



>>Entry Name: Ruthenium(III) bromide (RuBr₃)

Synonym(s): Ruthenium tribromide

CAS Registry Number: 14014-88-1

RuBr₃

Molecular Formula: Br₃Ru

Molecular Weight: 340.782

Accurate Mass: 338.719356

Percentage Composition: Br 70.34%; Ru 29.66%

pm; the Ru₂ units are separated by 312 pm. Ru-Br 246 (within dimeric units); Ru-Br 253 pm (between units)

Source/Synthesis: Prepd. by direct combination of the elements at 450-500°/20 atm.

Physical Description: Black rhombic cryst.

Solubility: Insol. H₂O, acid, EtOH and other common solvs.

Other Data: Dec. >500° to give Ru + Br₂. Shows weak temp.-independent paramagnetism. $\Delta G_f^\circ -126 \text{ kJ mol}^{-1}$. $\Delta H_f^\circ -184 \text{ kJ mol}^{-1}$. $\Delta S^\circ -205 \text{ J K}^{-1} \text{ mol}^{-1}$

Aldrich: 44928-8

>>Variant: Hydrated-form

Synonym(s): Ruthenium(III) bromide (hydrated). Soluble ruthenium(III) bromide

Molecular Formula: Br₃Ru

Molecular Weight: 340.782

Accurate Mass: 338.719356

Percentage Composition: Br 70.34%; Ru 29.66%

Source/Synthesis: Prepd. by adding RuO₄ to aq. HBr or by dissolving "ruthenium(III) hydroxide" in aq. HBr

Use/Importance: V. useful starting material for the synth. of bromide complexes

Physical Description: Red-brown solid

Solubility: V. sol. H₂O, HBr

References:

Gutbier, A. *et al.*, *Z. Anorg. Allg. Chem.*, 1905, **45**, 166; 1919, **109**, 187, (*hydrated-form, synth*)

Krauss, F. *et al.*, *Z. Anorg. Allg. Chem.*, 1924, **137**, 32, (*hydrated-form, synth*)

Shchukarev, S.A. *et al.*, *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1960, **5**, 923, (*synth, thermal dec.*)

Shchukarev, S.A. *et al.*, *Vestn. Leningr. Univ., Ser. Mat., Fiz. Khim.*, 1961, **16**, 100, (*synth, thermodynamics*)

Brodersen, K., *Angew. Chem., Int. Ed.*, 1968, **7**, 147; 148, (*cryst struct*)

Brodersen, K. *et al.*, *Z. Anorg. Allg. Chem.*, 1968, **357**, 162, (*cryst struct, magnetism*)

Kaindl, G. *et al.*, *Z. Phys. Chem. (Leipzig)*, 1969, **226**, 103, (*Mössbauer*)

Clausen, C.A. *et al.*, *Chem. Phys. Lett.*, 1971, **8**, 565, (*Mössbauer*)

Appleby, D. *et al.*, *J.C.S. Dalton*, 1990, 1879, (*hydrated-form, synth*)