

# Gaylussite

# Na<sub>2</sub>Ca(CO<sub>3</sub>)<sub>2</sub>•5H<sub>2</sub>O

©2001-2005 Mineral Data Publishing, version 1

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As flattened wedge-shaped crystals with dominant {110}, {011}, {001}, smaller {010}, {100}, { $\bar{1}01$ }, { $\bar{1}12$ }; also as prismatic to dipyrmidal crystals elongated along [100], to 6 cm.

**Physical Properties:** *Cleavage:* On {110}, perfect; on {001}, imperfect. *Fracture:* Conchoidal. *Tenacity:* Very brittle. *Hardness* = 2.5–3 *D(meas.)* = 1.991 *D(calc.)* = 1.991 Dehydrates with efflorescence in dry air; slowly decomposes in H<sub>2</sub>O leaving CaCO<sub>3</sub> as calcite or aragonite.

**Optical Properties:** Transparent to translucent. *Color:* Colorless to pale yellow or pale gray, white; colorless in transmitted light. *Streak:* White to pale gray. *Luster:* Vitreous. *Optical Class:* Biaxial (-). *Orientation:* X = b; Z  $\wedge$  c = -15°. *Dispersion:* r < v, strong, crossed.  $\alpha$  = 1.444  $\beta$  = 1.516  $\gamma$  = 1.523 *2V(meas.)* = 34°

**Cell Data:** *Space Group:* C2/c. a = 11.589 b = 7.780 c = 11.207  $\beta$  = 102.5° Z = 4

**X-ray Powder Pattern:** John Hay, Jr. Well No. 1, Wyoming, USA. 6.403 (100), 3.18 (80), 2.70 (80), 2.61 (80), 1.91 (80), 2.49 (70), 1.98 (70)

## Chemistry:

	(1)	(2)
CO <sub>2</sub>	30.02	29.72
SiO <sub>2</sub>	0.08	
Fe <sub>2</sub> O <sub>3</sub>	0.03	
MnO	0.01	
MgO	0.01	
CaO	19.02	18.94
Na <sub>2</sub> O	20.40	20.93
H <sub>2</sub> O	30.47	30.41
insol.	0.16	
Total	100.20	100.00

(1) Taboos-nor salt lake, Mongolia. (2) Na<sub>2</sub>Ca(CO<sub>3</sub>)<sub>2</sub>•5H<sub>2</sub>O.

**Occurrence:** Typically in evaporites or shales from alkali lakes; rarely in veinlets cutting alkaline igneous rocks.

**Association:** Shortite, northupite, pirssonite, trona (Green River Formation, Wyoming, USA); thermonatrite, shortite, villiaumite, ferrian “biotite”, pectolite, potassian feldspar, aegirine (Khibiny massif, Russia).

**Distribution:** From Lagunillas, 80 km southeast of Mérida, Venezuela. In the USA, in California, at Mono Lake, Mono Co., Borax Lake, Lake Co., Deep Spring Lake, Inyo Co., China Lake, Kern Co., and Searles Lake, San Bernardino Co.; in the Green River Formation, Sweetwater Co., Wyoming; at several localities in the Carson Desert, near Ragtown, Nevada. Large crystals from Lake Amboseli, Kenya. At Lake Eyasi, Tanzania. On Zoutpan Farm, 40 km northwest of Pretoria, Transvaal, South Africa. At the Taboos-nor salt lake, eastern Gobi Desert, Mongolia. From the Olenii Ruchi area, Khibiny massif, Kola Peninsula, Russia. Around Mt. Erebus, Victoria Land, Antarctica.

**Name:** Honors Joseph Louis Gay-Lussac (1778–1850), noted French chemist and physicist.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana’s system of mineralogy, (7th edition), v. II, 234–235. (2) Fahey, J.J. (1962) Saline minerals of the Green River Formation. U.S. Geol. Surv. Prof. Paper 405, 24, 49. (3) Menchetti, S. (1968) The crystal structure of gaylussite. *Atti Rend. Accad. Lincei*, 44, 680–694.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.