



>>Entry Name: Lithium hydroxide, 8CI, USAN

CAS Registry Number: 1310-65-2

Related CAS Registry Numbers(s): 12159-20-5

LiOH

Molecular Formula: HLiO

Molecular Weight: 23.948

Accurate Mass: 24.018743

Percentage Composition: H 4.21%; Li 28.98%; O 66.81%

Source/Synthesis: Prep. by reaction of aq. Li₂SO₄ with aq. Ba(OH)₂; crystallised as monohydrate

Use/Importance: Catalyst for polym. of vinyl and epoxy compds. Absorbent for CO₂

Physical Description: Granular powder; white tetragonal cryst. Hygroscopic. Dec. on heating by H₂O loss forming Li₂O. Reacts with atmospheric CO₂ forming Li₂CO₃

Melting Point: Mp 471°

Solubility: Sol. H₂O (13 g per 100 cm³ at 20°; 18 g per 100 cm³ at 100°); spar. sol. EtOH

Other Data: ΔH_f° -484.9 kJ mol⁻¹; ΔG_f° -439.0 kJ mol⁻¹; S° 42.8 J K⁻¹ mol⁻¹. Absorbs CO₂ and H₂O from air

Hazard & Toxicity: Irritating and corrosive to all tissues

Aldrich: 44241-0

>>Derivative: Monohydrate

CAS Registry Number: 1310-66-3

Molecular Formula: H₃LiO₂

Molecular Weight: 41.964

Accurate Mass: 42.029308

Percentage Composition: H 7.21%; Li 16.54%; O 76.25%

Source/Synthesis: Prep. by reaction of aq. Li₂SO₄ with aq. Ba(OH)₂

Use/Importance: Commercially available. Antidepressant. Latent heat storage material

Physical Description: White monoclinic cryst., dec. on heating by H₂O loss. Reacts with atmospheric CO₂ forming Li₂CO₃

Solubility: V. sol. H₂O (22 g per 1100 cm³ at 10°; 27 g per 100 cm³ at 80°); spar. sol. EtOH; insol. Et₂O

Other Data: ΔH_f° -788 kJ mol⁻¹; ΔG_f° -681 kJ mol⁻¹; ΔS° = 71 J K⁻¹ mol⁻¹

Hazard & Toxicity: Irritating and corrosive to all tissues

Aldrich: 45019-7

Fluka: 62531

Sigma: L4256

References:

- Ernst, T., *Z. Phys. Chem. (Leipzig)*, 1933, **20**, 65, (*cryst struct*)
Pepinsky, R., *Z. Kristallogr.*, 1940, **102**, 119, (*cryst struct, monohydrate*)
Jones, L.H., *J. Chem. Phys.*, 1954, **22**, 217, (*ir*)
Gmelin Handbook Inorg. Chem., Syst. No. 20, 1960, 262, (*rev, bibl*)
Gabrichidze, Z.A. *et al.*, *CA*, 1968, **69**, 6925, (*Raman, monohydrate*)
Alcock, N.W., *Acta Cryst. B*, 1971, **27**, 1682, (*cryst struct, monohydrate*)
Berglund, B. *et al.*, *J. Mol. Struct.*, 1978, **43**, 169, (*ir, monohydrate*)
Martindale, The Extra Pharmacopoeia, 28th/29th edn., *Pharmaceutical Press*, 1982, 7059
Ger. Pat., 1985, 3 345 061; *CA*, **105**, 63779t, (*uses, monohydrate*)
Chase, M.W. *et al.*, *J. Phys. Chem. Ref. Data*, 1985, **14**, 1228, (*thermochem*)
Sigma-Aldrich Library of Chemical Safety Data, 1988, **2**, 2156B
Luxon, S.G., *Hazards in the Chemical Laboratory*, 5th edn., *Royal Society of Chemistry*, 1992, 791
Patty's Ind. Hyg. Toxicol., 4th edn., Vol. 2, Wiley, 1993, 2087, (*tox, rev, Li*)
Lewis, R.J., *Sax's Dangerous Properties of Industrial Materials*, (1993 Update), *Van Nostrand Reinhold*, 1994, LHI00