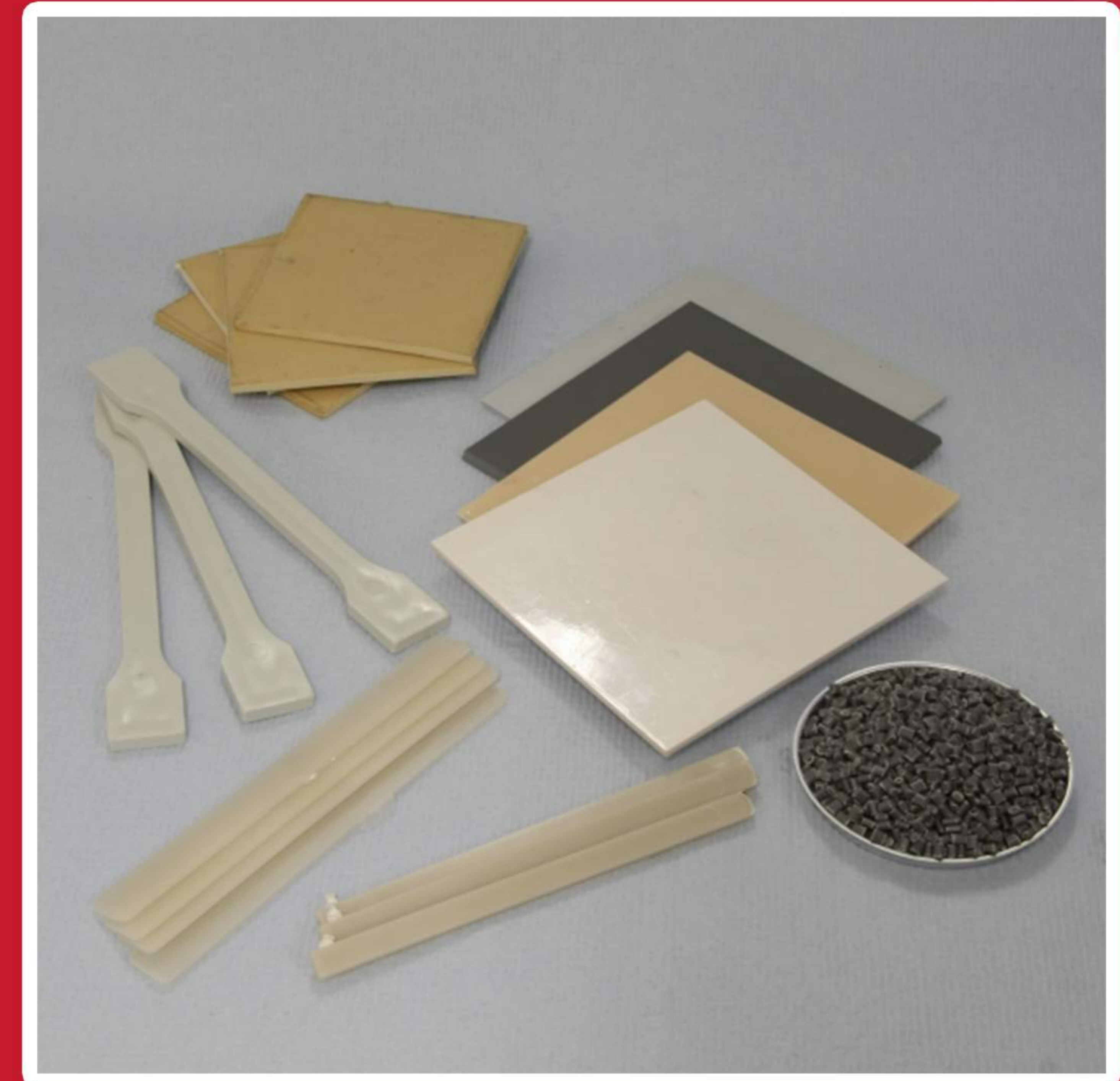
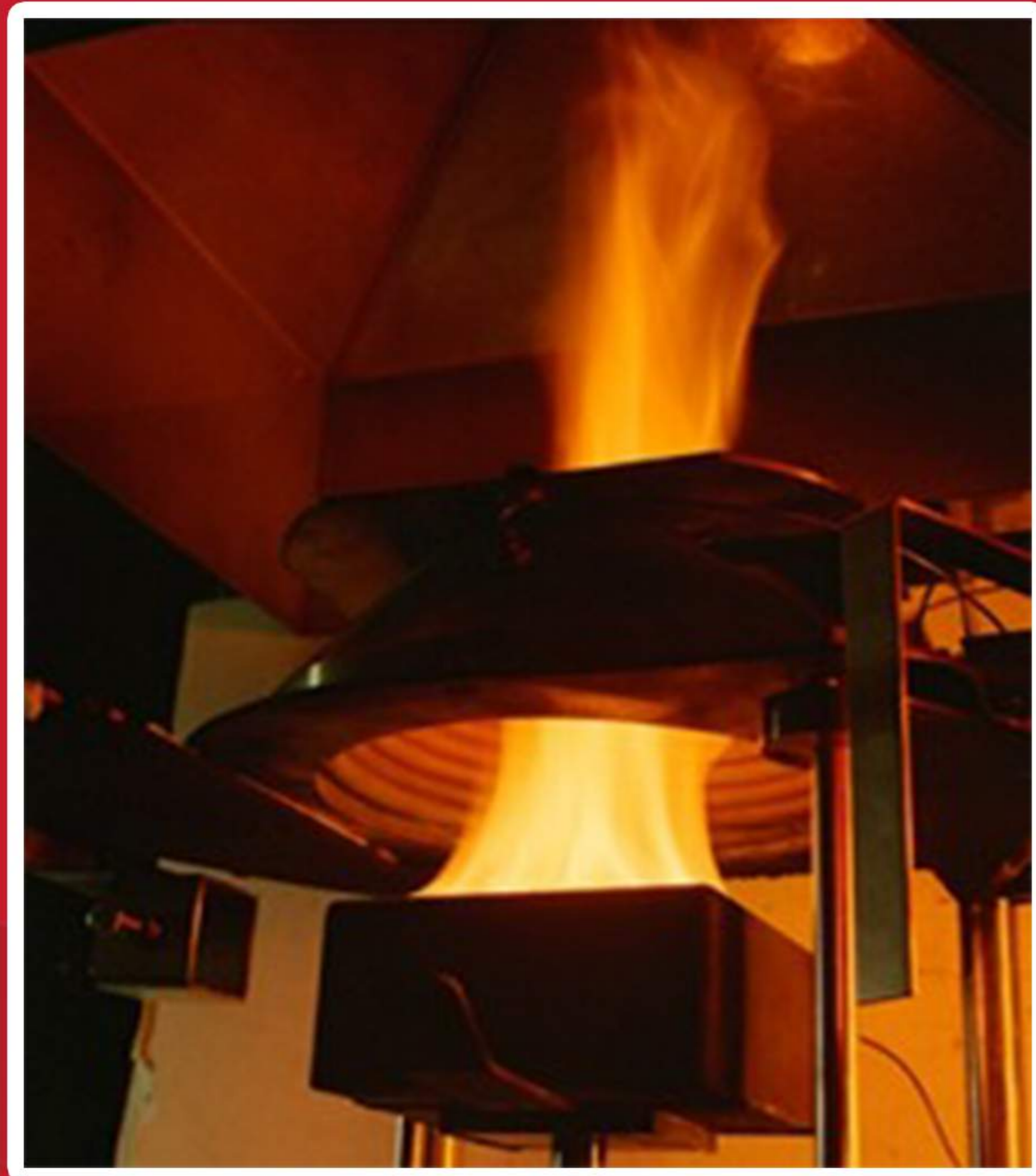


FIRE TESTING

COMPARISON CHART





innovation

TEST	SAMPLE SIZE	ADVANTAGES	STANDARDS	APPLICATIONS	TECHNIQUE
CONE CALORIMETRY	It is recommended that three test samples at a size of 100mm x 100mm x 2-50mm thick are to be tested	This test can simulate a range of fire intensities and provides data results that correlate well with full-scale fire tests	ISO 5660; BS476 (Part 15); ASTM E1354 and ASTM E1474	This test is for measuring the rate of fire growth and the maximum heat intensity of a sample material. It can also be used to determine: time to ignition; peak rate of heat release; fire performance index; smoke parameter; MAHRE and FIGRA.	The testing technique can be applied to samples horizontally using a technique referred to as oxygen depletion calorimetry to measure the evolved heat. The sample material is ignited under the cone, where it burns and measurements are taken
NBS SMOKE DENSITY TEST	The sample size required for this test is 76mm x 76mm x 2-10mm thick	The NBS chamber is versatile, as it has controlled ventilation, ongoing weight monitoring, toxicity measuring capabilities and one-dimensional heat flux.	BS6401; ISO 5659-2; ASTM E662 and NFPA 258	This test is used to measure the amount of smoke generated by a burning material. Smoke density testing can also be used to determine different types of smoke density, these tests are: Measuring Specific Smoke Density (Ds) and Maximum Specific Smoke Density (Dmc)	The sample material is placed horizontally or vertically in a smoke box or chamber, where it is burned in the flaming mode or non-flaming mode (smouldering). The smoke propensity is measured by the obscuration of a light beam travelling through the smoke.
LIMITING OXYGEN INDEX	For an injection-moulded sample: 120mm long x 7mm wide x 3mm thick	The sample specimen can be loaded quickly into the machine, which brings time and cost down. The digital display of oxygen percentage and temperature cuts out the need for calculation time	ISO 4589-2; BS2782 (Part 1 Method 14) and ASTM D2863	This test is used for determining the flammability of polymeric materials. It can also be used for comparative testing to measure relative flammability, as measured by % O ₂ required for a sample to burn.	The sample is put vertically into a glass chimney, where it is ignited and the oxygen concentration is increased and decreased, until a critical oxygen level is determined when the flame is supported for three minutes.





innovation

TEST	SAMPLE SIZE	ADVANTAGES	STANDARDS	APPLICATIONS	TECHNIQUE
UL-94 FLAME TEST	The preferred size for a sample is 127mm x 12.7mm x 0.8-12.7mm thick. Two sets of five samples to be submitted.	This is a widely used test, which is also commonly used as a certification test in the building industry.	The flame test itself is classed as a standard to ensure polymer products are within the flammability guidelines	This test is for classifying plastics according to how they burn. This technique is also used for a pass/fail grading for vertical or horizontal tests.	There are horizontal and vertical flame tests, which classify polymers in one of these categories: UL-94-HB; UL-94-V2; UL-94-V1; UL-94-V0; UL-94-5B and UL-94-5VA. The technique is to apply the flame for 10 or 5 seconds and then remove the flame for 10 or 5 seconds and then repeat the process.

NEED HELP?

We hope this comparison chart is useful in helping you to determine which fire testing technique might be appropriate for your needs. If you are in need of testing, you can ask any independent laboratory to test your products or components. This can be relatively inexpensive, especially if it is carried out under contract where testing of components is carried out routinely.

For more information on fire testing options:

Please contact: **Alastair Monk** at ITRI Innovation:

Call: **01727 871301**

Email him at: alastair.monk@itri.co.uk



Alternatively call **01727 875544** or visit the ITRI Innovation website at; www.itri-innovation.com

