

# Introduction to CO2 Laserable Materials

By Daniele Ingrassia

# Laserable Materials

## CO2 - 10,600μm

- Wood
  - Plywood
  - MDF
  - Massive wood
  - ...
- Plastics
  - Acrylic
  - Derlin/POM
  - Rubber
  - ...
- Textiles
  - Fabric
  - Cloth
  - ....
- Paper based
  - Cardboard
  - Paper
  - ....

# NOT Laserable Materials

(toxic/damage the machine etc)

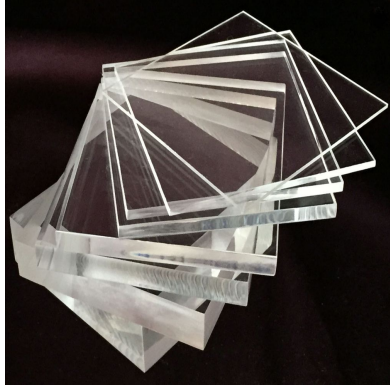
- Leather and artificial leather that contains chromium (VI)
- Carbon fibers (Carbon)
- Polyvinyl chloride (PVC)
- Polyvinyl butyrale (PVB)
- Beryllium oxide
- Any materials containing halogens (fluorine, chlorine, bromine, iodine and astatine), epoxy or phenolic resins

Additional material libraries:

[https://dallasmakerspace.org/wiki/Laser\\_Cutter\\_Materials](https://dallasmakerspace.org/wiki/Laser_Cutter_Materials)

<https://www.epiloglaser.com/how-it-works/laser-material-compatibility.htm>

# Acrylic (Poly Methyl Methacrylate or PMMA)

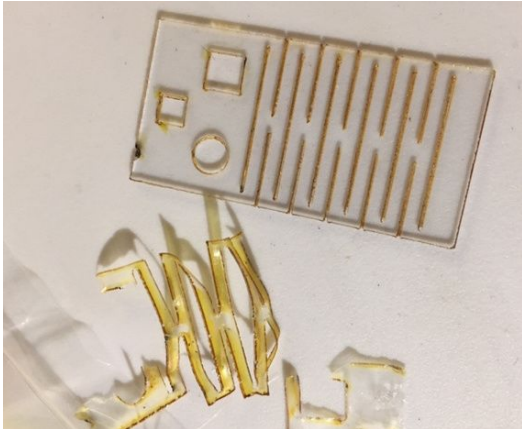


Pros of Cast Acrylic	Pros of Extruded Acrylic
<ul style="list-style-type: none"><li>• Greater range of thickness</li><li>• Lightweight and rigid</li><li>• Low water absorption</li><li>• Excellent optical properties</li><li>• Good electrical and UV resistivity</li><li>• Excellent resistance to long-term exposure to sunlight and weather</li></ul>	<ul style="list-style-type: none"><li>• Thermoformable</li><li>• Cheaper than cast acrylic</li><li>• Excellent optical properties</li><li>• More impact resistant than glass</li><li>• Good electrical and UV resistivity</li></ul>

# Unlabeled plastic sheets - How to identify them?

<https://www.mtec.or.th/wp-content/uploads/2018/04/Polymer-Identification.pdf>

[https://www.ehow.co.uk/how\\_8674192\\_identify-acrylic-polycarbonate.html](https://www.ehow.co.uk/how_8674192_identify-acrylic-polycarbonate.html)



Laser cut plastics testing:

<https://www.neverstopbuilding.com/blog/laser-cutter-plastics-testing>

# Medium Density Fiberboard - MDF



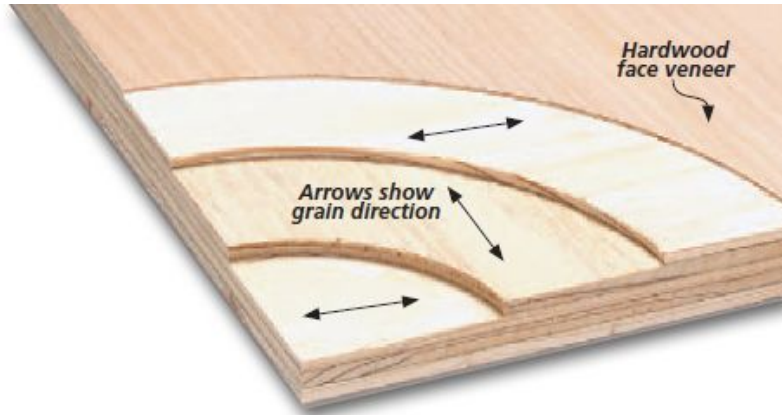
HDF=stronger and more water resistant MDF



# Plywood



Poplar Plywood=very light,  
cheap, easy to cut cleanly

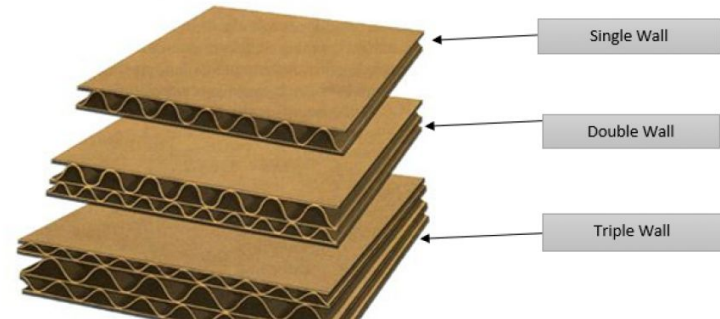
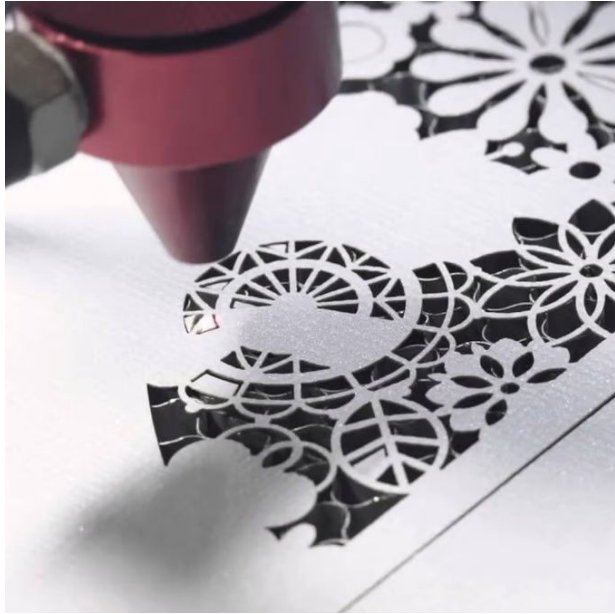


# POM - (Polyoxymethylene)





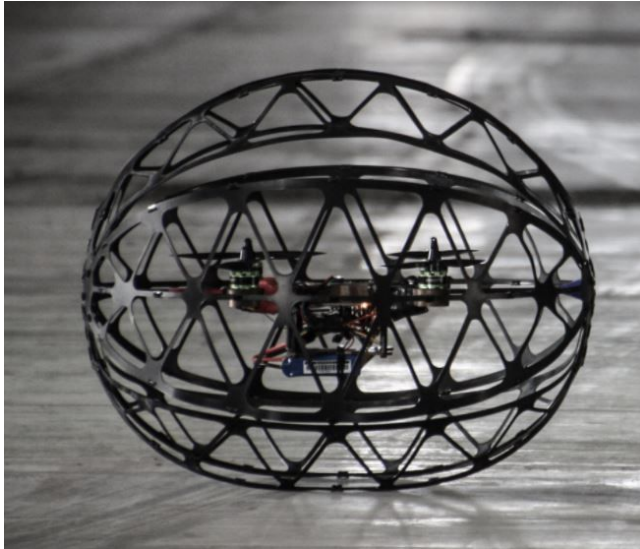
# Paper and Cardboard





# And many others....!

Polypropylene 0.8mm



Marking of marble:



Textiles:

