

## Viton® Has Superior Thermal Stability

Resisting damage from thermal upsets is important insurance against failure for seals and other components. Viton® fluoroelastomers resist hardening and embrittlement >10,000 hours in air up to 204°C, and they endure thermal excursions to 315°C (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  $-40^{\circ}\text{C}$ , and in some cases, appropriately designed parts of Viton® can still offer static sealing capabilities down to  $-60^{\circ}\text{C}$ .

What's more important, Viton® retains good performance in fluids at elevated temperatures. Figure 2 compares the performance of Viton® and other elastomers in a standard SAE/ASTM test that measures volume swell in hot oil. A swell of more than 30% is usually unacceptable.

### Effect of Temperature on Hardness in Viton®

The hardness of elastomer vulcanizates decreases with increasing temperature. The amount of the decrease depends upon the nature of the elastomer, the degree of cure, and the amount of plasticizer which is included in the compound.

Here is a convenient rule of thumb: At any temperature between 250° and 500°F (121° and 260° C) vulcanizates of Viton® are 15 to 16 durometer points softer than they are at room temperature. Accordingly, if 75 durometer A is required at 300°F (149° C) formulate for a room temperature hardness of about 90 A.