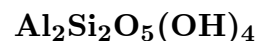


Kaolinite



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Crystal Data: Triclinic. *Point Group:* 1. Rarely as crystals, thin platy or stacked, to 2 mm. More commonly as microscopic pseudo-hexagonal plates and clusters of plates, aggregated into compact, claylike masses.

Physical Properties: *Cleavage:* Perfect on {001}. *Tenacity:* Flexible but inelastic. Hardness = 2–2.5 D(meas.) = 2.61–2.68 D(calc.) = 2.63

Optical Properties: Transparent to translucent as single crystals. *Color:* White to tan, may be variously colored by impurities. *Luster:* Pearly to dull earthy.

Optical Class: Biaxial (-). *Orientation:* $X \wedge c = -13^\circ$ to -10° ; $Y \wedge a = 1^\circ$ – 4° .

Dispersion: $r > v$, weak. $\alpha = 1.553$ – 1.565 $\beta = 1.559$ – 1.569 $\gamma = 1.560$ – 1.570

$2V(\text{meas.}) = 24^\circ$ – 50°

Cell Data: *Space Group:* $P1$. $a = 5.15$ $b = 8.95$ $c = 7.39$ $\alpha = 91.8^\circ$
 $\beta = 104.5^\circ$ – 105.0° $\gamma = 90^\circ$ $Z = [2]$

X-ray Powder Pattern: Scalby, Yorkshire, England (1A).

7.16 (vvs), 3.573 (vvs), 4.336 (vs), 2.491 (s), 2.289 (s), 2.558 (ms), 2.379 (ms)

Chemistry:

	(1)
SiO ₂	45.80
Al ₂ O ₃	39.55
Fe ₂ O ₃	0.57
FeO	0.18
MgO	0.14
CaO	0.41
K ₂ O	0.03
H ₂ O ⁺	13.92
H ₂ O ⁻	0.17
Total	100.77

(1) Mikawo mine, Niigata Prefecture, Japan; corresponds to $(\text{Al}_{2.00}\text{Fe}_{0.02}^{3+}\text{Mg}_{0.01}\text{Ca}_{0.02})_{\Sigma=2.05}\text{Si}_2\text{O}_5(\text{OH})_{3.99}$.

Polymorphism & Series: Dickite, halloysite, and nacrite are polymorphs.

Mineral Group: Kaolinite-serpentine group.

Occurrence: Replaces other aluminosilicate minerals during hydrothermal alteration and weathering. A common constituent of the clay-size fraction of sediments, where it may be formed by direct precipitation.

Association: Quartz, feldspar, muscovite.

Distribution: Pure material from many localities, including: at Kauling, Kiangsi Province, China. In numerous china-clay pits in Cornwall and Devon, England. At Limoges, Haute-Vienne, France. Near Dresden, Kemmlitz, and Zettlitz, Saxony, and elsewhere in Germany. Large deposits in the Donets Basin, Ukraine. In the USA, at Macon, Bibb Co., Georgia; at the Dixie Clay Company mine, and in the Lamar Pit, near Bath, Aikin Co., South Carolina; near Webster, Jackson Co., North Carolina; near Murfreesboro, Pike Co., and at Greenwood, Sebastian Co., Arkansas; from Mesa Alta, Rio Arriba Co., New Mexico. At Huberdeau, Quebec, and near Walton, Nova Scotia, Canada.

Name: From a corruption of the Chinese *Kauling*, *high ridge*, for a Chinese occurrence. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.

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