Chlorellestadite $Ca_5(SiO_4, SO_4, PO_4)_3(Cl, F)$

Crystal Data: Hexagonal or monoclinic, pseudohexagonal. *Point Group:* $6/m$ or $2/m$. Massive, granular.

Physical Properties: *Cleavage:* Indistinct on {0001} and $\{10\bar{1}0\}$. Hardness = ~5 D(meas.) = 3.068 D(calc.) = 3.046

Optical Properties: Translucent. *Color:* Pale rose, rose-pink, orange. *Luster:* Vitreous. *Optical Class:* Uniaxial (–). $\omega = 1.655(2)$ $\epsilon = 1.650(2)$

Cell Data: *Space Group:* $P6_3/m$. a = 9.530(2) $c = 6.914(2)$ Z = 2

X-ray Powder Pattern: Crestmore, California, USA.
2.843 (100), 2.751 (70), 3.458 (50), 2.800 (40), 1.964 (40), 1.855 (40), 2.651 (30)

Chemistry:

	(1)		(1)
SiO_2	17.31	Cl	1.64
Al_2O_3	0.13	H_2O^+	0.53
Fe_2O_3	0.22	H_2O^-	0.10
MnO	0.01	CO_2	0.61
MgO	0.47	P_2O_5	3.06
CaO	55.18	SO_3	20.69
F	0.57	$-O = (F, Cl)_2$	0.61
		Total	99.91

(1) Crestmore, California, USA.

Mineral Group: Ellestadite group.

Occurrence: In veinlets cutting contact metamorphosed limestone.

Association: Diopside, wollastonite, vesuvianite, monticellite, okenite, calcite.

Distribution: From Crestmore, Riverside Co., California, USA.

Name: For Dr. Reuben B. Ellestad (1900–), American analytical chemist, University of Minnesota, Minneapolis, Minnesota, USA, and *chlorine* in the chemical composition.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 906 [ellestadite]. (2) McConnell, D. (1937) The substitution of SiO_4- and SO_4-groups for PO_4-groups in the apatite structure; ellestadite, the end-member. Amer. Mineral., 22, 977–986. (3) Rouse, R.C. and P.J. Dunn (1982) A contribution to the crystal chemistry of ellestadite and the silicate sulfate apatites. Amer. Mineral., 67, 90–96.