>>**Entry Name: Titanium(*IV*) oxide (TiO_2),** 11Cl
ENTRY UNDER REVIEW
Synonym(s): Titanium dioxide, USAN. Tioxide. Bayertitan. C.I. 77891. C.I. Pigment white 6. Titania. Unitane. Many other names

CAS Registry Number: 13463-67-7
Related CAS Registry Numbers(s): 12214-43-6
Extra CAS Registry Numbers(s): 1344-29-2 51745-87-0

TiO_2

Molecular Formula: O_2Ti
Molecular Weight: 79.879
Accurate Mass: 79.937777
Percentage Composition: O 40.06%; Ti 59.94%
Source/Synthesis: Major sources are rutile (TiO_2) and ilmenite ($FeTiO_3$). Manuf. either from ilmenite by dissoln. in H_2SO_4, reduction and removal of Fe, hydrol. and calcining or from rutile by conversion to $TiCl_4$ ($TiO_2 + C + Cl_2$) and hydrol. or calcining in air at 1000°. Produced as ultrafine pure powder, by hydrothermal H_2O_2 oxidation of metallic Ti, carried out at rel. low temp. Metal-loaded samples for device use are produced by suspending TiO_2 in aq. soln. of metal salt, and evapn. to dryness
Use/Importance: V. large use (millions of tons) as white pigment in paints and paper and filler in rubber and plastics. Also used in dentistry, foods, pharmaceutical formulations, cosmetics and ceramics, in anodes for various electrochem. processes etc. Topical protectant. Dermatological agent. Used as a sunscreen agent. Important industrial chemical, USA production in 1999 1.49 million tons. Used as a semiconductor gas sensor for detn. of Me_3N as dec. product from food (fish products). Potential use as cathode material in optical devices
Physical Description: White solid with v. high refractive index (2.61-2.90). Loses O_2 in air to form $TiO_{1.985}$ which melts at *ca.* 1843°
Melting Point: Mp 1892 ° (under O_2 atm.)
Solubility: Insol. H_2O, HCl, HNO_3, dil. H_2SO_4; sol. hot conc. H_2SO_4, HF
Hazard & Toxicity: OES: long-term 10 mg m^{-3} (total inhalable dust). Mild pulmonary irritant

Fluka: 89490

>>**Variant:** Mineral-form
Synonym(s): Rutile

CAS Registry Number: 1317-80-2

Molecular Formula: O_2Ti
Molecular Weight: 79.879
Accurate Mass: 79.937777
Percentage Composition: O 40.06%; Ti 59.94%

Source/Synthesis: Occur. widespread
Other Data: Dec. at 1640°

Aldrich: 20475-7

>>**Variant:** Mineral-form
Synonym(s): Anatase. Octahedrite

CAS Registry Number: 1317-70-0
Molecular Formula: O_2Ti
Molecular Weight: 79.879
Accurate Mass: 79.937777
Percentage Composition: O 40.06%; Ti 59.94%

Physical Description: Brown cryst.
Melting Point: Mp 1560°
Refractive Index: n_D 2.6000
Other Data: Hardness: 5.8 Mohs

Aldrich: 24857-6
Sigma: T8141

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