

# Cutting

## Kapton (Polyimide) Cutting

Kapton is a Polyimide film (or tape) which has a number of useful properties such as high thermal conductivity, electrical resistance and excellent mechanical properties. These material properties remain stable in both high and low extremes of temperature ranging from -269°C to +400°C. Kapton lends itself to applications in electronic manufacturing, the aerospace industry, 3D printing and even cryogenics!

Cutting Polyimide is often a difficult process as charring and thermal damage can occur around the cut edge due to the material having very low absorption of 1062nm radiation. Using short pulse durations of 3 nanoseconds to provide a high peak power in combination with low pulse energy, SPI's G4 20W EP-Z laser was able to produce a high quality cut with minimal burning and small heat affected zones.

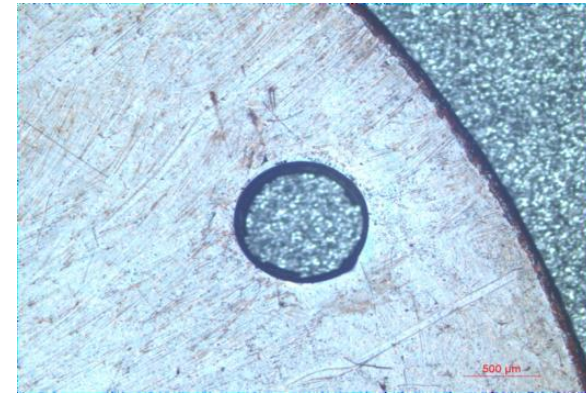
Producing 10 holes with a 1mm diameter takes just 1 second (95ms per hole). Using a multi pass technique, the initial pass provides some carburization of the sample which helps the subsequent passes overcome the low absorption of the material.

For applications where slight edge charring can be tolerated, SPI's G4 product range can offer a practical cost-effective solution.

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## Application Parameters

Type	G4 20W EP-Z
Power	20W
M <sup>2</sup>	<1.6
Beam Ø	11mm
Scanner/Lens	15mm/100mm FL
Energy	WF31 715kHz @ 125mm/s

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