

**Product Information**

# Zinc Selenide Patinal®

## GENERAL INFORMATION

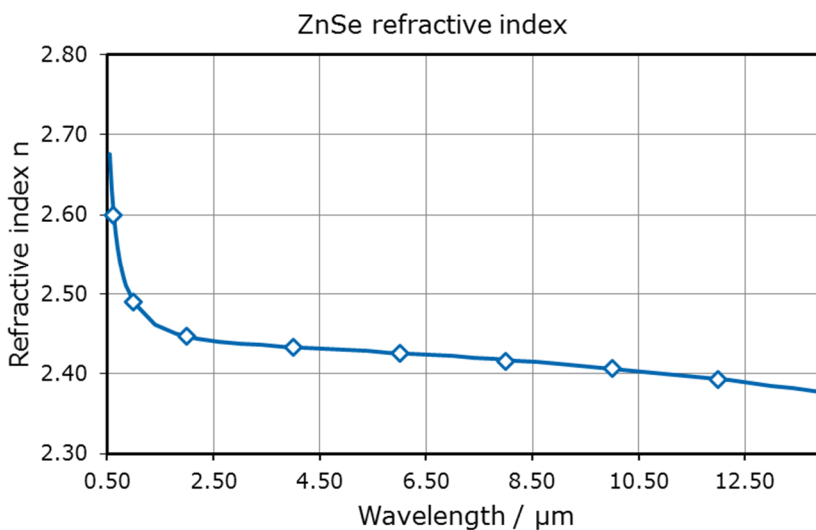
Zinc selenide has found widespread use in infrared optics due to its very broad transmission range from about 0.5  $\mu\text{m}$  to about 14  $\mu\text{m}$  and can be applied for IR optical thin film coatings made by vapor deposition.

## AREAS OF APPLICATION

- Multilayer coatings mainly in the IR spectral range such as mirrors, beamsplitters and AR (e.g. on Ge and ZnSe)
- Coatings for CO<sub>2</sub> laser optics at 10.6  $\mu\text{m}$

## THIN FILM PROPERTIES

Range of transparency	0.5 $\mu\text{m}$ – 14 $\mu\text{m}$
Refractive index at	
• 600 nm	~ 2.60
• 10 $\mu\text{m}$	~ 2.41
Thin film stress	compressive



wavl / $\mu\text{m}$	0.6	1.0	2.0	4.0	6.0	8.0	10.0	12.0
n	2.599	2.489	2.447	2.433	2.426	2.415	2.407	2.393

## NOTES FOR EVAPORATION

Evaporator source	Resistance heated evaporator Electron beam evaporator
Boat / liner	Mo, Ta, W boat / Mo, Ta liner
Evaporation temperature	600 – 900 °C
Deposition rate	0.5 – 3 nm/s
Chamber pressure	< $1 \cdot 10^{-5}$ mbar For IR < $1 \cdot 10^{-6}$ mbar
Substrate temperature	~150 °C
QCR-settings	Density 5.26 g/cm <sup>3</sup> , z-ratio 0.722



## PRODUCTS

Zinc Selenide Patinal® is available as pieces smaller than 2 cm.

Product Code	Description	Purity*	Dimensions
1.08869	Zinc Selenide Pieces Patinal®	≥ 99.995 % (4N5)	Pieces, < 2 cm

\* The purity values are based on the specified trace metals.

### Appearance

1.08869	Yellowish crystals
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## SPECIFICATION

Cobalt (Co)	≤ 0.0001 %
Copper (Cu)	≤ 0.0005 %
Chromium (Cr)	≤ 0.0001 %
Iron (Fe)	≤ 0.0005 %
Manganese (Mn)	≤ 0.0001 %
Nickel (Ni)	≤ 0.0001 %
Vanadium (V)	≤ 0.0001 %
Titanium (Ti)	≤ 0.001 %

### Sizes

1.08869	Pieces, < 2 cm
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### Application test

Each batch has to pass a specific application test assessing its evaporation behaviour.

### RoHS information

The RoHS compliance information is part of the Certificate of Analysis (CoA) for each batch of Patinal® material.



## Quality assurance

Research, production and sales of our Patinal® evaporation materials take place under a certified DIN EN ISO 9001:2000 quality management system and DIN EN ISO 14001 environmental management system. The quality of the materials is assured by our manufacturing processes, in-process controls and quality tests. Each batch is released only after passing our chemical analysis and application tests designed to confirm the suitability of the material for the evaporation process.

## Handling precautions

Product safety information required for safe use is not included in this document. Before handling, read product and safety sheets and container labels for safe use, physical and health hazard information. The material safety data sheet is available online at [www.patinal.com](http://www.patinal.com), from your EMD representative or distributor, or by calling your global Merck KGaA, Darmstadt, Germany, contact.

## Disclaimer

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