

# Delrin® Gears: Engineered for Precision, Quiet Performance & Long Term Reliability

## High Performance Gear Solutions for Modern Motion Systems

Delrin® acetal homopolymer (HPOM) is the preferred gear material for designers who demand strength, precision, and durability without the weight, noise, and maintenance drawbacks of metal or hygroscopic polymers. From automotive systems to robotics, consumer devices, and industrial automation, Delrin® enables compact, high performing gear trains that stand the test of time.



### Why Choose Delrin® for Gears?

Key features include improved creep and fatigue resistance, enabling greater durability and smarter, more compact, designs. These materials support demanding gear applications across a wide variety of industry sectors.

#### Superior Mechanical Strength

- High tensile and fatigue strength for long gear life
- Excellent creep resistance under continuous load
- Enables smaller gear designs without compromising performance

#### Smooth, Quiet Operation

- Naturally low friction for smooth motion
- Exceptional wear resistance
- Inherent noise dampening for low NVH gear trains

#### Precision You Can Count On

- Outstanding dimensional stability
- Low moisture uptake (0.2–0.8%) prevents swelling and tolerance drift
- Supports tight tolerances and precise tooth geometry

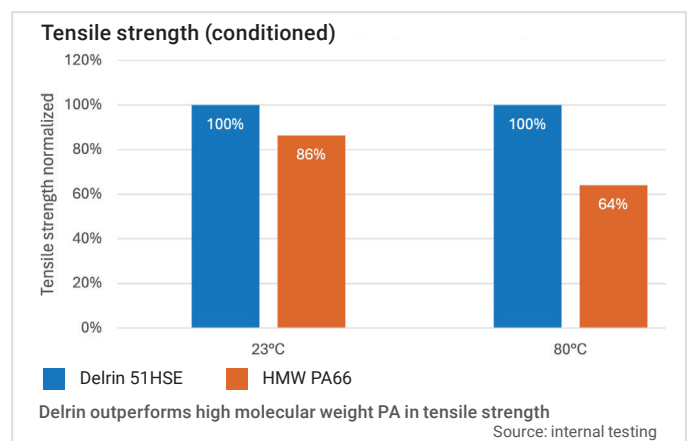
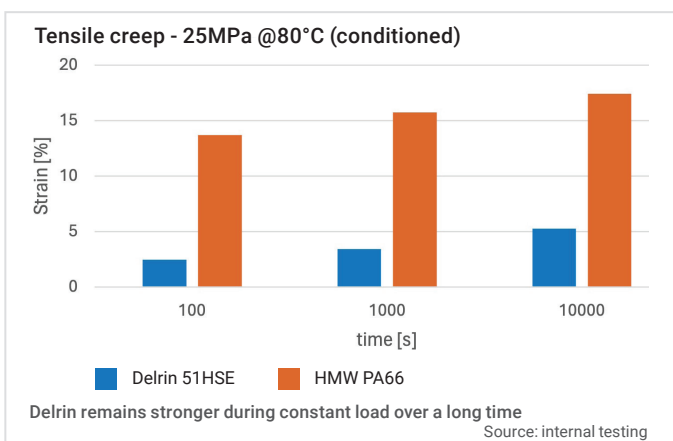
#### Lightweight & Energy Efficient

- 40–60% lighter than metal gears
- Improves battery life and payload in robots, e-bikes, and portable systems

#### Clean, Low Maintenance Design

- Self lubricating behavior eliminates grease in many applications
- Reduces maintenance frequency by 30–50%
- Ideal for food safe, medical, and cleanroom environments

### High strength with Delrin: comparing tensile properties vs. high molecular weight PA



## Key Applications

### Robotics & Humanoids

Lightweight, silent gear trains for actuators, grippers, and harmonic/cycloidal systems.

### Automotive

Window lift systems, actuators, interior mechanisms, reliable performance across temperature extremes.

### E-Bikes

High strength, low noise motor gears with proven endurance at elevated temperatures.

### Consumer & Industrial Equipment

Power tools, appliances, automation equipment, printers, and motion control systems.

## Proof in Performance

Across internal testing and customer programs, Delrin® gears consistently deliver:

- Longer life under load vs. competitors
- Stable precision across humidity and temperature changes
- Match or exceed performance of specialty materials at a fraction of the cost

## Partner With the Experts in Polymer Gear Engineering

Delrin® offers:

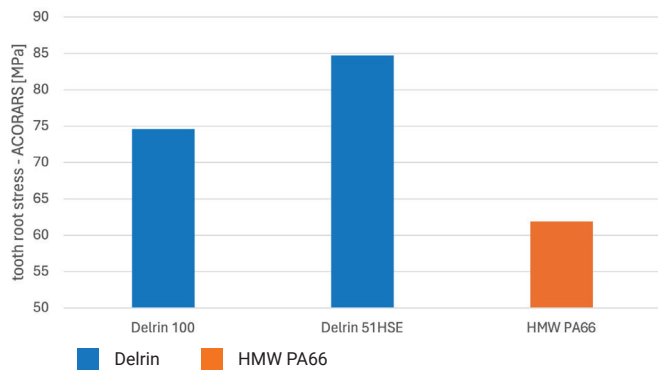
- Application specific gear testing
- Gear design support and simulation insights
- Material data for FEA modeling
- Global engineering assistance

From drive gears, gear sets, and bearing cages to wheels and casters, we offer solutions that are tough and durable under demanding conditions. Delrin® is a leading material for gears and other robotic parts.

## Get Started

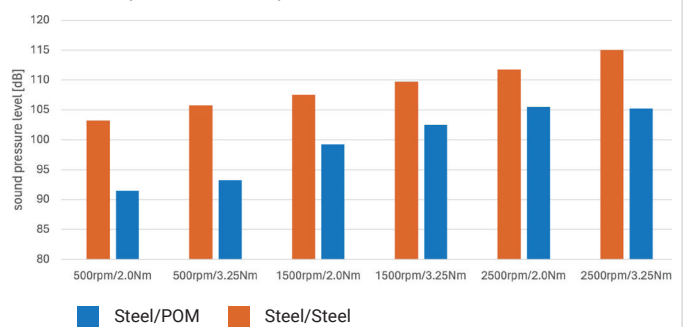
Discover how Delrin® can optimize your next gear system: [delrin.com/gears](https://delrin.com/gears)

Permissible tooth root stress for 1 million load cycles



Delrin outperforms high molecular weight PA in gear applications. The permissible tooth root stress is up to almost 40% for high viscosity Delrin grades  
Source: FZG - Munich technical university gear tests

NVH - Steel/Steel vs. Steel/POM



With Delrin the sound pressure level drops by over 9dB (average over 6 investigated load-cases)  
Source: RDmotion NVH study



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Delrin® is an industry-leading premium industrial polymer business. Grounded in strong innovation, Delrin is a category creator with a longstanding reputation for quality, reliability, supply and product performance. The iconic Delrin brand, coupled with proprietary technology and deep application expertise make us a leader in the high-end engineering polymer market. Delrin has exciting growth prospects from exposure to automation, actuation, healthcare, mobility and consumer applications.