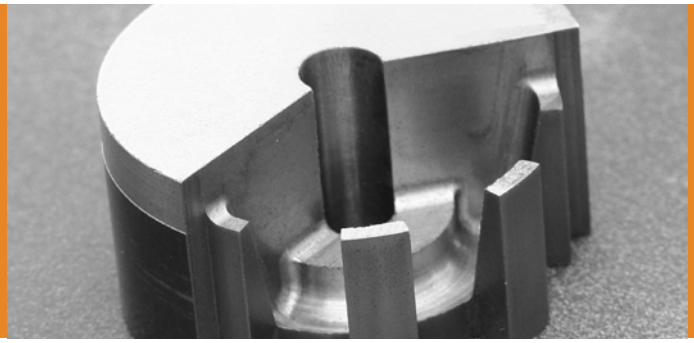
Höganäs



Somaloy® Prototyping Material

Tooling is the preferred approach to manufacture prototype components with Somaloy material. Using this method, the prototyped component will in all essential respects have the same properties as a mass produced component.

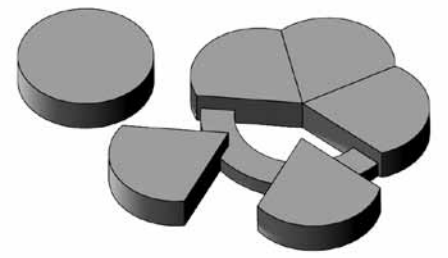
A simplified approach is to machine the component from a pre-fabricated blank. This can be a fast, low-cost approach, but it also has the drawback that the properties will in most cases be different from those obtained by compaction. A special Somaloy Prototyping Material with enhanced machinability has now been developed in order to minimize these differences.

Somaloy Prototyping Material blanks exhibit stable mechanical properties up to 150ºC.

For cost and availability, please contact Höganäs subsidiaries.

To manufacture prototype components for soft magnetic applications, the blanks should be machined using conventional machining techniques (milling, turning, drilling). Non conventional machining (such as electro discharge machining, EDM) would deteriorate the material and therefore should be avoided.

In order to machine larger components, Somaloy Prototyping Material blanks can be cut and glued together (epoxy glue) before machining.

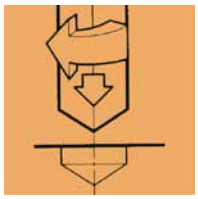


Typical data and Machining Recommendations

		Somaloy Prototyping Material		
		Diameter 80 mm Height 20 mm	Diameter 80 mm Height 40 mm	Diameter 120 mm Height 20 mm
Density [g/cc]		7,45	7,30	7,30
TRS @ ambient [MPa]		80	75	75
Resistivity [μΩ.m]		280	280	260
B_{max}@4000 A/m [T]		1,26	1,19	1,23
B_{max}@10000 A/m [T]		1,53	1,46	1,49
H_c [A/m]		200	200	210
μ_{max}		455	430	435
Core losses @ 1T [W/kg]	50 Hz	5	5	5
	400 Hz	47	45	47
	1000 Hz	138	134	138

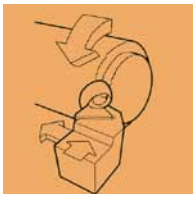
All properties are measured on toroids (OD55 ID45 H5 mm) machined from the different Somaloy Prototyping Material blanks.

Here are some recommendations on tooling and process parameters for machining Somaloy Prototyping Material.



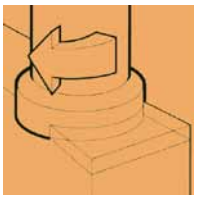
DRILLING

- HSS self-centering drill;
- Cutting speed: V_c = 30 m/min;
- Feed speed: V_f = 60 mm/min;
- No cutting fluid, but vacuum cleaning of chips.



TURNING

- Cermet polished sharp inserts;
- Cutting speed: V_c in the range 50 - 300 m/min;
- Feed: f = 0,12 mm/rev recommended for a good surface finish.



MILLING

- Carbide milling cutter;
- Cutting speed: V_c in the range 100-125 m/min;
- Feed per tooth: f_z = 0,05 mm/tooth;
- No cutting fluid, but vacuum cleaning of chips.