



>>Entry Name: Zirconium fluoride (ZrF₄), 11CI

Synonym(s): Zirconium tetrafluoride. Zirconium fluoride

CAS Registry Number: 7783-64-4

ZrF₄

Molecular Formula: F₄Zr

Molecular Weight: 167.218

Accurate Mass: 165.898315

Percentage Composition: F 45.45%; Zr 54.55%

Source/Synthesis: Both forms may be synth. by a v. wide range of methods including Zr + F₂; ZrO₂ + F₂. Reaction of Zr(BH₄)₄ with HF/F₂ yields ultrapure material for optical applications

Use/Importance: V. widely used in glasses, especially those for ir uses, and in optical fibres. Also used in dental cements and as a fluorination catalyst. Commercially available

Physical Description: White solid which readily subl.

Melting Point: Mp *ca.* 920°

Solubility: Sol. conc. and HF aq. without hydrol.

Hazard & Toxicity: Toxic

Aldrich: 31146-4

>>Variant: α-form

Synonym(s): Low temp.-form

Molecular Formula: F₄Zr

Molecular Weight: 167.218

Accurate Mass: 165.898315

Percentage Composition: F 45.45%; Zr 54.55%

Source/Synthesis: Synth. below 450°

>>Variant: β-form

Synonym(s): High temp.-form

Molecular Formula: F₄Zr

Molecular Weight: 167.218

Accurate Mass: 165.898315

Percentage Composition: F 45.45%; Zr 54.55%

Source/Synthesis: Formed by heating ZrF₄ above 450°. It is stable at r.t.

>>Derivative: Compd. with graphite

CAS Registry Number: 94185-82-7

Source/Synthesis: Synth. by heating graphite with ZrF₄ and F₂

Use/Importance: V. good electrical conductor

Other Data: Formulated as C_xF(ZrF₄)_y; x = 1-100, y = 0.0001-0.15

>>Derivative: Monohydrate

CAS Registry Number: 14596-11-3

Molecular Formula: F₄H₂OZr

Molecular Weight: 185.233

Percentage Composition: F 41.03%; H 1.09%; O 8.64%; Zr 49.25%

Source/Synthesis: Synth. from ZrF₄ in HF aq.

Physical Description: White solid (HF aq.)

Other Data: Struct. comprises dodecahedra sharing six corners to form a 3-D network

>>Derivative: Trihydrate

CAS Registry Number: 14517-16-9

Source/Synthesis: Synth. from ZrF₄ in HF aq.

Physical Description: White solid (HF aq.)

Other Data: Square antiprismatic dimer with 2 bridging fluorines