



Understanding Acetal for Your Machining Needs

What is Acetal?

Acetal, also known as polyoxymethylene (POM), is a semi-crystalline thermoplastic celebrated for its exceptional stiffness, strength, and wear resistance. These qualities make it an ideal choice for a wide range of machining applications across various industries.

At Millennium Metals, we provide valuable insights about materials like acetal to empower our customers to make informed decisions for their machining projects. While we don't machine materials ourselves, we are your trusted source for high-quality metals and engineering plastics.

Thermoplastics vs. Thermosets

Understanding material properties is essential for successful machining. Polymers fall into two main categories:

- **Thermoplastics:** These materials, like acetal, melt under heat, allowing reshaping or reprocessing.
- **Thermosets:** These remain permanently set after their initial formation and cannot be remelted.

Acetal's classification as a thermoplastic means that temperature management is critical during machining to prevent deformation and maintain material performance.

Key Properties and Advantages of Acetal

Acetal offers a unique combination of properties that make it versatile and reliable for machining and manufacturing:

- **Dimensional Stability:** Maintains tight tolerances for precision components.

- **Moisture Resistance:** Performs exceptionally in wet or submerged environments, outperforming other thermoplastics like Nylon.
- **Wear Resistance:** Features a low coefficient of friction and resists abrasion and fatigue.

Common Applications:

Acetal's properties make it suitable for industries like medical, aerospace, and energy, with applications such as:

- Bearings, rollers, and gears
 - Medical instruments and devices
 - Industrial scraper blades
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Popular Grades of Acetal

We supply information on several specialized grades of acetal to help our customers choose the right material for their applications:

1. **PTFE-Filled Grades:** Enhanced wear resistance and impact strength.
 2. **Glass-Reinforced Grades:** Improved strength and heat resistance.
 3. **FDA-Compliant Grades:** Ideal for medical and food-related uses.
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Tips for Machining Acetal

While we don't machine materials, we understand the critical factors for success when working with acetal:

- **Temperature Control:** Keep machining temperatures below 250°F (121°C) to avoid deformation.
 - **Balanced Material Removal:** Prevent warping by removing material evenly.
 - **Coolant Use:** Non-aromatic, air-based coolants are recommended for smooth surface finishes and extended tool life.
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Commitment to Quality and Support

At Millennium Metals, we're dedicated to providing not just materials but also the knowledge to help our customers succeed. Whether you're sourcing acetal for a high-precision application or exploring other materials, we are here to guide you with reliable information and exceptional service.

Contact us today to discuss your material needs and discover how Millennium Metals can support your business.

