



>>Entry Name: Samarium(III) chloride (SmCl₃)

Synonym(s): Samarium trichloride

CAS Registry Number: 10361-82-7

Related CAS Registry Numbers(s): 4089-27-4 19423-79-1 24614-60-6 31766-16-2 73303-19-2

SmCl₃

Molecular Formula: Cl₃Sm

Molecular Weight: 256.718

Accurate Mass: 256.826285

Percentage Composition: Cl 41.43%; Sm 58.57%

Use/Importance: Catalyses epoxide ring opening, aldol addition and other org. reactions

Physical Description: V. hygroscopic pale yellow solid

Melting Point: Mp 682° (679°)

Solubility: Sol. H₂O, EtOH; sl. sol. THF, Me₂CO, Py

Aldrich: 44999-7

>>Derivative: Hexahydrate

Synonym(s): Hexaaquadichlorosamarium(1+) chloride

CAS Registry Number: 13465-55-9

Molecular Formula: Cl₃H₁₂O₆Sm

Molecular Weight: 364.809

Accurate Mass: 364.889675

Percentage Composition: Cl 29.15%; H 3.32%; O 26.31%; Sm 41.22%

Physical Description: Yellow cryst.

Melting Point: Mp 147° (142°)

Solubility: Sol. H₂O

Other Data: Formulated as [SmCl₂(OH₂)₆]⁽⁺⁾Cl⁽⁻⁾

Aldrich: 24880-0

Fluka: 84440

>>Derivative: Bis-THF complex

Synonym(s): Trichlorobis(tetrahydrofuran)samarium

CAS Registry Number: 97785-15-4

Molecular Formula: C₈H₁₆Cl₃O₂Sm

Molecular Weight: 400.931

Accurate Mass: 400.941315

Percentage Composition: C 23.97%; H 4.02%; Cl 26.53%; O 7.98%; Sm 37.50%

Source/Synthesis: Synth. from Sm and C₂Cl₆ in THF under ultrasonic irradiation, or by extraction of SmCl₃·3.5THF with C₆H₆ or Et₂O; also readily synth. from Sm with Me₃SiCl and MeOH in THF at r.t.

Use/Importance: Useful synthetic reagent

Physical Description: Moisture-sensitive pale yellow cryst.

Solubility: Sol. THF

>>Derivative: Tetrakis-THF complex

Synonym(s): Trichlorotetrakis(tetrahydrofuran)samarium

CAS Registry Number: 83596-24-1

Molecular Formula: C₁₆H₃₂Cl₃O₄Sm

Molecular Weight: 545.145

Accurate Mass: 545.056345

Percentage Composition: C 35.25%; H 5.92%; Cl 19.51%; O 11.74%; Sm 27.58%

Use/Importance: Useful starting material. Enables sepn. from oxychloride

Physical Description: Yellow cryst.

Solubility: Sl. sol. THF

Other Data: Higher solvates lose THF on washing to afford 2:1 solvate

References: