

Ulfanderssonite-(Ce)**Ce₁₅CaMg₂(SiO₄)₁₀(SiO₃OH)(OH,F)₅Cl₃**

Crystal Data: Monoclinic. *Point Group:* *m*. As granular crystals to 300 μm and aggregates to 2 mm.

Physical Properties: *Cleavage:* Indistinct on (001). *Tenacity:* Brittle. *Fracture:* Uneven. Hardness = 5-6 D(meas.) = n.d. D(calc.) = 4.972

Optical Properties: Translucent to transparent. *Color:* 'Flesh'-pink to colorless-grey; colorless in transmitted light. *Streak:* White. *Luster:* Vitreous to greasy.

Optical Class: Biaxial (-). *n*(meas.) = > 1.8 *n*(calc.) = 1.82 2*V*(meas.) = 55(5)°

Dispersion: Moderate; *r* > *v*.

Cell Data: *Space Group:* *Cm*. *a* = 14.1403(8) *b* = 10.7430(7) *c* = 15.498(1) β = 106.615(6)° *Z* = 2

X-ray Powder Pattern: Malmkärna mine, Västmanland County, central Sweden. 2.948 (100), 2.923 (47), 2.660 (32), 3.524 (26), 1.7601 (25), 4.350 (21), 3.644 (21)

Chemistry:	(1)	(2)		(1)	(2)
CaO	2.26	1.65	Eu ₂ O ₃	0.18	
FeO	0.02		Gd ₂ O ₃	1.15	
MgO	1.97	2.37	Dy ₂ O ₃	0.30	
P ₂ O ₅	0.08		Tb ₂ O ₃	0.10	
SiO ₂	19.13	19.43	Y ₂ O ₃	1.11	
La ₂ O ₃	11.87		H ₂ O	[1.07]	1.06
Ce ₂ O ₃	30.98	72.41	F	1.09	1.12
Pr ₂ O ₃	3.99		Cl	2.89	3.13
Nd ₂ O ₃	17.14		<u>-O = (F, Cl)</u>	<u>1.10</u>	<u>1.17</u>
Sm ₂ O ₃	2.81		Total	97.04	100.00

(1) Malmkärna mine, Västmanland County, central Sweden; average of 10 electron microprobe analyses supplemented by Fourier transform infrared spectroscopy and laser ablation-inductively coupled plasma-mass spectrometric analyses, H₂O calculated from stoichiometry; corresponds to (Ce_{6.58}Nd_{3.55}La_{2.54}Pr_{0.84}Sm_{0.56}Y_{0.34}Gd_{0.22}Dy_{0.06}Eu_{0.04}Tb_{0.02})_{Σ=14.75}Ca_{1.41}Mg_{1.70}Fe_{0.01}Si_{11.11}P_{0.04}O₄₃(OH)_{4.16}F_{2.00}Cl_{2.84}. (2) Ce₁₅CaMg₂(SiO₄)₁₀(SiO₃OH)(OH,F)₅Cl₃.

Occurrence: A primary mineral in metasomatic Fe-*REE* skarn mineralization of the Bastnäs-type.

Association: Västmanlandite-(Ce), bastnäsite-(Ce), phlogopite, talc, magnetite.

Distribution: From the Malmkärna mine, Bergslagen ore region, Norberg District, Västmanland County, central Sweden.

Name: Honors Ulf B. Andersson (b. 1960), a Swedish geologist-petrologist for his contributions to the understanding of the genesis of *REE* deposits of the Bastnäs type.

Type Material: Department of Geosciences, Swedish Museum of Natural History, Stockholm, Sweden (NRM 20010323).

References: (1) Holstam, D., L. Bindi, U. Hålenius, U. Kolitsch, and J. Mansfeld (2017) Ulfanderssonite-(Ce), a new Cl-bearing *REE* silicate mineral species from the Malmkärna mine, Norberg, Sweden. *Eur. J. Mineral.*, 29(6), 1015-1026. (2) (2018) *Amer. Mineral.*, 103, 1714-1715 (abs. ref. 1).