



Technical Note 2

Flammability of Polyethylene

Polyethylenes are thermoplastic materials. All thermoplastic materials will melt and eventually ignite when sufficient heat is applied.

Melting Point and Flash Point

The Melting Point is the point at which a thermoplastic material turns from solid to liquid. The Flash Point is the temperature at which the material ignites. Both of these temperatures will vary according to polyethylene type. Typically the Melting Point for polyethylene is 120°C - 130°C and the Flash Point is 340°C - 360°C.

Once ignited, polyethylene will continue to burn slowly until the flames are extinguished.

Emissions from burning polyethylene

Smoke produced from burning polyethylene contains carbon oxides and soot.

Extinguishing burning polyethylene

Small fires can be extinguished using a fine water spray or dry chemical extinguisher. For larger fires use water spray or fog do not use a water jet.

Flame retarding polyethylene

Polyethylenes that have a flame retardant additive incorporated are commercially available. These are generally rated using the UL 94 Flammability Standard defined by Underwriters Laboratory of the USA.

The standard classifies plastics according to how they burn in various orientations and thicknesses. From lowest (least flame-retardant) to highest (most flame-retardant), the classifications are:

HB: slow burning on a horizontal specimen; burning rate < 76 mm/min for thickness < 3 mm.

V2 burning stops within 30 seconds on a vertical specimen; drips of flaming particles are allowed.

V1: burning stops within 30 seconds on a vertical specimen; drips of particles allowed as long as they are not inflamed.

V0: burning stops within 10 seconds on a vertical specimen; drips of particles allowed as long as they are not inflamed.

5VB: burning stops within 60 seconds on a vertical specimen; no drips allowed; plaque specimens may develop a hole.

5VA: burning stops within 60 seconds on a vertical specimen; no drips allowed; plaque specimens may not develop a hole

Tests are generally conducted on a 5" x 1/2" (12.7 cm x 1.27 cm) specimen of the minimum approved thickness. For 5VA and 5VB ratings, tests are performed on both bar and plaque specimens, and the flame ignition source is approximately five times as severe as that used for testing the other materials.

Polyethylene is classed as HB. Most commercially produced flame retarded grades are classed as V2. Special compounds with higher levels of flame retardancy can be produced but it is important to note that the addition of flame retardants will reduce the mechanical properties of the polymer and may reduce impact strength.

Whilst every attempt has been made to ensure that the information provided in this product information sheet is accurate and reliable Francis Ward cannot accept responsibility for the interpretation of the information provided. It is the responsibility of the user to determine the chemical compatibility of the container with its intended contents.



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