



>>Entry Name: Tantalum silicides

CAS Registry Number: 52953-72-7

Molecular Formula: [SiTa]

Use/Importance: Used in ceramics and a wide range of electrical contact and semiconductor devices

>>Variant: Tantalum silicide (Ta₃Si), 10Cl

CAS Registry Number: 12039-66-6

Molecular Formula: SiTa₃

Molecular Weight: 570.929

Accurate Mass: 570.820903

Percentage Composition: Si 4.92%; Ta 95.08%

Source/Synthesis: Synth. by arc-melting Ta + Si

>>Variant: Tantalum silicide (Ta₂Si), 11Cl

CAS Registry Number: 12384-90-6

Molecular Formula: SiTa₂

Molecular Weight: 389.981

Accurate Mass: 389.872911

Percentage Composition: Si 7.20%; Ta 92.80%

Source/Synthesis: Synth. from Ta + Si at 1480° or from Ta₂O₅ + Si in a plasma furnace

>>Variant: Tantalum silicide (Ta₅Si₃), 11Cl

CAS Registry Number: 12067-56-0

Molecular Formula: Si₃Ta₅

Molecular Weight: 988.996

Accurate Mass: 988.670741

Percentage Composition: Si 8.52%; Ta 91.48%

Source/Synthesis: Synth. by H₂ reduction of a mixt. of TaCl₅ and SiCl₄

Use/Importance: Electrode material in fuel cells

>>Variant: Tantalum silicide (TaSi₂), 11Cl

CAS Registry Number: 12039-79-1

Molecular Formula: Si₂Ta

Molecular Weight: 237.119

Accurate Mass: 236.901846

Percentage Composition: Si 23.69%; Ta 76.31%

Source/Synthesis: Synth. by heating Si + Ta to 1480° after preheating to 350° or by reaction of TaS₂ and SiH_nX_{4-n} at up to 900°

Aldrich: 37270-6

References:

Bachmayer, K. *et al.*, *Monatsh. Chem.*, 1955, **86**, 859, (*cryst struct, Ta₅Si₃*)

Rossteutscher, W. *et al.*, *Z. Metallkd.*, 1965, **56**, 813, (*cryst struct, Ta₃Si*)

Kozlov, F.N. *et al.*, *Izv. Akad. Nauk SSSR, Neorg. Mater.*, 1969, 88, (*synth, Ta₅Si₃*)

Deardoff, D.K. *et al.*, *J. Less-Common Met.*, 1969, **18**, 11, (*synth, struct, Ta₃Si*)

Fr. Pat., 1972, 2 114 251; *CA*, **78**, 113449g, (*synth, TaSi₂*)

De Vynck, Y.A., *Silic. Ind.*, 1974, **39**, 109, (*synth, Ta₂Si*)

Sarkisyan, A.R. *et al.*, *Fiz. Goreniya Vzryva*, 1979, **15**, 112; *CA*, **91**, 25501f, (*synth, TaSi₂, Ta₂Si*)

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