>>**Entry Name: Samarium(*III*) chloride ($SmCl_3$)**
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

$SmCl_3$

Molecular Formula: Cl_3Sm
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. H_2O, EtOH; sl. sol. THF, Me_2CO, Py

Aldrich: 44999-7

>>**Derivative:** Hexahydrate
Synonym(s): Hexaaquadichlorosamarium(1+) chloride

CAS Registry Number: 13465-55-9
Molecular Formula: $Cl_3H_{12}O_6Sm$
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. H_2O
Other Data: Formulated as $[SmCl_2(OH_2)_6]^{(+)}Cl^{(-)}$
Aldrich: 24880-0
Fluka: 84440

>>**Derivative:** Bis-THF complex
Synonym(s): Trichlorobis(tetrahydrofuran)samarium

CAS Registry Number: 97785-15-4
Molecular Formula: $C_8H_{16}Cl_3O_2Sm$
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 C_2Cl_6 in THF under ultrasonic irradiation, or by extraction of $SmCl_3$.3.5THF with C_6H_6 or Et_2O; also readily synth. from Sm with Me_3SiCl 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: $C_{16}H_{32}Cl_3O_4Sm$
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: