**Specialty Resins**
2612 Kersten Court, Kalamazoo MI 49048
Phone: (269) 462-9256
**website**: www.specialtyresin.com

# TECHNICAL DATA SHEET

## TOUGH-CAST 75D

Tough-Cast 75D polyurethane casting resin features high impact resistance, abrasion resistance, strength, and chemical resistance. Perfect for prototyping and precision casting. It contains zero solvents, and the clear amber color makes for easy coloring.

| PRODUCT SPECIFICATIONS | |
|---|---|
| **Mix Ratio by Weight** | 1 : 1 |
| **Mixed Viscosity** | Low |
| **Work Time (100 gram mass)** | 6 minutes |
| **Demold Time** | 60 minutes |
| **Full Cure Time** | 3 days |
| **Ultimate Shore Hardness (ASTM D-2240)** | D75 |
| **Shelf Life** | 1 year |
| **Color** | Clear Amber |

**BEFORE USE: Thoroughly read Safety Data Sheets, product labels and the “SAFETY” section in this Technical Data Sheet.**

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## IMPORTANT: PLEASE NOTE

• This product may be mixed with compatible pigment powders and liquid dyes to achieve the desired color. Do not mix with oil-based or water-based colorants or additives. When in doubt, test a small sample batch to ensure compatibility and performance.

• Polyurethane resins are moisture sensitive. Exposure to moisture can cause foaming, bubbles, or incomplete cure.

• Unmixed resin and hardener have a shelf life of 1 year when stored properly. Store in original, tightly sealed containers in a cool, dry environment.

## BEFORE YOU BEGIN

**Work Environment:** The ideal working temperature is 65–75°F (18–24°C) in a clean, dry, dust-free environment. Avoid working in high humidity. For large pours (2 gallons or more), maintaining temperatures closer to 65°F is recommended to help manage exotherm. Use fans as needed to dissipate heat.

**Materials:** Prepare all necessary materials before beginning. This may include (but is not limited to):

- Two-part resin kit (Parts A & B)
- Graduated mixing containers
- Clean stir sticks or mechanical mixer
- Gloves and appropriate PPE
- Mold release (if required)
- Casting molds
- Drop cloths, vacuum chamber or pressure pot (if applicable)

## LET'S GET STARTED: MIXING & POURING

Pre-Mixing: Thoroughly shake or agitate both Part A and Part B before measuring. Allow containers to rest briefly to let any trapped air dissipate.

Measuring & Mixing: Measure the correct mix ratio of Part A and Part B into separate containers. Combine both components into a clean mixing container and mix thoroughly for 15–30 seconds, scraping the sides and bottom using a steady, rhythmic motion. Work efficiently within the stated working time.

Pouring: If using a mold made from materials other than silicone rubber, apply a suitable mold release. Pour material slowly in a thin stream into the lowest point of the mold, allowing the resin to rise and flow naturally to minimize trapped air. Do not scrape the sides or bottom of the mixing container when pouring, as this may introduce unmixed material.

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Air Entrapment & Bubble Reduction: To further reduce trapped air, care should be taken to pour slowly and avoid unnecessary agitation. For applications requiring minimal air entrapment, a vacuum chamber may be used to degas the mixed material prior to pouring, or a pressure pot may be used after pouring to compress remaining air bubbles to a microscopic size. When using vacuum or pressure equipment, closely monitor material expansion and working time to prevent overflow or premature gelation. Always follow equipment manufacturer safety guidelines.

Note: Due to the short working time typical of many polyurethane resins, pressure casting is often preferred over vacuum degassing.

Curing & De-Molding: Allow the material to cure undisturbed. Do not de-mold before the recommended de-mold time. Smaller or thinner castings may require additional time. Always verify cure by checking residual material in the mixing container before de-molding.

De-Molding: If properly released, parts should de-mold easily. Flexible molds may be gently flexed to release the part. Compressed air may be used to help break vacuum seals if necessary.

**TIPS & TRICKS**

• After pouring, gently rotate, tap, or lightly squeeze the mold to help material flow into deep undercuts and release trapped air.

• Lightly dusting the mold with talc or baby powder may help reduce surface tension, improve surface quality, and minimize air entrapment.

• Pre-warming molds to approximately 120°F (49°C) may reduce de-mold time and improve part quality, especially for thin sections.

• Ensure all tools, containers, and molds are completely dry before use. Polyurethane resins are moisture sensitive and exposure to moisture can cause foaming or surface defects.

• Keep resin components capped when not in use and return materials to storage promptly after dispensing.

• For best results, resin components and molds should be at room temperature (minimum 70°F / 21°C) prior to casting.

## CLEAN UP & DISPOSAL

Tools can be cleaned with Isopropyl Alcohol or a residue-free cleaner. Do not use soap and water.

Dispose of product and container according to Federal, State and local regulations. Store any remaining product in the original bottles, tightly sealed and locked up in a cool, dry environment.

## SAFETY

**Safety:** Before use, thoroughly read Safety Data Sheets and product labels. Follow safety precautions and directions. **Resin:** Keep out of reach of children. Avoid breathing vapors. Use with adequate general or local exhaust ventilation to minimize exposure levels. If needed, a NIOSH-approved respirator with organic vapor cartridge may be used. If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. Wear impervious gloves, such as butyl rubber or nitrile rubber. Wash skin thoroughly with soap and water after handling. Take off contaminated clothing and wash it before reuse. If skin irritation occurs, get medical help. Wear eye protection, such as chemical safety glasses/googles. If in eyes, rinse cautiously with water for several minutes, removing contact lenses if present and easy to do. If eye irritation persists, get medical help.

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**Hardener:** Keep out of reach of children. Do not eat, drink, or smoke when using this product. If swallowed, rinse mouth and get medical help. Use with adequate general or local exhaust ventilation to minimize exposure levels. If needed, a NIOSH-approved respirator with organic vapor cartridge may be used. If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. Wear impervious gloves, such as butyl rubber or nitrile rubber. Wash skin thoroughly with soap and water after handling. Wear eye protection, such as chemical safety glasses/googles. If in eyes, immediately rinse with water for several minutes, removing contact lenses if present and easy to do. If eye irritation persists, get medical help.

**WARNING: THE CURE REACTION IS EXOTHERMIC. Do not apply in thicknesses greater than the recommended maximum application thickness for the product.**

**DISCLAIMER:** The information contained herein is considered accurate; however, Specialty Resins makes no warranty regarding its accuracy. The user must determine the suitability of the product for the intended use and accepts all risk and liability associated with that use.