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## UNITAL<sup>®</sup> Acetal

UNITAL Acetal (polyoxy-methylene) offers design engineers a superior blend of strength, stiffness, lubricity, and dimensional stability. These properties, along with inherent machining ease, have made UNITAL one of the most widely used engineering grade thermoplastics. Nytef Plastics offers a broad array of UNITAL Acetal stock shapes to meet specific application configurations, and to maximize production efficiencies. These materials include both homopolymer (DELRIN<sup>®</sup>) and copolymer unfilled grades as well as PTFE-filled grades for enhanced wear resistance.

### UNITAL ACETAL ATTRIBUTES

- 185°F continuous use temperature
- High strength and stiffness
- Excellent toughness
- Superior wear resistance
- Very low moisture absorption
- Easily machined and fabricated

### UNFILLED PRODUCTS

#### UNITAL H

- Higher strength and stiffness
- Superior toughness

#### UNITAL C

- Improved chemical resistance
- Superior dimensional stability

### ENHANCED WEAR PRODUCTS

- Very low Coefficient of Friction
- Improved wear life
- Virtually eliminates "slip-stick" behavior

### UNITAL LF-13

- 13% PTFE powder filled homopolymer acetal

### DELRIN 100AF Blend

- 13% PTFE fiber filled homopolymer acetal

### INDUSTRIES

- Food processing
- Material handling equipment
- Fluid handling
- Electronics manufacturing
- Automotive

### APPLICATIONS

- Pistons
- Valves
- Manifolds
- Food product forming dies
- Timing screws
- Scraper blades
- Wear strips
- Pump components
- Gears
- Bushings and bearings
- Electrical components

Nytef Plastics, Ltd. is dedicated to supplying our customers with the highest quality thermoplastic stock shapes for machining. We manufacture and stock a full line of thermoplastic materials in a wide variety of rod, plate and tubular bar sizes. In addition, we offer over 30 years of experience in the custom extrusion of application-specific and proprietary resins to meet even the most demanding performance requirements. Nytef Plastics offers full technical support for all products and is certified to ISO 9002 standards for the manufacture of extruded plastics stock shapes.

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# NATIONWIDE PLASTICS, INC.

The Authority on Plastics Manufacturing and Distribution

## UNITAL® ACETAL

| Property                                 | Test Method | Units        | UNITAL H             | UNITAL C             | UNITAL Lf-13         | DELTRIN 100AF Blend  |
|--|-------------|--------------|----------------------|----------------------|----------------------|----------------------|
|  |             |              | Unfilled Homopolymer | Unfilled Copolymer   | 13% PTFE Powder      | 13% PTFE Fiber       |
| <b>Mechanical</b>                        |             |              |                      |                      |                      |                      |
| Specific Gravity                         | ASTM-D792   | —            | 1.42                 | 1.40                 | 1.48                 | 1.50                 |
| Tensile Strength                         | ASTM-D638   | psi          | 9,600-11,000         | 9,000-10,200         | 8,000-8,500          | 7,600-8,000          |
| Tensile Elongation                       | ASTM-D638   | %            | 30-50                | 30-60                | 15-30                | 15-30                |
| Tensile Modulus of Elasticity            | ASTM-D638   | psi          | 450,000              | 400,000              | 600,000              | 550,000              |
| Flexural Strength                        | ASTM-D790   | psi          | 14,300               | 12,000               | 13,500               | 12,500               |
| Flexural Modulus of Elasticity           | ASTM-D790   | psi          | 470,000              | 366,000              | 410,000              | 400,000              |
| Compressive Strength                     | ASTM-D695   | psi          | 16,000               | 15,000               | 15,500               | 16,000               |
| Izod Notched Impact                      | ASTM-D256   | ft.-lbs./in. | 1.2                  | 1.0                  | 0.8                  | 0.9                  |
| Rockwell Hardness                        | ASTM-D785   | M or R       | M94                  | M90                  | M89                  | M89                  |
| <b>Thermal</b>                           |             |              |                      |                      |                      |                      |
| Coef. of Linear Thermal Expansion        | ASTM-D696   | in./in./°F   | $6.8 \times 10^{-5}$ | $5.4 \times 10^{-5}$ | $5.2 \times 10^{-5}$ | $5.0 \times 10^{-5}$ |
| Max. Continuous Use Temp.                | Nytec Std.  | °F           | 185                  | 185                  | 185                  | 185                  |
| Heat Deflection Temp. @ 264 psi          | ASTM-D648   | °F           | 257                  | 220                  | 235                  | 260                  |
| Melting Point                            | ASTM-D3418  | °F           | 347                  | 335                  | 347                  | 347                  |
| <b>Electrical</b>                        |             |              |                      |                      |                      |                      |
| Dielectric Strength-Short Term           | ASTM-D149   | volts/mil    | 500                  | 500                  | 400                  | 400                  |
| Dielectric Constant @ 60 Hz              | ASTM-D150   |              | 3.7                  | 3.8                  | 3.1                  | 3.1                  |
| Dielectric Constant @ 10 <sup>6</sup> Hz | ASTM-D150   |              | 3.7                  | 3.8                  | 3.1                  | 3.1                  |
| Dissipation Factor @ 60 Hz               | ASTM-D150   |              | 0.005                | 0.003                | 0.009                | 0.009                |
| Volume Resistivity                       | ASTM-D257   | ohm-cm       | 10 <sup>16</sup>     | 10 <sup>16</sup>     | 10 <sup>16</sup>     | 10 <sup>16</sup>     |
| <b>Miscellaneous</b>                     |             |              |                      |                      |                      |                      |
| Water Absorption/24 hrs.                 | ASTM-D570   | % weight     | 0.25                 | 0.25                 | 0.23                 | 0.20                 |
| Water Absorption @ Saturation            | ASTM-D570   | % weight     | 0.90                 | 0.8                  | 0.8                  | 0.72                 |
| Flammability                             | UL 94       |              | HB                   | HB                   | HB                   | HB                   |
| Dynamic Coefficient of Friction          | Nytec Std.  |              | 0.20                 | 0.21                 | 0.16                 | 0.17                 |
| <b>Agency Approvals</b>                  |             |              |                      |                      |                      |                      |
| FDA                                      |             |              | Yes                  | Yes                  | Yes                  | No                   |
| USDA                                     |             |              | Yes                  | Yes                  | Yes                  | No                   |
| NSF                                      |             |              | Yes                  | Yes                  | No                   | Yes                  |

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