INSTRON®

Materials Testing Accessories Newsletter

In This Issue: Accessories for Elastomeric Testing

Whether it is a new cover for your smart phone or more economical tires for your car, the demands on rubber and elastomeric production and performance are constantly changing. One certainty is that the raw material or end product will need to be tested, often to an industry standard. Instron® accessories allow the operator to confidently test to many of these standards.

Elastomeric materials typically consist of long and tangled molecular chains that will untangle and stretch when tensile forces are applied, ultimately returning to their original dimensions when the tensile force is removed. This is known as elastic deformation. If the tangled molecular chains are stretched too far the material will start to fail and the elastomer will suffer plastic deformation and ultimately, tensile failure.

When testing elastomers it is important to use appropriate specimen cutters to ensure uniform and consistent specimens without edge defects, which may affect the results.

Tensile testing is one way to measure a material's properties. Different gripping methods should be used when testing elastomers and when testing rigid specimens. Rubbers and elastomers characteristically show a thickness reduction during elongation, which can result in specimen slippage if the wrong grips are used. Instron's 2712-04x pneumatic grips provide a constant gripping pressure to the specimen tab ends avoiding specimen slippage and spoiled results. The 2712-04x pneumatic grips have specimen stops and a self-centering mechanism that allows for more repeatable and efficient testing.

Instron's 2712-04x pneumatic grips add value to your process in terms of productivity, repeatability, ease of use, and operator safety.

Pneumatic side action grips provide a versatile and effective solution for gripping a wide range of specimen types and materials, including fibers, wires, sheet, foils, film, textiles, plastics, elastomers, and components. Repeatable gripping force and speed of operation make pneumatic grips the ideal choice for a wide range of testing applications.

In addition to the pneumatic grips, we also offer a range of mechanical self-tightening tensile grips.

The self-tightening grips are ideal for meeting customers' elastomeric tensile testing requirements at ambient and non-ambient temperatures. These grips have a short effective length so that elongation in a chamber can be maximized.

More Information

CEAST Industry Standard Specimen Cutters

Contact Us

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Online Request

Related Links

• Fifth Edition of the Accessories Catalog for Materials Testing is now available!

• Missed previous issues of the Accessories Newsletter?
Catch up at the Instron Library. Follow the link and select "Newsletter" as the Document Type.

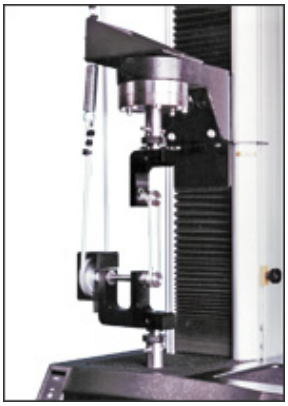
• Visit our Testing Solutions to find technical tips relevant to your testing application.

Future Events

For a list of upcoming shows that Instron will be attending, please visit the Events page of our website.

At times, elastomers need to perform at either above or below ambient temperatures. Asphalt and bituminous membranes for flat roofs are being replaced by rubber in many countries. This means the rubber needs to perform over a vast temperature range. Combining the self-tightening grip and an Instron temperature chamber provide customers with a solution that can replicate or get close to 'in the field' conditions.

Typical rubber testing standards, like ASTM D412 and ISO 37, in addition to the typical dumbbell specimen, specify how to test o-rings or sections of tubing. The 2717 o-ring fixture is capable of meeting a number of standards by changing the spindle set size. The fixture allows for testing continuous loop specimens without creating localized stressing and inducing premature failure, which is seen when using other grip types on tubular specimens.



How to measure strain is important due to the nature of elastomers. Although many standards allow the use of crosshead displacement to measure strain, Instron recommends using an extensometer to measure the properties important to the customer.

As previously mentioned, elastomers tend to thin as they elongate. This means if the crosshead displacement is used to measure strain then elongation is not only being measured at the gauge length but also outside the gauge length and within the jaw faces.

Instron recommends using a long travel extensometer for the majority of elastomeric specimens. However, when specimens are particularly sensitive, we recommend using a non-contact video extensometer. The use of an extensometer standardizes the results and allows customers to reliably compare between products. View more details on Instron long travel extensometers capable of measuring elongations up to 7500%.

Lastly, it is important to confidently and professionally present your test results with accurate data. This can be done by using any of the Bluehill® Software testing platforms.

For more details on applications that suit your industry, simply click on the links below and visit Instron's testing solution pages.

Examples of Instron testing solutions for Elastomers Including:
ASTM D412 A
ASTM D1414

ISO 37
ISO 34-1

For more information on Accessories, visit us on the web,submit an online request, or call us at +800 564 8378 (US only) or +44 1494 456815 (Europe only)

Are you testing something a little different? Do you think more people should know about it? Would you like to submit an article for possible publication in the Instron accessories newsletter? If so, please submit your story.

What do you think? Tell us!

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