>>**Entry Name: Tantalum sulfide (TaS_2),** 11Cl

CAS Registry Number: 12143-72-5
Related CAS Registry Numbers(s): 34340-90-4 81627-60-3 81627-61-4

TaS_2

Molecular Formula: S_2Ta
Molecular Weight: 245.08
Accurate Mass: 244.892132
Percentage Composition: S 26.17%; Ta 73.83%

Source/Synthesis: Synth. by direct reaction of Ta and S
Use/Importance: Commercially available. Has lubricating props. similar to MoS_2, it can also be used as an electrode in Li/S batteries because it intercalates Li
Physical Description: Black solid. Forms many intercalation compds. with a very wide range of species
Melting Point: Mp 1300°

>>**Derivative:** Li compd.
Synonym(s): Lithium tantalum sulfide ($LiTaS_2$). Tantalum sulfide compd. with lithium. Lithium disulfidotantalate

CAS Registry Number: 55964-35-7
Molecular Formula: LiS_2Ta
Molecular Weight: 252.021
Accurate Mass: 251.908135
Percentage Composition: Li 2.75%; S 25.45%; Ta 71.80%
Source/Synthesis: Synth. from 2H-TaS_2 + butyllithium
Physical Description: Has variable composition $Li_{1-x}TaS_2$

>>**Derivative:** Na compd. (1:0.33)
Synonym(s): Sodium tungsten sulfide ($NaTa_3S_6$). Tungsten sulfide (TaS_2) sodium compd. (1:0.33). Sodium hexasulfidotritantalate

CAS Registry Number: 67115-65-5
Molecular Formula: NaS_6Ta_3
Molecular Weight: 758.229
Accurate Mass: 757.666163
Percentage Composition: Na 3.03%; S 25.37%; Ta 71.59%
Source/Synthesis: Synth. from TaS_2 and NaCl at 900°
Other Data: Mono and dihydrate are known

>>**Derivative:** Na compd. (1:1)
Synonym(s): Sodium tantalum sulfide ($NaTaS_2$). Tantalum sulfide compd. with sodium. Sodium disulfidotantalate

CAS Registry Number: 71852-76-1
Source/Synthesis: Synth. from 2H-TaS_2 + sodium naphthalenide in THF; or from TaS_2 + Na at 800°
Physical Description: Has variable composition $Na_{1-x}TaS_2$

>>**Derivative:** NH_3 compd. (1:1)
Synonym(s): Amminedithioxotantalum(*IV*), 10Cl. Tantalum(*IV*) sulfide. ammonia

CAS Registry Number: 73689-97-1
Source/Synthesis: Synth. from TaS_2 + liq. NH_3 at 20° under pressure or by electrolysis of NH_3(aq.) at a TaS_2 cathode
Physical Description: Blue-black solid
Other Data: NH_3 is intercalated between the layer of the TaS_2 struct. $0.5NH_3$ compd. is also known

References:

Jellinek, F.*, J. Less-Common Met.*, 1962, **4**, 9, *(cryst struct)*
Chianelli, R.R. *et al.*, *Inorg. Chem.*, 1975, **14**, 1691, *(synth, cryst struct, NH_3 compd)*
Graf, H.A. *et al.*, *J. Less-Common Met.*, 1977, **55**, 213, *(synth, cryst struct, K compd)*
Inorg. Synth., 1979, **19**, 35, *(synth, intercalation compds)*
Lerf, A. *et al.*, *Mater. Res. Bull.*, 1979, **14**, 792, *(synth, Li compd)*
Kleinberg, R.L. *et al.*, *Solid State Commun.*, 1980, **33**, 867, *(nmr, NH_3 compd)*
Johnson, D.C.*, Mater. Res. Bull.*, 1982, **17**, 13; *J. Less-Common Met.*, 1982, **84**, 326, *(synth, struct, Na compd)*
Meerschaut, A. *et al.*, *Stud. Inorg. Chem.*, 1983, **3**, 777, *(struct, pe)*