**Tensile Strength | Ultimate Elongation | Modulus of Elasticity**

Rubber Compound Data sheets usually display a number of physical properties as recorded from standard test methods. Among the most common are three measured on the Tensometer:

1. Tensile Strength (at break)
2. Ultimate Elongation
3. Modulus of Elasticity

**The Test**

The Tensometer stretches a specimen, or dumbbell, cut from a sheet of rubber, until it breaks. During the test, the force required and length of the gauged section are measured continuously. These measurements are used to calculate the various results, which considers the actual dimensions of the test specimen.

While Tensile Strength and Ultimate Elongation are pretty well understood by most, Modulus is not as well understood. Unlike the other two, the Modulus values are not usually reported at break, but rather at various elongation percentages as recorded during the test. Modulus is reported in pounds per square inch (psi) or Megapascals (MPa) at a given elongation percentage as below:

Modulus @ 100% Elongation: 610 psi 4.2 MPa

**The Results**

You might ask, “What does knowing the Modulus do for me?” While Modulus and Durometer are somewhat related, there can be a pretty large variance in modulus values between two compounds of the same durometer. In an application that requires a rubber seal to be stretched into place, a low modulus compound might be considered to make assembly easier. On the other hand, a firmer compound would be preferable in an application where stretchiness is not desirable. In this case, a high modulus compound would be superior. Higher modulus is also a good indicator of a compound’s ability to resist extrusion in high
pressure sealing applications.

This article is not intended to explain at length, the technical aspects of tensometer testing and resultant properties. To see an actual test performed on an 80 Durometer EPDM, look below:

The original article can be found on Precision Associates website.

Gallagher Fluid Seals is a preferred distributor for Precision Associates. For more information, or if you have a custom engineering question, please contact our Engineering Department.

Share this:

Email
Facebook
LinkedIn
Twitter
Google