For More Reliable Rubber Components and Seals... Specify Viton Fluoroelastomers

- Reduce Lifetime Costs
- Cut Unscheduled Downtime
- Increase Temperature Capability
- Stand Up to Aggressive Fluids
- Comply with Tougher Regulations
Seals, rubber parts last longer with Viton® fluoroelastomers

Viton can help you reduce costs by preventing sealing failures, extending maintenance intervals, handling more aggressive fluids and higher temperatures, increasing safety, and meeting stringent environmental regulations.

With Viton, you can meet these needs with performance proven by decades of service in harsh environments.

**Reduce Lifetime Costs**
Viton far outlasts nitriles and other general-purpose elastomers. It allows you to extend service intervals and stretch maintenance dollars.

**Cut Unscheduled Downtime**
Viton protects against unscheduled downtime because it provides increased reliability. You can extend warranty periods with greater confidence.

**Increase Temperature Capability**
In many applications, rubber parts are stressed by accidental temperature excursions as well as by increases in operating temperatures designed to increase production. In some situations, Viton can serve continuously at 204°C (399°F) with excursions to 315°C (599°F).

**Stand Up to Aggressive Fluids**
Viton performs well in a wide range of aggressive fluid environments. Systems can tolerate changes in fluids and have more versatility for broader application.

**Comply with Tougher Regulations**
Environmental regulations have raised the stakes for leaks, spills and emissions. Viton helps guard against these problems and increases safety for workers and plant neighborhoods.

**Proven Performance**
Since its introduction in 1957, Viton has solved sealing and other problems in major industries:

- **Aircraft and Aerospace**
- **Automotive**
- **Chemical Processing and Transportation**
- **Off-Highway and Heavy-Duty Equipment**
- **Petroleum Refining and Transportation**

Major uses include bonded seals, radial lip seals, caulks, coatings, vibration dampeners, expansion joints, gaskets, O-rings, piston seals, custom shapes, and stock rod and sheet.

**Learn More About What Viton Can Do for You**
This brochure contains extensive technical data and information to show what Viton can do for you. It’s all here: data confirming superior thermal, chemical and mechanical performance, and comparisons with other elastomers. Basic information is included to help you select the best type of Viton for your application, along with examples of economic analyses.

**Superior Thermal Stability**
Resisting damage from thermal upsets is important insurance against failure for seals and other components. Viton® fluoroelastomers resist hardening and embrittlement indefinitely in air at up to 204°C (399°F), and they endure thermal excursions to 315°C (599°F) (Figure 1).

And with the high-temperature capability of Viton, some users can increase operating temperatures to improve productivity or gain other advantages.

Viton delivers at low temperatures, too. Dynamic seal applications for Viton have been successful at −40°C, and in some cases, appropriately designed parts of Viton can still offer static sealing capabilities down to −160°C.

**Broad Chemical Compatibility**
Because Viton is compatible with a very wide range of chemicals, fuels and solvents, it can reduce costs through extended service life and reduced unscheduled downtime for seals and components. Broad compatibility also increases product versatility to extend applications. Much more information is available about the performance of Viton with chemicals and fluids. The DuPont Dow publication, “Fluid Resistance of Viton®”, can be obtained from any DuPont Dow Elastomers office listed on the back cover.

**Permeation Resistance to Fugitive Emissions**
Even if high temperatures or aggressive fluids aren’t involved, Viton may be specified because it has good resistance to permeation. In automotive, chemical processing and other industries, Viton helps control fugitive emissions to meet Clean Air Act requirements.

**Table 1: Permeation Rates for Selected Elastomers, Nylon 12 and Fluoropolymers.**

<table>
<thead>
<tr>
<th>Material</th>
<th>Permeation Rate (ml/100 in²/24 hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBR (25% ACM)</td>
<td>0.05</td>
</tr>
<tr>
<td>HNBR (75% ACM)</td>
<td>0.05</td>
</tr>
<tr>
<td>Fluoroelastomer</td>
<td>0.05</td>
</tr>
<tr>
<td>Nylon 12</td>
<td>0.05</td>
</tr>
<tr>
<td>Viton EFLT</td>
<td>0.05</td>
</tr>
<tr>
<td>Viton EP</td>
<td>0.05</td>
</tr>
<tr>
<td>Viton A200D</td>
<td>0.05</td>
</tr>
<tr>
<td>Viton FLT</td>
<td>0.05</td>
</tr>
<tr>
<td>Viton B200</td>
<td>0.05</td>
</tr>
<tr>
<td>Viton SF</td>
<td>0.05</td>
</tr>
<tr>
<td>Tefzel® ETFE 1000LZ</td>
<td>0.05</td>
</tr>
<tr>
<td>Tefzel® FEP 1000L</td>
<td>0.05</td>
</tr>
</tbody>
</table>

* Mathematically normalized to 1 mm thickness using data described in ASTM D149.

Table 1 shows permeability to standard ASTM fuels for general purpose and specialty types of Viton and several other materials. Other information about types of Viton is given on page 5 in “Selecting the Type of Viton® That’s Best for You.”
We’ve developed many types of Viton to meet specific end-use and processing needs. Table 3 shows how different types of Viton compare in chemical resistance and mechanical properties.

Selecting the type that best meets your needs is important, but it isn’t complicated, and help is available from DuPont Dow Elastomers. The general purpose types differ primarily from the specialty types in chemical resistance. In the specialty family, the choice is among four types that are tailored for superior fluid resistance, low-temperature performance or combinations of these properties.

Each type of Viton is available in a number of grades. The grade to be used for a specific application is selected for manufacturability as well as performance.

PART COSTS OR LIFE CYCLE COSTS?

When Viton is specified, it’s not because “nothing else will work.” Although they usually cost more than parts made with ordinary elastomers, parts of Viton are selected because they deliver higher value through increased reliability and service life.

The additional cost of a seal of Viton is insignificant, for example, compared with the cost of the pump it protects, or of lost business, pollution or safety risks due to the pump’s failure.

A TOUGH CONTENDER

The compatibility of Viton fluoroelestomers with some important materials is shown in Table 2. The capabilities of other elastomers shown for comparison can be helpful when you’re considering changing materials to increase reliability or accommodate more severe operating conditions.

Viton also offers mechanical ruggedness so seals and components resist damage during installation and use. Basic mechanical property data listed show that Viton compares favorably with other elastomers in tensile strength, range of hardness and leak-preventing resistance to compression set.

Viton retains sealing force to prevent leaks even after compression for long periods in severe environments. After 100 hours in air at 150°C (302°F), Viton retains more than 90% of its original sealing force, while seals of fluorosilicone, polyacrylate and nitrile retain only 70%, 58% and 40%, respectively.

Viton has excellent resistance to atmospheric oxidation, sunlight and ozone. After 20 years of exposure to direct sunlight, seals of Viton showed no traces of cracking. In addition, Viton did not crack after one year in an atmosphere containing 100 ppm ozone.

Viton is more resistant to burning than hydrocarbon rubbers.
ASSURE PERFORMANCE
BENEFITS BY SPECIFYING
VITON® FLUOROELASTOMERS

Viton gives you advantages over other fluoroelastomers because its performance is supported by innovation, quality and long experience.

The right product for you. No other manufacturer offers as broad a selection of fluoroelastomer types to meet your specific application needs. DuPont Dow scientists are inventors on more breakthrough patents in the fluoroelastomer field and have developed more technology firsts in this area than any other manufacturer. This technical innovation has been focused on meeting user needs for improved performance and product grades for cost-effective processing.

Uniformity. DuPont Dow Elastomers is the only fluoroelastomer producer with multi-site, worldwide ISO 9002 registration. This quality assurance for fluoroelastomers is available only from DuPont Dow.

Solutions, not problems. All the benefits of DuPont knowledge are available to you when you use Viton. Since 1957, longer than any other manufacturer, DuPont, and now DuPont Dow have continuously supported the development of new fluoroelastomer technology and products.

MAKE SURE YOU GET
WHAT YOU SPECIFY

You can make sure that you’re receiving the quality and performance benefits of Viton by insisting that your parts carry the Viton certification mark. Or you can ask your supplier to document in writing that your parts are made with Viton. Fluoroelastomers move through compounders to parts manufacturers, and finished parts often are sold to distributors or component manufacturers or OEMs before they reach end users. Because this supply chain is so long, communications can break down. Users may not be sure they’ve received parts made with the material they’ve selected. If you select Viton, insist on the DuPont Dow certification mark or other documentation to be sure you are getting Viton.

PUT VITON TO WORK FOR YOU

Contact any of the DuPont Dow offices on the back cover for more information. We’re ready to work with you and your parts supplier to recommend the correct type of Viton and the best formulation to meet your needs.

THE “MADE WITH GENUINE DU PONT DOW ELASTOMERS VITON®” CERTIFICATION MARK IS YOUR ASSURANCE OF QUALITY THAT ONLY VITON FLUOROELASTOMERS CAN PROVIDE.
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CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, discuss with your DuPont Dow Elastomers customer service representative, and read medical caution statement H-69237.

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