
3M
Science.
Applied to Life.™
Contributing to your success.
Meet the Application Engineers who make the 3M difference!

When it comes to high-performance fluoroelastomers

We've got technical service down to a science.

For over 60 years, 3M™ Dyneon™ Fluoroelastomers have been used in a variety of demanding sealing, hose/tubing and other high performance applications – thanks to their unique properties that include excellent thermal and chemical resistance, low permeation and high sealing strength.

But when it comes to making parts, the quality of your fluoroelastomer raw material is just one piece of the puzzle. It takes a lot of knowledge about cure chemistries; molding and processing techniques; the interaction of various additives and fillers; and many other factors to consistently produce high-value parts – at a price your customers are willing to pay.

That's why the availability of technical service and application engineering support is the key to successfully producing quality fluoroelastomer products.

The 3M difference

At a time when technical support is becoming tougher to find, 3M is doubling down on our commitment to your success, with investments that include:

- Direct access to some of the best and brightest minds in the industry – experienced application engineers devoted exclusively to fluoroelastomer application development and troubleshooting.
- State-of-the-art lab facilities inside 3M's new, 470,000 s.f. Carlton Science Center. Here we maintain a wide range of testing, formulating and processing equipment, designed to replicate real-world conditions
- Advanced analytical services, available through 3M's corporate laboratories

You get the industry's most comprehensive and personalized technical support included with every box of Dyneon fluoroelastomer.

"Our technical service team has the experience to develop compounds, to improve processing, to reduce scrap rates and do a lot of things to help the customer. That's a way we can stand above the competition."
– Tho Nguyen

Straight talk. Honest answers.

At the very top of 3M's declaration of corporate values is the charge to "...act with uncompromising honesty and integrity in everything we do." We understand that our success ultimately depends on your success, which is why we strive to provide technical support that is comprehensive, science-based and objective.

"We have good, smart competitors. Sometimes our materials offer the best solution, but sometimes it's our competition. We're not going to push our product when we know that something else might work better. Always be ethical, always be responsible. I think that those values are ingrained in you here, not only when you start but throughout your entire career. It's something that I respect a great deal."
– Jarod Lowry

We're with you in the trenches.

Imagine that it's your second or third shift. You need to ship parts to your customer tomorrow but production is having issues and slowing to a crawl.

How would you rather handle the situation: sort through pages of FAQs on your polymer supplier's website? Or have an experienced rubber engineer standing shoulder-to-shoulder with your team until the problem is solved?

"Our customers don't just mold our product during a nice eight-hour time shift in the day. Many of the engineers in our group have spent evenings, working through the night. If they're planning on running an experimental trial in the middle of the night, we're there." **– Al Sohlo**

"We have gone to their plants and spent many a night working third shifts with operators to try to help find the root cause and understand what the problem may be. I used to be a customer of 3M's and I know when needing technical service for fluoroelastomers a lot of times with the competition we weren't able to get that kind of service. A lot of them simply because they were understaffed, they didn't have the resources." **– Ed Cole**

Of course, not every formulating or processing challenge will warrant an in-person visit from a 3M application engineer. And although we can and do send our people to customer facilities to lend their expertise in an emergency, most questions can be answered most efficiently over the phone or by email.

The important thing to remember is, our application engineers are ready to do whatever it takes to ensure your success using 3M™ Dyneon™ Fluoroelastomers. And they have the experience, the resources and the passion to make that happen.

"Fluoroelastomers have to be made into a recipe. So it's just like cooking: you can vary that recipe hundreds of ways. And what that means to the customer is, how will that process, and what end properties will I get? Most people aren't specialists in compounding, but the engineers in our technical service group are. We've been doing this for many, many years." **– Nena Serios**

Facilities

3M's fluoroelastomer laboratory gives you access to a wide range of capabilities, including:

- **Elastomer mixing**
  - Two-roll Rubber Mills (50g - 5 Kg)
  - BR Lab Banbury® (2 Kg)
  - 3.5 liter Tilt Mixer (5 Kg)
  - Haake™ Mixer (50g - 500g)
- **Elastomer processing**
  - Rosand™ Capillary Rheometer
  - Production- and Lab-Scale Extruders
  - Compression Presses
  - Bench Top Injection Molder
  - 100 ton Injection Molder (for o-rings)
- **Rheological testing**
  - Mooney Viscometers
  - Rubber Process Analyzer (RPA)
  - Moving Die Rheometers (MDR)
  - Oscillating Disc Rheometer (ODR)
- **Physical property testing**
  - Stress/strain
  - Elevated Temperature
  - Dynamic Mechanical Thermal Analysis (DMTA) (tan delta, elastic & loss modulus)
  - Dynamic Mechanical Analysis (DMA)
  - Thermal Gravimetric Analysis (TGA)
  - Low Temperature Retraction (TR-10)
  - Brittle Point
  - DIN Abrasion
- **Chemical resistance/aging/ permeation testing**
  - Block Ovens (Oil)
  - Constant Temperature Baths (fuel, aqueous)
  - Permeation Chamber
  - Pressure Vessels for High Pressure Testing
- **Aging at temperature**
- **Various analytical techniques, both in our fluoroelastomers lab and through 3M Corporate Analytical Services.**

"Never be afraid to ask a question. Or if we're selling you a product, and you think we can make that product better, let us know. For example, if your material cures at a speed that's not quite fast enough, let us know. We'll help you figure out a way to get it to the sweet spot; reduce scrap; make your materials better and work together." **– Karen Hopperstad**

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