ASTM E 84 "Class" 1 One-Component Handi-Foam

All Handi-Foam One-Component Polyurethane Foam products are tested according to ASTM E-84 for surface burning characteristics as Caulkings and Sealants, and are considered to be "Class 1" This Technical Bulletin will serve to clarify the various issues relating to the use of the term "Class 1 foam" in construction practices, and the differences between one-component polyurethane foam and two-component foam.

The term "Class 1" has been used historically by the major building code bodies to refer to a material that exhibits a Flame Spread of 25 or less, and a Smoke Development of 450 or less, when tested according to ASTM E 84. The term "Class 2" refers to a material that exhibits a Flame Spread of 75 or less and a Smoke Development of 450 or less. The major difference between one-component polyurethane foam tested as a "Caulking and Sealant" and a two-component foam that is normally tested as a "Foamed Plastic" is that the one-component foam is dispensed in several beads onto the test surface, such that the dispensed beads cover less than 100% of the exposed test surface area. This coverage rate and bead size, then, is usually stated alongside the flame spread and smoke development results. The two-component "Foamed Plastic" materials are tested at full 100% surface coverage, and dispensed to a specified thickness.

ASTM E 84, “Standard Test Method for Surface Burning Characteristics of Building Materials”, is a widely recognized standard used to classify the surface burning behavior of building materials such as insulation, paneling, flooring, etc. A summary of this test method, which is also sometimes referred to as "UL 723" or the "Steiner Tunnel Test", is described below. Most of the major building codes in the United States reference ASTM E 84, which rates a product for its "Flame Spread" and "Smoke Development".

Note*: The numerical flame spread ratings from this test are not meant to represent a time rating, and are not intended to reflect performance under actual fire conditions (see below for further information about what these ratings mean).

The Flame Spread number is a calculation, not a direct measurement, which takes into account the time of ignition, rate and extent of burn, and is a comparison of the tested material relative to a totally non-combustible material (e.g. inorganic cement) with a Flame Spread of zero (0), and untreated red oak, which has a defined Flame Spread of 100. As indicated above, the Flame Spread is not a time rating. A photovoltaic eye measures smoke density and the number value should be equal to or less than 450 for a Class 1 designation. This smoke number is a direct measurement.