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Press Release

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Laser Cutting Flame-Retardant Polypropylene

One of the primary uses for flame-retardant (FR) polypropylene is in the manufacture of low-cost, low-temperature electrical insulating products to replace polycarbonate, polyester, and PVC materials. In addition to its flame-retardant properties, FR polypropylene is non-hygroscopic and is now available in halogen-free formulations. Products manufactured from FR polypropylene for the electrical/electronics industry include insulating shields, barriers, enclosures, and spacers.

For this application trial, the request was to cut through a sheet of 1.6-mm (0.062") thick flame-retardant polypropylene and its 0.1 mm (0.004") thick adhesive/paper backing. The Synrad laser cutting setup consisted of a Firestar f201 laser with its beam directed by a set of XY flying optic mirrors down through a cutting head. The head assembly contains a 63.5 mm (2.5") positive meniscus focusing lens that provides a 100-micron (0.004") spot with a 1.8 mm (0.07") depth of field. To aid the cut process and protect the focusing lens, .4 bar (20 PSI) of clean, dry assist air was introduced into the cutting head's gas assist port.

The flame-retardant polypropylene sheet was positioned face down (paper side up) on the table so a clean cut through the self-adhesive backing was achieved. At a power level of 200 watts, cut speeds of 5.72 meters per minute (225 inches/minute) were achieved. In addition to achieving a clean cut through the adhesive paper backing, the FR polypropylene provides a cleanly cut edge (no residue or charring) with just a slight melt back on the lower edge.

This sheet of 62-mil thick flame-retardant polypropylene and a 4-mil thick self-adhesive paper liner exhibits a cleanly cut edge with only slight melt back at the lower edge when cut using 200 W of power at a speed of 225 inches/minute.



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