

Application Success Stories

Parker compound V1289-75: Low Temperature FluoroElastomer

Application:

Automotive fuel system

Problem:

The customer had low temperature leakage at -40° C with a GFLT fluorocarbon O-ring in a gasoline fuel system component.

Fluorosilicone could not be used due to permeation, and GLT fluorocarbon compounds swelled significantly in the fuel-alcohol blends used in testing. High temperature and compression set concerns eliminated fuel-resistant nitrile materials from consideration for this application.

Parker Solution:

Parker developed compound V1289-75 utilizing a new low temperature fluorocarbon elastomer. V1289-75 offered similar or better fluid compatibility with improved low temperature performance over GFLT or GLT fluorocarbon polymers.

Outcome:

The customer tested V1289-75 prototypes in their application and submitted them to a full spectrum of fluid immersion tests. Not only did V1289-75 successfully pass the fluid immersion tests, but V1289-75 demonstrated successful static sealing down to -50° C. V1289-75 was approved for the application, and Parker was awarded the full production volume purchase order.

V1289-75 is a new low temperature (-40°C TR-10) fluorocarbon material with superior low temp sealing properties compared to GLT-type fluorocarbons, and with comparable fuel resistance and mechanical properties. It has also passed leakage testing requirements at -40° C in automotive and aerospace environments.

Compound V1289-75 is designed to have the best low temperature properties of any fluorocarbon rubber compound available. The low temperature resilience of V1289-75 exceeds all other fluorocarbon materials tested to date. Rubber compounds lose spring force as they approach their TR-10 temperature.

At around -15° C, V1289-75 generates approximately the same sealing force

	TR-10	Temp Range
V1289-75	-40° C	-48 to +200° C
A-type FKM	-18° C	-26 to +200° C
GLT-type FKM	-31° C	-40 to +200° C
GFLT-type FKM	-28° C	-37 to +200° C

as a traditional A-type fluorocarbon compound. However, the A-type material drops to near-zero contact sealing force at around -18° C. Compound V1289-75 continues to show excellent retained sealing force down to -40° C.

In addition, the methanol swell resistance of V1289-75 is similar to that of low-swell F-type and GFLT-type fluorocarbon compounds. While A-type and GLT-type fluorocarbon compounds typically swell more than 100% in an 85% methanol / Fuel C blend, F-type and GFLT-type materials typically swell around 10%. Compound V1289-75 matches this level of compatibility.

As a result, V1289-75 can be considered an improved-performance alternative for GLT or GFLT fluorocarbon technology in many applications. For more information on this or any of Parker's O-ring Division compounds, contact Parker's Applications Engineering team or your local Territory Sales Manager. Please refer to Parker's *Fluorocarbon Fact Sheet* for more information on the more traditional grades of fluorocarbon rubber.