### Filled Plastics

**Type:** Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE)

**Material:**
- Carbon/Glass Fiber 5% < 20%
- Carbon/Glass Fiber 21% < 40%

**Product Notes:**
- Unfilled - virgin plastic with no additives, fillers or reinforcement
- Filled - virgin plastic with lubricating additives or strengthening particle fill
- Fiber Reinforced - virgin plastic with reinforcing strands of fiber laid in either a random or engineered way

Since the melting point varies greatly from plastic to plastic, the speed (RPM) used should be closely supervised.

Fiber Reinforced Plastics can be challenging as they encompass multiple variations. Please consider the following:
- An additional reduction in RPM may be necessary to avoid excessive fraying, splitting and tear out of fibers.
- There may be high density areas or "hard spots" (especially in random/whisker reinforcement) in which speeds & feeds should be reduced.
- Aramid fibers are more ductile and less abrasive than glass and carbon fibers allowing increased chip loads (IPT) in these materials.
- When machining woven/cloth layered materials, use an oscillating program to help avoid excessive fiber wear.

### General Notes:

- All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions. Chip loads reflect uncoated cutters and may be increased, remain unchanged or even decreased if coated.

If you require additional information, Harvey Tool has a team of technical experts available to assist you through even the most challenging applications. Please contact us at 800-645-5609 or Harveytech@harveyperformance.com.

**WARNING:** Cutting tools may shatter under improper use. Government regulations require use of safety glasses and other appropriate safety equipment in the vicinity of use.