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TECANYL™ MT
Medical Materials

# TECANYL™ MT

## Medical Materials

TECANYL™ MT is a new family of autoclavable materials developed for medical device applications. The material offers the desired performance properties of PPSU based resins with the machining ease and tool friendliness of acetal or POM. This allows part designers to take advantage of lower manufacturing costs by increasing output rates, and reducing tool wear, all without sacrificing part performance. TECANYL™ MT and TECANYL™ MT XRO™ shapes are all ISO 10993 tested to support their use in instrumentation that is intended to come in contact with blood and tissue for a period of not more than 24 hours. Ensinger can also provide TECANYL™ MT grades in finished injection molded parts for high volume applications.

- **Excellent autoclave performance comparable to higher temperature materials**
- **Easily machined, producing high quality surface**
- **No black speck generation as in sulfone polymers**
- **Lower manufacturing costs**
- **ISO 10993 Tested**

***TECANYL™ MT exhibits a broad range of outstanding properties for applications in medical devices where exposure to extreme heat and hygienic measures are demanded. Excellent wear properties, ease of quality machining and availability in a wide range of colors contribute to its desirability in medical devices.***

# TYPICAL PROPERTY VALUES

| | PROPERTIES | | ASTM Test Method | Units | TECANYL™ MT | TECANYL™ MT XRO | TECANYL™ MT CF30 |
|---|---|---|---|---|---|---|---|
| PHYSICAL | Density | | ISO 1183 | lbs/in³ | 0.03 | 0.03 | - |
| | Specific Gravity | | D792 | - | 1.08 | 1.08 | 1.12 |
| | Water Absorption, equilibrium, 73°F | | ISO 62 | % | 0.23 | 0.23 | - |
| | @saturation, 73°F | | - | - | - | - | - |
| MECHANICAL | Tensile Strength @ Break, 73°F | | D638 | psi | 9,800 | 9,800 | 20,600 |
| | Tensile Modulus, 73°F | | D638 | psi | 471,000 | 471,000 | - |
| | Elongation @ Break, 73°F | | D638 | % | 16.3 | 16.3 | 5.94 |
| | Flexural Strength, 73°F | | D790 | psi | 14,600 | 14,600 | 38600 |
| | Flexural Modulus, 73°F | | D790 | psi | 368,000 | 368,000 | 3,027,200 |
| | Compressive Strength | | - | - | - | - | - |
| | Izod Impact Strength, Notched, 73°F | | D256 | ft-lbs/in | 2.6 | 2.6 | 1.14 |
| | Rockwell Hardness, 73°F | | - | - | - | - | - |
| | Shore Hardness | | - | - | - | - | - |
| | Wear Factor Against Steel, 40 psi, 50 fpm | | - | - | - | - | - |
| | Static Coefficient of Friction | | - | - | - | - | - |
| | Dynamic Coefficient of Friction, 40 psi, 50 fpm | | - | - | - | - | - |
| THERMAL | Heat Deflection Temperature @ 66 psi | | - | - | - | - | - |
| | @264 psi | | D648 | °F | 296 | 296 | 296 |
| | Coefficient of Linear Thermal Expansion (-40°F to 100°F) | | E831 | in/in/°F | 4.81-10⁻⁵ | 4.81-10⁻⁵ | 4.81-10⁻⁵ |
| | | | - | °F | - | - | - |
| | Maximum Servicing Temperature, | Intermittent | - | °F | - | - | - |
| | | Long Term | - | - | - | - | - |
| | Specific Heat | | - | - | - | - | - |
| | Thermal Conductivity | | ISO 306 | °F | 168 | 168 | 168 |
| | Vicat Softening Point, Rate B/50 | | - | - | - | - | - |
| | Applicable Temperature Range for Thermal Expansion | | - | - | - | - | - |
| ELECTRICAL | Surface Resistivity | | - | - | - | - | - |
| | Volume Resistivity | | - | - | - | - | - |
| | Dielectric Strength | | - | - | - | - | - |
| | Dielectric Constant, @ 60 Hz, 73°F, 50% RH | | - | - | - | - | - |
| | Dissipation Factor, @ 60 HZ, 73°F | | - | - | - | - | - |
| | | | - | - | - | - | - |
| | | | - | - | - | - | - |
| | | | - | - | - | - | - |

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TECANYL™ MT – Ensinger Industries, Inc.
XRO™ – Ensinger Industries, Inc.

**MATERIAL AVAILABILITY**

**Rods:** Diameters: 1" to 3 1/2"

**Plates:**

**Primary Specification (Typical)**

***Profiles, tubes, and special sizes are custom-produced on request.***

DISTRIBUTED BY

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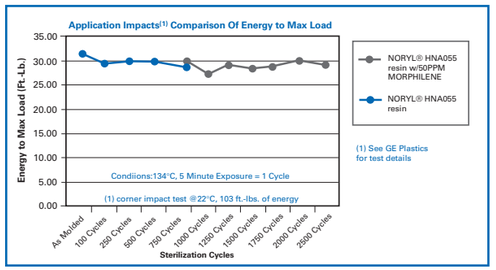
# TECANYL™ MT and XRO

## Medical Materials

One of the yard sticks by which the suitability of many potential medical materials are judged, is the materials ability to with stand multiple autoclaving cycles. Testing done on Sabic's Noryl™ resin from which TECANYL™ MT and MT XRO™ are made, demonstrates the material's ability to perform under these most difficult circumstances. In addition, the TECANYL™ MT family is much easier to machine, and exhibits significantly less wear on machine tooling than do parts machined from typical PPSU based resins. Finally, TECANYL™ is much less likely to suffer from black spec contamination that the Sulfone polymers are prone to.

### Autoclave Property Test Comparison




### Motivating features of TECANYL MT as a replacement for PPSU

- **Equivalent autoclave performance to PPSU.**
- **Material exhibits machining characteristics much closer to those of acetal.**
- **Much more uniform appearance of machined surfaces, no burnishing.**
- **Lower per part cost resulting from higher possible output rates.**
- **Less tool wear in machining.**
- **Sulfone polymers are prone to black speck generation.**

### SEM Photos of Carbide Cutters used to Machine 20 Parts

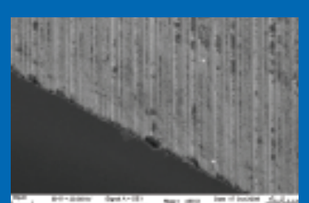
**PPSU**

200X

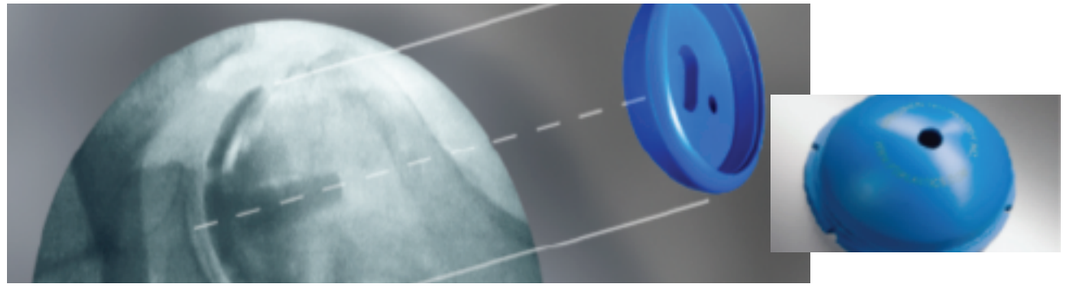
400X

**TECANYL MT**

200X



400X



### Radio Opaque Grades Available

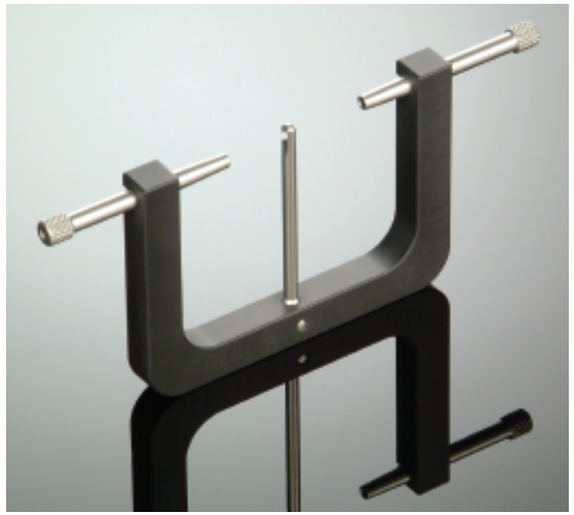
TECANYL MT XRO is radio opaque and is available in the range of colors listed below. XRO™ medical grade shapes are offered to address safety issue of using plastic in open surgery and to assist the visualization of the instrument for MIS (minimally invasive surgical procedures) with fluoroscopy.

### TECANYL™ MT Colors Match PPSU Colors

| | |
|---|---|
| Bone Natural | WT265 |
| Black | BK085 |
| Brown | BN029 |
| Gray | GY061 |
| Green | GN083 |
| Yellow | YL114 |
| Blue | BL033 |
| Red | RD099 |
| Orange | OR040 |
| Rust | BN102 |
| Purple | PL033 |
| Orange | OR042 |

*Colors may very slightly from printed examples

**TECANYL MT CF30** is a carbon fiber reinforced grade developed for applications requiring higher stiffness and dimensional stability. This grade is radiolucent and suitable for light duty targeting devices.



TECANYL MT CF30 targeting devise