

# Epic Resins

## S7302

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### Product Datasheet

### Description

EPIC S7302 is a tough urethane material designed for electronic potting applications. The chemistry of S7302 lends itself well for products that are exposed to a wide range of temperatures. S7302 is adequate for applications that are thermal cycled between -40C and 135C with excursions up to 160C. S7302 also features good moisture resistance and good adhesion to various metals and plastics. S7302 is a UL94 HB recognized system.

### Versions

[S7302-02](#) [S7302-03](#) [S7302-01](#) [S7302-04](#) [S7302-05](#) [S7302-06](#) [S7302-08](#) [S7302-07](#) [S7302-09](#) [S7302-10](#) [S7302-11](#) [S7302-12](#)

### RoHS Status

**Compliant:** This is to certify the above referenced part(s) listed meet the requirements of the current RoHS Directive 2011/65/EU.

### Typical Properties

<b>Product Identification:</b> Potting Compound	<b>Product Resin:</b> Urethane
<b>Component Count:</b> 2	<b>Color, Part A:</b> Black
<b>Color, Part B:</b> Amber	<b>Color, Mixed:</b> Black
<b>Flammability (UL):</b> Recognized UL94 HB @ 1.5 mm	<b>UL File Number:</b> E55516 Plastics Component
<b>Shelf Life 25C, Part A:</b> 12 Months	<b>Shelf Life 25C, Part B:</b> 6 Months
<b>Pot Life, minutes:</b> 35 - 50 minutes @ 25C (100 grams)	

### Viscosity

<b>Viscosity, Part A (ASTM D2196):</b> 6,400 - 7,000 cps @ 25C, 20 rpm	<b>Viscosity, Part A (ASTM D2196):</b> 900 - 1,200 cps @ 65c, 20 rpm
<b>Viscosity, Part A (ASTM D2196):</b> 1,400 - 1,600 cps @ 55c, 20 rpm	<b>Viscosity, Part A (ASTM D2196):</b> 1,900 - 2,200 cps @ 45c, 20 rpm
<b>Viscosity, Part A (ASTM D2196):</b> 3,400 - 3,700 cps @ 35c, 20 rpm	<b>Viscosity, Part B (ASTM D4287):</b> 80 - 100 cps @ 25C, 400 rpm
<b>Viscosity, Mixed (ASTM D2196):</b> 2,500 - 3,500 cps @ 25C, 20 rpm	

### Weight per Gallon

<b>Weight/Gallon A (ASTM D1875):</b> 11.85 - 12.15 lb/gal	<b>Weight/Gallon B (ASTM D1875):</b> 9.25 - 9.35 lb/gal
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### Processing

<b>Mix Ratio by Weight:</b> 100:19.5	<b>Mix Ratio by Volume:</b> 4:1
<b>Cure Schedule, Hours:</b> 10 - 12 hours @ 25C (Overnight ambient)	<b>Alternate Cure, Hours:</b> 3 hours @ 65C

### Gel Time

**Gel Time, Minutes (ASTM D3056):** 45 - 55 Minutes @ 25C (100 grams)

### Cured Properties

<b>Hardness, Shore A (ASTM D2240):</b> 68 - 72	<b>Hardness Change:</b> -5 - -5.5 % after 24 hrs immersed in Diesel Fuel @ 25C
<b>Hardness Change:</b> -3.5 - -4.5 % after 7 days immersed in Diesel Fuel @ 25C	<b>Elongation (ASTM D412):</b> 145.00 - 207.00 % @ 25C
<b>Elongation (ASTM D412):</b> 137.00 - 167.00 % @ -40C	<b>Elongation (ASTM D412):</b> 124.00 - 140.00 % @ 80C
<b>Tensile Modulus (ASTM D412) psi:</b> 348 - 368 psi @ 25C	<b>Tensile Modulus (ASTM D412) psi:</b> 4,162 - 7,118 psi @ -40C
<b>Tensile Modulus (ASTM D412) psi:</b> 267 - 369 psi @ 80C	<b>Tensile Strength (ASTM D412) psi:</b> 679 - 745 psi @ 25C
<b>Tensile Strength (ASTM D412) psi:</b> 1,749 - 2,173 psi @ -40C	<b>Tensile Strength (ASTM D412) psi:</b> 273 - 349 psi @ 80C
<b>Tg (Glass Transition) (ASTM E1545):</b> -70 - -65 C	<b>Coef Thrm Exp (ASTM E831):</b> 130 - 140 (Exp-6)/C (from 60 to 80C)
<b>Coef Thrm Exp (ASTM E831):</b> 45 - 50 (Exp-6)/C (from -120 to -100C)	<b>Coef Thrm Exp (ASTM E831):</b> 190 - 200 (Exp-6)/C (from -60 to -40C)
<b>Coef Thrm Exp (ASTM E831):</b> 175 - 190 (Exp-6)/C (-25C to 25C)	<b>Thermal Cond, BTU (ET-164):</b> 3.05 - 3.12 BTU in/hr ft2 F
<b>Thermal Cond, CalCm (ET-164):</b> 10.37 - 10.61 (EXP-4) cal cm/ Sec cm2 C	<b>Thermal Cond, W/mK (ET-164):</b> 0.44 - 0.45 W/mK
<b>Weight Change:</b> 6.5 - 7.5 % after 7 days immersed in Diesel Fuel @ 25C	<b>Weight Change:</b> 16 - 17 % after 24 hrs immersed in Diesel Fuel @ 25C

### Electrical Properties

<b>Dielectric Constant (ASTM D150):</b> 3.82 @ 500 MHz	<b>Dielectric Constant (ASTM D150):</b> 3.76 @ 1 GHz
<b>Dielectric Constant (ASTM D150):</b> 3.06 @ 3 GHz	<b>Dielectric Constant (ASTM D150):</b> 5.1 - 5.3 @ 100 kHz
<b>Dielectric Strength (ASTM D149):</b> 360 - 370 Volts/mil @ 0.125"	<b>Dissipation Factor (ASTM D150):</b> 0.02 - 0.03 @ 100 kHz
<b>Dissipation Factor (ASTM D150):</b> 0.015 @ 500 MHz	<b>Dissipation Factor (ASTM D150):</b> 0.014 @ 1 GHz
<b>Dissipation Factor (ASTM D150):</b> 0.076 @ 3 GHz	<b>Volume Resistivity (ASTM D257) ohm cm:</b> 2.40e+12 - 2.80e+12 ohm cm

### Additional Information

**Additional Information:** RoHS Compliant

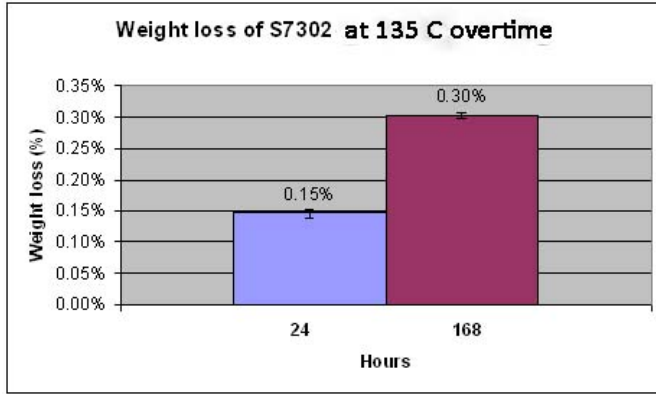
### Table

**Table 1:**

<b>Properties After Condition Soaking. (Complete Immersion for 6 Days)</b>			
	<b>Hardness (shore A) ASTM D2240</b>	<b>Tensile Strength (psi) ASTM D412</b>	<b>% Elongation ASTM D412</b>
No Soak (control)	72	605-680	190-225
5W 30 Engine Oil	78	800-850	180-200
Power Steering Fluid	73	660-700	160-200
Brake Fluid	42	130-150	115-145
Water	73	715-745	270-310
85C Oven Aging	80	900-940	195-205

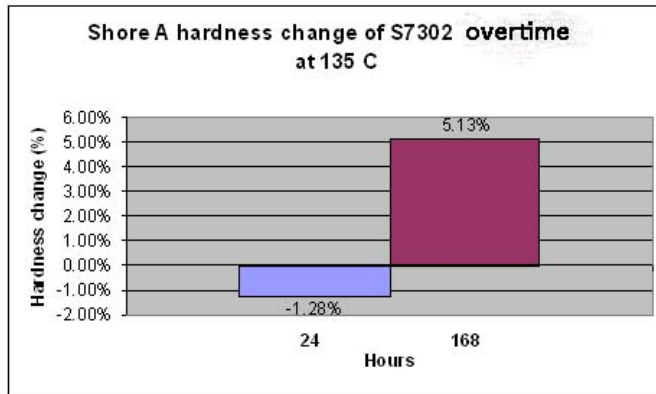
**Chart 1**

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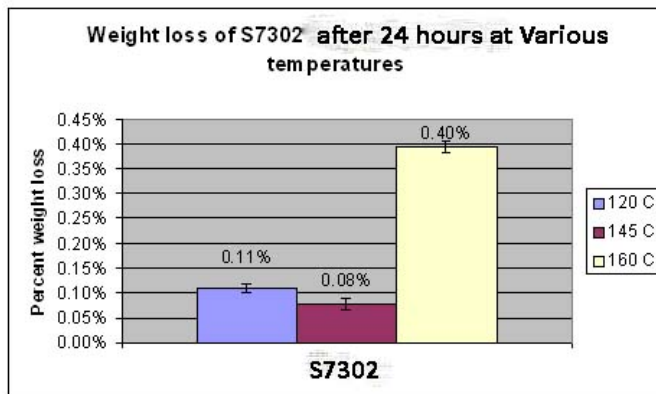
**Chart 2**

**Chart 2:**



**Chart 3**

**Chart 3:**



**Chart 4**

**Chart 4:**

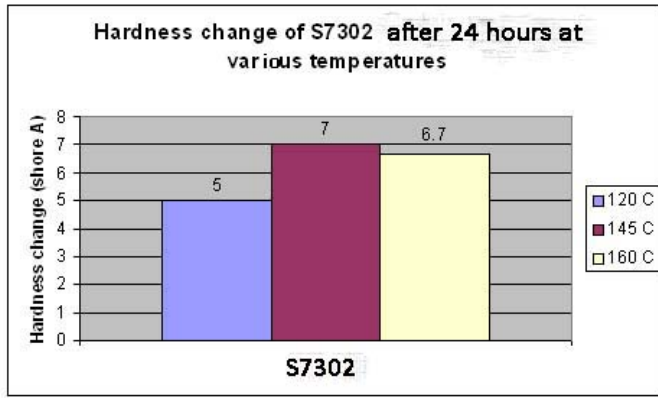


Chart 5

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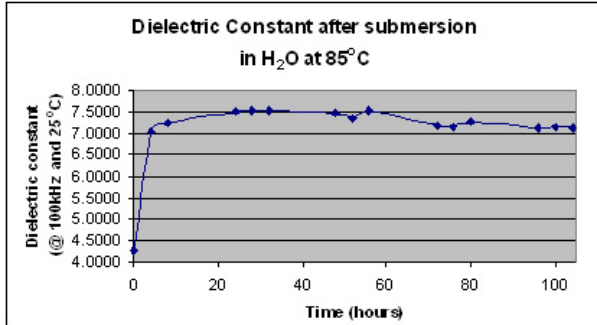


Chart 6

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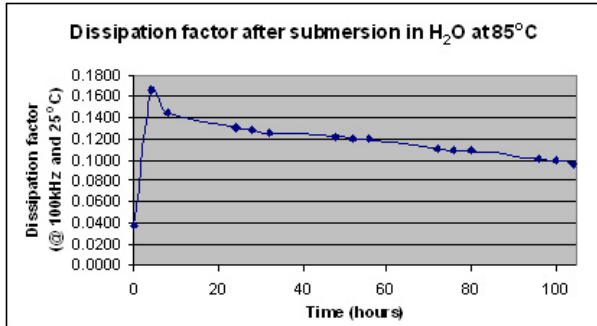


Chart 7

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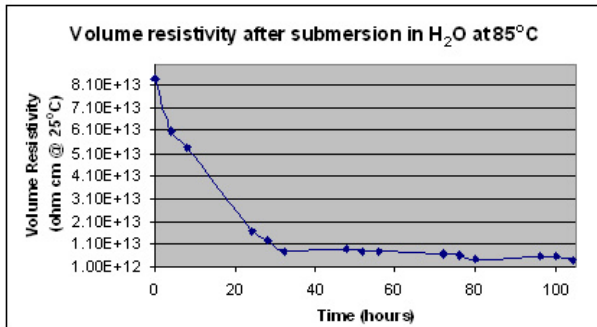


Chart 8

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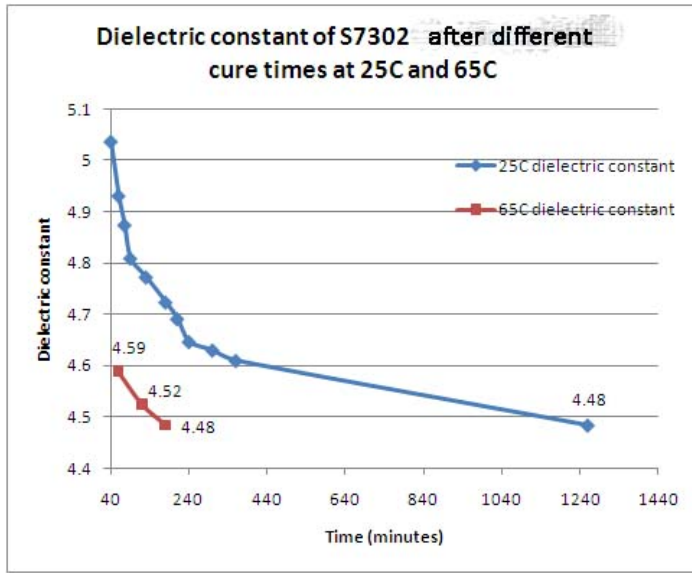


Chart 9

Chart 9:

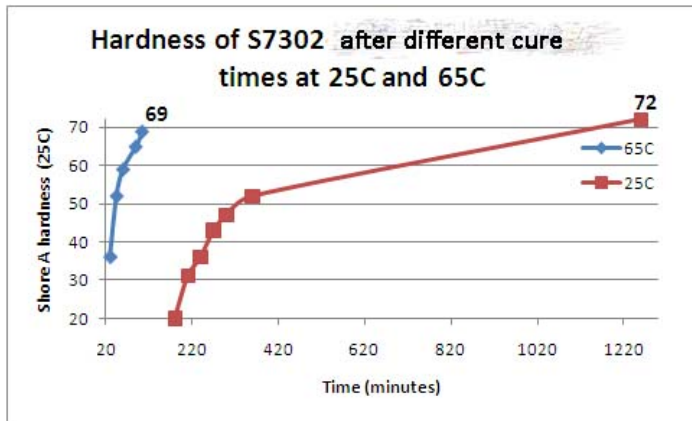


Chart 10

Chart 10:

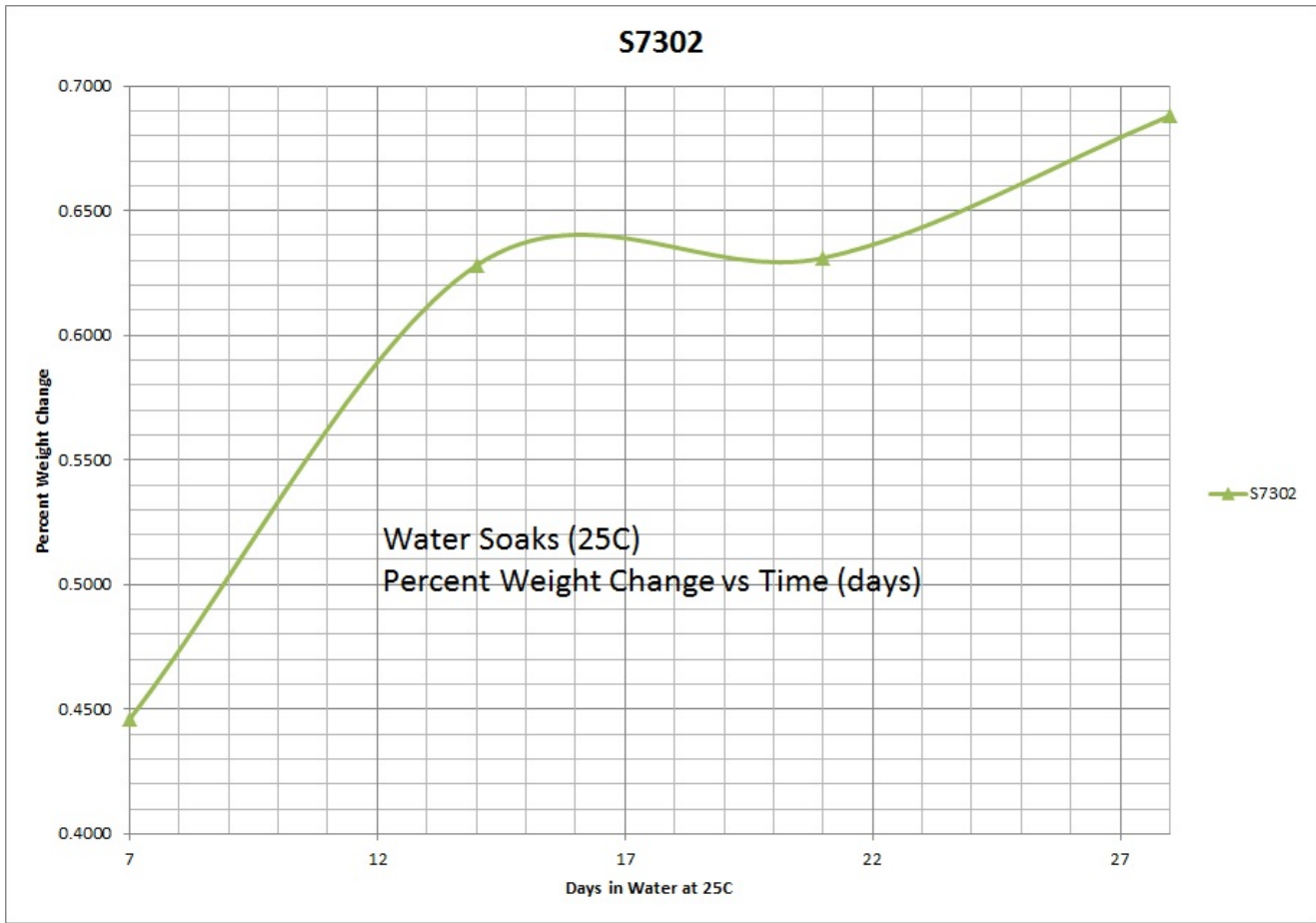


Chart 11

Chart 11:

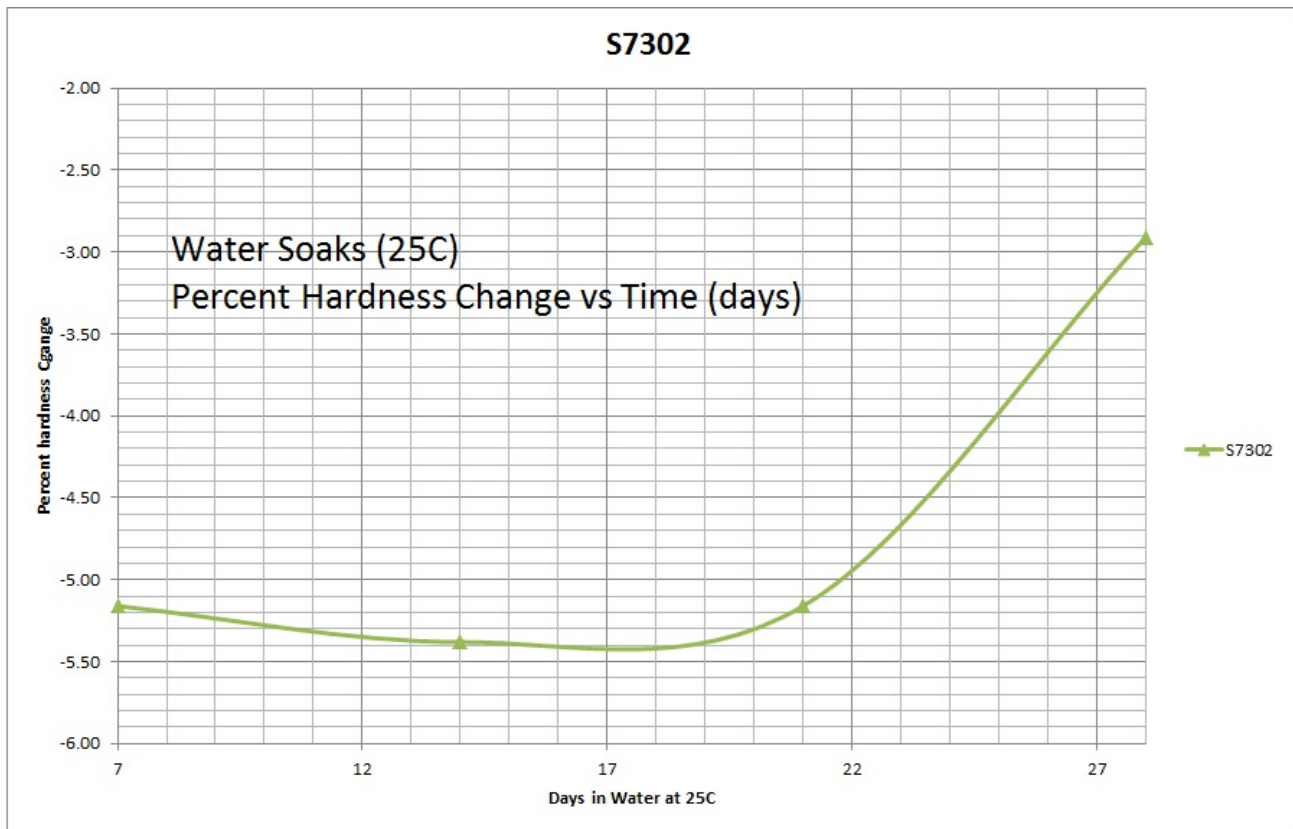


Chart 12

Chart 12:

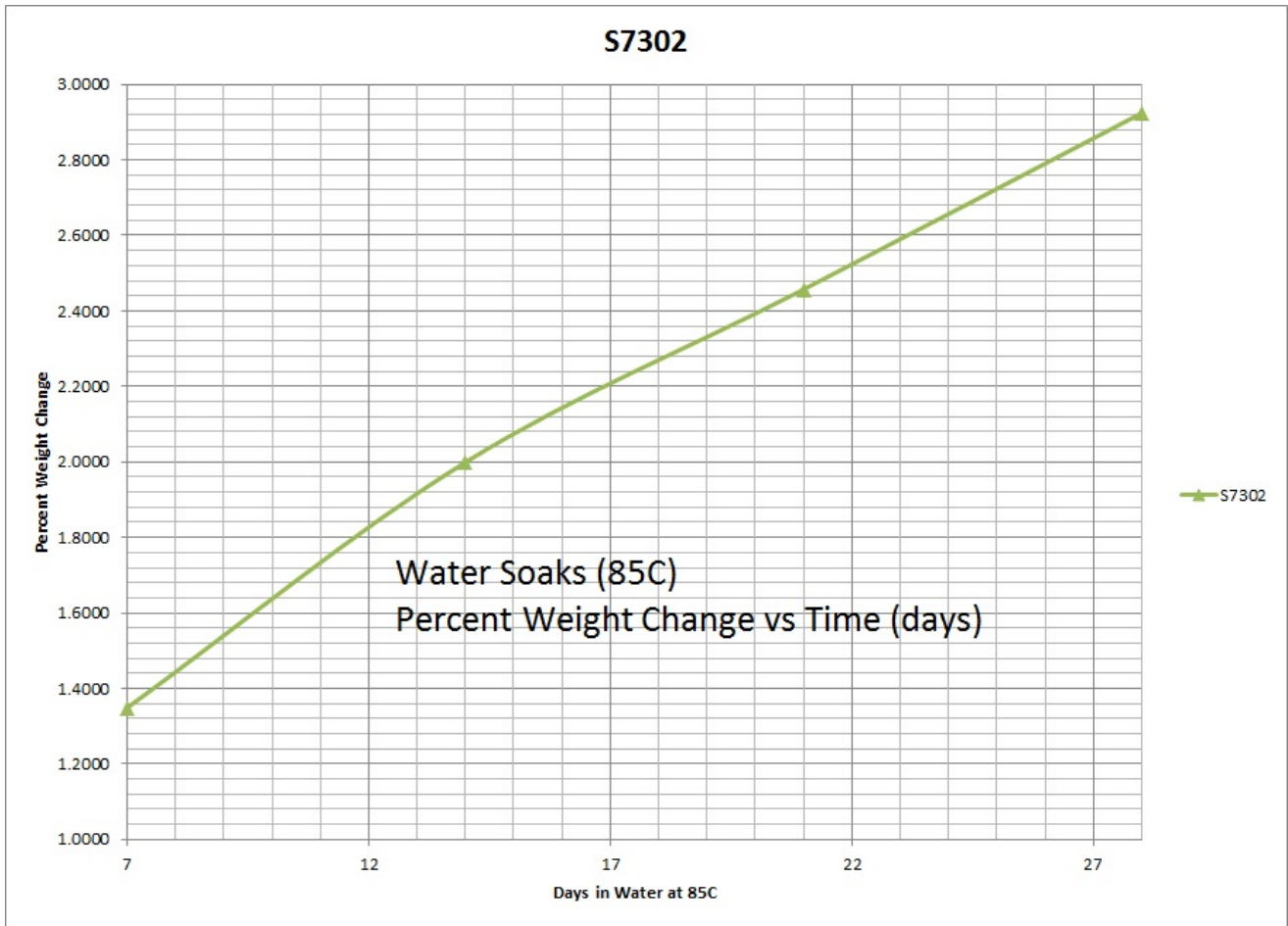
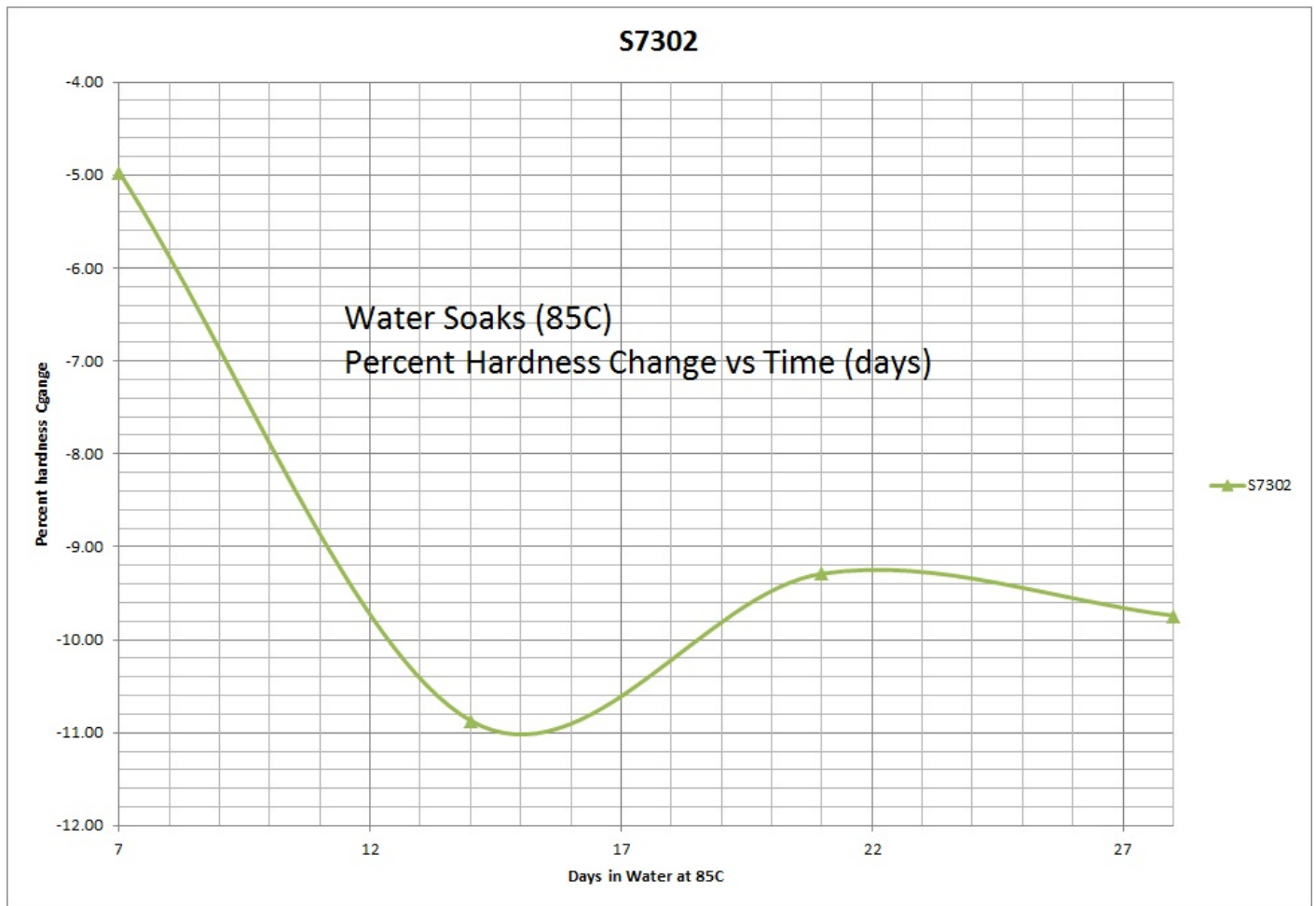


Chart 13

Chart 13:



### Mixing Instructions

**Polyurethane Mixing Instructions:** When mixing two component polyurethanes, the ideal method is to mix by weight using a balance or digital scale. The mixing container should be placed on the scale and set to read zero, the appropriate amount of resin should be weighed followed by the appropriate amount of hardener. The material should then be stirred, ideally with a metal spatula, ensuring that the material is thoroughly mixed to a homogenous state by scraping the sides, bottom and the area where the sides meet the bottom of the container. Failure to do so can result in uncured sections of material or altered properties of the cured material. When mixing polyurethanes, precautions should be taken to prevent any moisture from contaminating the material. The use of wood stir sticks and paper cups should be avoided due to their porosity and ability to hold moisture. When reclosing partial containers, an inert gas purge should again be introduced to prevent moisture contamination.

### Handling and Storage

Please refer to the Safety Data Sheet when determining the proper precautions to be used when storing or handling Epic S7302. This product contains 4,4' Diphenylmethane Diisocyanate (MDI), which is a respiratory sensitizer. Other health problems may be aggravated by exposure to this material. Great care should be taken to ensure employees are not exposed to this material above the ACGIH TLV. Epic Resins recommends that engineering controls be used to minimize employee exposure to this or any other industrial chemical.

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