

TITANIUM OXIDES

TiO_2 , TiO , Ti_2O_3 , Ti_3O_5 , Ti_5O_9

Application

Titanium oxide is used for the production of transparent optical coatings with high refractive index. Titanium oxide provides the highest index film material for the visible region, is hard and stable in combination with other oxides.

All the stoichiometries can be evaporated and subsequently oxidized to the final stable phase.

Titanium oxide thin films are dielectric, wear and corrosion resistant and are used in multi-layers for laser mirrors, beam splitters, cold mirrors as well as heat reflecting mirrors.

Forms of delivery

TiO_2 : granules, tablets, targets, slugs
 TiO : granules, tablets, targets
 Ti_2O_3 , Ti_3O_5 , Ti_5O_9 : granules, tablets, targets

Examples for shaped forms

diameter 8-90 mm (one segment)
 > 90 mm (segmented)
 thickness tablets 3-8 mm
 targets 6-12 mm

Suggested evaporation method

electron beam

Purity

99.9%

Physical and optical properties

Melting points:

TiO	~ 1750°C
TiO_2	~ 1855°C
Ti_2O_3	~ 2130°C
Ti_3O_5	~ 1760°C
Ti_5O_9	~ 1820°C

Evaporation temperature:

TiO	~ 2700°C
TiO_2	~ 2900°C
Ti_2O_3	~ 3000°C
Ti_3O_5	~ 2000°C
Ti_5O_9	~ 2000°C

Theoretical density:

TiO	4.88 g/cm ³
TiO_2	4.24 g/cm ³
Ti_2O_3	3.35 g/cm ³
Ti_3O_5	4.44 g/cm ³
Ti_5O_9	3.86 g/cm ³

Density supplied:

TiO	3.50 g/cm ³
TiO_2	3.76 g/cm ³
Ti_2O_3	2.55 g/cm ³
Ti_3O_5	2.90 g/cm ³
Ti_5O_9	3.17 g/cm ³

Refractive index:

2.1 - 2.6 (540 -700 nm)