LUBRIZOL LIFE SCIENCE

HEALTH

# Aromatic Carbothane™ AC Series TPU

## Transparent Thermoplastic Polyurethane

**Type:** Medical grade polycarbonate-based aromatic Thermoplastic Polyurethanes (TPUs)

**Features:** This series exhibits excellent oxidative stability in blood contact and provides superior mechanical performance and chemical resistance properties

**Process:** Extrusion and injection molding

| Products & Properties | ASTM Test | AC-4075A | AC-4085A | AC-4095A | AC-4055D | AC-4065D | AC-4075D |
|---|---|---|---|---|---|---|---|
| Durometer (Shore Hardness) | D2240 | 77A | 85A | 95A | 56D | 70D | 75D |
| Specific Gravity | D792 | 1.19 | 1.20 | 1.21 | 1.22 | 1.22 | 1.22 |
| Ultimate Tensile (psi) | D412 | 8000 | 9000 | 10,000 | 11,000 | 11,500 | 12,000 |
| Ultimate Elongation (%) | D412 | 400 | 400 | 370 | 300 | 300 | 250 |
| Tensile Modulus (psi) | D412 | | | | | | |
| at 100% Elongation | | 400 | 875 | 2125 | 3300 | 3000 | 4300 |
| at 200% Elongation | | 1025 | 2100 | 4650 | 6700 | 5500 | 6000 |
| at 300% Elongation | | 4400 | 6200 | 7700 | – | – | – |
| Flexural Modulus (psi) | D790 | 1500 | 3500 | 10,800 | 27,700 | 60,000 | 150,000 |
| Vicat Temperature (°C) | D1525 | 91 | 73 | 124 | 144 | 110 | 160 |
| Mold Shrinkage (in/in) (1"x.25"x6" bar) | D955 | 0.011 | 0.011 | 0.011 | 0.009 | 0.008 | 0.007 |
| Glass Transition Temperature (˚C) | D3418 Second Heat | -15 | -10 | 0 | 5 | 20 | 30 |

**Note:** These test results are based on small samples of Carbothane™ polyurethanes and do not necessarily represent average results from larger test samples. This information should not be used for establishing engineering or manufacturing guidelines or specifications.

LUBRIZOL LIFE SCIENCE 9911 Brecksville Road, Cleveland, OH 44141-3201 USA

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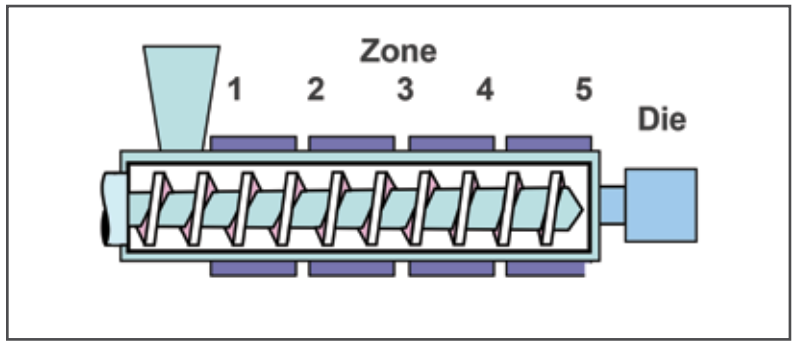
**Handling Conditions:** Properties of all thermoplastic polyurethane products in the molten state are adversely affected by moisture. For the best results, always dry the material at least two hours at 95°C (200°F) or overnight at 80°C (180°F) in a machine mounted dehumidifying dryer (a desiccant dryer delivering air at 1 liter/sec/kg at -40°C dew point (1 cfm/lb at -40°F dew point). A dehumidifying dryer hopper or one shot loader is also recommended. Depending on the applied processing technique, the **maximum moisture level should be 0.02%**. Never to exceed 500°F (260°C) melt temperature.

**Processing Conditions:** Aromatic Carbothane™ TPUs can be processed on any conventional extruder or molder. Please refer to Lubrizol's processing guide for medical TPUs for further recommendations regarding equipment and process design.

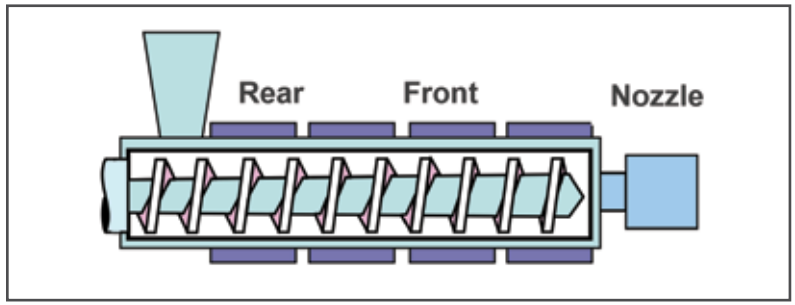
**Recommended Starting Extrusion Temperature Profile:**




| | AC-4075A | AC-4085A | AC-4095A | AC-4055D | AC-4065D | AC-4075D |
|---|---|---|---|---|---|---|
| | °F/°C | °F/°C | °F/°C | °F/°C | °F/°C | °F/°C |
| **Zone 1** | 410/210 | 410/210 | 410/210 | 410/210 | 425/218 | 435/224 |
| **Zone 2** | 420/215 | 420/215 | 420/215 | 420/215 | 435/224 | 445/229 |
| **Zone 3** | 430/221 | 430/221 | 430/221 | 430/221 | 445/229 | 455/235 |
| **Zone 4** | 430/221 | 430/221 | 430/221 | 430/221 | 455/235 | 465/241 |
| **Adapter 5** | 420/215 | 420/215 | 420/215 | 420/215 | 425/218 | 435/224 |
| **Die** | 420/215 | 420/215 | 420/215 | 420/215 | 425/218 | 435/224 |

Screen Pack Recommendation: 100/500/250 mesh

**Recommended Starting Injection Molding Temperature Profile:**




| | AC-4075A | AC-4085A | AC-4095A | AC-4055D | AC-4065D | AC-4075D |
|---|---|---|---|---|---|---|
| | °F/°C | °F/°C | °F/°C | °F/°C | °F/°C | °F/°C |
| **Rear** | 383/195 | 383/195 | 400/205 | 375/190 | 460/237 | 460/237 |
| **Front** | 392/200 | 392/200 | 410/210 | 390/200 | 460/237 | 460/237 |
| **Nozzle** | 383/195 | 383/195 | 420/215 | 410/210 | 440/225 | 460/237 |
| **Melt** | 392/200 | 392/200 | 410/210 | 410/210 | 400/204 | 410/210 |
| **Mold** | 50-80/10-27 | 50-80/10-27 | 50-80/10-27 | 50-80/10-27 | 50-80/10-27 | 50-80/10-27 |

**Further guidance is available on the LLS Health Resource Hub or by contacting our technical solutions team.**