



# Hysol<sup>®</sup> PC29M

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## PRODUCT DESCRIPTION

Hysol<sup>®</sup> PC29M is a solvent-based, polyol-adduct-type polyurethane printed circuit coating designed for thin film applications. This coating was developed for use where flexibility and superior resistance to moisture is required. Its elastomeric properties provide protection to glass diodes and other sensitive components where strains may cause cracking. PC29M is qualified to meet the latest requirement of MIL-I-46058C Type PUR.

This coating is suitable for continuous operation up to 125°C (257°F). It may be applied by spray, dip or brush procedures.

## SPECIFICATION OF PRODUCT

Color, maximum, Part A	Gardener 4
Color, maximum, Part B	Gardener 6
Color	Amber
Free TDI content, max., %, Part A	1
NCO content, %, min., Part A	10
Solids content, %, weight, Part A	60
Solids content, %, weight, Part B	76
Specific gravity @ 25°C, Part A	1.14
Specific gravity @ 25°C, Part B	0.97
Flash point, °C, Part A	49
Flash point, °C, Part B	30
Viscosity @ 25°C, Brookfield RVF	
Spindle 2, Speed 20, cps, Part A	200-450
Spindle 2, Speed 20, cps, Part B	100-200
Shelf Life @ 25°C, months from date of manufacture (unopened)	18

## TYPICAL CURED PROPERTIES

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

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

**Flexibility** – No cracking or crazing of film on bending over 1/8" mandrel.

**Fungus Resistance** – Non-nutrient per ASTM G21.

**Film Thickness** – adjustable from 0.0015 to 0.006.

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

## CURED ELECTRICAL PROPERTIES

**Dielectric withstand at 1,500 volts, 60 Hz** – no flash over or breakdown before or after thermal shock and moisture exposure.

## Insulation resistance, ohms (1-3 mil film)

Initial (25°C – 50% R.H.)	$2 \times 10^{14}$
4 <sup>th</sup> Cycle (65°C – 95% R.H.)	$5 \times 10^{10}$
7 <sup>th</sup> Cycle (65°C – 95% R.H.)	$1 \times 10^{11}$
10 <sup>th</sup> Cycle (65°C – 95% R.H.)	$5 \times 10^{10}$
24 Hrs after 10 <sup>th</sup> Cycle (25°C – 50% R.H.)	$5 \times 10^{12}$

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

## Dielectric Constant @ 25°C

100 Hz	5.3
1 kHz	4.8
100 kHz	4.0
1 MHz	3.5

## Dissipation Factor @ 25°C

100 Hz	0.07
1 kHz	0.06
100 kHz	0.05
1 MHz	0.05

## Volume Resistivity @ 25°C

 $4 \times 10^{13}$ 

## HANDLING

Mix ratio, parts by weight, Part A/Part B	100/60
Viscosity @ 25°C, Brookfield RVF	
Spindle 2, Speed 10, cps, Part A	150-300
Pot Life @ 25°C, 200 gram mass, hours	6

**IMPORTANT** – Mix parts A and B together thoroughly. After mixing, let stand 15 to 30 minutes at 25°C to allow air to escape. Deaeration is not suggested.

PC29M may be applied to clean boards by spray, dip or brush. Cleanliness of the substrate is paramount in promoting adhesion and preventing underfilm corrosion of copper conductors.

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.

Keep containers tightly closed to avoid contamination; moisture may cause polymerization of Part A. Store in dry place at 21°C to 32°C. If container has been opened, flush with dry nitrogen before resealing.

Viscosity may be reduced when desired with Hysol AC0305 thinner. 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. The evaporation rate of some

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recommended solvents, starting with the fastest, are as follows: methyl ethyl ketone – toluene – xylene – AC0305 – methoxy propyl acetate. Dilutions of 15-20% will generally be sufficient for most applications.

#### **CURE SCHEDULE**

**Air-dry coated boards for at least 30 minutes at 25°C prior to curing to remove solvent before oven cure or applying additional coats.**

Recommended cure – 2 hrs at 100°C (212°F)

Alternate cure – 4 hrs at 60°C (140°F)

Some variation in listed values may occur; customer should determine whether cure other than recommended cure above will give satisfactory results.

#### **GENERAL INFORMATION**

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

#### **STORAGE**

Liquid Storage – Liquids should be stored at 23°C or below, in closed containers. If stored below 23°C, 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.