

Sputtering Targets for Photovoltaic Applications

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The Thin Film Materials Division (TMD) of W. C. Heraeus GmbH is first in development, production, sales and distribution of sputtering targets and evaporation materials for thin film technology world wide.

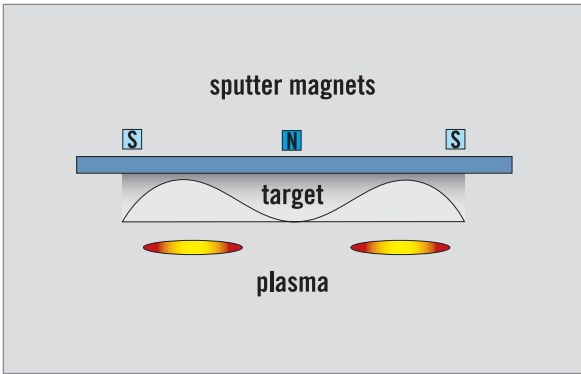
Our wide range of products and services encompass the large area coating, photovoltaics, electronic components, displays and data storage markets. Reliable and high-quality products, excellent customer service and innovation make Heraeus the right choice for targets.

Heraeus TMD, in cooperation with our Photovoltaic customers and coating system manufacturers, has developed a variety of sputtering targets for most layers found in the different types of thin film photovoltaic cells and the sputtered layers on silicon wafer based cells.

All technologies (casting, powder metallurgy, spraying, bonding) are deployed to manufacture these Photovoltaic specific sputtering targets in planar and cylindrical form.

Our worldwide dedicated development resources, in-house technologies and manufacturing make Heraeus TMD your reliable partner for development and secured delivery of all your current and future sputter target needs for photovoltaic applications.

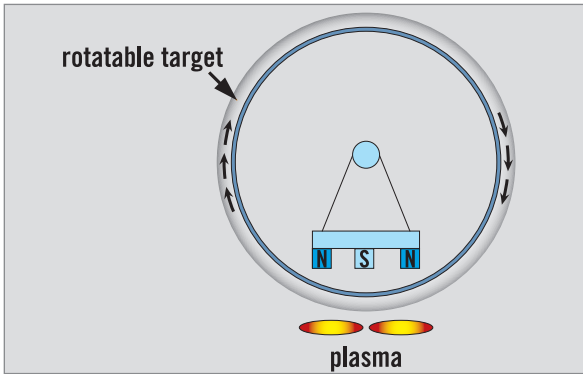
planar sputter cathode



We want to help our customers and the photovoltaic industry to be successful, thus contributing to the concepts of clean and renewable energy and preservation of the environment.

The general trend from planar to cylindrical cathodes and targets that we have been observing in the large area glass, web and display industry has begun for photovoltaic sputter applications. TMD's experience with existing large area sputtering solutions and changing demands in geometry (form and size) can also be applied in development and production of targets for the PV sputtering industry.

rotatable sputter cathode



Sputtering targets for photovoltaic applications based on cell types

CIGS	a-Si	CdTe	Wafer based
ZAO®, In, CuGa, ZnO, Mo, CIG, CuIn, ZnAl, ZGO, ZnOMgO	ZAO®, ZnO, Al, Mo, NiV, Ag	ITO, Sn, Mo, NiV	Si, SISPA®, Al, Ag

Material	Composition [wt%]	Purity	Rotatable	Planar
Ag	n.a.	3N7	✓	✓
Al	n.a.	4N	✓	✓
CIG	various	4N	✓	✓
CuGa	various	4N	*	✓
CuIn	various	4N	*	✓
In	n.a.	4N, 5N	✓	✓
ITO	In ₂ O ₃ / SnO ₂ 10	4N	✓	✓
Mo	n.a.	3N5	✓	✓
NiV	NiV 7	3N	✓	✓
Si	n.a.	5N	*	✓
SISPA®	SiAl 10	3N	*	✓
Sn	n.a.	3N, 4N	✓	✓
ZAO®	ZnO / Al ₂ O ₃ (0.5 – 2)	3N5	✓	✓
ZGO	ZnO / Ga ₂ O ₃ (0.5 – 2.5)	3N	✓	✓
ZnAl	ZnAl (0.5 – 2)	3N	✓	✓
ZnO	0.01	4N	✓	✓
ZnOMgO	ZnO / MgO (15 – 30 at %)	3N		✓

target length up to 4 metres

* materials on request

Reliable and Highest Quality Products

- Modern production facilities
- Proven capabilities for process upscaling
- 25 years experience in large area coating
- Highly integrated in-house manufacturing
- Targets qualified by system manufacturers
- All production and testing ISO 9001:2000 certified

Innovative Products

- Full range of R&D capabilities
- Targets optimized to your production parameters
- Close cooperation with system manufacturers

Customer Support

- Extensive process technology
- Global network close to you

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