Empressite, AgTe

Crystal Data: Orthorhombic. Point Group: 2/m 2/m 2/m. As compact, granular masses; crystals rare, to 400 µm.


Optical Properties: Opaque. Color: Pale bronze; grayish white in reflected light. Streak: Gray-black to black. Luster: Metallic. Pleochroism: Very strong, in gray to creamy white. Anisotropism: Strong, gray to yellowish white to grayish blue. Bireflectance: Strong. R₁–R₂: (400) 36.6–42.8, (420) 37.1–44.2, (440) 37.5–45.8, (460) 37.8–47.8, (480) 38.1–49.6, (500) 38.7–51.0, (520) 39.3–51.9, (540) 39.8–52.6, (560) 40.0–52.8, (580) 40.0–52.8, (600) 40.0–52.9, (620) 39.9–53.1, (640) 39.8–53.5, (660) 39.7–53.8, (680) 39.5–53.9, (700) 39.4–54.0

Cell Data: Space Group: P mnb. a = 8.882(1) b = 20.100(5) c = 4.614(1) Z = 16

X-ray Powder Pattern: Empress Josephine mine, Colorado, USA. 2.70 (100), 2.23 (80), 3.81 (60), 3.33 (60), 3.18 (50), 2.14 (50), 2.04 (50)

Chemistry: (1) (2) (3) (4)
Ag 45.17 44.9 45.2 45.81
Fe 0.22
Te 54.75 55.8 54.9 54.19
insol. 0.39
Total 100.53 100.7 100.1 100.00

(1) Empress Josephine mine, Colorado, USA; average of two analyses, corresponding to Ag₅₀.₉₈Te₁.₀₀. (2) Do.; by electron microprobe, corresponding to Ag₅₀.₉₅Te₁.₀₀. (3) Do.; by electron microprobe, corresponding to Ag₅₀.₉₇Te₁.₀₀. (4) AgTe.

Occurrence: In low-temperature gold-poor hydrothermal vein deposits.

Association: Tellurium, sylvanite, petzite, hessite, rickardite, altaite, galena (Empress Josephine mine, Colorado, USA); pyrite, rodalquilarite (Tombstone, Arizona, USA); gold, tellurium, hessite, petzite, rickardite (Pitman, Canada).

Distribution: In the USA, in Colorado, from the Empress Josephine mine, Kerber Creek district [TL], and the Klondike mine, Finley Gulch, both in Saguache Co.; the May Day mine, La Plata Co.; and the Red Cloud, Rex, and other mines, Boulder Co.; from Tombstone, Cochise Co., Arizona. In Canada, from the Grotto group of pits, near Pitman, British Columbia, and the Quetico intrusions, northwestern Ontario. At Kalgoorlie, Western Australia. From the Emperor mine, Vatukoula, Fiji Islands. At the Kawazu mine, Shizuoka Prefecture, Japan. In the Kochbulak gold deposit, Chatkal-Kuramin Mountains, eastern Uzbekistan. At Sultijelma, Norway. From the Huangshaping Pb–Zn deposit, Guiyang, Hunan Province, China.

Name: For the Empress Josephine mine, Colorado, USA.


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