>>**Entry Name: Hafnium tellurides**

CAS Registry Number: 11126-07-1

Molecular Formula: [HfTe]
General Statement: Three phases have been studied

>>**Variant: Hafnium telluride (Hf_3Te_2)**

Molecular Formula: Hf_3Te_2
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 ($HfTe_2$),** 11Cl

CAS Registry Number: 39082-23-0
Molecular Formula: $HfTe_2$
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 ($Hf_{1+x}Te_2$) or Te defects ($HfTe_{2-x}$). Has a layer Te struct. with random distribution of Hf
Source/Synthesis: Synth. from Hf, Te and I_2 in temp. gradients around 800°

>>**Variant: Hafnium telluride ($HfTe_3$),** 11Cl

CAS Registry Number: 11128-40-8
Molecular Formula: $HfTe_3$
Molecular Weight: 561.29
Accurate Mass: 569.665232
Percentage Composition: Hf 31.80%; Te 68.20%
General Statement: Isostructural with $ZrSe_3$
Source/Synthesis: Synth. by heating the elements in a sealed tube at 500°. Cryst. may be grown by transport with I_2
Physical Description: Either metallic or semiconductor with v. small band-gap

>>**Variant: Hafnium telluride ($HfTe_5$),** 11Cl

CAS Registry Number: 11128-41-9
Molecular Formula: $HfTe_5$
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 I_2

References:

Brattas, L. *et al.*, *Acta Chem. Scand.*, 1971, **25**, 2783; 1972, **26**, 341, *(synth, cryst struct, props, $HfTe_3$)*
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, $Hf_{1+x}Te_2$)*
Furuseth, S. *et al.*, *Acta Chem. Scand.*, 1973, **27**, 2367, *(synth, cryst struct, $HfTe_3$)*
Khumalo, F.S. *et al.*, *Phys. Rev. B*, 1980, **22**, 2078, *(uv, $HfTe_3$)*
Hodul, D.T. *et al.*, *Inorg. Chem.*, 1981, **20**, 3655, *(synth, cryst struct, $HfTe_2$)*
Fjellvaag, H. *et al.*, *Solid State Commun.*, 1986, **60**, 91, *(synth, cryst struct, nd, $HfTe_3$)*
Abdon, R.L. *et al.*, *Angew. Chem., Int. Ed.*, 1994, **33**, 2329, *(synth, cryst struct, Hf_3Te_2)*