

### **How can I get to Parker's inPHorm for o-rings seal design software?**

inPHorm for O-rings 3.0 is now available as a fully web-enabled internet application with updated material offerings and test reports and a new more-user-friendly interface.

Version 2.1 is still available for download or on CD for mobile users.

Since 1994, Parker O-ring Division's inPHorm (pronounced in'-form) has been the ultimate desktop tool for O-ring design and material selection.

### **How do I order Parker o-rings?**

Parker part numbers consist of a compound number followed by a size number. For example, Parker part number N0674 2-214 refers to a 70-durometer nitrile O-ring with a one inch inside diameter and one-eighth inch cross-section. Use this link for a list of Parker compound numbers organized by polymer family. O-ring sizes are defined by several industry standards and are also available in custom dimensions. Parker's inPHorm seal design software can help you determine the appropriate O-ring part number for your application.

### **Does Parker make metric o-rings?**

True metric O-rings are still fairly rare in North America. At this time, much of the demand is for low volume maintenance and repair operations, which have disproportionately high setup charges. If you only need a few metric or custom O-rings, you're probably better served contacting the original equipment manufacturer for replacement parts.

For production volumes, setup charges become more reasonable. We treat production volume metric O-rings the same as custom O-rings.

### **If two o-rings look the same, why is one more expensive than the other?**

Very seldom are the differences between seal compounds visible to the naked eye. Differences in the recipe used to make the compound play a significant role in both the seal performance and the seal cost. The cliché "you get what you pay for" usually applies in the O-ring industry.

### **Can Parker make this rubber part, even though it's not technically an o-ring?**

Parker has a total of eight divisions: Chomerics (CHO), Composite Seal Systems (CSS), Engineered Polymer Systems (EPS), Engineered Seals (ESD), O-Ring (ORD), Integrated Sealing Systems (ISS), Seal Aftermarket Products (SAP), and TechSeal (TSD). The breadth of rubber product manufacturing capability available to Darco is quite extensive.

## What're the differences between Shore A, Shore M, Shore D, and IRHD?

These are four different methods of determine rubber hardness. All four evaluate hardness as the resistance to penetration of an indenter, but that's where the similarities stop.

Shore A is the most common method of evaluating rubber hardness in North America. Even though it's a manual method, it has been shown to be very accurate and repeatable over the entire spectrum of materials and is not sensitive to the size or shape of the sample being tested, assuming proper measuring technique is used.

Shore D is very similar to Shore A, but it's intended for use with plastics. A Shore D measurement of 50 is approximately equal to a Shore A measurement of 90. Shore D is generally not valid for rubber O-rings. Shore M is designed specifically to measure finished O-rings. Because it removes the influence of operator technique, the results are more repeatable.

However, Shore M results vary with the thickness of the O-ring being tested. A small cross-section O-ring could register as much as 20 points lower than a larger cross-section O-ring of the exact same material. As a result, there is no correlation between Shore A and Shore M measurements. Shore A pass - fail limits are not valid for Shore M results, and vice-versa. IRHD is the standard European test for rubber hardness. The equipment is automated (and quite expensive,) but the results are repeatable and generally consistent with Shore A results within about five hardness points. Micro-IRHD (IRHDM) was designed to test rubber hardness of very small samples. As with Shore M, though, the results vary considerably from one sample thickness to another. IRHDM results do not correlate with other test methods.

Shore M, IRHD, and IRHDM are all useful in measuring the consistency of a specific rubber part from batch to batch. However, it cannot be stressed enough that the Shore A hardness limits for a Parker compound CANNOT be used with these test methods to determine if a seal has been properly manufactured.