

Evaporation Materials: Oxides

Our evaporation materials are available as granules with size from 1mm, pellets with diameter from 5mm, targets with size up to 1,000mm. They are suitable for both electron- and ion-beam evaporation as well as ion beam sputtering. The parameters in the table below are approximate and depend on the sinter and application conditions.

material	Al ₂ O ₃ aluminium oxide	CeO ₂ cerium oxide	HfO ₂ hafnium oxide	In ₂ O ₃ indium oxide	In ₂ O ₃ -CeO ₂ indium-cer oxide
density colour transmission	3.9g/cm ³ white 190nm...7µm	7.3g/cm ³ yellow 400nm...12.5µm	9.7g/cm ³ white 190nm...7µm	7.2g/cm ³ yellow 400nm...7µm	7.0g/cm ³ yellow 300nm...12.5µm

refractive index and transmission

wavelength					
140nm	-	-	-	-	-
150nm	-	-	-	-	-
190nm	1.92	-	2.48	-	-
300nm	1.81	-	2.20	-	-
400nm	1.79	2.23	2.16	2.06	2.06
600nm	1.77	2.20	2.11	1.89	1.89
800nm	1.76	2.18	2.09	1.77	1.77
1µm	1.76	2.18	2.08	1.64	1.64
2µm	1.74	2.17	2.06	-	-
4µm	1.68	2.15	2.02	-	-
7µm	1.47	2.05	1.90	-	-
8µm	-	2.01	-	-	-
10µm	-	1.95	-	-	-
12.5µm	-	1.90	-	-	-
15µm	-	-	-	-	-
standard form and size (other forms and sizes are available by request)	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm
price	150 EUR/kg	190 EUR/kg	710 EUR/kg	870 EUR/kg	1,230 EUR/kg

recommended crystalline quartz deposition monitors:

- with aluminium as electrode material (choice 1)
- with silver as electrode material (choice 2)

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material	In ₂ O ₃ -SnO ₂ indium-tin oxide	MgO magnesium oxide	Nb ₂ O ₅ niobium oxide	SiO silicon monoxide	Si ₂ O ₃ disilicon trioxide
density colour transmission	7.1g/cm ³ yellow-green 400nm...1µm	3.6g/cm ³ white 300nm...8µm	4.5g/cm ³ white 400nm...7µm	2.1g/cm ³ dark 800nm...8µm	2.2g/cm ³ gray 300nm...7µm

refractive index and transmission

wavelength					
140nm	-	-	-	-	-
150nm	-	-	-	-	-
190nm	-	-	-	-	-
300nm	-	1.80	-	-	1.55
400nm	2.06	1.76	2.54	-	1.53
600nm	1.89	1.74	2.33	-	1.52
800nm	1.77	1.73	2.28	1.93	1.51
1µm	1.64	1.72	2.26	1.90	1.51
2µm	-	1.70	2.24	1.86	1.50
4µm	-	1.67	2.20	1.80	1.45
7µm	-	1.64	2.10	1.60	1.40
8µm	-	1.61	-	1.16	-
10µm	-	-	-	-	-
12.5µm	-	-	-	-	-
15µm	-	-	-	-	-
standard form and size (other forms and sizes are available by request)	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm
price	930 EUR/kg	282 EUR/kg	260 EUR/kg	76 EUR/kg	130 EUR/kg

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material	SiO ₂ silicon dioxide	Sb ₂ O ₃ antimony trioxide	TaO ₂ tantalum dioxide	Ta ₂ O ₅ tantalum pentoxide
density colour transmission	2.3g/cm ³ white 190nm...2µm	5.2g/cm ³ white 400nm...12.5µm	8.2g/cm ³ dark gray 300nm...7µm	8.2g/cm ³ white 300nm...7µm

refractive index and transmission

wavelength				
140nm	-	-	-	-
150nm	-	-	-	-
190nm	1.56	-	-	-
300nm	1.49	-	2.34	2.34
400nm	1.47	2.15	2.25	2.25
600nm	1.46	2.09	2.14	2.14
800nm	1.45	2.06	2.10	2.10
1µm	1.45	2.04	2.08	2.08
2µm	1.44	2.00	2.04	2.04
4µm	-	1.95	1.99	1.99
7µm	-	1.89	1.77	1.77
8µm	-	1.80	-	-
10µm	-	1.69	-	-
12.5µm	-	1.55	-	-
15µm	-	-	-	-
standard form and size (other forms and sizes are available by request)	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm
price	60 EUR/kg	by request	810 EUR/kg	730 EUR/kg

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material	TiO titanium monoxide	Ti ₂ O ₃ ditanium trioxide	Ti ₃ O ₅ tritanium pentoxide	TiO ₂ titanium dioxide	Y ₂ O ₃ yttrium oxide
density colour transmission	4.9g/cm ³ gold 400nm...10µm	4.6g/cm ³ violet 400nm...10µm	4.6g/cm ³ dark violet 400nm...10µm	4.2g/cm ³ white 400nm...10µm	5.0g/cm ³ white 300nm...8µm

refractive index and transmission

wavelength					
140nm	-	-	-	-	-
150nm	-	-	-	-	-
190nm	-	-	-	-	-
300nm	-	-	-	-	2.07
400nm	2,68	2.68	2.68	2.68	1.98
600nm	2,60	2.60	2.60	2.60	1.93
800nm	2,52	2.52	2.52	2.52	1.91
1µm	2,49	2.49	2.49	2.49	1.90
2µm	2,41	2.41	2.41	2.41	1.89
4µm	2,31	2.31	2.31	2.31	1.86
7µm	2,02	2.02	2.02	2.02	1.78
8µm	1,87	1.87	1.87	1.87	1.74
10µm	1,39	1.39	1.39	1.39	-
12.5µm	-	-	-	-	-
15µm	-	-	-	-	-
standard form and size (other forms and sizes are available by request)	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm
price	170 EUR/kg	150 EUR/kg	150 EUR/kg	100 EUR/kg	280 EUR/kg

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material	Yb ₂ O ₃ ytterbium oxide	ZrO ₂ zirconium oxide
density colour transmission	9.2g/cm ³ white 400nm...8µm	5.6g/cm ³ white 300nm...7µm
refractive index and transmission		
wavelength		
140nm	-	-
150nm	-	-
190nm	-	-
300nm	-	2.25
400nm	1.98	2.22
600nm	1.95	2.16
800nm	1.92	2.14
1µm	1.90	2.12
2µm	1.88	2.10
4µm	1.86	2.05
7µm	1.78	1.96
8µm	1.74	-
10µm	-	-
12.5µm	-	-
15µm	-	-
standard form and size (other forms and sizes are available by request)	dia 18 x 10mm granules 1-6mm	dia 18 x 10mm granules 1-6mm
price	300 EUR/kg	100 EUR/kg