

## CONATHANE® TU-981 & TU-981 Black

CONATHANE TU-981 is a two-component liquid casting system that produces a 65-Shore D elastomer of exceptional toughness and extraordinary processing flexibility.

CONATHANE TU-981 offers the unique processing options of rotocasting or hand casting a high hardness polyurethane with exceptional elastomer properties.

CONATHANE TU-981 is one in a series of flexible elastomer systems ranging in hardness from 40 Shore A to 70 Shore D. TU-981 has an initial viscosity of 2000 cps at 25°C (77°F) and an effective work life of 16-20 minutes at 25°C, so it is pourable into almost any configuration. Its outstanding processing flexibility includes the following attributes:

- Systems can be used for spincasting (rotocasting) applications
- Room or elevated temperature processing and curing
- Convenient mix ratio
- Low viscosity
- Long pot life
- Low moisture sensitivity during handling and processing
- Good green strength

These high performance elastomers offer such outstanding properties as high elongation, high tensile and tear strength, excellent abrasion resistance, extraordinary impact resistance, excellent resiliency, and good chemical and solvent resistance. These properties make it an excellent material for many applications including:

- Cast-in-place linings for metal polishing and finishing equipment
- Industrial wheels
- Vibration, shock, and sound dampening pads
- Metal forming pads
- Flexible molds
- Drop hammer faces
- Washers
- Gaskets
- Bushings and diaphragms
- Foundry patterns
- Military training aids
- Core box linings

### TYPICAL PRODUCT CHARACTERISTICS

|                         | Prepolymer<br>PART A | Curative<br>PART B | Curative<br>PART B BLACK | TEST METHOD |
|-------------------------|----------------------|--------------------|--------------------------|-------------|
| Color                   | Light Amber          | Dark Amber         | Black                    | Visual      |
| Appearance              | Translucent          | Translucent        | Opaque                   | Visual      |
| Viscosity 25°C, cps     | 2800                 | 190                | 190                      | ASTM D2393  |
| % NCO                   | 12.0                 | ---                | ---                      |             |
| Specific Gravity @ 25°C | 1.05                 | 1.06               | 1.06                     | ASTM D792   |

## TYPICAL CURED PROPERTIES

|   | TU-981 Cured @ Room Temp. | TU-981 Cured @ 60°C    | TU-981 Black Cured @ Room Temp. | TEST METHOD  |
|---|---------------------------|------------------------|---------------------------------|--------------|
| Color                                       | Dark Amber                | Dark Brown             | Black                           | Visual       |
| Appearance                                  | Translucent               | Translucent            | Opaque                          | Visual       |
| Hardness, Shore D                           | 65                        | 65                     | 65                              | ASTM D2240   |
| Tensile Strength, psi                       | 4,050                     | 4,500                  | 4,050                           | ASTM D412    |
| Elongation, %                               | 230                       | 175                    | 230                             | ASTM D412    |
| Tear Strength (Graves), pli                 | 600                       | 600                    | 600                             | ASTM D624    |
| Tear Strength (Split), pli                  | 80                        | ---                    | 80                              | ASTM D470    |
| Flexural Strength, psi                      | 1900                      | ---                    | 1900                            | ASTM D790    |
| Flexural Modulus, psi                       | 350,000                   | ---                    | 350,000                         | ASTM D790    |
| Izod Impact Strength, ft. lb./in. – Notched | 7.5                       | ---                    | 7.5                             | ASTM D256    |
| Heat Distortion Temperature, 66 psi, °C     | 56                        | ---                    | 56                              | ASTM D648    |
| Linear Shrinkage, in./in.                   | 0.0002                    | 0.0010                 | 0.0002                          | Cytec*       |
| Specific Gravity @ 25°C                     | 1.09                      | 1.09                   | 1.09                            | ASTM D792    |
| Volume Resistivity, ohm-cm                  |                           | 1.6 x 10 <sup>14</sup> |                                 | ASTM D257    |
| Dielectric Constant @ 1 KHz                 |                           | 4.84                   |                                 | ASTM D150    |
| Dissipation Factor @ 1 KHz                  |                           | 0.03                   |                                 | ASTM D150    |
| Dielectric Strength, 1/16", vpm             |                           | 480                    |                                 | ASTM D149    |
| Surface Resistivity, ohm                    |                           | 3.2 x 10 <sup>15</sup> |                                 | ASTM D257-76 |

\* Shrinkage measured on 1" x 2" x 8" bar

The data presented here are provided as general information only. They are typical values and are not part of the product specification.

## RECOMMENDED PROCESSING PARAMETERS

|                               | Room Temp. | 60°C     | TEST METHOD |
|-------------------------------|------------|----------|-------------|
| Mix Ratio by Weight, A/B      | 100 / 60   | 100 / 60 |             |
| Mix Ratio by Volume, A/B      | 100 / 60   | 100 / 60 |             |
| Initial Mixed Viscosity, cps  | 2,000      | 1,200    | ASTM D2393  |
| Work Life 100K, cps (minutes) | 16-20      | 10       |             |
| Demold Time, hours            | 7          | 3        |             |
| Post Cure                     | 7 Days     | 16 hours |             |

## RECOMMENDED PROCESSING PROCEDURE

CONATHANE TU-981 can be processed by batch mixing or by the use of automatic metering, mixing, and dispensing equipment. Specific recommendations can be made by the Technical Service Department of Cytec or by your local sales manager. The following procedure is recommended for batch processing:

1. Containers used for weighing or mixing should be metal, glass, or plastic. Mixing rods should also be made of metal, plastic, or glass. Avoid paper containers and wooden sticks.
2. If void-free castings are desired, use a separate container for mixing, with enough space to allow for expansion during degassing (usually 2 to 3 times the volume of material being mixed). In many applications, the degassing step may be eliminated.
3. Weigh the correct proportions of the two components together, MIX THOROUGHLY, and degas at 28-29 inches of mercury vacuum to remove the air entrapped during mixing.

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- Pour mixed material into molds or fixtures in a manner to avoid trapping air bubbles or pockets and cure as recommended. Porous molds should be properly sealed prior to using. Contact Cytec's Technical Service Department or your local sales manager for assistance.
- If parts are to be demolded, a quality CONAP® mold release should be applied prior to pouring.
- Clean equipment with appropriate solvents. N-methyl pyrrolidone dissolves cured polyurethane. Dibasic ester (DBE) can be used to flush equipment.

## PRIMERS

When curing CONATHANE TU-981 at 80°C, or above, the recommended primer is CONAP® AD-1147 or AD-1147-C. For information concerning the primers, request Bulletin A-143.

**NOTE:** It is important that all dirt, rust, grease, and oil be removed from surfaces prior to applying the primers. Request Surface Preparation Guide, Bulletin AC-107, for further information.

## COLORING

CONATHANE TU-981 is supplied in clear amber or black. For those customers who wish to color CONATHANE TU-981, Cytec offers four color concentrates (CONAP® DS-1830 Series). Please request Bulletin AC-112.

## HANDLING AND STORAGE

Both the Part A and Part B components of CONATHANE TU-981 are moisture sensitive. Containers should be flushed with dry nitrogen or CONAP® Dri-Purge each time they are opened unless the contents are used within one day. The components of CONATHANE TU-981 (Part A and Part B) have a shelf life of at least 18 months from date of manufacture when stored in the original, unopened containers at 65°F-85°F.

**CAUTION:** FOR INDUSTRIAL USE ONLY!

Do not take internally. This product contains isocyanate-based prepolymers, amines, and metal catalysts which are harmful if swallowed. Use only in well-ventilated areas. Avoid breathing of vapors and protect skin and eyes from contact with material.

Should skin contact occur, wash immediately with soap and water. In case of eye contact, immediately flush eyes with plenty of water and obtain medical attention.

## AVAILABILITY

CONATHANE TU-981 is available in the following unit packaging:

| Gallon Unit Consists of: |                  | 5-Gallon Unit Consists of: |                | 55-Gallon Unit Consists of: |                 |
|--------------------------|------------------|----------------------------|----------------|-----------------------------|-----------------|
| 1-Gal Part A             | 8.0 lbs.         | 1-5Gal Part A              | 40 lbs.        | 1-55Gal Part A              | 415 lbs.        |
| 1-Gal Part B             | <u>4.8 lbs.</u>  | 1-5Gal Part B              | <u>24 lbs.</u> | 1-30Gal Part B              | <u>250 lbs.</u> |
| <b>Total Unit Weight</b> | <b>12.8 lbs.</b> | <b>Total Unit Weight</b>   | <b>64 lbs.</b> | <b>Total Unit Weight</b>    | <b>665 lbs.</b> |

*See the Comparison Chart for the CONATHANE® TU-950 Series to compare similar product properties.*

### CAUTION:

Responsible handling of Cytec Industries Inc. products requires a thorough preview of safety, health, and environmental issues prior to use. Review the Material Safety Data Sheets(s) for the specific Cytec Industries Inc. product(s) and container label information before opening containers. Ensure that employee exposure issues are understood, communicated to all workers, and controls are in place to prevent exposures above Permissible Exposure Limits (P.E.L.'s). Review safety and environmental issues to be certain controls are in place to prevent injury to employees, the community, or the environment, and ensure compliance with all applicable Federal, State, and Local laws and regulations. For assistance in this review process, please call your Cytec Industries Inc. representative or our office noted below.

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