KES

Test Method for Rubber Stress Relaxation in Compression

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1. Scope of application

This standard shall be applied to test method of rubber under compression stress that is particularly used for gasket material.

2. Stress relaxation

Stress relaxation of rubber material means reduction of stress in the test sample that is compressed and deformed at the specified temperature during the specified time.

The difference of stress relaxation test from the compression test is that reduction of stress is measured instead of restored length of test sample. Real stress is related to dynamic load due to uniform deformation, uniform load, and repeated deformation and restoration. Dynamic load generates stress relaxation and its effect is similar to that of compression or hysteresis test. Therefore, stress relaxation test is fulfilled under static load.

3. Test equipment

(1) Stress relaxation equipment

Two steel plates compress test sample and inserted metallic bar among them limits the amount of compression. Load applier is actual compressor that compresses the test sample. This is attached on an upper steel plate and moves vertically. Load applier is insulated from all parts except the flange located at lower part of upper plate. There are resistor meter that measure electric resistor between upper plate and lower plate.

Restoration ability of test sample is equivalent to the sum of load in a load applier, when the flange is removed from the upper plate, and external forces. There is change in electric resistor at this time.

There is base plug with micro bolt that raise and lower test sample at lower plate.

(2) Compression test

The speed of compression tester specified ASTM E 4 (Definition of tester) is 1mm/min.

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