

# POLYISO FLAME SPREAD AND SMOKE DEVELOPMENT

## ASTM E84: standard test method for surface burning characteristics of building materials.

ASTM E84 is the standard test method that is intended to provide only comparative measurements of surface flame spread and smoke development with that of select red oak and fiber-cement board surfaces under controlled fire exposure conditions.

### “STEINER TUNNEL TEST”

Often referred to as the “Steiner Tunnel Test,” ASTM E84 involves installing 20 inches wide and 24 feet long sample of material as the ceiling of a horizontal test chamber. The material is exposed to a gas flame on one end of the tunnel for a period of 10 minutes to measure flame front progression. The rate of flame front progression is compared to selected standards and calculations obtained from an arbitrary scale in which cement board has a value of 0 and red oak wood has a value of 100. Smoke from the fire in the tunnel is measured in the exhaust stack via a light beam to establish smoke development ratings. ASTM E84 also has a number of other designations, such as [UL 723](#) or NFPA 255.

Due to the fact that ASTM E84 is a standard laboratory fire test on a single material, numerical ratings derived from ASTM E84 are not intended to reflect hazards presented by the test material under actual fire conditions. Flame spread index of  $\leq 75$  and smoke development  $\leq 450$  meet code requirements for foam plastic roof insulation. Codes exempt foam plastic insulation when used in FM 4450 or UL 1256.

