



>>Entry Name: Platinum(IV) oxide (PtO₂)

Synonym(s): Platinum dioxide

CAS Registry Number: 1314-15-4

PtO₂

Molecular Formula: O₂Pt

Molecular Weight: 227.079

Accurate Mass: 226.954596

Percentage Composition: O 14.09%; Pt 85.91%

Source/Synthesis: Synth. from Hexachloroplatinate(IV)(2-) [JCX41-E](#) + Na₂CO₃ or Hexachloroplatinic acid [JCZ29-Q](#) + NaNO₃

Use/Importance: Commercially available as *Adams' catalyst* for hydrogenations. Reacts with alkalis, forming Platinate [Pt(OH)₆²⁽⁻⁾] [JCZ14-I](#)

Physical Description: Black solid

Melting Point: Mp 450°

Other Data: Trihydrate also reported but v. poorly characterised

Aldrich: 20603-2

Fluka: 81090

Sigma: P0804

>>Derivative: Hydrate

CAS Registry Number: 52785-06-5

Physical Description: Red-brown solid

Other Data: Degree of hydration uncertain

Aldrich: 22905-9

>>Derivative: Monohydrate

CAS Registry Number: 12137-21-2

Molecular Formula: H₂O₃Pt

Molecular Weight: 245.094

Accurate Mass: 244.965161

Percentage Composition: H 0.82%; O 19.58%; Pt 79.59%

Physical Description: V. dark brown solid

Solubility: Insol. acids, alkali, H₂O, aqua regia; sol. NaOH

Aldrich: 22904-0

>>Derivative: Dihydrate

CAS Registry Number: 12137-22-3

Molecular Formula: H₄O₄Pt

Molecular Weight: 263.109

Accurate Mass: 262.975726

Percentage Composition: H 1.53%; O 24.32%; Pt 74.14%

Physical Description: Brown solid

Solubility: Sol. HCl, alkali

>>Variant: α-form

Molecular Formula: O₂Pt

Molecular Weight: 227.079

Accurate Mass: 226.954596

Percentage Composition: O 14.09%; Pt 85.91%

>>Variant: β-form

Molecular Formula: O₂Pt

Molecular Weight: 227.079

Accurate Mass: 226.954596

Percentage Composition: O 14.09%; Pt 85.91%

Source/Synthesis: Synth. from Pt black at 850° and 500 atm. O₂ for 5 days