

**NEW MINERALS RECENTLY APPROVED
BY THE
COMMISSION ON NEW MINERALS AND MINERAL NAMES
INTERNATIONAL MINERALOGICAL ASSOCIATION**

The information given here is provided by the Commission on New Minerals and Mineral Names, I. M. A. for comparative purposes and as a service to mineralogists working on new species.

Each mineral is described in the following format:

IMA No. (any relationship to other minerals)
Chemical Formula
Crystal system, space group
unit cell parameters
Colour; lustre; diaphaneity.
Optical properties.
Strongest lines in the X-ray powder diffraction pattern.

The names of these approved species are considered confidential information until the authors have published their descriptions or released information themselves.

NO OTHER INFORMATION WILL BE RELEASED BY THE COMMISSION.

J. A. Mandarino, Chairman
Commission on New Minerals and Mineral Names
International Mineralogical Association

1993 PROPOSALS

IMA No. 93-001 The calcium-analogue of burbankite and khanneshite.
 $\text{Na}_3(\text{Ca,REE,Sr})(\text{CO}_3)_3$
Hexagonal: $P6_3mc$, $P6_3c$ or $P6_3mmc$
a 10.447 c 6.318 Å
Deep orange; vitreous; translucent.
Uniaxial (-), ω 1.636, ϵ 1.631.
5.20 (4), 3.68 (3), 3.01 (5), 2.601 (10), 2.130 (6), 1.649 (3).

IMA No. 93-002 The nickel-analogue of chalcophanite.
 $\text{NiMn}_2\text{O}_7 \cdot 3\text{H}_2\text{O}$
Hexagonal (trigonal): $R\bar{3}$ or $R3$
a 7.514 c 20.52 Å
Very dark brown to almost black; submetallic to vitreous; opaque, but translucent in thin plates.
Uniaxial (-), $\omega > 2.00$, ϵ 1.97.
6.84 (10), 4.01 (2), 2.219 (3), 1.884 (2), 1.575 (2).

IMA No. 93-003 The arsenate-analogue of berlinite.
 AlAsO_4
Hexagonal (trigonal): $P3_21$ or $P3_21$
a 5.031 c 11.226 Å
Colourless, white, cream; vitreous; transparent.
Uniaxial (+), ω 1.596, ϵ 1.608.
4.36 (20), 4.06 (31), 3.442 (100), 2.359 (15), 1.873 (16), 1.4202 (11).

IMA No. 93-004 The aluminum-analogue of klyuchevskite.
 $\text{K}_2\text{Cu}_2\text{AlO}_4(\text{SO}_4)_4$
Monoclinic: $I2$
a 18.423 b 5.139 c 18.690 Å β 101.72°
Dark green; vitreous; transparent.
Biaxial (+), α 1.542, β 1.548, γ 1.641, $2V(\text{meas.})$ unknown, $2V(\text{calc.})$ 30°.
9.15 (84), 9.04 (100), 7.20 (52), 3.781 (37), 3.757 (33), 2.786 (21).

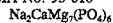
IMA No. 93-005
 $\text{NaBa}_4(\text{Mn}^{2+}, \text{Mn}^{3+})_2[\text{Si}_4\text{O}_{10}(\text{OH})_2][\text{Si}_2\text{O}_7]_2\text{O}_2\text{F} \cdot \text{H}_2\text{O}$
Orthorhombic: $Pnma$
a 23.42 b 12.266 c 7.181 Å
Black with a green shade; vitreous to greasy; translucent.
Biaxial (+), α 1.767, β 1.793, γ 1.871, $2V(\text{meas.})$ 60-65°, $2V(\text{calc.})$ 62°.
4.580 (5), 3.303 (9), 2.999 (10), 2.715 (5), 2.655 (10), 2.156 (4), 1.648 (5).

IMA No. 93-006 A tetragonal polymorph of rooseveltitite.
 BiAsO_4
Tetragonal: $I4_1/a$
a 5.085 c 11.69 Å
White to yellowish white; earthy; opaque.
Uniaxial (+), mean $n > 2.0$.
4.660 (11), 3.066 (100), 2.546 (12), 1.797 (11), 1.581 (10), 1.551 (17).

IMA No. 93-008
 NH_4BF_4
Orthorhombic: $Pnma$
a 9.0615 b 5.6727 c 7.2672 Å
Colourless to white and yellowish; vitreous; transparent to translucent.
Biaxial, mean n calculated from Gladstone-Dale is 1.308.
4.472 (75), 3.540 (90), 3.183 (100), 2.8982 (80), 2.5362 (65), 2.2822 (65), 2.1631 (70).

IMA No. 93-009 A tetragonal polymorph of bismite.
 Bi_2O_3
Tetragonal: $P4_2/n$ or $P4_22$
a 8.08 c 6.46 Å
Green, yellowish; adamantine; translucent.
Uniaxial (+), ω 2.13, ϵ 2.18.
5.73 (7), 3.44 (5), 3.16 (10), 3.01 (4), 2.56 (4dif.), 2.02 (5), 1.902 (6).

IMA No. 93-010 The magnesium analogue of fillowite and johnsomervilleite.

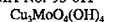
Hexagonal (trigonal): R $\bar{3}$

a 14.967 c 42.595 Å

Colourless; vitreous; transparent.

Uniaxial, indices of refraction calculated from reflectance values: n_x 1.60, n_z 1.62. 3.694 (S), 3.558 (M), 2.960 (S), 2.753 (S), 2.500 (M), 2.126 (M), 1.851 (M).

IMA No. 93-011



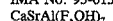
Orthorhombic: Pnmm

a 8.499 b 12.527 c 6.067 Å

Dark green; adamantine; transparent.

Biaxial (+), α slightly < 1.89, β unknown, γ slightly < 1.91, 2V(meas.) 74°. 5.471 (S), 3.754 (S), 3.043 (S), 2.591 (VS), 1.519 (S).

IMA No. 93-013

Monoclinic: P2 $\frac{1}{c}$ a 8.215 b 11.989 c 6.076 Å β 96.22°

Colourless; vitreous; transparent.

Biaxial (+), α 1.4240, β 1.4320, γ 1.4415, 2V(meas.) 85.5°, 2V(calc.) 85.6°. 6.758 (7), 4.250 (9), 3.643 (8), 3.148 (7), 3.063 (8), 3.030 (7), 2.840 (7), 2.125 (8).

IMA No. 93-016

Cubic: Pa $\bar{3}$

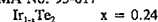
a 6.502 Å

Steel black; metallic; opaque.

In reflected light: bright white with a yellowish tint, moderate anisotropy, no birefractance, nonpleochroic. R: (51.0%)470nm, (52.6%)546nm, (52.9%)589nm, (49.2%)650nm.

2.89 (70), 1.955 (100), 1.735 (80), 1.250 (80), 1.207 (70), 1.148 (70), 1.054 (70).

IMA No. 93-017

Cubic: Pa $\bar{3}$

a 6.413 Å

Steel black; metallic; opaque.

In reflected light: bright white with bluish tint, no anisotropy, no birefractance, nonpleochroic. R: (44.3%)470nm, (46.0%)546nm, (46.9%)589nm, (45.5%)650nm.

2.86 (70), 1.93 (100), 1.235 (80), 1.132 (90), 1.040 (80), 0.9780 (80).

IMA No. 93-018

Hexagonal: P $\bar{3}m1$

a 3.933 c 5.390 Å

Steel black; metallic; opaque.

In reflected light: bright yellowish white with bluish tint, moderate anisotropy with bluish or yellowish tint, no birefractance, nonpleochroic. R_O & R_E :

(41.4, 49.0%)470nm, (40.2, 48.2%)546nm, (41.1, 49.0%)589nm, (45.2, 51.2%)650nm.

2.85 (100), 2.10 (80), 1.95 (60), 1.580 (70), 1.160 (60), 1.110 (70).

IMA No. 93-019



Orthorhombic: space group unknown

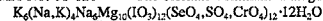
a 5.689 b 10.791 c 5.308 Å

Yellow green to light green; adamantine; transparent.

Biaxial n's > 2. In reflected light, R: (14.8%)470nm, (13.0%)546nm, (13.2%)589nm, (13.6%)650nm.

3.146 (100), 2.841 (80), 2.694 (20), 1.956 (10), 1.695 (20), 1.631 (10).

IMA No. 93-020 The selenate-dominant analogue of 93-021

Hexagonal: P $\bar{3}c1$

a 9.590 c 27.60 Å

Pale yellow; vitreous; transparent.

Uniaxial (-), ω 1.655, ϵ 1.642.

13.75 (30), 7.10 (20), 3.974 (16), 3.561 (100), 3.082 (32), 3.058 (39), 2.715 (39).

IMA No. 93-021 The sulfate-dominant analogue of 93-020

Hexagonal: P $\bar{3}c1$

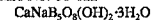
a 9.4643 c 27.336 Å

Pale yellow; vitreous; transparent.

Uniaxial (-), ω 1.622, ϵ 1.615.

13.67 (50), 7.05 (40), 3.927 (100), 3.515 (24), 3.023 (41), 2.681 (33), 2.3273 (21).

IMA No. 93-022

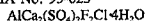
Monoclinic: P2 $\frac{1}{c}$ a 6.506 b 13.280 c 11.462 Å β 92.97°

White; silky to pearly; translucent.

Biaxial (-), α 1.540, β 1.534, γ 1.558, 2V(meas.) 60°, 2V(calc.) 56°.

8.64 (100), 6.62 (30), 4.18 (17), 2.868 (26), 2.845 (16), 2.795 (17), 2.587 (15).

IMA No. 93-023



Tetragonal: 4/m

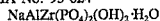
a 6.859 c 13.310 Å

White; vitreous; transparent.

Uniaxial (+), ω 1.509, ϵ 1.526.

6.67 (60), 3.922 (50), 3.729 (40), 3.431 (100), 3.335 (80), 3.052 (40), 2.483 (40).

IMA No. 93-024



Monoclinic: space group unknown

a 20.840 b 9.871 c 11.195 Å β 104.41°

Pale pinkish orange; vitreous; translucent.

Biaxial, n's vary from 1.62 (parallel to fibres) to 1.64 (normal to fibres) 8.865 (40), 4.128 (80), 3.711 (65), 3.465 (60), 3.243 (35), 2.603 (100).

IMA No. 93-025

Monoclinic: P2 $\frac{1}{a}$ a 8.444 b 23.97 c 5.844 Å β 113.58°

Brilliant black, but dark red in thin fragments; metallic to submetallic; opaque, but translucent in thin fragments.

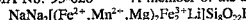
In reflected light: greyish white, clearly visible anisotropy from bluish to very weak reddish, visible birefractance, nonpleochroic. R_{min} & R_{max} :

(29.7, 35.4%)470nm, (28.8, 33.1%)546nm, (26.7, 30.3%)589nm,

(26.6, 29.9%)650nm.

5.346 (32), 3.998 (74), 3.816 (54), 3.587 (86), 2.823 (100), 2.778 (84), 2.670 (58).

IMA No. 93-026 A member of the amphibole group



Monoclinic: C2/m

a 9.792 b 17.938 c 5.3133 Å β 103.87°

Bluish black to black; vitreous; opaque.

Biaxial (+), α 1.675, β 1.683, γ 1.694, 2V(meas.) 87°, 2V(calc.) 81°.

8.426 (45), 4.481 (54), 3.404 (57), 2.985 (38), 2.710 (100), 2.585 (38),

2.536 (92).

IMA No. 93-028

Hexagonal: P6 $\frac{3}{m}mc$

a 4.316 c 5.510 Å

White, greyish-black to black (when oxidized); metallic; opaque.

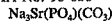
In reflected light: white with light yellow tint, clear anisotropy light yellow with a brown tint, faint birefractance, nonpleochroic. R_O & R_E :

(65.4, 65.2%)470nm, (76.7, 74.8%)546nm, (80.5, 77.9%)589nm,

(82.8, 79.5%)650nm.

3.726 (34), 3.087 (38), 2.218 (100), 2.159 (57), 1.546 (31), 1.258 (25), 1.256 (26).

IMA No. 93-030

Monoclinic: P2 $\frac{1}{c}$ a 9.187 b 6.707 c 5.279 Å β 89.98°

Colourless to white; vitreous; transparent.

Biaxial (-), α 1.520, β 1.564, γ 1.565, 2V(meas.) 20°, 2V(calc.) 17°.

3.35 (50), 2.708 (100), 2.648 (90), 2.172 (100), 2.080 (50), 1.891 (80), 1.676 (50), 1.415 (70).

IMA No. 93-031

Triclinic: P1 or P $\bar{1}$ a 6.259 b 6.791 c 5.053 Å α 90.92° β 107.45° γ 104.45°

White to colourless; vitreous; transparent.

Biaxial (-), α 1.629, β 1.682, γ 1.691, 2V(meas.) 41°, 2V(calc.) 44°.

4.42 (100), 4.05 (35), 3.221 (40), 2.595 (70), 2.190 (65), 2.030 (50), 2.015 (40).

IMA No. 93-032



Monoclinic: C2/c

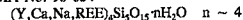
a 6.526 b 8.691 c 7.032 Å β 113.88°

Deep red; adamantine; transparent.

Biaxial (sign unknown), α ~ 1.95, β unknown, γ 2.105, 2V(meas.) unknown.

4.90 (W), 3.22 (VS), 2.97 (M), 2.59 (S), 2.271 (W), 1.641 (W).

IMA No. 93-034

Triclinic: P1 or P $\bar{1}$ a 9.245 b 9.684 c 5.510 Å α 97.44° β 100.40° γ 116.70°

White; vitreous; translucent.

Biaxial (-), α 1.602, β 1.607, γ 1.611, 2V(meas.) 73°, 2V(calc.) 83°.

8.44 (80), 8.01 (50), 4.51 (50), 3.76 (70), 2.973 (100), 2.930 (60).

IMA No. 93-035

The chromium-dominant analogue of schreyerite

Monoclinic: C2/c, Cc, P2 $\frac{1}{c}$, P2/c or Pca 7.03 b 5.02 c 18.83 Å β 119.60°

Black; metallic; opaque.

In reflected light: white, faint anisotropy, faint birefractance, faint pleochroism pale brown. R_{min} & R_{max} : (18.1, 20.1%)470nm, (18.5, 19.9%)546nm,

(18.4, 19.8%)589nm, (18.6, 20.9%)650nm.

2.88 (2), 2.75 (3), 2.43 (2), 1.635 (3), 1.386 (2).

IMA No. 93-036

BaCuSi₃O₉
 Tetragonal: P4/ncc
 a 7.441 c 16.133 Å
 Blue; vitreous; transparent.
 Uniaxial (-), ω 1.633, ε 1.593.
 8.055 (100), 4.031 (35), 3.544 (15), 3.200 (21), 2.688 (18), 2.395 (19), 2.016 (26).

IMA No. 93-037 The K-dominant analogue of gainesite

NaKZr₂(Be,Al,Ca,Mn)(PO₃)₆·2H₂O
 Tetragonal: I4/amd
 a 6.570 c 17.142 Å
 Intense bluish purple or pale lilac; vitreous; transparent.
 Uniaxial (+), ω 1.624, ε 1.636.
 6.161 (100), 4.291 (25), 3.286 (50), 3.039 (30), 2.895 (20).

IMA No. 93-038

Na(REE,Ca)₂F₇
 Hexagonal: P3̄
 a 6.099 c 11.066 Å
 Pale pink to colourless; vitreous; transparent.
 Uniaxial (+), ω 1.483, ε 1.503.
 5.29 (70), 3.036 (100), 2.146 (70), 1.757 (80), 1.152 (40), 0.9189 (40).

IMA No. 93-040 The PO₄-analogue of atelite and a monoclinic polymorph of petitjeanite

Bi₂O(OH)(PO₃)₂
 Monoclinic: P2₁/c
 a 6.954 b 7.494 c 10.869 Å β 107.00°
 White to yellow; adamantine; translucent.
 Biaxial (+), α 2.05, β 2.06, γ 2.09, 2V(meas.) 45°, 2V(calc.) 61°.
 4.268 (17), 3.271 (51), 3.254 (100), 3.145 (34), 2.727 (29), 1.885 (16).

IMA No. 93-041

Hg₂⁺(CO₃)₂(OH)2H₂O
 Orthorhombic: Pcab
 a 11.130 b 11.139 c 10.725 Å
 Black to very dark red-brown; sub-metallic to adamantine; opaque.
 In reflected light: grey with slight bluish tinge, weak anisotropism (dull and dark greys and browns), weak to moderate birefractance, nonpleochroic.
 R_{min.} & R_{max.}: (11.4, 12.15%)470nm, (10.95, 11.6%)546nm, (10.85, 11.3%)589nm, (10.7, 11.2%)650nm.
 4.84 (50), 2.969 (70), 2.786 (70), 2.648 (100), 2.419 (60), 1.580 (50).

IMA No. 93-042 A regular interstratification of amesite and clinocllore

(Mg,Al,Fe²⁺)₂(Si,Al)₆O₁₅(OH)₁₂
 Monoclinic: Cm
 a 5.323 b 9.214 c 21.45 Å β 94.43°
 Colourless to very pale green; macerous; translucent.
 Biaxial (+), α 1.575, β 1.575, γ 1.581, 2V(meas.) 0°, 2V(calc.) 0°.
 7.1 (100), 4.61 (60), 3.560 (80), 2.557 (40), 2.427 (60), 1.536 (70).

IMA No. 93-044

NaSbO₃ Isostructural with ilmenite and gelikietite
 Hexagonal: R3̄
 a 5.301 c 15.932 Å
 Colourless; pearly; transparent.
 Uniaxial (-), ω 1.184, ε 1.631.
 5.30 (53), 3.00 (55), 2.650 (67), 2.365 (69), 1.874 (100), 1.471 (69).

IMA No. 93-045 The Fe-analogue of leonite

K₂Fe(SO₄)₂·4H₂O
 Monoclinic: C2/m
 a 11.843 b 9.552 c 9.945 Å β 94.89°
 Colourless to light yellow; vitreous; transparent.
 Biaxial (+), α 1.497, β 1.501, γ 1.509, 2V(meas.) 73°, 2V(calc.) 71°.
 4.776 (30), 3.504 (52), 3.439 (100), 3.330 (48), 3.051 (29), 2.405 (30), 2.389 (49).

IMA No. 93-046

(Rh,Ir,Pt)₂S₄
 Monoclinic: P2₁/m
 a 13.44 b 10.749 c 10.448 Å β 118.32°
 Megascopic colour not observed; metallic; opaque.
 In reflected light: pale slightly brownish grey, weak anisotropism in greys and browns, weak birefractance, pleochroism weak. R₁ & R₂: (47.2, 48.9%)470nm, (48.4, 50.3%)546nm, (49.1, 50.7%)589nm, (49.8, 51.0%)650nm.
 3.156 (100), 3.081 (100), 2.957 (90), 2.234 (60), 1.871 (80), 1.791 (90), 1.532 (70).

IMA No. 93-047

Cu₂Te⁶⁺O₄(OH)₂
 Monoclinic: P2₁/n
 a 9.095 b 5.206 c 4.604 Å β 98.69°
 Medium leaf green; adamantine; transparent.
 In reflected light: pale grey, weak anisotropism with brown rotation tints, weak birefractance, nonpleochroic. The mean index of refraction calculated from the reflectances at 589nm is 2.00.
 4.506 (40), 4.337 (60), 3.838 (50), 2.891 (70), 2.598 (100), 1.834 (40), 1.713 (40), 1.500 (40).

IMA No. 93-048

Bi₂(Fe³⁺,Cu)₂O(OH)₂(AsO₄)₂
 Triclinic: P1 or P1
 a 4.569 b 6.162 c 8.993 Å α 94.56° β 99.68° γ 94.31°
 Brown-yellow; adamantine; transparent to translucent.
 Biaxial (-), α 2.04, β 2.10 (calc.), γ 2.11, 2V(meas.) 45°.
 8.822 (62), 3.749 (100), 3.596 (77), 3.468 (58), 2.903 (69), 2.810 (51), 2.685 (48).

IMA No. 93-049

Ca₃B₂O₆
 Hexagonal: R3̄c or R3c
 a 8.638 c 11.850 Å
 Greyish white; vitreous; transparent.
 Uniaxial (-), ω 1.726, ε 1.630.
 2.915 (100), 2.756 (61), 2.493 (44), 2.160 (19), 2.044 (21), 1.976 (18), 1.895 (75).

IMA No. 93-050

Tl₂Sb₂(As,Sb)₂S₂₂
 Triclinic: P1
 a 7.393 b 8.707 c 17.58 Å α 103.81° β 91.79° γ 109.50°
 Black; metallic; opaque.
 In reflected light: white, distinct to strong anisotropism with blue or blue-green colours, weak to medium birefractance, pleochroism white to white with grey-blue tints. R_{min.} & R_{max.}: (34.0, 36.7%)470nm, (32.0, 34.9%)546nm, (30.5, 33.0%)589nm, (28.1, 29.7%)650nm.
 3.459 (100), 3.388 (64), 3.177 (54), 3.076 (65), 2.802 (44), 2.287 (57), 1.736 (38).

IMA No. 93-051

Fe₂S₆O
 Monoclinic: space group unknown
 a 9.717 b 7.280 c 6.559 Å β 95.00°
 Yellow; metallic; opaque.
 In reflected light: yellow, strong anisotropism with orange, yellow-orange and greenish grey colours, distinct birefractance, pleochroism greyish brown, orange, yellow orange. R_{min.} & R_{max.}: (19.5, 32.1%)470nm, (23.8, 36.8%)546nm, (24.6, 37.4%)589nm, (25.1, 37.3%)650nm.
 2.709 (10), 2.419 (8), 2.323 (7), 1.92 (6), 1.758 (8), 0.9605 (6), 0.9576 (7).

IMA No. 93-052

CaAl₂O₇
 Monoclinic: C2/c
 a 12.94 b 8.910 c 5.446 Å β 107.0°
 Colourless to white; vitreous; transparent.
 Biaxial (+), α 1.6178, β 1.6184, γ 1.6516, 2V(meas.) 12°, 2V(calc.) 15.5° (synthetic material).
 4.460 (43), 3.609 (13), 3.515 (100), 2.882 (13), 2.605 (36), 2.440 (21), 1.764 (20).

IMA No. 93-053

Pb₂OCCO₃
 Orthorhombic: P2₁2₁2₁ or P2₁2₁2₁
 a 9.294 b 9.000 c 5.133 Å
 White; waxy; transparent to opaque.
 The mean index of refraction calculated from the reflectance value at 589nm is 2.09.
 6.49 (30), 4.02 (40), 3.215 (100), 3.181 (90), 2.858 (40), 2.564 (35).

IMA No. 93-054 The Se-analogue of pyrite

FeSe₂
 Cubic: Pa3̄
 a 5.783 Å
 Black; metallic; opaque.
 In reflected light: pink-yellow, no anisotropism, no birefractance, nonpleochroic.
 R: (42.4 %)470nm, (42.7 %)546nm, (45.7 %)589nm, (49.8 %)650nm.
 2.888 (50), 2.588 (100), 2.364 (80), 2.045 (40), 1.743 (50), 1.546 (60), 1.1131 (40).

IMA No. 93-055

Na₂K₂(Tl₂Al₂Si₂O₂Cl)₂
 Monoclinic: C2/m
 a 10.37 b 16.32 c 9.16 Å β 105.6°
 Colourless; vitreous; transparent.
 Biaxial (+), α 1.601, β 1.625, γ 1.654, 2V(meas.) 85°, 2V(calc.) 86°.
 8.22 (71), 3.50 (42), 3.157 (35), 3.049 (100), 2.900 (71), 2.835 (84).

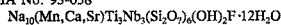
IMA No. 93-056

Pb₁₈B₈Ca₂Mn₂Fe³⁺Si₁₀(O,OH)₆Cl
 Hexagonal: R3̄
 a 9.863 c 79.45 Å
 Colourless; adamantine; transparent.
 Uniaxial (-), ω 1.845, ε 1.815.
 13.4 (50), 4.43 (30), 3.98 (30), 3.32 (100), 3.11 (40), 2.969 (40), 2.671 (80).

IMA No. 93-057

Pd₂Ni₂As₂
 Hexagonal: P6₃/m, P6₃ or P6₂2
 a 8.406 c 6.740 Å
 Megascopic colour not observed; metallic; opaque.
 In reflected light: rose, distinct anisotropism from light grey to greyish-brown, no birefractance, nonpleochroic. R_{min.} & R_{max.}: (48.4, 50.2%)470nm, (51.2, 53.2%)546nm, (53.2, 55.3%)589nm, (56.6, 58.7%)650nm.
 2.626 (10), 2.477 (10), 2.429 (8), 2.283 (7), 1.978 (7), 1.818 (7), 1.781 (7).

IMA No. 93-058



Monoclinic: Pm, P2 or P2/m

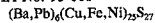
a 5.468 b 7.18 c 31.1 Å β 94.0°

Colourless, white, silvery, pale pink or cream; greasy to pearly; transparent to translucent.

Biaxial (+), α 1.608, β 1.630, γ 1.660, 2V(meas.) 82°, 2V(calc.) 83°.

15.56 (9), 5.16 (6), 3.11 (10), 2.850 (7), 2.665 (7), 2.627 (7), 2.217 (6), 1.795 (6).

IMA No. 93-061



Cubic: Pm3m

a 10.373 Å

Megascopic colour unknown; metallic; opaque.

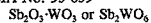
In reflected light: pale brownish grey, no anisotropism, no bireflectance,

nonpleochroic. R: (22.0%)470nm, (24.85%)546nm, (26.2%)589nm,

(27.55%)650nm.

3.460 (40), 3.281 (40), 2.996 (90), 2.378 (90), 1.835 (100), 1.779 (40).

IMA No. 93-059

Orthorhombic: probably P22₂

a 8.59 b 9.58 c 6.12 Å

Green to dark green; pearly to dull; translucent to opaque.

Biaxial (+), α 2.285, β 2.40, γ 2.58, 2V(meas.) large, 2V(calc.) 82°.

3.32 (10), 3.06 (10), 2.98 (4), 2.73 (6), 2.46 (5), 1.919 (4).

IMA No. 93-062

(Pu,Ag)₂TeTetragonal: P4₂22, P4₂/m or P4₂

a 8.913 c 6.098 Å

Megascopic colour unknown; metallic; opaque.

In reflected light: brownish-rose, distinct to strong anisotropism from white to

rose-brown, distinct bireflectance, pleochroic from brownish-grey

to violet-rose. R_{min.} & R_{max.}: (38.7, 48.7%)470nm, (44.0, 55.5%)546nm,

(47.3, 58.2%)589nm, (50.7, 60.7%)650nm.

3.051 (6), 2.825 (10), 2.553 (4), 2.231 (6), 2.042 (5), 1.326 (3).

IMA No. 93-060

A monoclinic polymorph of atacamite, botallackite and paratacamite

Monoclinic: P2₁/na 6.157 b 6.814 c 9.104 Å β 99.65°

Green to dark greenish black; adamantine; translucent to transparent.

Biaxial (-), indices of refraction could not be measured because mineral reacts with immersion liquids, 2V(meas.) 75°.

5.44 (100), 2.887 (40), 2.767 (60), 2.742 (70), 2.266 (60), 2.243 (50), 1.704 (50).

NOTICE

Dr. J. A. Mandarino retires as Chairman of the Commission on New Minerals and Mineral Names (CNMMN) of the International Mineralogical Association on 31 December 1994. After that date, all proposals for new minerals should be sent to the new Chairman:

Dr. J. D. Grice
Mineral Sciences Division
Canadian Museum of Nature
P.O. Box 3443
Station 'D'
Ottawa, Ontario
K1P 6P4 CANADA

Dr. E. H. Nickel remains the Vice-chairman of the CNMMN and will continue to handle redefinitions, discreditations and revalidations. Proposals of these kinds should be sent to:

Dr. E. H. Nickel
Division of Mineral Products
CSIRO
Private Bag
P. O. Wembley
Western Australia 6014
AUSTRALIA

Dr. C. E. S. Arps retires as Secretary of the CNMMN on 31 December 1994. The new Secretary is:

Dr. W. D. Birch
Department of Mineralogy and Petrology
Museum of Victoria
285 Russell Street
Melbourne
Victoria 3000
AUSTRALIA