

Rectangular target details

Target information for Gencoa standard rectangular magnetrons of 100mm, 125mm, 150mm and 200mm widths

This document illustrates Gencoa's standard (recommended) target thickness for rectangular magnetrons and details the maximum thickness that can be sputtered.

All standard target thicknesses are based on flat bonded targets. The maximum thickness is the maximum combined thickness of the target and backing plate. Mono-block targets can therefore be the maximum thickness.

A profiled Mz Metallizer target design can typically exceed the maximum thickness.

100mm target width

Array type	Strength	Standard thickness*	Target use (%)	Maximum thickness
Standard	650G	6mm target/6mm backing plate	> 25	16mm
High Yield**	300G	6mm target/6mm backing plate	> 45	16mm
High Yield (ITO)	300G	6mm target/6mm backing plate	> 35	
High Yield (Reactive)	300G	6mm target/6mm backing plate	> 37	
High Strength (ITO)	1000G	6mm target/8mm backing plate	> 18	-
High Strength	1115G	6mm target/8mm backing plate	> 20	20mm
High Strength (Nickel target)	400G	6mm target/8mm backing plate	> 15	-
High Strength (Iron target)	~500G	2mm target/6mm backing plate	> 12	-
RF***		6-8mm target/8mm backing plate	> 25	16mm
High Yield RF			> 38	
LOOP (Iron)		6mm primary target/6mm directly cooled backing plate	> 25	

125mm target width

Array type	Strength	Standard thickness*	Target use (%)	Maximum thickness
Standard	550G	8mm target/8mm backing plate	> 25	25mm
High Yield**	220G	8mm target/8mm backing plate	> 40	20mm
High Yield (ITO)	220G	8mm target/8mm backing plate	> 33	
High Yield (Reactive)	220G	8mm target/8mm backing plate	> 35	
High Strength (ITO)	1000G	8mm target/8mm backing plate	> 17	-
High Strength	1000G	8mm target/8mm backing plate	> 20	25mm
High Strength (Nickel target)	850G	6mm target/8mm backing plate	> 15	-
High Strength (Iron target)	~250G	3mm target/6mm backing plate	> 10	-
RF***		6-8mm target/8mm backing plate	> 25	18mm
High Yield RF			> 38	
LOOP (Iron)		6mm primary target/6mm directly cooled backing plate	> 25	

150mm target width

Array type	Strength	Standard thickness*	Target use (%)	Maximum thickness
Standard	650G	8mm target/8mm backing plate	> 25	25mm
High Yield**	300G	8mm target/8mm backing plate	> 40	20mm
High Yield (ITO)	300G	8mm target/8mm backing plate	> 33	
High Yield (Reactive)	300G	8mm target/8mm backing plate	> 35	
High Strength (ITO)	1000G	8mm target/8mm backing plate	> 17	
High Strength	1000G	8mm target/8mm backing plate	> 19	25mm
High Strength (Nickel target)	800G	6mm target/8mm backing plate	> 14	
High Strength (Iron target)	~220G	3mm target/8mm backing plate	> 10	
RF***		6-8mm target/8mm backing plate	> 25	16mm
High Yield RF			> 39	
LOOP (Iron)		4mm primary target/6mm directly cooled backing plate	> 25	

200mm target width

Array type	Strength	Standard thickness*	Target use (%)	Maximum thickness
Standard	475G	10mm target/10mm backing plate	> 25	30mm
High Yield**	250G	10mm target/10mm backing plate	> 40	25mm
High Yield (ITO)		10mm target/10mm backing plate	> 34	
High Yield (Reactive)		10mm target/10mm backing plate	> 35	
High Strength (ITO)	1000G	5mm target/10mm backing plate	> 18	-
High Strength	800G	10mm target/10mm backing plate	> 20	30mm
High Strength (Nickel target)	650G	8mm target/8mm backing plate	> 15	-
High Strength (Iron target)	~400G	4mm target/8mm backing plate	> 11	-
LOOP (Iron)		NOT AVAILABLE		

* The standard target thickness for monoblock targets is calculated by adding the thickness of the target and the backing plate. Mono-block targets require a shunt in the water channel to maximize target use.

** High yield magnetics have a multi-component magnetic field with a large plasma volume to reduce the plasma voltage.

*** RF target thickness is dependent on the properties of the target. For example, materials such as SiO₂ would use a maximum of 6mm, while materials like iZnO could use up to 10mm.

- Targets can be thicker or thinner than recommended by Gencoa.
- High yield magnetics are optimized for a specific target thickness; a target thickness which is either thicker or thinner will therefore result in a lower relative target use.
- The maximum thickness takes into account magnetic strength as well as plasma volume.
- Target use estimate is by weight with the recommended target thickness and with a power of ≥ 10 w/cm² and 3×10^{-3} mbar pressure.
- Target use can vary depending upon vacuum environment and power density (low power and high pressures typically result in lower target use).

