

Crystal Data: Monoclinic. *Point Group:* 2/m. As hemispherical aggregates, to 1 mm, of ultra-thin pseudohexagonal platelets, typically 50 to 100 μm .

Physical Properties: *Cleavage:* Perfect on {001}. *Tenacity:* n.d. *Fracture:* n.d. *Hardness:* = n.d. *D(meas.)* = n.d. *D(calc.)* = 2.09

Optical Properties: Transparent. *Color:* Colorless. *Streak:* White. *Luster:* n.d.
Optical Class: Biaxial (+), strongly pseuduniaxial. $\alpha = \beta = 1.475(2)$ $\gamma = 1.479(2)$ $2V(\text{calc.}) = 0^\circ$
Orientation: $Z \approx c$.

Cell Data: *Space Group:* C2/m. $a = 12.242(1)$ $b = 7.0118(7)$ $c = 11.2946(9)$ $\beta = 101.19(1)^\circ$ $Z = 2$

X-Ray Diffraction Pattern: Tom's Quarry, Kapunda, South Australia, Australia.
 11.08 (100), 5.106 (31), 2.852 (17), 5.782 (12), 5.532 (10), 6.059 (9), 2.882 (8)

| Chemistry: | (1) | (2) |
|--------------------------------|--------|--------|
| Na ₂ O | 2.93 | 5.22 |
| K ₂ O | 3.19 | |
| CaO | 0.21 | |
| MgO | 12.1 | 6.78 |
| Al ₂ O ₃ | 19.4 | 25.7 |
| P ₂ O ₅ | 24.0 | 23.9 |
| F | 13.8 | 19.2 |
| H ₂ O | [30.5] | 27.3 |
| -O = F | 5.81 | 8.1 |
| total | 100.32 | 100.00 |

(1) Tom's quarry, Kapunda, South Australia, Australia; average electron microprobe analysis, H₂O from structure and IR spectroscopy; corresponds to Na_{0.56}K_{0.40}Ca_{0.02}Mg_{1.79}Al_{2.27}P_{2.02}F_{4.33}H_{20.19}O_{18.67}.
 (2) NaMgAl₃(PO₄)₂F₆·9H₂O.

Polymorphism & Series: A dimorph of penriceite.

Occurrence: Secondary in phosphate rock derived from weathered argillaceous rocks by alteration of minyulite in near-neutral solutions.

Association: Minyulite, penriceite, wavellite, "angastonite", goethite (Tom's quarry); crandallite, minyulite, penriceite, perhamite, quartz, an amorphous calcium-magnesium-aluminum phosphate with the composition reported for "angastonite" (Penrice quarry).

Distribution: From Tom's phosphate quarry (TL) and Penrice marble quarry, ~15 km southeast of Tom's quarry, Kapunda, South Australia, Australia.

Name: Honors Peter Elliott (b. 1954) for his contributions to the characterization and naming of more than 30 new minerals from Australian localities (half of which he collected personally) and particularly his contributions to the descriptions of new phosphate minerals from South Australia.

Type Material: South Australia Museum, Adelaide, South Australia (G35026 holotype) and the Museums Victoria, Melbourne, Victoria (M45575 cotype), Australia. Natural History Museum of Los Angeles County, Los Angeles, California, USA (76203).

References: (1) Grey, I.E., W.G. Mumme, C.M. MacRae, A.R. Kampf, and S.J. Mills (2022) Elliottite, NaMgAl₃(PO₄)₂F₆·9H₂O; a new crandallite-derivative mineral from Tom's phosphate quarry, Kapunda, South Australia. *Australia J. Mineral.*, 23, 13-20.