>>**Entry Name: Lithium perchlorate ($LiClO_4$)**
Synonym(s): Lithium chlorate(*VII*). Chloric(*VII*) acid, lithium salt. Perchloric acid, lithium salt, 8Cl

CAS Registry Number: 7791-03-9
$LiClO_4$

Molecular Formula: $ClLiO_4$
Molecular Weight: 106.391
Accurate Mass: 105.964515
Percentage Composition: Cl 33.32%; Li 6.52%; O 60.15%
Source/Synthesis: Prepd. by slow neutralisation of Li_2CO_3 with aq. $HClO_4$; cryst. as trihydrate
Use/Importance: Commercially available. Component of rocket propellants
Physical Description: Colourless orthorhombic cryst., deliquescent. Dec. on heating with evolution of O_2 and formation of LiCl
Melting Point: Mp 236°
Solubility: V. sol. H_2O (60 g per 100 cm^3 at 25°; 150 g per 100 cm^3 at 89°), EtOH (152 g per 100 cm^3 at 25°), MeOH (182 g per 100 cm^3 at 25°), Me_2CO (137 g per 100 cm^3 at 25°), Et_2O (114 g per 100 cm^3 at 25°)
Other Data: ΔH_f° –381 kJ mol^{-1}; ΔG_f° –254 kJ mol^{-1}; S° 126 J K^{-1} mol^{-1}
Hazard & Toxicity: Oxidiser, irritant; potentially explosive when mixed with org. compds.

Aldrich: 20528-1
Fluka: 62585
Sigma: L7656

>>**Derivative:** Monohydrate

CAS Registry Number: 18716-61-5
Molecular Formula: ClH_2LiO_5
Molecular Weight: 124.407
Accurate Mass: 123.97508
Percentage Composition: Cl 28.50%; H 1.62%; Li 5.58%; O 64.30%
Other Data: ΔH_f° –697 kJ mol^{-1}; ΔG_f° –510 kJ mol^{-1}; S° 155 J K^{-1} mol^{-1}

>>**Derivative:** Trihydrate
Synonym(s): Perchloric acid, lithium salt trihydrate, 8Cl

CAS Registry Number: 13453-78-6
Molecular Formula: ClH_6LiO_7
Molecular Weight: 160.437
Accurate Mass: 159.99621
Percentage Composition: Cl 22.10%; H 3.77%; Li 4.33%; O 69.81%
Source/Synthesis: Prep. by electrolysis of aq. $LiClO_3$ soln.
Use/Importance: Commercially available. Pyroelectric, piezoelectric
Physical Description: White hexagonal cryst.
Melting Point: Mp 95°
Solubility: V. sol. H_2O (130 g per 100 cm^3 at 25°), EtOH (73 g per 100 cm^3 at 25°), MeOH (156 g per 100 cm^3 at 25°), Me_2CO (96 g per 100 cm^3 at 25°); prac. insol. Et_2O (0.096 g per 100 cm^3 at 25°)
Other Data: ΔH_f° –1298 kJ mol^{-1}; ΔG_f° –1001 kJ mol^{-1}; S° 255 J K^{-1} mol^{-1}
Hazard & Toxicity: Oxidiser. Dec. on heating by H_2O loss prior to explosive reaction

Aldrich: 20530-3
Fluka: 62589
Sigma: L3533

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