



**>>Entry Name: Lanthanum nitrate**

**Synonym(s):** Trinitratolanthanum

**CAS Registry Number:** 10099-59-9

**Related CAS Registry Numbers(s):** 10277-43-7 36788-95-1 68811-97-2

$\text{La}(\text{NO}_3)_3$

**Molecular Formula:**  $\text{LaN}_3\text{O}_9$

**Molecular Weight:** 324.92

**Accurate Mass:** 324.869804

**Percentage Composition:** La 42.75%; N 12.93%; O 44.32%

**Physical Description:** Hygroscopic white solid

**Solubility:** Sol.  $\text{H}_2\text{O}$ , EtOH

**Other Data:** Usually forms hexahydrate. Tetra- and pentahydrates also reported

**>>Derivative:** Hexahydrate

**Synonym(s):** Lanthanum nitrate hexahydrate

**CAS Registry Number:** 10277-43-7

**Molecular Formula:**  $\text{H}_{12}\text{LaN}_3\text{O}_{15}$

**Molecular Weight:** 433.011

**Accurate Mass:** 432.933194

**Percentage Composition:** H 2.79%; La 32.08%; N 9.70%; O 55.42%

**Use/Importance:** Commercially available

**Physical Description:** Deliquescent colourless cryst.

**Melting Point:** Mp 40° (66.5°)

**Boiling Point:** Bp 126° dec.

**Solubility:** Sol.  $\text{H}_2\text{O}$ , EtOH,  $\text{Me}_2\text{CO}$

**Other Data:** 11-Coord., contains  $\text{La}(\text{NO}_3)_3(\text{H}_2\text{O})_5$  molecules; isostructural with Ce analogue

**Aldrich:** 33193-7

**Fluka:** 61520

**Sigma:** L2388

**>>Derivative:** Tris(hexamethylphosphoric triamide-*O*) complex

**CAS Registry Number:** 81448-71-7

**Molecular Formula:**  $\text{C}_{18}\text{H}_{54}\text{LaN}_{12}\text{O}_{12}\text{P}_3$

**Molecular Weight:** 862.524

**Accurate Mass:** 862.226051

**Percentage Composition:** C 25.07%; H 6.31%; La 16.10%; N 19.49%; O 22.26%; P 10.77%

**Source/Synthesis:** Synth. from the tetrahydrate and HMPA, followed by addn. of  $\text{Et}_2\text{O}$

**Use/Importance:** Catalyses oxidn. of alkenes to hydroperoxides

**Physical Description:** Colourless cryst.

**Melting Point:** Mp 213-214° (193-194°)

**Solubility:** Sol. toluene

**Other Data:** 9-Coord. tricapped trigonal prismatic La. Can also be obt. as 4:1 complex. Diamagnetic

**References:**

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Walker, A. *et al.*, *J. Chem. Phys.*, 1965, **43**, 2689, (*ir*)

Mironov, K.E. *et al.*, *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1969, **14**, 165, (*synth*)

Sylvanovich, J.A. *et al.*, *J. Inorg. Nucl. Chem.*, 1972, **34**, 1675, (*synth, ir, Raman, deriv*)

Brauer, G., *Handbuch Prap. Anorg. Chem.*, 3rd edn., Ferdinand Enke Verlag, 1975, **2**, 1109, (*synth*)

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*U.S. Pat.*, 1978, 4 104 312; *CA*, **90**, 54548, (*use, deriv*)

Eriksson, B. *et al.*, *Inorg. Chem.*, 1980, **19**, 1207, (*synth, cryst struct*)

Tsintsadze, G.V. *et al.*, *Koord. Khim.*, 1982, **8**, 367; *Sov. J. Coord. Chem. (Engl. Transl.)*, 1982, **8**, 195, (*cryst struct, HMPA complex*)

*Fieser and Fieser's Reagents for Organic Synthesis*, Wiley, 1984, **11**, 283, (*use*)

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Barr, D. *et al.*, *Angew. Chem., Int. Ed.*, 1990, **29**, 285, (*synth, struct, deriv*)