

# UR-340

## BLACK, LOW VISCOSITY, FLEXIBLE ENCAPSULATING SYSTEM

### Description:

Lord UR-340 is a two component, room temperature curing, urethane encapsulating compound. It is low in viscosity and has excellent flow characteristics. Its flexibility, low modulus characteristics, and very good electrical properties make it a good choice for encapsulating sensitive electronic components. UR-340 is often suitable in applications operating up to 130°C.

### Typical Properties:

The values listed below are averages and are not intended for specification purposes. Contact Lord when establishing specifications. The choice of cure schedule will vary with the application. Users must establish their own optimum cure schedules.

### Handling Properties:

<b>Mix Ratio</b>	
By Weight	100:104
By Volume	1:1
<b>Viscosity @ 25°C (cps)</b>	
Resin	900-1,300
Hardener	90-130
Mixed	400-500
STM 1	
<b>Typical Cure Schedules (hours)</b>	
Initial Cure @ 25°C	24
Full Cure @ 25°C	24
Alternate Cure @ 66°C	2 to 4
<b>Working Life @ 25°C (minutes)</b>	
(Based on 100 gram mass)	20
<b>Gel Time @ 25°C (minutes)</b>	
(Based on 100 gram mass)	40-50

### Physical Properties:

<b>Specific Gravity STM (ASTM D1505)</b>	
Resin	0.97
Hardener	1.02
Mixed	1.00
<b>Weight/Gallon</b>	
Resin	8.11
Hardener	8.50
Mixed	8.28
STM 2	
<b>Appearance/Color</b>	
Resin	Black
Hardener	Light Amber
Mixed	Black

<b>Shelf Life @ 25°C (months)</b>	6
<b>Shore A Hardness (after full cure)</b>	25-35
STM 2 (ASTM D 2240)	
<b>Temperature Rating Guide* °C</b>	130
<b>Moisture Absorption %</b>	0.21
(24 hrs @ 25°C)	
ASTM D 570	
<b>Weight Loss %</b>	
168 hrs @ 125°C	-0.57
<b>Glass Transition Tg (DMTA) °C</b>	-46
<b>Tensile Strength (psi)</b>	63
ASTM D638	
<b>Tensile Elongation %</b>	68
ASTM D638	

### Electrical Properties:

<b>Dielectric Strength @ 25°C (volts/mil)</b>	>500
ASTM D 149	
<b>Dielectric Constant</b>	
1MHz @ 25°C	3.96
ASTM D 150	
<b>Dissipation Factor</b>	
1MHz @ 25°C	0.11
ASTM D 150	
<b>Volume Resistivity (ohm-cm)</b>	2.4 x 10 <sup>11</sup>
ASTM D 257	

**\*Temperature Rating Guide:** Is based on average design requirements and the guide is not intended as a guarantee for all applications operating at that temperature. The guide is based on the weight loss.

In most cases, STM (Lord Standard Test Methods) test methods correspond with standard ASTM tests. Copies are available upon request.

### Proportioning and Mixing:

Lord UR-340 resin is unfilled. However, the resin is pigmented black and may settle in storage and during shipment. In order to obtain a uniform mixture, UR-340 resin should be thoroughly stirred prior to mixing with the hardener.

Lord UR-340 can be proportioned by weight or volume. These ratios are stoichiometrically calculated and should be closely followed. Automated meter-mix dispensing equipment may be used for high volume production. (A list of dispensing equipment manufacturers is available from Lord.)

When mixing small amounts of UR-340, it is best to use a balance and disposable containers. The containers should be large enough to hold both resin and hardener and still have ample room for mixing. After allowing for the weight of the container, the correct amount of resin is added to the container. The scale is then set for the total weight of both resin and hardener, and the hardener is added slowly until the total weight is reached.

To insure thorough mixing, periodic scraping of the sides and bottom of the container is necessary. Even small amounts of improperly mixed material can cause soft spots or irregular curing.

### Deairing and Evacuation:

Unless a closed-chamber, mechanical mixer is to be used, air will be introduced into the urethane system when catalyzing the mixture. The electrical properties of a urethane are best when air bubbles and voids are minimized. Therefore, in extremely high voltage or other critical applications, vacuuming may be appropriate. Should vacuuming prove to be necessary for the application, the mixed urethane should be deaired in a container large enough to allow for expansion from two to five times the original volume.

A vacuum of 2 mm of Hg for two to five minutes is generally adequate for small (one quart or less) batches. Large batches may require longer vacuuming, lower pressures (2 <mm Hg), or introduction of the urethane into the chamber in thin streams. Once the urethane has been adequately deaired, the vacuum should be slowly released.

### Mold Release:

When encapsulating a unit in a nonporous mold, a mold release should be used. Most mold releases evaporate quickly and, when properly applied, leave a surface that will release easily from Lord urethanes. As with other flammable solvents, appropriate precautions should be observed.

### Clean-Up:

It is recommended that customers use disposable containers and utensils when working with urethanes. However, when disposable materials are impractical, uncured urethanes 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 and Storage:

Lord UR-340 resin has a shelf life of approximately 12 months and UR-340 hardener has a shelf life of approximately six months at room temperature (25°C) in closed containers. The pigment used in UR-340 resin may slowly settle with time. Therefore, small containers should be periodically turned upside down and drums should be rolled prior to use to minimize settling. Before resealing a partially used container of UR-340 resin or hardener, the user should spray dry nitrogen gas into the container for 15 seconds with the lid partially open. The nitrogen gas will displace the moist atmosphere air, which shortens the shelf life of UR-340.

Lord UR-340 hardener may crystallize when stored at low ambient temperatures for prolonged periods of time. To prevent crystallization and dimerization, it is best to store the hardener between 60° and 95°F.

### Handling Precautions:

The labels on containers of Lord materials contain current information on the hazards with each particular product. Most urethane chemicals are skin and eye irritants. Some may be corrosive to the skin and eyes. The isocyanate portion is irritating to the respiratory tract. 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.

### Container Disposal:

Empty containers of UR-340 hardener should be decontaminated before disposal by using a dilute solution, (e.g. 5-10%) sodium carbonate in water with a small quantity of detergent. If there is a chance of unauthorized reuse, holes should be made in the containers. Residual quantities of UR-340 hardener should not be burned out of the containers because fumes in highly toxic concentrations may result. For complete decontamination procedures see the Material Safety Data Sheet.

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