



>>Entry Name: Hafnium tellurides

CAS Registry Number: 11126-07-1

Molecular Formula: [HfTe]

General Statement: Three phases have been studied

>>Variant: Hafnium telluride (Hf₃Te₂)

Molecular Formula: Hf₃Te₂

Molecular Weight: 790.67

Accurate Mass: 799.652093

Percentage Composition: Hf 67.72%; Te 32.28%

General Statement: The struct. is best descr. as alternating 3 layers of bcc Hf and 2 layers of Te with only weak interlayer interactions

Source/Synthesis: Synth. by heating Hf and Te to 1000° over 5d in a sealed Nb capsule

Physical Description: Black cryst./molten KCl

>>Variant: Hafnium telluride (HfTe₂), 11Cl

CAS Registry Number: 39082-23-0

Molecular Formula: HfTe₂

Molecular Weight: 433.69

Accurate Mass: 439.759003

Percentage Composition: Hf 41.16%; Te 58.84%

General Statement: Non-stoichiometric but there is disagreement as to whether it contains excess Hf (Hf_{1+x}Te₂) or Te defects (HfTe_{2-x}). Has a layer Te struct. with random distribution of Hf

Source/Synthesis: Synth. from Hf, Te and I₂ in temp. gradients around 800°

>>Variant: Hafnium telluride (HfTe₃), 11Cl

CAS Registry Number: 11128-40-8

Molecular Formula: HfTe₃

Molecular Weight: 561.29

Accurate Mass: 569.665232

Percentage Composition: Hf 31.80%; Te 68.20%

General Statement: Isostructural with ZrSe₃

Source/Synthesis: Synth. by heating the elements in a sealed tube at 500°. Cryst. may be grown by transport with I₂

Physical Description: Either metallic or semiconductor with v. small band-gap

>>Variant: Hafnium telluride (HfTe₅), 11Cl

CAS Registry Number: 11128-41-9

Molecular Formula: HfTe₅

Molecular Weight: 816.49

Accurate Mass: 829.47769

Percentage Composition: Hf 21.86%; Te 78.14%

General Statement: There is no evidence for non-stoichiometry in this phase. Hf is in a distorted bicapped trigonal prism, these units being linked by zig-zag chains of Te

Source/Synthesis: Synth. by heating the elements in an evacuated silica tube to 450-500°. Single cryst. may be obtained by transport with I₂

References:

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Smeggil, J.G. *et al.*, *J. Solid State Chem.*, 1972, **5**, 391, (*synth, cryst struct, HfTe_{2-x}*)

Brattas, L. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 1290, (*synth, cryst struct, Hf_{1+x}Te₂*)

Furuset, S. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 2367, (*synth, cryst struct, HfTe₃*)

Khumalo, F.S. *et al.*, *Phys. Rev. B*, 1980, **22**, 2078, (*uv, HfTe₃*)

Hodul, D.T. *et al.*, *Inorg. Chem.*, 1981, **20**, 3655, (*synth, cryst struct, HfTe₂*)

Fjellvaag, H. *et al.*, *Solid State Commun.*, 1986, **60**, 91, (*synth, cryst struct, nd, HfTe₃*)

Abdon, R.L. *et al.*, *Angew. Chem., Int. Ed.*, 1994, **33**, 2329, (*synth, cryst struct, Hf₃Te₂*)