

Reederite-(Y)**Na_{15-x}(Y, Ce)₂(CO₃)₉(SO₃F)(Cl, F)**

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Crystal Data: Hexagonal. *Point Group:* $\bar{6}$. Tabular to blocky grains, to 2 mm.**Physical Properties:** *Cleavage:* Perfect on {001}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 3–3.5 D(meas.) = 2.91(3) D(calc.) = 2.85**Optical Properties:** Transparent. *Color:* Yellow to orange-brown. *Streak:* White. *Luster:* Vitreous.*Optical Class:* Uniaxial (–), may be anomalously biaxial (–). $\omega = 1.548(1)$ $\epsilon = 1.537(1)$ 2V(meas.) = 15°**Cell Data:** *Space Group:* $P\bar{6}$. $a = 8.763(1)$ $c = 10.736(2)$ $Z = 1$ **X-ray Powder Pattern:** Mont Saint-Hilaire, Canada.

2.532 (100), 4.39 (80), 2.774 (80), 2.240 (80), 6.20 (40), 2.067 (30), 3.801 (20)

Chemistry:

	(1)		(1)
SO ₃	5.07	Er ₂ O ₃	1.19
CO ₂	[31.91]	Yb ₂ O ₃	0.37
Al ₂ O ₃	1.31	FeO	0.42
Y ₂ O ₃	10.24	MnO	1.23
La ₂ O ₃	1.39	CaO	0.70
Ce ₂ O ₃	3.54	Na ₂ O	34.04
Pr ₂ O ₃	0.36	F	1.86
Nd ₂ O ₃	1.99	Cl	2.05
Sm ₂ O ₃	0.52	–O = (F, Cl) ₂	1.24
Gd ₂ O ₃	0.80	Total	[99.14]
Dy ₂ O ₃	1.39		

(1) Mont Saint-Hilaire, Canada; by electron microprobe, average of ten analyses, total Fe as FeO, total Mn as MnO, presence of (CO₃)^{2–} confirmed by IR, calculated from stoichiometry and crystal-structure analysis; corresponds to (Na_{13.63}Al_{0.32}Mn_{0.22}Ca_{0.16}Fe_{0.07})_{Σ=14.40} (Y_{1.13}Ce_{0.27}Nd_{0.15}La_{0.11}Dy_{0.09}Er_{0.08}Gd_{0.06}Sm_{0.04}Pr_{0.03}Yb_{0.02})_{Σ=1.98}(CO₃)_{9.00}(SO₃F)_{0.79}(Cl_{0.72}F_{0.43})_{Σ=1.15}O_{0.74}.

Occurrence: A very rare mineral in a sodalite xenolith in syenite in an intrusive alkalic gabbro-syenite complex.**Association:** Trona, shortite, petersenite-(Ce), catapleiite, analcime, manganotychite.**Distribution:** From Mont Saint-Hilaire, Quebec, Canada.**Name:** To honor Dr. Richard James Reeder (1953–), Professor of Geochemistry, State University of New York, Stony Brook, New York, USA, for his contributions to carbonate mineralogy.**Type Material:** Canadian Museum of Nature, Ottawa, Canada, 81520.**References:** (1) Grice, J.D., R.A. Gault, and G.Y. Chao (1995) Reederite-(Y), a new sodium rare-earth carbonate mineral with a unique fluorosulfate anion. *Amer. Mineral.*, 80, 1059–1064.