

Davyne**(Na, Ca, K)₈Al₆Si₆O₂₄(Cl, SO₄, CO₃)_{2–3}**

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Crystal Data: Hexagonal. *Point Group:* 6/*m*. As prismatic hexagonal crystals, striated lengthwise, up to 4 cm.

Physical Properties: *Cleavage:* Perfect on {10 $\bar{1}$ 0}, perfect to indistinct on {0001}.
Fracture: Conchoidal to uneven. *Tenacity:* Brittle. Hardness = 5.5–6 D(meas.) = 2.42–2.53
D(calc.) = [2.50]

Optical Properties: Transparent to translucent. *Color:* Colorless to white; colorless in thin section. *Luster:* Vitreous.

Optical Class: Uniaxial (+). $\omega = 1.515\text{--}1.519$ $\epsilon = 1.519\text{--}1.522$

Cell Data: *Space Group:* $P6_3/m$. $a = 12.705(4)$ $c = 5.368(3)$ $Z = 1$

X-ray Powder Pattern: Vesuvius, Italy; can be distinguished from quadridavyne only by single-crystal diffraction.

4.80 (100), 3.67 (100), 3.28 (100), 2.670 (60), 2.121 (60), 2.756 (50), 2.652 (50)

Chemistry:

	(1)	(2)
SiO ₂	32.21	32.23
Al ₂ O ₃	29.22	28.98
CaO	12.60	10.36
Na ₂ O	10.14	11.01
K ₂ O	6.79	7.11
Cl	6.71	6.25
CO ₂		1.26
SO ₃	4.43	4.11
–O = Cl ₂	1.51	1.56
Total	100.59	99.75

(1) Monte Somma, Italy; corresponds to (Na_{3.54}Ca_{2.43}K_{1.56}) $_{\Sigma=7.53}$ (Al_{6.20}Si_{5.80}) $_{\Sigma=12.00}$ O₂₄
[Cl_{2.05}(SO₄)_{0.60}] $_{\Sigma=2.65}$. (2) Do.; corresponds to (Na_{3.86}Ca_{2.01}K_{1.64}) $_{\Sigma=7.51}$ (Al_{6.18}Si_{5.82}) $_{\Sigma=12.00}$ O₂₄
[Cl_{2.13}(SO₄)_{0.56}(CO₃)_{0.31}] $_{\Sigma=3.00}$.

Mineral Group: Cancrinite group.

Occurrence: In volcanic ejecta and in leucite-rich lavas.

Association: Nepheline, leucite.

Distribution: From Monte Somma and Vesuvius, Campania, and Pitigliano, Tuscany, Italy. On the Island of Zabargad (Zabirget or St. Johns), in the Red Sea, Egypt. From Mt. Karnasurt, Lovozero massif, Kola Peninsula, Russia.

Name: For the great English chemist, Sir Humphrey Davy (1778–1829).

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 428–429.
(2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 4, framework silicates, 310–320. (3) Bariand, P., F. Cesbron, and R. Giraud (1968) Une nouvelle espèce minérale: l'afghanite de Sar-e-Sang, Badakhshan, Afghanistan. Comparaison avec les minéraux du groupe de la cancrinite. Bull. Soc. fr. Minéral., 91, 34–42 (in French with English abs.).
(4) Bonaccorsi, E., S. Merlino, and M. Pasero (1990) Davyne: its structural relationships with cancrinite and vishnevite. Neues Jahrb. Mineral., Monatsh., 97–112.