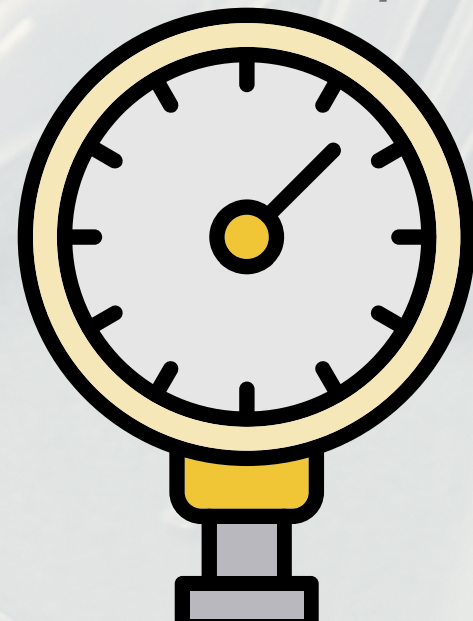


PLASTIC SHORE HARDNESS EXPLAINED

*Learn about the core elements of **plastic shore hardness**, how the shore hardness durometer is measured, and how hardness affects the finished molded product...*



WHAT IS PLASTIC HARDNESS AND WHY IS IT IMPORTANT?

Thermoplastic resin has several qualities, one of them being hardness.

Hardness is defined as a material's resistance to compression, scratch, or puncture. This information is important for finding materials that meet your application's visual and physical requirements.

For clarity, hardness is often measured by comparison between two materials; a softer vs a harder material. This makes measuring material hardness a less than scientific process.



Continue





HOW IS PLASTIC HARDNESS MEASURED?

Shore durometer is an accepted unit of measurement for plastic hardness. It is a combination of measurement standards but is ultimately a dimensionless measurement itself. To clarify, shore durometer is a relative comparison between slightly different materials.

There are three key factors that keep this measurement consistent (standardized):

1. The same device is used when comparing materials
2. The same *durometer scale* is used
3. The same measurement standard is used

Continue





Shore durometer
and test stand

TESTING PLASTIC COMPRESSION

The device used to measure shoreness is called a **durometer gauge** (pictured left). There are different versions of durometer gauges: some that use steel rods to puncture plastic, metal, and rubber that causes an indentation. **Indentation** is one indicator of the hardness of a material. However, it is NOT a unit of measurement.

For soft plastics, tests are done by compressing the plastic part, which returns a reading on the gauge. **Compression** is also NOT the unit of measurement, but it translates into shoreness via the durometer.

Continue →



WHAT IS THE SHORE DUROMETER SCALE?

Remember that shore durometer is a dimensionless measurement. Shoreness is measured relative to another plastics shoreness on a scale, or comparative spectrum.

So the question is: what is the **durometer scale**?

Continue



There are 3 scales used to measure material shore hardness...

Shore A Scale

The Shore A scale measures a wide range of materials. From very soft and flexible plastic to semi-rigid with little to no flexibility at all. Generally, this scale is used to measure softer plastics like TPE.

Shore D Scale

The Shore D Scale is similar to Shore A as it measures semi-rigid plastics. In fact, the low end of Shore D - 0 actually overlaps with Shore A - 60. Shore D however can measure the hardness of super rigid plastics like PVC.

Rockwell Scale

The Rockwell scale measures hard materials: PA, PC, PS, and POM. According to material experts, this test is best used when resilience, or creep, is less likely to affect test results.

**Most common*

Continue →

How to visualize Shore Hardness and Rockwell Scales



Soft

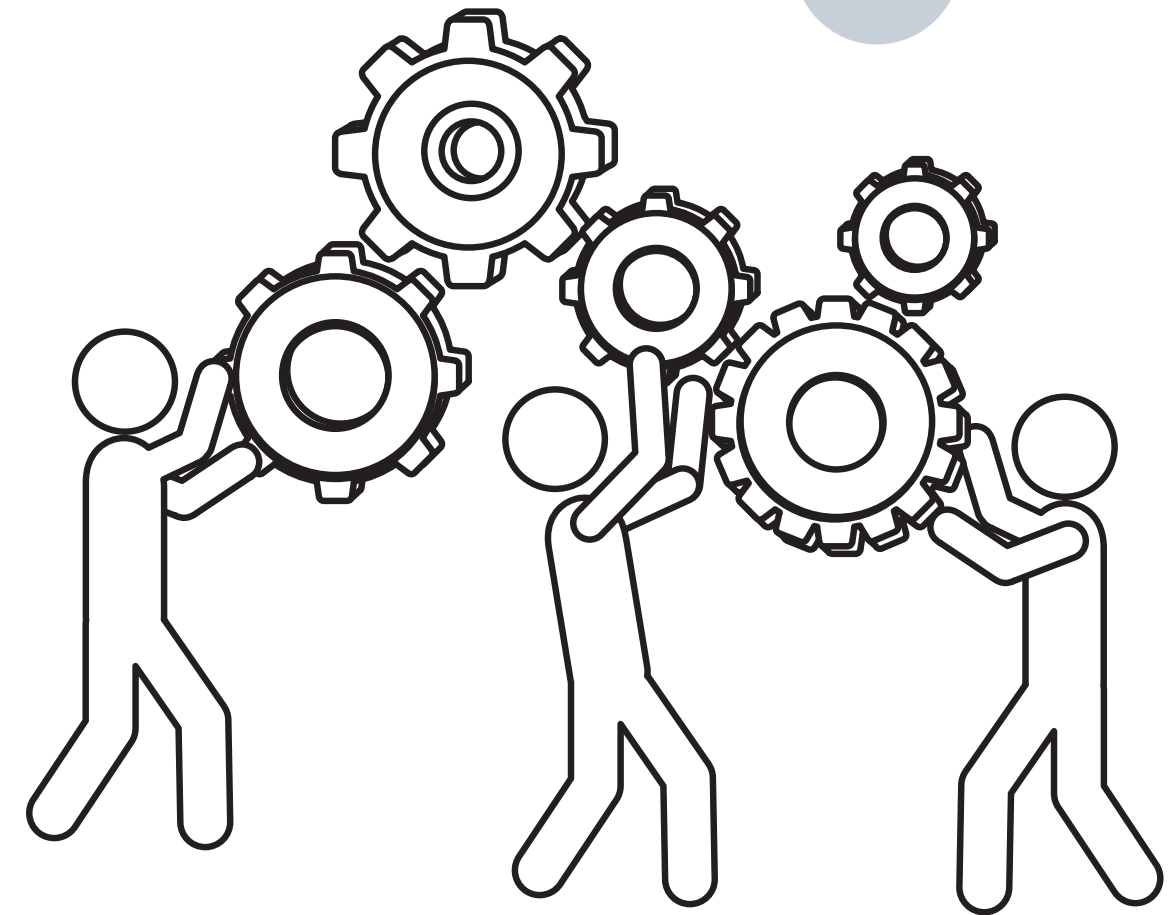
Hard

Continue 

How Will This Help You Make A Decision On Material?

Now that you understand what shore hardness means, you can decide which base plastic resin will better suit your needs.

For softer plastics, you'll likely be looking at a more elastic feeling material like TPE. For a hard feel, you'll want rigid plastic, like abs, or even a glass-filled formulation.



Continue





Need More Information About Plastic Resins?

There are a ton of online resources that can provide spec sheets, material safety information, compatibility, and more!

Pro tip: Working with raw material suppliers early on will help eliminate guesswork.



Continue



You Have Your Material Dialed In.

What Now?

Once you have your material selected, and your product's design ready, it's time to get some samples for testing!

Injection molding is exceptional for manufacturing engineering test parts. You can leverage this service for your initial testing and roll it into production once you're ready.

Find out more by visiting our website by clicking our logo below!



Finish

