



Case Study: Injection Molded Polyamide Parts with Higher Heat Resistance.

After your part is molded, the process of electron beam crosslinking allows you to obtain higher heat performance. This can be achieved at a price of \$2-3/lb (including crosslinking) instead of using a \$4-7/lb (or more) engineered resin, which is often more difficult to mold.

Objective: Show the dramatic property difference at high temperatures between crosslinked and non-crosslinked polyamide samples by testing them using a soldering iron test.

Material: TechnoMid PA6 S GF30 1VN Nylon 6 with 30% glass and a crosslinking additive. One sample was electron beam crosslinked to a dose of 80 kGy. The second sample was not crosslinked.

Test: The soldering iron test was conducted on the two samples. The soldering iron test is a practice-oriented test used to determine the short-term temperature resistance of the test samples. The test was conducted at a temperature of 375°C for up to 15 seconds. The tip of the soldering iron used was 2 mm by 0.75 mm and the soldering iron was applied at a weight of 2000 grams.

Results: The results are shown in the figures below. In Figure 1, the soldering iron immediately penetrated the non-crosslinked sample. In Figure 2, the crosslinked sample penetrated less than 0.1 mm at the end of the 15 seconds.

Figure 1: Not Crosslinked

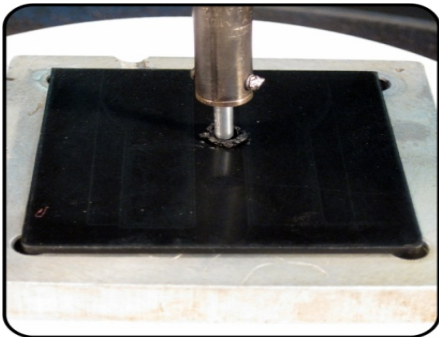
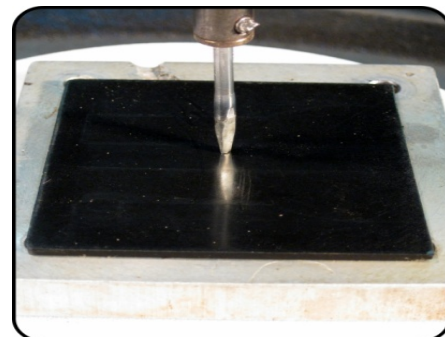


Figure 2: Crosslinked



Benefits:

- The ability to use an easy-to-mold resin in standard tooling
- A lower cost resin with engineered resin properties
- Improved stress-cracking and aging properties
- Improved chemical resistance
- Higher continuous working temperature
- Higher abrasion resistance
- Improved low-temperature impact properties
- Leadless soldering (at up to 280°C) and short-time high temperature soldering (at up to 450°C)

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