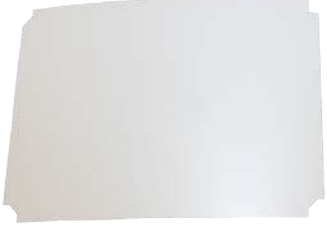







## Illustrated Guide to CO2 Laser Cutting



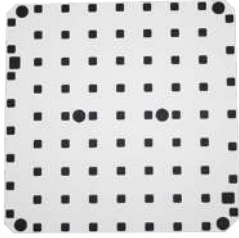





PRIME PRODUCTS, INC

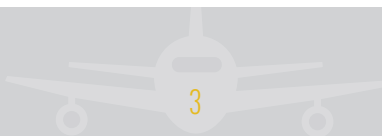
# Illustrated Guide to CO2 Laser Cutting

	Material Type	Material Description	Notes
	Film/Reflector	Reflective Film, White	Kimoto films are used for diffusion and/or reflectance of light, and also cuts extremely well on the laser with slight cleaning required.
	Film/Reflector	Optical Film	Vikuiti Dual Brightness Enhancement Film is a thin, multi-layer reflective polarizer. We cut the material with the protective layer in place, and then remove the liner to clean after cutting.
	Film/Reflector	Optical Film	3M ESR is a thin, non-metallic, polymer film used for reflectance. This material cuts very well on the laser, with a light cleaning required to remove any fogging.
	Film/Reflector	3M 3635-100 Light Enhance film w/PSA	These parts must be cut after removing the protective liner. The material cuts very well, some cleaning may be required to remove laser residue.
	Film/Reflector	3M VIKUITI IDF20 II	Vikuiti Image Directing Film is a polymer optical film with an acrylic prismatic structure overlaid on a polyester substrate. The part must be cut with the material oriented in a particular direction. This material cuts extremely well on the CO2 laser, no cleaning is required.
	Film/Reflector	White Polyester Label Film, .002" w/PSA	This part is laser cut from polyester film material and then screen printed after laser cutting. This material cuts very cleanly on the CO1 laser with no cleaning required.









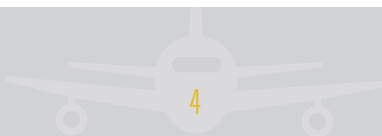
# Illustrated Guide to CO2 Laser Cutting

	Material Type	Material Description	Notes
	Film/Reflector	GORE Diffuse Reflector 0.5mm w/ PSA	This part is made from W. L. Gore diffuse reflector material that has an adhesive on one side. This material cuts very well on the laser, and we manufacture many parts using this material. We do some light cleaning and debur to remove residue.
	Thermal/Insulator Material	CHO-SEAL 1285 w/ PSA, .093" thk	Part was initially laser cut, but produced too much burning and had to be changed to die-cutting. This material cannot be easily laser cut, especially when laminated with an adhesive.
	Thermal/Insulator Material	Black Polyethylene Foam, .125" thk, w/ PSA one sid	This material cuts very well on the CO2 laser. No cleaning is required for this material.
	Thermal/Insulator Material	Sil-Pad K-10	Sil-Pad K-10 is a high performance insulator. It combines special film with a filled silicone rubber. The material cuts very well, but we ultrasonically wash as required and oven dry.
	Thermal/Insulator Material	Sil-Pad 900S w/ PSA	Sil-Pad 900S thermally conductive insulation material, is designed for a wide variety of applications requiring high thermal performance and electrical isolation. Laser cuts very well, with minimul wiping to remove residue.
	Metal	Cold Rolled Steel SAE 1008/1010 .024"	We can handle up to 1/8" thick carbon steel. This thin gauge part cut cleanly with very little edge clean-up required.

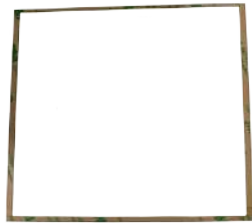







# Illustrated Guide to CO2 Laser Cutting

	Material Type	Material Description	Notes
	Metal	Aluminum 2024-T3 .025" thk	We laser cut our own aluminum test coupons, which are used by our finishing shop to test paint thickness. Each coupon is vibratory tumbled to ensure the edges smooth to the touch.
	Metal	Stainless Steel 12 gauge	Our equipment is best suited aluminum and stainless steel that is 16 gauge or below, but we were able to cut this thicker part with the right combination of power, speed and shield gas. This part was vibratory tumbled to smooth the cut edges and sent out for electro polishing.
	PSA	3M 4941 with 3M F9469PC	This part is made from two different adhesives laminated together. It cuts very easily on the CO2 laser. Because of the thickness of the laminated material, a slight amount of laser residue will be present, but can be easily wiped clean.
	PSA	3M F9469PC Converted to Sheet w/ Dbl Liner w 100MP	This part is made by laminating two pieces of 3M F9469PC adhesive sheets together and laser cutting. The material cuts very easily on the CO2 laser.
	PSA	3M 7945MP Adhesive	3M High Performance Acrylic Adhesive 200MP is used for graphic attachment and general industrial joining applications. Cuts very easily on the laser, with only light cleaning/deburring required.
	PSA	CHR-K350 Tape, Electrical Insulating	This part is made from CHR-K350 electrical insulation tape laminated into sheets with a release liner. It does laser cut well, requiring only a small amount of cleaning to remove any laser residue.

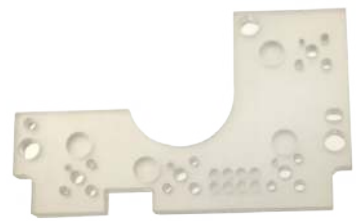
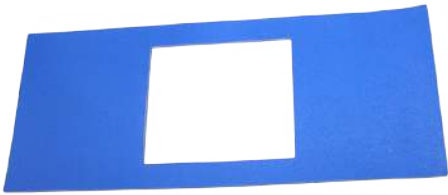


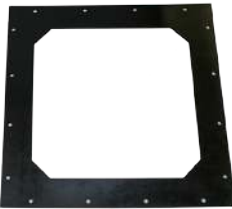


# Illustrated Guide to CO2 Laser Cutting

	Material Type	Material Description	Notes
	Plastic	Laminate Sheet IPC-4101/21 .005", Natural	This material is a glass-reinforced epoxy laminate sheet. It burns and discolors on the edges when laser cut. We have developed a cleaning process to remove the burnt "crust", or in some cases we CNC mill this material instead of laser cutting.
	Plastic	PVC White .025"	PVC is not a great candidate for laser cutting as it tends to burn/discolor on the edges. We ultrasonically clean these parts to remove as much residue as possible, however there will still be some discoloration. For certain applications such as this one, where the part is not cosmetically sensitive, this may be acceptable.
	Plastic	Acrylic Sheet White 2067 .118" L-P-391TY I GR C	This diffuser is laser cut, then we flycut, sand and liquid hone to the desired finish. Acrylic is an ideal material to be cut on the CO2 laser.
	Plastic	Acrylic Cast Black 2025 .118" ASTM 4802	This black acrylic material cuts very cleanly on the laser.
	Plastic	Lexan 8010 Clear Polish/Polish .020"	This part is made from thin polycarbonate material. It does tend to discolor when cut on the laser. We minimize the discoloration by cutting the parts with the protective liners in place, and removing them after the parts are cut. For applications that are not cosmetically sensitive, laser cutting may be an option.
	Plastic	Lexan 8010 Clear Polish/Polish .030"	This part is made from slightly thicker material, so there is a bit more discoloration. It is also rastered with a part marking in the same laser cutting cycle.



# Illustrated Guide to CO2 Laser Cutting

	Material Type	Material Description	Notes
	Plastic	Acrylic light block .187" L-P-391 TY I GR A	This part is laser cut from clear acrylic sheet. As with the other acrylic parts in the table, clear acrylic is very compatible with laser cutting.
	Rubber	Fluorosilicone Sponge w/ PSA	Saint-Gobain Performance Plastics R-10490 medium silicone sponge rubber is a fluorosilicone closed-cell sponge that can be used in most gasketing applications. The material laser cuts fairly well, but requires us to blow off the dust with an air gun and then clean the laser residue.
	Rubber	Rubber IAW MIL-R-6855 CL 4 TY A GR 60, .016" thk	This thin rubber cuts very easily on the laser. A slight amount of burnt residue can be removed through ultrasonic cleaning
	Rubber	Cohrlastic 9060 Silicone Rubber, .031" thk, 60 dur	Saint-Gobain COHRLastic 9060 is a general-purpose 60 durometer solid silicone rubber. It cuts well, but requires us to ultrasonically clean after cutting. We cut and apply an adhesive layer separately on this part.
	Rubber	Silicon, Black, 60 durometer, .020" ± .003"	This material cuts very well on the CO2 laser. Parts must be ultrasonically cleaned and then wiped clean to remove all laser residue.
	Rubber	Synthetic Rubber Sheet .063" thick	This material cuts very well on the CO2 laser. Parts must be ultrasonically cleaned and then wiped clean to remove all laser residue.

