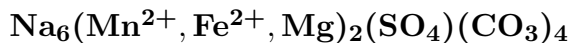


Manganotychite



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Crystal Data: Cubic. *Point Group:* $2/m\bar{3}$. As irregular grains, to 1 cm, and in massive aggregates.

Physical Properties: *Fracture:* Conchoidal. Hardness = 4 D(meas.) = 2.70(5)
D(calc.) = 2.79 Weakly magnetic; slightly soluble in H₂O, forming a brown coating.

Optical Properties: Semitransparent. *Color:* Pale pink, white. *Luster:* Vitreous to dull.
Optical Class: Isotropic. $n = 1.544(2)$

Cell Data: *Space Group:* $Fd\bar{3}$. $a = 13.9951(8)$ $Z = 8$

X-ray Powder Pattern: Mt. Alluaiv, Kola Peninsula, Russia.
2.695 (100), 4.22 (76), 2.474 (70), 1.959 (28), 1.616 (28), 2.366 (27), 1.605 (25)

Chemistry:	(1)	(2)
SO ₃	14.13	13.71
CO ₂	30.68	30.15
FeO	6.00	
MnO	15.00	24.30
MgO	1.98	
Na ₂ O	32.21	31.84
Total	[100.00]	100.00

(1) Mt. Alluaiv, Kola Peninsula, Russia; (CO₃)²⁻ and (SO₄)²⁻ confirmed by IR, recalculated to 100% from an original total of 99.34%, after deduction of CO₂ 1.65%, CaO 1.49%, Na₂O 0.77% as shortite [Na₂Ca₂(CO₃)₃], corresponds to Na_{5.99}(Mn_{1.22}²⁺Fe_{0.48}²⁺Mg_{0.28})_{Σ=1.98}(SO₄)_{1.04}(CO₃)_{4.02}.
(2) Na₆Mn₂(SO₄)(CO₃)₄.

Occurrence: An uncommon mineral formed in pegmatite veins in a differentiated alkalic massif (Mt. Alluaiv, Kola Peninsula, Russia).

Association: Shortite, pirssonite, sidorenkite, kogarkoite, many other species (Mt. Alluaiv, Kola Peninsula, Russia); trona, shortite, petersenite-(Y), reederite-(Y), catapleite, analcime (Mont Saint-Hilaire, Canada).

Distribution: On Mt. Alluaiv, Lovozero massif, Kola Peninsula, Russia. At Mont Saint-Hilaire, Quebec, Canada.

Name: As the *manganese* analog of *tychite*.

Type Material: Mining Institute, St. Petersburg, 2023/1; Geology Museum, Kola Branch, Academy of Sciences, Apatity; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, p545/2.

References: (1) Khomyakov, A.P., A.Y. Bakhchisaraitsev, A.V. Martynova, and T.M. Parashchenko (1990) Manganotychite Na₆Mn₂(SO₄)(CO₃)₄ – a new mineral. Zap. Vses. Mineral. Obshch., 119(5), 46–49 (in Russian). (2) (1992) Amer. Mineral., 77, 448 (abs. ref. 1).