

MinIdent-Win - celestite

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Formula: SrSO₄

Status: Mineral name is IMA approved or traditional

Level: Species

Parents: sulphates and barite-group

Symmetry: Orthorhombic

Mean Atomic Number: 25.0

Diffraction Values: 2.972, 3.295, 2.731, 3.180, 2.040

Kretz abbreviation: Clt

First Described in 1798

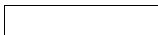


Space Group: Pnma

Z number: 4

ICDD (TM) Number: 5-593

	Minimum	Maximum	Average	Std. Dev.
a (A)	8.359	8.731	8.545	
b (A)	5.352	5.355	5.354	
c (A)	6.866	6.870	6.868	
Alpha	90.000	90.000	90.000	
Beta	90.000	90.000	90.000	
Gamma	90.000	90.000	90.000	
Volume	307.167	321.203	314.183	

	Minimum	Maximum	Average	Std. Dev.
n(Alpha)	1.621	1.622	1.622	
n(Beta)	1.623	1.624	1.624	
n(Gamma)	1.630	1.633	1.631	
Max. birefrin	0.009	0.011	0.009	
2V Gamma	50	50	49	
Optical Sign:	+ve			

C(Alpha)		Colourless
C(Beta)		Colourless
C(Gamma)		Pale Blue, Colourless
Dispersion	V>R	

	Minimum	Maximum	Average	Std. Dev.
Mohs	3.0	3.5	3.0	
Vickers	116	182	116	
Density	3.95	4.01	4.00	

	Total Min Wt (%)	Anal. Min Wt (%)	Average Wt (%)	Anal. Max Wt (%)	Total Max Wt (%)	Average Atomic	Coordination
O	31.3718	31.3718	34.1179	35.4726	35.4726	4.0000	
Mg	0.0000	0.0000	0.0804	0.1809	0.1809	0.0062	
Al	0.0000	0.0000	0.0282	0.0847	0.0847	0.0020	
Si	0.0000	0.0000	0.1262	0.2992	0.2992	0.0084	
S	15.6070	15.6070	16.9687	17.6015	17.6288	0.9928	4
Ca	0.0000	0.1858	0.5060	0.9291	0.9291	0.0237	12
Mn	0.0000	0.0000	0.1387	0.5546	0.5546	0.0047	
Fe	0.0000	0.0000	0.1651	0.7204	0.7204	0.0055	
Sr	23.9049	23.9049	41.2733	47.5220	48.1796	0.8836	12
Ba	0.0000	0.0000	6.5070	28.7865	28.7865	0.0889	12
Total			99.9116			6.0159	




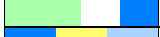
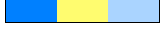
Atomic proportions calculated for O = 4.0

Compilation based on 2 general and 6 sample records

Values in italics are calculated from the minimum and maximum values. Other data are from the sample and general records.

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Lustre	Pearly, Vitreous
Aggregation	Fibrous, Nodular, Massive, Granular, Lamellar, Pulverescent, Radiating, Compact
Habit	Tabular, Bladed, Prismatic, Pyramidal
Tenacity	Brittle
Fracture	Uneven
Cleavage	{001} Excellent, {210} Good, {010} Indistinct
Surface Colour	 White, Colourless, Pale Blue, Pale Yellow, Grey, Pale Green, Pale Orange, Pale Brown, Brown, Pale Red, Pale Green
Streak	 Colourless, White
Fluor. Short	 Blue, Phosphorescence: Bluish White
Fluor. Unspec	 Greenish White, Greenish White, White, Blue
Fluor. Long	 Blue, Yellow, Phosphorescence: Bluish White

Notes on hand specimen data: The principle source of strontium.

Synonyms: celestine, colestine

Remarks: Transparent to translucent and colourless, white, reddish, brownish, greenish or, most frequently, pale blue. Well-formed crystals are common (and often tabular) but the mineral also occurs in radiating, prismatic and granular aggregates. It is not easily differentiated in the hand specimen from other orthorhombic sulphates, although density differences are useful. Celestite is an important ore of strontium.

Occurrences: Generally associated with limestone and dolomites, lining fissures and cavities and associated with calcite, dolomite and minerals such as gypsum, anhydrite, barite, fluorite and strontianite. Also in some hydrothermal veins and rarely in basic igneous rocks.

Localities of samples used in compilation: Djebel Kelbouch & Dejebel Mezzouna, Tunis. Trichy, India. Bolshoi Porog Vymsk district, S. Timan, U.S.S.R. Caramanico, Italy. Greiner, Switzerland. Chipping Sudbury, Gloucestershire, U.K.

References: Roberts et al. (1974) *Encycl. Mins.* Deer et al. (1962) v.5, p.196. Phillips & Griffen (1981) *Opt. Min.*

MinIdent-Win

Sulphur with celestite



Dorian G.W. Smith

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Caption: Prismatic to tabular, colourless to snowy white crystals of celestite are associated with native sulphur and a small amount of calcite at this classic Italian locality. The celestite crystals are elongated along the x crystallographic axis. Locality: Girgenti, Sicily, Italy.

Keywords: sulphur; native elements; native sulphur; sulfur; celestite; sulphates; strontium ore; Girgenti; Sicily; Italy; elements

Acknowledgements: Ward's Natural Science Establishment, specimen number 325. Photography by Frank Dimitrov and Dorian Smith.