

Jarosite

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Crystal Data: Hexagonal. *Point Group:* $\bar{3}2/m$. As well-formed crystals, pseudocubic rhombohedral {01 $\bar{1}$ 2} or tabular on {0001}, to 25 cm; typically as minutely crystalline crusts, also fibrous, nodular, granular, pulverulent, earthy.

Physical Properties: *Cleavage:* On {0001}, distinct. *Fracture:* Uneven to conchoidal. *Tenacity:* Brittle. Hardness = 2.5–3.5 D(meas.) = 2.91–3.26 D(calc.) = 3.127 Strongly pyroelectric.

Optical Properties: Transparent to translucent. *Color:* Amber-yellow to dark brown. *Streak:* Pale yellow. *Luster:* Subadamantine to vitreous, resinous on fractures. *Optical Class:* Uniaxial (–), typically anomalously biaxial. *Pleochroism:* *O* = reddish brown; *E* = colorless. ω = 1.791–1.820 ϵ = 1.705–1.715 2*V*(meas.) = Small.

Cell Data: *Space Group:* $R\bar{3}m$. $a = 7.29$ $c = 17.16$ $Z = 3$

X-ray Powder Pattern: Synthetic. (ICDD 22–827).
3.08 (100), 3.11 (75), 5.09 (70), 5.93 (45), 1.977 (45), 1.825 (45), 3.65 (40)

Chemistry:	(1)	(2)	(1)	(2)
SO ₃	32.02	31.97	H ₂ O	10.61
Fe ₂ O ₃	48.63	47.83	insol.	0.29
Na ₂ O	0.55			
K ₂ O	7.75	9.41	Total	99.85
				100.00

(1) Saint Félix de Pallières, France; corresponds to $(\text{K}_{0.82}\text{Na}_{0.04})_{\Sigma=0.86}\text{Fe}_{3.05}(\text{SO}_4)_2(\text{OH})_6$.

(2) $\text{KFe}_3(\text{SO}_4)_2(\text{OH})_6$.

Polymorphism & Series: Forms a series with natrojarosite.

Mineral Group: Alunite group.

Occurrence: A secondary mineral in oxidized portions of sulfide-bearing rocks, typically altering from pyrite; less common as a low-temperature, primary hydrothermal mineral, including as deposits around hot springs.

Association: Alunite, pyrite.

Distribution: Widespread. A few localities for studied material include: in Spain, in the Barranco del Jaroso, Sierra Almagrera, Almería Province. At Horní Slavkov (Schlaggenwald), Czech Republic. From the Frisches Glück mine, Fürstenberg, near Schwarzenberg, Saxony, Germany. In the Kamariza mine, Laurium, Greece. In the USA, from Marysvale, Ohio district, Piute Co., and at the Mammoth mine, Tintic, Juab Co., Utah; in the Vulture mine, near Wickenburg, Maricopa Co., at Tombstone, Cochise Co., and many other places in Arizona; from the Meadow Valley mines, Pioche district, Lincoln Co., Nevada. Immense crystals from the La Domitila mine, Sierra Peña Blanca uranium district, Sierra del Cuervo, Chihuahua, Mexico. In Chile, at Chuquicamata, from Quetena, west of Calama, and at Alcaparrosa, near Cerritos Bayos, southwest of Calama, Antofagasta. At volcanoes on the Kamchatka Peninsula, Russia.

Name: For the Barranco del Jaroso, Spain, from where the first scientifically studied specimens were obtained.

Type Material: Mining Academy, Freiberg, Germany, 17.966.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 560–562 [carphosiderite, part]. (2) Brophy, G.P. and M.F. Sheridan (1965) Sulfate studies IV: The jarosite-natrojarosite-hydronium jarosite solid solution series. Amer. Mineral., 50, 1595–1607. (3) Menchetti, S. and C. Sabelli (1976) Crystal chemistry of the alunite series: crystal structure refinement of alunite and synthetic jarosite. Neues Jahrb. Mineral., Monatsh., 406–417. (4) Kato, T. and Y. Miura (1977) The crystal structures of jarosite and svanbergite. Mineral. J. (Japan), 8, 419–430.

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