KLINGER® Hot Compression Test Method

Summary: Typical external load is 7,250 psi (100 kN) and typical temperature is 572°F (300°C). Heating rate is 50°F (10°C) per minute. A high-temperature test can be performed up to 840°F (450°C). No conditioning of the material is required.

A ring is compressed between the heated platens of a hydraulic press. The external load of 7,250 psi (100 kN) remains constant, and the temperature is increased at an incremental rate of 50°F (10°C) per minute. The decrease of thickness is measured during the test.

Usage: This test method provides a measure of the gasket under load and/or temperature. The hot compression test serves as a "real-world" type test.

Warnings: This test method was developed by Klinger Group and is not currently an ASTM standard.

The test equipment is manufactured and maintained by the Klinger Group.

This test method is recognized and performed by most gasket manufacturers.

ASTM F36, Test Method for Compressibility and Recovery

Summary: A total of eight procedures is now included for different gasket types such as cork, rubber, fluorocarbons, non-asbestos compressed, etc. These procedures cover specific penetrative diameters, conditioning requirements and defined stresses for pre-load and major load.

After conditioning, a pre-load is applied to the gasket for 15 seconds and thickness is measured. The major load is then applied for 60 seconds and thickness is recorded. The original pre-load is then applied for 60 additional seconds and recovered thickness is recorded.

Usage: This test method gives an indication of the compressibility of the material at defined gasket stress and, therefore, can indicate the suitability of a material to fill in voids and scratches, the required surface finish, the final thickness of the material after assembly, etc.

Warnings: This test method is carried out at ambient temperatures. Because rubber bound materials continue to cure at elevated temperatures, these characteristics will no doubt change in application.

Beware of comparing different material results, such as compressed non-asbestos vs. cork and rubber. These materials have completely different loads and

ASTM F104, Standard Classification System

Summary: Provides a means for specifying or describing pertinent properties of commercial nonmetallic gasket materials. It is intended to encourage uniformity in reporting properties; to include a common language for communications between suppliers and consumers. It is based on the principle that nonmetallic gasket materials should be described in terms of specific physical and mechanical characteristics, and that an infinite number of such descriptions can be formulated by use of one or more standard statements based on tests.

Usage: A "line call-out" of the descriptions of the material and/or characteristic is used to define the material. Each numeral of the call-out represents a performance level of each property or characteristic.

FSA-NMG-204 Standard Test Method for Performance in High Pressure, Saturated Steam

Summary: This test method provides a means of assessing the performance of various gasket materials in saturated steam service under controlled conditions. This test method can be run in a "steam phase," with the gasket not in contact with the liquid, or in "wet phase," with the gasket being in contact with the liquid.

Usage: This test method uses "cycling" of the flange assemblies to simulate real-life application. It measures the loss of fluid in the flange assembly similar to what would be seen in an application with steam.

Gasket Assembly Stress Recommendations

The recommended assembly stress for all KLINGERSIL® materials differs from their corresponding "M" and "Y" values. "M" and "Y" do not take factors such as flange condition and blowout resistance into account. Thermoseal provides a torque chart based on a gasket assembly stress of about 6,500 to 7,200 psi (45 to 50 N/mm^2) gasket stress, for every material we manufacture, and this torque table should provide the best overall seal.

"M" and "Y" data is to be used for *flange designs only* as specified in the ASME Boiler and Pressure Vessel Code Division 1, Section VIII, Appendix 2. *They are **not** meant to be used as gasket seating stress values in actual service. Our bolt torque tables give that information and should be used as such.*

For individual "M" and "Y" data on any of our KLINGERSIL®