

MATERIALS FOR LASER CUTTING

Edited from CoMotion Makerspace - Allen School Fabrication Research Lab, Last Revised Dec. 29th, 2022

APPROVED MATERIALS

Category	Material
Woods	Untreated plywoods, basswood, balsa wood, non-resinous and non-oily woods
Paper/Cardboard	Construction and printer paper, matboard/chipboard, museum board, corrugated cardboard
Plastics	Acrylic, thin PLA, PETG, non-reflective mylar, Nylon
Fabrics	Natural fabrics, natural wool felt, natural leather (NOT synthetic), Rayon (cellulose fibers)
Other	Kapton, nitrocellulose, non-reflective soda lime glass, non-reflective marble, non-reflective glass

BANNED MATERIALS

Material	Danger	Cause
Food	Carcinogens	Burned foods and residues in the laser can be carcinogenic
ABS (Acrylonitrile butadiene styrene)	Emits cyanide gas, melts, bursts into flame	Will melt rather than vaporize and will coat the bed. Easily catches fire
Coated carbon fiber	Emits dangerous fumes	The coating emits dangerous fumes. Thin, uncoated carbon fiber mat can be cut, but will fray along the edges
ANY chlorinated plastics (Vinyl, PVC, pleather/fake leathers, Sintra, Kydex)	Emits chlorine gas!!!	Destroys the focus lens and mirrors, corrodes metal parts and motion control system. It is also very toxic to breath
Polyoxymethylene (POM) or Delrin	Emits dangerous fumes	Formaldehyde causes skin, eye, and respiratory irritation and allergic reactions and has shown evidence of causing cancer
Dureflex	Emits dangerous fumes	Produces hydrogen cyanide, a LETHAL gas
Fiberglass	Emits dangerous fumes	Glass will not cut and the resin will burn to release dangerous fumes
Galvanized metal	Emits dangerous fumes	Zinc fumes are poisonous. Galvanized metal should never be super-heated
HDPE	Catches fire and melts	Fire hazard
MDF and LDF (Medium- or Low-Density Fiberboard)	May contain formaldehyde. Also makes	Detrimental to lenses and mirrors
Any mirrored surface	Will not cut and will reflect the laser beam	The mirrored surfaces can reflect the beam and damage internal components of the laser head
PEI (Polyetherimide), EVA, other plastic foams	Emits chlorine gas!!!	Destroys the focus lens and mirrors, corrodes metal parts and motion control system. It is also very toxic to breath
Polycarbonate/Lexan	Cuts poorly, discolors, catches fire	Absorbs infrared energy very well, thus is more likely to melt than cut
Polystyrene foam	Catches fire easily	This is the #1 cause of laser fires!!
Polypropylene foam	Catches fire easily	Just as bad as polystyrene and will also leave hard deposits in the machine
PTFE	Cannot filter	If vented directly outside, deadly to birds
Pressure treated woods	Emits dangerous fumes	Should never be burned period.

UNLISTED MATERIALS

Materials not listed here cannot be cut without approval. Submit a SDS (Safety Data Sheet) of the material to lab manager for consideration.