

## Flammability Ratings

**UL 94** is a plastic flammability standard released by Underwriters Laboratories 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 <76mm/min for thickness <3mm.
- **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 are allowed as long as they are not inflamed.
- **V0**: burning stops within 10 seconds on a vertical specimen; drips of particles are 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" (12.7cm x 1.27cm) 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.

There are other classifications that apply to low density foam materials (HF-1, HF-2, HBF) and thin films (VTM-0, VTM-1, VTM-2).