle (65ºC-95% R.H.)	4×10^{10}
10th Cycle (65ºC-95% R.H.)	1×10^{10}
24 Hrs after 10th Cycle (25ºC-50% R.H.)	3.5×10^{12}

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, 100 Hz		
	@ 25ºC	2.78
	@ 60ºC	3.67
	@ 90ºC	3.54
	@ 110ºC	3.42
Dielectric Constant, 10 kHz		
	@ 25ºC	2.36
	@ 60ºC	2.74
	@ 90ºC	3.43
	@ 110ºC	3.41
Dielectric Constant, 100 kHz		
	@ 25ºC	2.29
	@ 60ºC	2.39
	@ 90ºC	2.89
	@ 110ºC	3.24
Dissipation Factor, 100 Hz		
	@ 25ºC	0.790
	@ 60ºC	0.036
	@ 90ºC	0.003
	@ 110ºC	0.014
Dissipation Factor, 10 kHz		
	@ 25ºC	0.027
	@ 60ºC	0.110
	@ 90ºC	0.064
	@ 110ºC	0.015
Dissipation Factor, 100 kHz		
	@ 25ºC	0.012
	@ 60ºC	0.062
	@ 90ºC	0.132
	@ 110ºC	0.089
Volume Resistivity, volts/mil		
	@ 25ºC	1.04×10^{16}
	@ 60ºC	3.89×10^{14}
	@ 90ºC	2.86×10^{13}
	@ 110ºC	9.25×10^{12}
Dielectric Strength, volts/mil		2,000

HANDLING

Printed circuits or other objects to be coated should be cleaned in accordance with accepted industry practices. Isopropyl alcohol, P.C. 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 HYSOL 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 – 45 minutes at 75ºC (167ºF)
Alternate cure – 24 hours at 25ºC (77ºF)

Some variation in listed values may occur; customer should determine whether cure other than recommended cure above, will give satisfactory results. **Deaeration is not suggested.**

Apply by brush, dip or spray. Cleanliness of the substrate is paramount in promoting adhesion and preventing under-film corrosion of copper conductors.

Viscosity may be reduced when desired by using xylene. AC0305 is not recommended

Uncured PC20M may be cleaned up with ketones or those solvents listed above. Cured coatings can be removed with toluene, isopropyl alcohol, or ketones.

Keep containers closed to avoid contamination and solvent evaporation.

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 and its affiliates ("Henkel") specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel products. Henkel 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 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.

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