



## Machining Instructions for Ebonite

### General:

The machines which are used have to be equipped with an exhaust device.

When machining Ebonite, the blades of the machines will become blunt rather quickly. Therefore, a high amount of attention should be placed on the cleanness of the material, the sharpness and durability of the tools and the paste of machining.

### Cutting and Punching:

- With a shaping machine, plates up to a thickness of 10 mm can be segmented.
- The blades have to be sharpened on both sides to achieve a 90 degree cut.
- The bevel should be made up to 10 degrees.
- Before cutting, the plates should be heated to 140 degrees Celsius.
- The blades have to be positioned in a way that the plates are cut all the way through.
- The cut parts have to be cooled down in between planed wooden plates.

### Sawing:

- Sawing can be done with buzz- and band saws.
- The band saw can especially be used for the cutting of stronger plates, rods and tubes.
- The saw has set saw teeth top distance of 0.5 mm and running speed of 20 mps.
- When operated shortly with low thicknesses, buzz saws can be used, which are 0.8 mm thick and have a diameter of 200 mm with a saw teeth top distance of 2.5 mm. The working speed should be 15-20 mps.
- The saw teeth should also be set.

### Turning:

- The turning is done dry, by using high speed steel, or even better: by turning steel with solid metal plates brazed on top. The pitch is approx. 8 degrees, the tensioning bracket is approx. 20-25 degrees. The cutting speed is 3 mps for small parts and 0.7 mps for very big parts. The infeed is 0.1 mm.
- The best and cleanest turning is done with turning diamonds.

### Tapping:

- Tapping can be done in the normal way with a machine screw tap and the use of some soapwater.

### Milling:

- Milling can be done in the normal way with a cylindrical milling cutter or side milling cutter, made of high-speed steel. The cutting speed is approx. 0.8 mps.



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### Drilling:

- Drilling can be done with a flat drill or with a special rubber drill. The drilling speed for 2-7 mm holes is at about 4000 rpm.

### Grinding:

- Grinding can be done dry or wet.
- Dry grinding with carborundum-stones results in a rough surface.
- High class grindings can only be done wet, with smooth carborundum-stones.
- Circumferential speed and grit depend on the quality of the used ebonite. The circumferential speed is approx. 23 mps, grit 80 to 220.

### Polishing:

- See finishing instructions.

### Stamping:

- Stamping can be done by a normal steel stamp with dull letters, which has to be pre-heated.
- Before stamping the material has to be finished.