

Standard Classification for Non-metallic Gasket Materials

ASTM Designation: F104

This classification system provides a means for specifying or describing pertinent properties of commercial non-metallic gasket materials. Materials composed of asbestos, cork, cellulose, and other non-asbestos materials in combination with various binders or fillers are included. Materials normally classified as rubber compounds are covered in Method D2000.

Since all the properties that contribute to gasket performance are not included, use of the classification system as a basis for selecting materials is limited.

The purpose of the classification system is intended to provide a common language for communication between suppliers and purchasers; to guide engineers and designers in the test methods commonly used for commercially available materials, and be versatile enough to cover new materials and test methods as they are introduced.

It is based on the principle that non-metallic gasket materials should be described, insofar as possible, in terms of specific physical and functional characteristics. An infinite number of such descriptions can be formulated by use of one or more standard statements based on standard tests.

All fibrous and PTFE type gasketing materials in this catalog show our F104 Line Callout.

Tension of Non-metallic Gasket Materials

ASTM Designation: F152

The Universal Tester is used to determine the tensile strength of non-metallic gasketing products. The types of products covered are those containing various organic fibers, inorganic fibers, flexible graphite, or fluorocarbons as described in F104.

F152 is not applicable to the testing of vulcanized rubber, a method that is described in Test Method D142, nor for rubber O-rings, a method that is described in D1414.

The measurement of tensile strength characterizes various classes and grades of products of a given type. It also will aid the purchaser in determining whether the gasketing product approved for a given application is being manufactured to acceptable quality. Various procedures are given for different types of materials, and in order to compare results from one lab to another, it is imperative that the applicable procedure be used.

The measurement of tensile strength should not be construed as an indication of the performance of that product in use.

Thermal Analysis System

Thermal Analysis, often referred to as TA, is a series of techniques that characterize materials by measuring and analyzing changes in their physical and chemical properties resulting from controlled and measured changes in temperature. The TA techniques include DSC (Differential Scanning Calorimetry), TGA (Thermal Gravimetric Analysis) and TMA (Thermal Mechanical Analysis).

DSC measures heat flow into or out of a material as it is undergoing a programmed thermal profile. The resulting plot of heat flow vs. temperature can reveal a great deal of information about a material. DSC is being used to determine such things about a material as specific heat, melting point, crystallinity, glass transition temperature, degree of cure of thermosets, purity, oxidative stability, and reaction kinetics.

TGA measures changes in the weight of a material. By heating a sample in a controlled manner in various atmospheres, the composition of various materials can be determined. The technique is also useful for performing thermal stability studies.

TMA provides measurements of penetration, expansion, contraction, extension, and relaxation of materials as a function of either time or temperature. By using various probes and accessories, TMA can be used to determine expansion coefficients, softening points, heat-deflection temperatures, viscosity, creep, and stress relaxation.

Torque Retention

DIN 52913

This test is designed to determine the torque retention capabilities of gasketing products, when subjected to the compression load and operating temperature as defined by the test procedure.

The test consists of applying a predetermined load on the test gasket via a tension screw, then heating the gasket/flange assembly to the desired temperature (there is no internal pressure). The standard test period is either sixteen (16) hours or one hundred (100) hours. At the end of the required time period, the compression load which is left acting on the test gasket is measured. This allows one to calculate the torque retention capabilities of various gasketing products.