Targets for HARD COATINGS

Besides of production of precious metal targets, SAFINA, a.s. produces also multiple sort of targets for the deposition of hard coatings. These special protective coatings increase the wear resistance of machining tools and components in large thermal amplitude. Some compositions are used for decorative coatings as well.

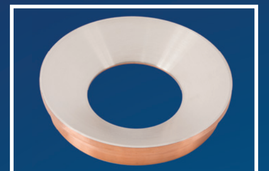
Materials available for hard coatings as planar monolithic or bonded targets: Ti, Zr, Cr, Al, Nb.

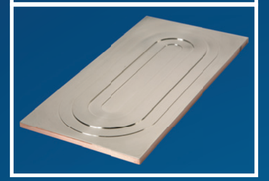
Targets for SEMICONDUCTOR INDUSTRY

Semiconductor industry, one of the largest consumers of sputtering targets and evaporating materials, is another key market for SAFINA, a.s. We manufacture and supply high purity materials mainly from precious metals and their alloys for various sputtering and evaporation coating systems to our customers in semiconductor business. Our quality based on precise analyses in our laboratories meets high demands of the market.

Monoblock and bonded sputtering targets made of precious metals and their alloys:

Ag 4N, Au 4N, Pt 4N, Pd 3N5





SPECIAL targets and services

In order to satisfy individual needs together with sputtering targets manufactured by classic production techniques, SAFINA, a.s. is able to offer special technologies for sputtering targets production, e.g. powder metallurgy for precious metal targets alloyed with refractory metals, spraying techniques, diverse types of bonding, manufacturing profiled targets with extreme high utilization, backing plate repairs, etc.

Quality assurance

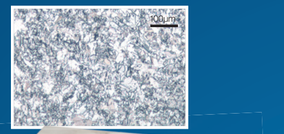
SAFINA, a.s. enforces EN ISO 9001 and EN ISO 14001 certified standards and places an extraordinary emphasis on quality of its products. Our laboratories guarantee reliable control over quality of materials and precision and correctness of analytic results.

Depending on customers requirements we apply a large quantity of analytical methods including:

- XRF X-ray fluorescence analysis
- ICP-OES Inductively coupled plasma-optical emmision spectrometry
- AAS Atomic absorbtion spectrometry for trace analysis
- Metallography Grain size determination
- Ultrasonic testing

When choosing SAFINA sputtering targets, you are assure of:

- Fitted technical solution with best product performance/cost ratio
- Respect of customers design and requirement
- High purity and full density
- Homogenous structure and fine grain size
- High thermal conductivity
- High and uniform taeget utilization



Recycling

SAFINA, a.s. recycles waste material containing precious and nonferrous metals for its subsequent and full-fledged use. Maximum courtesy to the environment is an important criteria in waste reprocessing.

In the field of sputtering targets we can offer to our customers large variety of recycling services ranging from recycling and purchase of spent pure and alloy targets to precious metal scraps or chemical solutions from different industrial productions.

SAFINA, a.s. provides also the establishment and accounting of Material Account as well as worldwide precious metal transfers via Material Accounts through other precious metal manufacturers, refineries and banks.

All solutions you need

Sputtering targets

SAFINA, a.s., Vídeňská 104, 252 42 Vestec, Czech Republic
tel.: +420 241 024 111, fax: +420 241 024 292, e-mail: targety@safina.cz

www.safina.cz

PRECIOUS METALS PROCESSING AND RECYCLING

THIN FILM MATERIALS

SPUTTERING TARGETS

THIN FILM
MATERIALS
Sputtering targets

SAFINA - Introduction

SAFINA, a.s. is a company with a comprehensive manufacturing program of processing and production of precious and nonferrous metals products including their recycling. The company has a long-lasting tradition which dates back to 1860. Since 1992, SAFINA, a.s. has been a private company and has maintained its dominant position primarily on the European market. The company constantly focuses on the improvement of its existing manufacturing program, as well as on the developement of new production programs and technological advances.

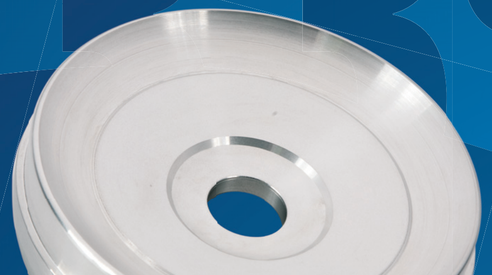
Thin Film Materials - Sputtering targets

Based on experience in precious metals, SAFINA, a.s. has been manufacturing sputtering targets for more than a decade. Through past years SAFINA, a.s. integrated the development, production and logistics processes in order to offer an exceptional level of quality, flexibility and proximity to the customer. We are a reliable partner in the manufacture of sputtering targets with the main focus on products quality, associate services and partnership

SAFINA sputtering targets

are used in the following industrial areas:

- Large area coatings and displays
- Optical media industry
- Decorative coatings
- Hard coatings
- Semiconductors
- Special purposes



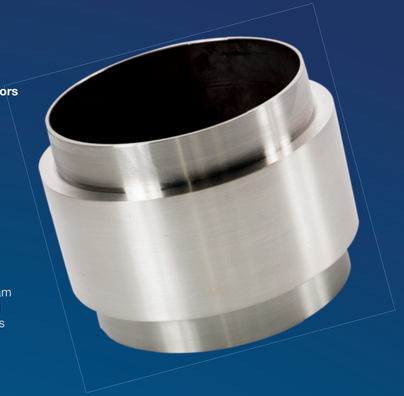
Targets for LARGE AREA COATINGS

The large area coatings Industry is represented by multiple market sectors with numerous types of thin film coatings like:

- **Architectural glass**
- **Automotive glass**
- **Displays**
- **Photovoltaics**
- **Solar technology**
- **Mirrors**

SAFINA, a.s. develops continuously its product range and services to be competitive and able to offer customized solutions for new applications.

As one of leading suppliers, SAFINA, a.s. offers multiple products for a large area coating applications, particularly for flat glass coatings. SAFINA R&D team pays attention namely to the key production concerned with silver planar and silver rotatable targets (both cylindrical and dogbone) in various constructions and designs according to individual customers needs.

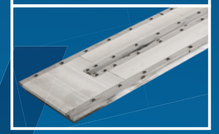


Silver sputtering targets

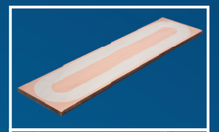
The potential technical solutions overview:

Ag planar target 25 mm
Casted blocks
Silver weight: 220 kgs
Utilization: 25-30%

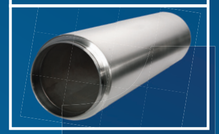
Ag planar target 25 mm
Multi-piece construction with clamps
(GRADEL solution)
Silver weight: 180 kgs
Utilization: 30-35%



Ag planar target 25 mm
Replenished in the backing plate
Silver weight: 110 kgs
Utilization: 50-60%



Ag rotatable target 9/13 mm
Replenished on the steel backing tube
Silver weight: 180 kgs
Utilization: 80-90%



Silver sputtering targets

physical data

Standard purity:	99,99% (4N)
Density:	10,49 g/cm3
Microstructure:	homogenous recrystallized (annealed)
Average grain size:	< 50 µm
Melting point:	961 °C
Electrical resistivity:	1,59 µΩcm
Thermal resistivity:	418W/mK
Appearance:	silver grey

SAFINA, a.s. can offer to customers also other materials and products used in large area coatings:

Planar targets: Pd, Al, Ti, Nb

Rotatable targets: Zn, ZnAl, Al

Targets for OPTICAL MEDIA INDUSTRY

SAFINA, a.s. manufactures wide variety of sputtering targets for optical discs, such as CD, CD-R, DVD±R, CR±RW, DVD±RW, and DVD9. Targets are produced based on the requested design and geometry keeping stable high quality and precision machining. As a reference, our products match with numerous types of metallizers made by Singulus, M2, Balzers, Tapematic, Anwell etc. Our recycling services for spent targets and precious metal scrap from masks complete the offer for our customers.

Target materials:

- Pure silver - Ag 4N purity, monoblocks for CD-R and DVD±R
- Silver alloys - targets for DVD9, non-standard alloys on request
- Pure gold - Au 4N purity, in monoblocks or profiled bonded targets with higher utilization
- Copper-aluminium - CuAl gold colour material for gold-discs
- Aluminium - main material for CD, DVD5/9/10 discs

Targets for DECORATIVE COATINGS

We can offer many types of rotatable and planar sputtering targets as well as evaporation materials for decorative coatings. Applying the optimization of target geometry, high oxidation and wear resistence, superior uniformity and coating quality can be provided.

Decorative coating materials:

Colour:	Material:
Golden/Yellow	Au, Cu, CuZn, CuAl, Ti, Zr
Silver	Ag, Pt, Al, Ti, Cr, Ni, Zr, NiCr
Rose/Pink	AgCu, Ti
Purple/Blue	Ti
Gray/Silver Gray	Ti
Black	Ti, Ni
Transparent/Rainbow	Zr, Ti