Lizardite $Mg_3Si_2O_5(OH)_4$

Crystal Data: Hexagonal, pseudo-orthorhombic. *Point Group:* $3m$ (1A); $6mm$ ($2H_1$). Crystals rare, to 2 mm, as trigonal plates to truncated trigonal pyramids. Commonly as extremely fine-grained scales and massive aggregates.

Physical Properties: *Cleavage:* Perfect on {0001}. *Tenacity:* Crystals are easily bent. Hardness = 2.5 D(meas.) = 2.55(3) D(calc.) = 2.57

Optical Properties: Translucent. *Color:* Green, light yellow to white; colorless to pale green in thin section. *Luster:* Waxy.
Optical Class: Uniaxial (–) to slightly biaxial (–). α = 1.538–1.554 β = 1.546–1.560 γ = 1.546–1.560 2V(meas.) = Small.

Cell Data: *Space Group:* $P31m$ (1A). $a = 5.325(5)$ $c = 7.259(7)$ Z = 2, or *Space Group:* $P6_3cm$ ($2H_1$). $a = 5.318(4)$ $c = 14.541(7)$ Z = [4]

X-ray Powder Pattern: Kennack Cove, England (1A).
7.4 (100), 2.505 (100), 4.6 (80), 3.67 (80), 2.156 (80), 1.538 (80), 1.505 (80)

Chemistry:

	(1)	(2)		(1)	(2)
SiO_2	44.29	41.80	FeO		1.81
TiO_2	0.03		MgO	40.43	40.69
Al_2O_3	2.18	2.79	CaO	0.03	
Fe_2O_3	0.50		H_2O^+	12.42	[12.90]
			Total	99.88	[99.99]

(1) Kennack Cove, England; corresponds to $(Mg_{2.74}Al_{0.12}Fe^{3+}_{0.02})_{\Sigma=2.88}Si_{2.00}O_{5.13}(OH)_{3.87}$.
(2) Coli, Italy; by electron microprobe, $2H_2O$ assumed; corresponds to $(Mg_{2.82}Al_{0.09}Fe_{0.07})_{\Sigma=2.98}(Si_{1.94}Al_{0.06})_{\Sigma=2.00}O_5(OH)_4$.

Polymorphism & Series: 1A, 6A, $2H_1$ polytypes; polymorphous with antigorite, clinochrysotile, orthochrysotile, and parachrysotile; forms a series with népouite.

Mineral Group: Kaolinite-serpentine group.

Occurrence: Typically a product of retrograde metamorphism, replacing olivine, orthopyroxene, or other minerals in ultramafic igneous rocks.

Association: Chrysotile, brucite, magnetite.

Distribution: Probably the most common serpentine mineral. A few prominent localities for well-studied material include: at Kennack Cove, The Lizard, Cornwall, England. On Unst, Shetland Islands, Scotland. From near Val Sissone, Lombardy, and Val Trebbia, Piacenza, Italy. In Japan, from Maruo Odori and Kodo, Yamaguchi Prefecture, and at Hamao, Fukuoka Prefecture. At Woodsreef, New South Wales, Australia. From the Jeffrey mine, Asbestos, Quebec, and the Cassiar mine, British Columbia, Canada. In the USA, in the Stillwater complex, Montana.

Name: For the type locality, the Lizard complex, Cornwall, England.

Type Material: The Natural History Museum, London, England, 1955,243; National Museum of Natural History, Washington, D.C., USA, 114569.

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