Laboratory Data Sheet

# LOCTITE® UK 3173 / UK 3184

Known as
**Hysol® Product 3173/3184**
August 2015

## PRODUCT DESCRIPTION

LOCTITE® UK 3173 Polyurethane Resin is a resin that is designed to be mixed with LOCTITE® UK 3184 Polyurethane Hardener. This mixture forms a low viscosity, flame retardant potting compound.

## PROPERTIES OF UNCURED MATERIAL (Resin)

| | Typical Value |
|---|---|
| Chemical Type | Polyurethane resin |
| Appearance | Clear brown |
| Viscosity, Spindle 1 @ 20 RPM, cP (25ºC) | 75 |
| Specific Gravity | 1.23 |

## PROPERTIES OF UNCURED MATERIAL (Hardener)

| | Typical Value |
|---|---|
| Chemical Type | Polyurethane hardener |
| Appearance (mixed) | Opaque white (opaque tan) |
| Viscosity, Spindle 5 @ 20 RPM, cP (25ºC) | 14,000 |
| Specific Gravity | 1.45 |

## PROPERTIES OF CURED MATERIAL

| | Typical Value |
|---|---|
| Vol. Mix Ratio, Resin:Hardener | 1 to 4.8 |
| Weight Mix Ratio, Resin:Hardener | 15 to 85 |
| Mixed Specifiic Gravity | 1.40 |
| Mixed Viscosity, Spindle 4 @ 20 RPM (25ºC) cP | 2,250 |
| Work Time, 300g (25ºC) | 45 min |
| Gel Time, 300g (25ºC) | 150 min |
| Regular Cure Schedule (25ºC) | 24 hr |
| Alternate Cure Schedule (85ºC) | 1-3 hours, 185ºF |
| Tg, ºC, ASTM E1545-95a | -15 |
| CTE, above Tg, (mm/mmºC) ASTM E831 | 151 E-06 |
| Hardness, Shore A, ASTM D2240 | 80 |

## Electrical Properties

| | |
|---|---|
| Dielectric Constant, ASTM D150 | |
| 0.1 kHz | 4.51 |
| 1.0 kHz | 4.29 |
| 10.0 kHz | 3.94 |
| 100 kHz | 3.56 |
| Dissipation Factor, ASTM D150 | |
| 0.1 kHz | 0.02 |
| 1.0 kHz | 0.04 |
| 10.0 kHz | 0.06 |
| 100 kHz | 0.07 |
| Insulation Resistance, ASTM D257 | 1.1 E12 |
| Volume Resistivity, Ω.cm, ASTM D257 | 6.61 E12 |
| Dielectric Strength, Volts/mil, ASTM D149 | 370 |

## GENERAL INFORMATION

**This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected for use with chlorine or other strong oxidizing materials.**
**For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).**

## Approvals

UL94 V-0 0.37” thick
UL94 V-2 0.25” thick

## Storage

Product shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8°C to 28°C (46°F to 82°F) unless otherwise labeled. Optimal storage is at 0°C (32°F) or less. To prevent contamination of unused product, do not return any material to its original container. For further specific shelf life information, contact your local Technical Service Center.

## Data Ranges

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

# Properties of Uncured Material

| | Specific Gravity | Viscosity (25ºC) | Color | Mixed Color |
|---|---|---|---|---|
| Loctite UK 3173 Polyurethane Resin | 1.24 | 75 | Dark brown | |
| **Loctite UK 3182 Polyurethane Hardener** | 1.59 | 30,000 | Black | Black |
| **Loctite UK 3183 Polyurethane Hardener** | 0.96 | 800 | Opaque Black | Opaque Black |
| **Loctite UK 3184 Polyurethane Hardener** | 1.46 | 14,000 | Opaque White | Opaque tan |

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## Curing Properties of the Systems
## (All Properties in Conjunction with LOCTITE UK 3173 Polyurethane Resin)

| Hardener | Vol. Mix Ratio<br>*Resin:Hardener* | Weight Mix Ratio<br>*Resin:Hardener* | Mixed Specific Gravity | Mixed Viscosity, cP (25ºC) | Work Time (25°C, 77°F) sample size noted | Gel Time (25°C, 77°F) sample size noted | Regular Cure Schedule (25°C, 77°F) | Alternate Cure Schedule (66°C, 150°F) |
|---|---|---|---|---|---|---|---|---|
| **Loctite UK 3182 Polyurethane Hardener** | 1 to 5.2 | 13 to 87 | 1.56 | 5,500 | < 7 min/300g | 14 min/ 300 gm | 90 min | 30 min 185 F |
| **Loctite UK 3183 Polyurethane Hardener** | 1 to 3.01 | 30 to 70 | 1.06 | 450 | 20 to 40min/105g | 40-70 min/ 105 gm | 24 hr | 1 – 3 hours 185°F |
| **Loctite UK 3184 Polyurethane Hardener** | 1 to 4.81 | 15 to 85 | 1.40 | 2,250 | 45 min/300g | 150 min/ 300 gm | 24 hr | 1 – 3 hours 185°F |

## Cured Properties of the System
## (All Properties in Conjunction with LOCTITE UK 3173 Polyurethane Resin)

| Hardener | Tg, °C | CTE above Tg (mm/mm °C) | Hardness Shore A |
|---|---|---|---|
| **Loctite UK 3182 Polyurethane Hardener** | -10 | 128 E-06 | 75 |
| **Loctite UK 3183 Polyurethane Hardener** | -16 | 190 E-06 | 70 |
| **Loctite UK 3184 Polyurethane Hardener** | -15 | 151 E-06 | 80 |

## Electrical Properties of the System

| Dielectric Constant | | | | |
|---|---|---|---|---|
| | Frequency | | | |
| **Hardener** | **0.1 KHz** | **1.0 KHz** | **10 KHz** | **100 KHz** |
| **Loctite UK 3182** | 4.68 | 4.02 | 3.76 | 3.63 |
| **Loctite UK 3183** | 5.92 | 4.36 | 3.65 | 3.31 |
| **Loctite UK 3184** | 4.51 | 4.29 | 3.94 | 3.56 |

| Dissipation Factor | | | | |
|---|---|---|---|---|
| | Frequency | | | |
| **Hardener** | **0.1 KHz** | **1.0 KHz** | **10 KHz** | **100 KHz** |
| **Loctite UK 3182** | 0.13 | 0.07 | 0.04 | 0.02 |
| **Loctite UK 3183** | 0.22 | 0.17 | 0.10 | 0.05 |
| **Loctite UK 3184** | 0.02 | 0.04 | 0.06 | 0.07 |

| Hardener | Insulation Resistance, ohms | Volume Resistivity, Ω.cm | Dielectric Strength, Volts/mil |
|---|---|---|---|
| **Loctite UK 3182** | 2.5 E13 | 1.5 E15 | 370 |
| **Loctite UK 3183** | 1.1 E11 | 6.83 E12 | 375 |
| **Loctite UK 3184** | 1.1 E12 | 6.61 E12 | 370 |

**Note**
The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are

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