

Test Standard for Elastic Characteristics of Rubber with Set Load

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1. Scope of Application

This standard shall specify measurement of elasticity of rubber under a set load.

2. Summary of Method

This standard starts with test sample collected from material selected for test. Measure the elasticity of test piece under load for given time as specified.

Place and hang the weight that can apply a load by gravity.

3. Significance

This test is useful for change, load of vulcanized rubber, deciding effect of variables of displacement characteristic. For example, it is useful in evaluation of composition material for certain purpose with temperature, relative humidity, and treatment of rubber. It is important that elasticity can be measured to accuracy.

4. Definition of Terms

Test Sample : Part of test material made for the test

Set load : Divided force resulted from cross sectional area

5. Apparatus

5.1 Test Device

Test is done with the device powered by the following condition.

Test apparatus should include a timing device that can inform the operator of the start of elasticity test and automatically started when the weight is freely hanging.

Millimeter ruler and indicator should be included so that test can be done at maximum inspection value, without time delay.

Holder should be attached at the bottom. And weight should be acquired through automatic device for set load. Weight should have accuracy in the force range required by 0.002 mm thick test piece. Clamp device in the test apparatus should be able to evenly apply the load to the surface of the test sample, and automatically tighten the test sample. Example of the apparatus is shown in Figure 1.

5.2 Die

Die should be able to cut parallel to both sides of about 150 mm long. Error allowance should be less than 0.02 mm for the width of die. Example of the die is shown in Figure 2. The die has 6 razor blades, and is fixed firmly to the support. The razor blade is 150 mm long, 19 mm wide, and 0.25 mm thick. The razor blades are firmly fixed between metal spacer to make test piece with consistent width, and projected about 3 mm above the spacer.

5.3 Bench Marker

Bench marker has two parallel blades. Ends of the blades shouldn't be sharp but even. The width of the end of the blade should be 0.05~0.08 mm and incline angle should be under 15 °. Distance between the center of the blade and sides of the blade 100 ± 0.1 mm. Example of the blade is shown in Figure 3.

5.4 Stamp Pad

Stamp pad should be flat without curve made with wood, glass, or plastic including ink to mark the test piece. Ink should have no ill effect on the test piece and opposite color from the stamp pad.

5.5 Thickness Gage

Thickness gage should be able to measure to 0.01 mm under 3.2 ± 0.7 psi. Average thickness should be calculated with the gage. The gage should have dial indicator with