CR-39™ Cast Optical Sheet

CR-39™ Sheet Cutting Recommendations:

I. Using a Laser cutting tool:

All CR-39™ parts can be cut to any shape or size using a computer controlled laser with general tolerance of ± 0.1 mm. Laser source should be CO_2 type. Power source for the laser should be 100 to 250 W.

II. Using a Computer Numerically Controlled (CNC) cutting tool:

Customers that are used to processing plastic material that is softer than CR-39™ may have to increase the RPM of their milling machine and adjust milling linear speed depending on the thickness of the sheet. Otherwise, the risk of breaking/chipping the CR-39™ sheet increases. Specific details are below:

1. Cutter spinning speed:

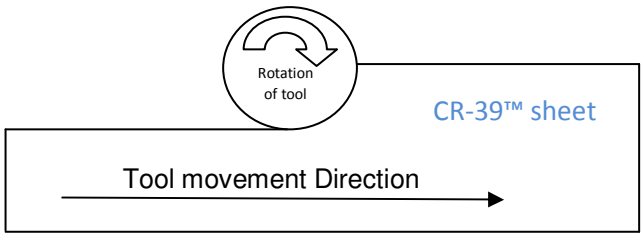
The cutter spinning speed can be as high as possible.

In general:

- for cutter with diameter = 5 mm the speed could be about 25000 rpm.
- for cutter with diameter = 1 mm the speed could be about 40000 rpm.

2. Cutter rotation direction:

For best results, the cutter tool should move in the same way of rotation:

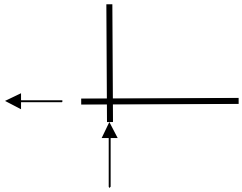


3. Cutter linear directional speed:

The X Y and Z linear speed will depend on how much material is going to be removed (Thickness and size reduction)

4. Cutting square angles:

Suggested 90° tool movement in cutting square angles, continue the cutter past the end of the part end as shown below:



5. Cooling requirements:

Cooling by liquid is not needed. Air flow to cool the cutter and remove the cut material is suggested.

6. Example of parameters for a 1.0 mm thick part using CNC machine:

FZ – linear speed on Z axis (cutter in-out)
FA – linear speed on x and y axis
S – cutter spinning speed

Using single cutter with Diameter 5.5mm
FZ=1250
FA=2500
S=28000

Using single cutter with Diameter 1.0mm
FZ=450
FA=675
S=38500

III. Using a Knife blade to score a CR-39™ sheet:

A Tantung or Widia blade can be used to score a CR-39™ sheet. Note however, that thinner sheets (<1.0mm), may chip or crack when attempting to break the sheets apart.