

Crystal Data: Hexagonal. *Point Group:* 6. Prismatic crystals to 1.5 mm, display {100} and {001}, in radiating groups. As acicular crystals to 0.2 mm, in nearly parallel or sheaf-like clusters, also as open chaotic aggregates to 4 mm, that resemble matted wool. In cauliflower-like clusters, to 1 cm [xenoliths in volcanic glass].

Physical Properties: *Cleavage:* Distinct on {100}. *Fracture:* Uneven or stepped.
Tenacity: Brittle. *Hardness* = 2-2.5 D(meas.) = 1.82(3) D(calc.) = 1.86
 Slowly dissolves in HCl with very weak effervescence.

Optical Properties: Transparent. *Color:* Colorless; snow-white aggregates. *Streak:* White.
Luster: Vitreous; silky aggregates.
Optical Class: Uniaxial (-). $\omega = 1.494(2)$ $\varepsilon = 1.476(2)$

Cell Data: *Space Group:* $P6_3$, $a = 11.1178(2)$ $c = 10.5381(2)$ $Z = 2$

X-ray Powder Pattern: Graulay quarry, Rhineland-Palatinate, Germany.
 9.62 (100), 3.823 (64), 5.551 (50), 2.742 (38), 4.616 (37), 2.528 (37), 2.180 (35)

Chemistry:	(1)	(2)
CaO	27.15	26.93
Al ₂ O ₃	2.33	
SiO ₂	7.04	9.62
SO ₃	[12.91]	12.82
SO ₂	[6.40]	10.25
CO ₂	2.71	
N ₂ O ₅	0.42	
H ₂ O	39.22	40.38
Total	98.18	100.00
SO ₃ (meas.)	20.91	

(1) Graulay quarry, Rhineland-Palatinate, Germany; average of 8 electron microprobe analyses, complex anions confirmed by IR spectroscopy, SO₂ and SO₃ recalculated from SO₃(meas.) based on structural analysis, H₂O, CO₂, and N₂O₅ by gas chromatography and CHN analysis; corresponding to Ca₃(Si_{0.73}Al_{0.28})_{Σ=1.01}(OH)_{5.71}(SO₄)_{1.00}(SO₃)_{0.62}(CO₃)_{0.38}(NO₃)_{0.05}•10.63H₂O.

(2) Ca₃Si(OH)₆(SO₄)(SO₃)•11H₂O.

Polymorphism & Series: Forms a series with thaumasite.

Occurrence: In miarolitic cavities in alkaline basalt or also in xenoliths in volcanic glass.

Association: Diopside, nepheline, fluorapatite, magnetite, phillipsite-K, chabazite-Ca, gypsum, gismondine.

Distribution: From Graulay quarry near Hillesheim, western Eifel Mountains, Rhineland-Palatinate, Germany.

Name: Honors German mineral collector Klaus Hielscher (b. 1957) from Steinbach, Hessen, a specialist in the mineralogy of the Zeilberg basalt quarry in Franconia, Bavaria, Germany.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (#4093/1).

References: (1) Pekov, I.V., N.V. Chukanov, S.N. Britvin, Y.K. Kabalov, J. Göttlicher, V.O. Yapaskurt, A.E. Zadov, S.V. Krivovichev, W. Schüller, and B. Ternes (2012) The sulfite anion in ettringite-group minerals: a new mineral species hielscherite, Ca₃Si(OH)₆(SO₄)(SO₃)•11H₂O, and the thaumasite-hielscherite solid-solution series. *Mineral. Mag.*, 76(5), 1133-1152. (2) (2015) *Amer. Mineral.*, 100, 1324-1325 (abs. ref. 1).