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Make it custom: Why custom compounding matters and what it enables

By Rachael Pasini | June 26, 2026

Caio Beraldo, technical manager at Trelleborg Sealing Solutions, shares insights on custom compounding for manufacturing and why it can be a valuable solution for original equipment manufacturers.



Though selecting standardized materials has its value, Caio Beraldo makes the case for keeping custom compounding in mind.

Image: Trelleborg Sealing Solutions



adjust fillers, additives, colorants, and base polymers to achieve the precise properties needed for a customer's application.

Why do original equipment manufacturing (OEM) customers seek custom compounds instead of standard materials?

OEMs typically pursue custom compounding for several key reasons:

- **Performance tailored to exact conditions**, such as chemical compatibility, heat resistance, sealing integrity, friction reduction, or durability in demanding environments.
- **Regulatory or environmental requirements**, such as PFAS-free alternatives or materials suitable for medical and food-related applications.
- **Manufacturing accuracy**, especially when parts must be visually distinguishable to avoid production errors, using methods such as adding unique colors or patterns to seals, enabling quick size identification.
- **Fit-for-purpose customization** enabling unique geometries, thin-wall tolerances, conductivity, radiopacity, or miniaturization.
- **Confidence in long-term material performance** backed by testing, simulation, and structured documentation.

Can you give a practical example of custom compounding solving a customer problem?

Yes, a recent floating lip seal project required creating color-speckled polytetrafluoroethylene (PTFE) compounds so operators could quickly differentiate between dozens of nearly identical seal sizes on an assembly line. This avoided incorrect installations in hermetically sealed systems where, once assembled, parts cannot be opened or reworked.

This project was challenging because adding colorants changed the material's physical properties. We had to perform extensive formulation iterations to add just enough pigment for visibility without compromising performance. This example demonstrates how custom compounding isn't just about color. It's about engineering a material that solves a real-world manufacturing risk.

Another instance I can share is about how custom compounding enhanced part performance for an automotive application. We had a customer who was using a rubber washer as a stopper for a solenoid. The washer would stick to the impact bumper and delay the return of the plunger after ultra-fast acceleration in cold weather conditions. Trelleborg helped the customer design a custom fluorocarbon rubber (FKM) washer with embedded lubricants and a low-friction surface, which improved solenoid return times under both standard test conditions and low temperatures, eliminating stiction.



Sometimes, custom solutions are necessary to meet specific application requirements or to achieve more innovative products.

Image: Trelleborg Sealing Solutions

What kinds of material innovations can custom compounding achieve?

Custom compounding enables innovations such as:

- **PFAS-free compounds** that still perform like PTFE in critical applications.
- **High-performance silicones** including fluorosilicone (FVMQ) and phenyl silicone (PVMQ) for chemical, thermal, or low-temperature extremes.
- **Engineered thermoplastics** with conductive, friction-reducing, sterilization-resistant, or radiopaque properties.
- **Compounds optimized for precise filler distribution**, critical in electrically or thermally conductive applications.

What does the development process of custom compounds look like?

While each project is unique, a typical workflow includes:

1. **Understanding customer challenges**, often through engineering discussions or joint development sessions.
2. **Formulation development** achieved by adjusting polymer, filler, color, and processing additives to meet target properties.
3. **Testing and validation**, including evaluating mechanical, thermal, chemical, and physical performance.
4. **Regulatory and quality alignment** to ensure documentation meets standards such as ISO 9001, ISO 13485, or specific customer certifications.
5. **Scaling for production** from small trial batches to full manufacturing.



- Deep material science expertise in rubber, silicone, and thermoplastics
- Advanced in-house testing and simulation capabilities
- Global facilities with high-precision manufacturing capacity

With custom compounding, customers aren't just getting a material, they get a purpose-engineered solution backed by cross-functional technical teams and validated performance.

What's the bottom line about the benefits of custom compounds?

Custom compounding delivers:

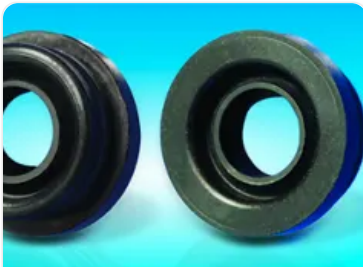
- Improved performance
- Reduced risk
- Greater manufacturing efficiency
- Compliance confidence
- Competitive edge in their market

Or put another way: the right material unlocks the right solution, and custom compounding is how you get there.

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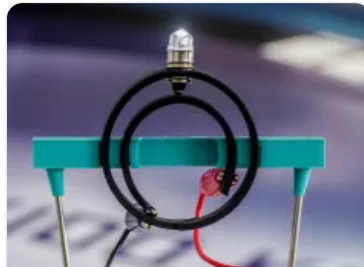
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