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# Technical Data Sheet

## Hysol® Product E-20HP

formerly Durabond E-20HP

Industrial Version, April 2004

### PRODUCT DESCRIPTION

LOCTITE® Hysol® Product E-20HP is a toughened, medium-viscosity, industrial grade epoxy adhesive with a medium work life. Once mixed, the two-component epoxy cures at room temperature to form a tough, off-white, bondline that provides high peel resistance and high shear strengths. The fully cured epoxy is resistant to a wide range of chemicals and solvents, and acts as an excellent electrical insulator.

### TYPICAL APPLICATIONS

The high performance epoxy provides excellent bond strengths to a wide variety of plastics and metals. Ideal for general purpose industrial assemblies. Used as adhesive for bonding dry concrete or limestone for architectural applications.

### PROPERTIES OF UNCURED MATERIAL

| Resin                        | Typical            |                  |
|------------------------------|--------------------|------------------|
|                              | Value              | Range            |
| Chemical Type                | Epoxy              |                  |
| Appearance                   | Pale yellow liquid |                  |
| Specific Gravity @ 25°C      | 1.00               | 0.9 to 1.1       |
| Viscosity @ 25°C, mPa.s (cP) | 65,000             | 40,000 to 90,000 |
| Flash Point (TCC), °C (°F)   | >93 (>200)         |                  |

| Hardener                     | Typical       |                |
|------------------------------|---------------|----------------|
|                              | Value         | Range          |
| Chemical Type                | Amine         |                |
| Appearance                   | Yellow liquid |                |
| Specific Gravity @ 25°C      | 1.10          | 1.0 to 1.2     |
| Viscosity @ 25°C, mPa.s (cP) | 7,000         | 5,500 to 8,000 |
| Flash Point (TCC), °C (°F)   | >93 (>200)    |                |

| Mixture                   | Typical Value |
|---------------------------|---------------|
| Appearance                | Off-white     |
| Specific Gravity @ 25°C   | 1.03          |
| Mix Ratio (R:H) by Weight | 100 to 55     |
| by Volume                 | 2 to 1        |

### Curing Properties

|                         | Typical Value |
|-------------------------|---------------|
| (@ 25°C unless noted)   |               |
| Working Life, minutes   | 20            |
| Tack Free time, minutes | 40            |

### TYPICAL PROPERTIES OF CURED MATERIAL

|                                      | Typical Value |
|--------------------------------------|---------------|
| (@ 25°C unless noted)                |               |
| <b>Physical Properties</b>           |               |
| Dielectric Strength, Volts/Mil       | 500           |
| Tensile Strength ASTM D638, psi      | 5,700         |
| Tensile Elongation ASTM D-638, %     | 8             |
| Hardness ASTM D-1706, Shore D        | 80            |
| Glass Transition Temperature, Tg, °C | 60            |

### PERFORMANCE OF CURED MATERIAL

#### Shear Strength vs Substrate

(Substrates cured for 5 days @ 22°C)

| Substrate                                      | Typical Value     |       |
|--|-------------------|-------|
| Lapshear                                       | N/mm <sup>2</sup> | (psi) |
| Grit-Blasted Steel                             | 22.6              | 3270  |
| Aluminum (Abraded/Acid Etched, 3 to 9 mil gap) | 28.2              | 4090  |
| Aluminum (Anodized)                            | 17.4              | 2530  |
| Stainless Steel                                | 22.0              | 3190  |
| Polycarbonate                                  | 3.9               | 560   |
| Nylon  | 1.8               | 260   |
| Wood (Fir)                                     | 11.4              | 1660  |

| Block Shear | N/mm <sup>2</sup> (psi) |      |
|-------------|-------------------------|------|
| PVC         | 7.9                     | 1140 |
| ABS         | 10.4                    | 1510 |
| Epoxy       | 28.6                    | 4140 |
| Acrylic     | 2.0                     | 290  |
| Glass       | 32.3                    | 4690 |

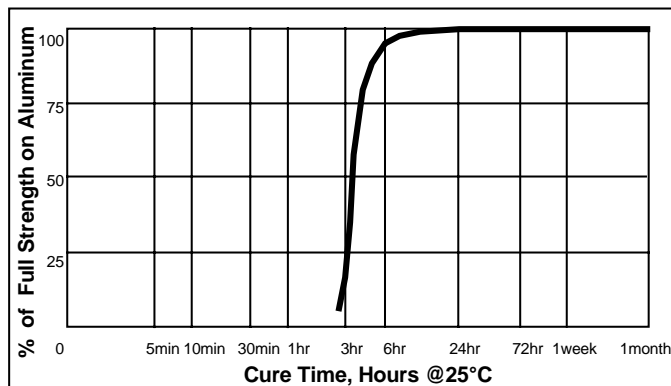
#### Concrete Strength by ASTM C881/C882-99

E-20 HP passes the requirements of a type IV epoxy. During testing the concrete fractured prior to the adhesive failing. The test was modified as we do not recommend it be used on wet surfaces.

### TYPICAL CURING PERFORMANCE

#### Cure speed

The graph below shows the shear strength developed over time on abraded, acid etched aluminum lap shears with an average bondline gap of 3 to 9 mils and tested according to ASTM D-1002.

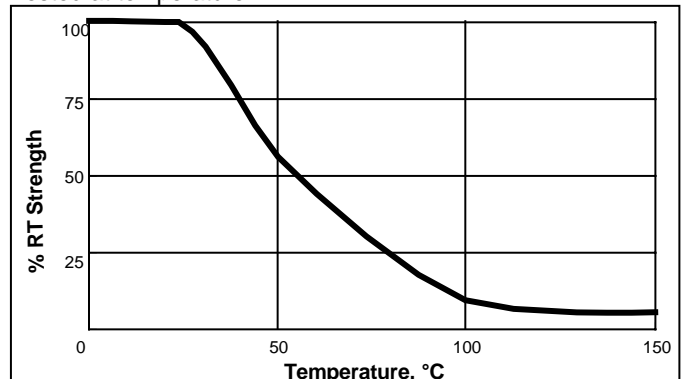


### TYPICAL ENVIRONMENTAL RESISTANCE

#### Hot Strength

|                     |                                    |
|---------------------|------------------------------------|
| Test procedure :    | ASTM D-1002                        |
| Substrate:          | Abraded, acid etched aluminum      |
| Bondline gap, mils: | 3 to 9                             |
| Cure procedure:     | 12 hours at 65°C & 4 hours at 22°C |

Tested at temperature.



Heat Aging