

Product Information

Chiolite Patinal®

GENERAL INFORMATION

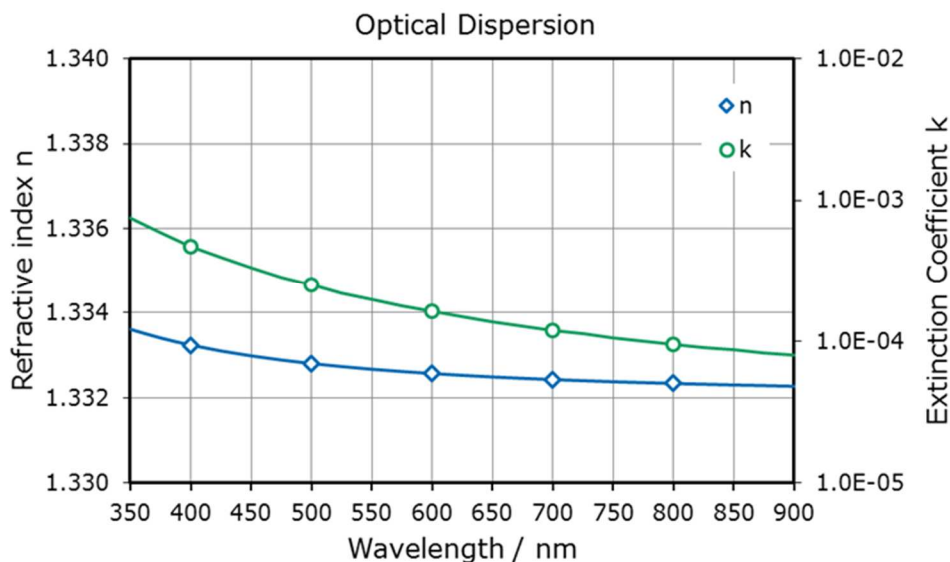
Chiolite ($\text{Na}_3\text{Al}_3\text{F}_{14}$) decomposes during evaporation to AlF_3 and NaF . Layers made from Chiolite contain a higher amount of AlF_3 than layers made from Cryolite (Na_3AlF_6) and therefore are less sensitive against water.

AREAS OF APPLICATION

- Multilayer coatings, e.g. interference filters with ZnS and Chiolite

THIN FILM PROPERTIES

Range of transparency	200 nm – 14 μm
Refractive index at 500 nm	1.3 – 1.35
Thin film stress	Tensile



wavl / nm	350	500	650	900
n	1.334	1.333	1.332	1.332
k	7.5E-04	2.5E-04	1.4E-04	8.0E-05

The resulting optical properties of the thin film are dependent on process conditions like deposition rate and substrate temperature.

NOTES FOR EVAPORATION

Evaporator source	Resistance heater thermal evaporator
Boat	Molybdenum, tantalum or platinum indirectly heated alumina crucibles
Evaporation temperature	800 - 1000 °C
Deposition rate	0.6 – 1.5 nm/s
Chamber pressure	< 2·10 ⁻⁵ mbar
Substrate temperature	250 – 300 °C
QCR-settings	Density 2.90 g/cm ³ , z-ratio 1.0

Evaporating chiolite from molybdenum- or tantalum boats gives layers which absorb in the UV-spectral region. To produce absorption-free layers in the UV, boats of platinum or indirectly heated alumina crucibles should be used. The use of tungsten boats is not recommended as there is a noticeable reaction between chiolite and tungsten at high temperatures.

It is of advantage to evaporate chiolite at a pressure of less than 2·10⁻⁵ mbar and to use a liquid nitrogen cooled baffle.



PRODUCTS

Chiolite Patinal® is available as granules.

Product Code	Description	Purity*	Dimensions
1.02286	Chiolite Patinal®	≥ 99.95 % (3N5)	Granules, about 1 – 4 mm

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

Appearance

1.02286	White granules
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SPECIFICATION

Cobalt (Co)	≤ 0.001 %	Sizes	1.02286	granules 1 - 4 mm ≥ 80 %
Copper (Cu)	≤ 0.001 %			
Chromium (Cr)	≤ 0.002 %	Application test	Each batch has to pass a specific application test assessing its evaporation behaviour.	
Iron (Fe)	≤ 0.005 %			
Vanadium (V)	≤ 0.005 %			
Oxygen (O)	≤ 0.15 %			

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, from your EMD representative or distributor, or by calling your global Merck KGaA, Darmstadt, Germany, contact.

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