



>>Entry Name: Tantalate ($\text{TaO}_3^{(-)}$)

Synonym(s): Trioxotantalate(*V*)(1−), 11Cl

CAS Registry Number: 59458-31-0

$[\text{TaO}_3]^{(-)}$

Molecular Formula: $\text{O}_3\text{Ta}^{(-)}$

Molecular Weight: 228.946

Accurate Mass: 228.932737

Percentage Composition: O 20.96%; Ta 79.04%

Use/Importance: The alkali metal salts, esp. Li, have been very widely studied because they are ferroelectric and piezoelectric. Many electrooptical devices are described

>>Derivative: Li salt

Synonym(s): Lithium tantalum oxide (LiTaO_3). Lithium tantalate(*V*) (LiTaO_3). Lithium tantalum trioxide

CAS Registry Number: 12031-66-2

Molecular Formula: LiO_3Ta

Molecular Weight: 235.887

Accurate Mass: 235.94874

Percentage Composition: Li 2.94%; O 20.35%; Ta 76.71%

Source/Synthesis: Commercial material may be crystallised by heating to 1547°

Use/Importance: Pyroelectric; used in electronics industry

Aldrich: 39525-0

>>Derivative: Na salt

Synonym(s): Sodium tantalum oxide (NaTaO_3). Sodium tantalate(*V*) (NaTaO_3). Sodium tantalum trioxide

CAS Registry Number: 12034-15-0

Molecular Formula: NaO_3Ta

Molecular Weight: 251.936

Accurate Mass: 251.922504

Percentage Composition: Na 9.13%; O 19.05%; Ta 71.82%

Source/Synthesis: Synth. by sintering $\text{Ta}_2\text{O}_5 + \text{Na}_2\text{CO}_3$

Physical Description: Cryst.

Other Data: Distorted perovskite struct.

>>Derivative: K salt

Synonym(s): Potassium tantalum oxide (KTaO_3). Potassium tantalate(*V*) (KTaO_3). Potassium tantalum trioxide

CAS Registry Number: 12030-91-0

Molecular Formula: KO_3Ta

Molecular Weight: 268.044

Accurate Mass: 267.896444

Percentage Composition: K 14.59%; O 17.91%; Ta 67.51%

Source/Synthesis: Synth. by sintering $\text{Ta}_2\text{O}_5 + \text{K}_2\text{CO}_3$

Other Data: Perovskite struct.. Ferroelectric

>>Derivative: Ca salt (2:1)

Synonym(s): Calcium tantalum oxide (CaTa_2O_6). Calcium tantalate(*V*) ($\text{Ca}(\text{TaO}_3)_2$). **Ryersonite**

CAS Registry Number: 12338-27-1

Molecular Formula: CaO_6Ta_2

Molecular Weight: 497.97

Accurate Mass: 497.828065

Percentage Composition: Ca 8.05%; O 19.28%; Ta 72.67%

Source/Synthesis: Synth. by heating CaCO_3 and Ta_2O_5 at 1200°. An ordered high temp. form is obtained by laser-heating the product

Physical Description: White solid

Melting Point: Mp 1720°

Other Data: Struct. related to perovskite; the mineral is identical