

Rapidcreekite

$\text{Ca}_2(\text{SO}_4)(\text{CO}_3)\cdot 4\text{H}_2\text{O}$

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As acicular crystals, elongated along [001], flattened on {010}, with minor {100}, {001}, to 3 mm, in radiating sprays, isolated and in crusts.

Physical Properties: *Cleavage:* Perfect on {010}; good on {100}. *Fracture:* Splintery. *Tenacity:* Brittle. Hardness = 2 D(meas.) = 2.21(1) D(calc.) = 2.239

Optical Properties: Transparent. *Color:* White to colorless. *Streak:* White. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Orientation:* $X = c; Y = a; Z = b$. $\alpha = 1.516(1)$ $\beta = 1.518(1)$ $\gamma = 1.531(1)$ $2V(\text{meas.}) = 45(3)^\circ$ $2V(\text{calc.}) = 43^\circ$

Cell Data: *Space Group:* $Pcnb$. $a = 15.517(2)$ $b = 19.226(3)$ $c = 6.1646(8)$ $Z = 8$

X-ray Powder Pattern: Rapid Creek, Canada; strongest lines close to gypsum. 7.78 (100), 3.11 (80), 4.31 (70), 3.88 (70), 2.797 (60), 2.917 (50), 2.555 (50)

Chemistry:	(1)	(2)
SO ₃	26.1	25.97
CO ₂	14.0	14.28
CaO	36.3	36.38
H ₂ O	23.6	23.37
Total	100.0	100.00

(1) Rapid Creek, Canada; by electron microprobe, CO₂ and H₂O by TGA-EGA; corresponding to Ca_{1.99}(SO₄)_{1.00}(CO₃)_{0.98}•4.02H₂O. (2) Ca₂(SO₄)(CO₃)•4H₂O.

Occurrence: A rare secondary mineral formed along joint and bedding-plane surfaces of quartz-rich sideritic iron formation.

Association: Kulanite, gypsum, aragonite.

Distribution: From Crosscut Creek, a tributary of Rapid Creek, Yukon Territory, Canada.

Name: For its occurrence in the Rapid Creek district, Canada.

Type Material: Geological Survey of Canada, Ottawa, 64346; Canadian Museum of Nature, Ottawa, Canada, 49502, 50824.

References: (1) Roberts, A.C., H.G. Ansell, and I.R. Johnson (1986) Rapidcreekite, a new hydrated calcium sulfate-carbonate from the Rapid Creek area, Yukon Territory. *Can. Mineral.*, 24, 51–54. (2) (1987) *Amer. Mineral.*, 72, 225 (abs. ref. 1). (3) Cooper, M.A. and F.C. Hawthorne (1996) The crystal structure of rapidcreekite, Ca₂(SO₄)(CO₃)•4H₂O, and its relation to the structure of gypsum. *Can. Mineral.*, 34, 99–106.