Kulkeite $\mathbf{Na_{0.35}Mg_8Al(AlSi_7)O_{20}(OH)_{10}}$

Crystal Data: Monoclinic. *Point Group:* n.d. As platy to subhedral crystals, to 2 mm, and in aggregates.

Physical Properties: *Cleavage:* Perfect on {001}. Hardness = ∼2 D(meas.) = n.d. D(calc.) = 2.70

Optical Properties: Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Pearly on the cleavage.
Optical Class: Biaxial (–). *Orientation:* $X = c$; $Y = a$; $Z = b$. *Dispersion:* $r < v$. $\alpha = 1.552$ $\beta = 1.5605$ $\gamma = 1.5610$ 2V(meas.) = 24(3)° 2V(calc.) = 27°

Cell Data: *Space Group:* n.d. $a = 5.319(1)$ $b = 9.195(2)$ $c = 23.897(10)$ $\beta = 97°1(2)'$ Z = 2

X-ray Powder Pattern: Derrag, Algeria.
7.90 (10), 11.9 (8), 3.38 (8), 4.74 (6), 2.55 (6), 2.96 (5), 2.46 (5)

Chemistry:

	(1)
SiO_2	40.53
Al_2O_3	12.64
MgO	33.19
CaO	0.06
Na_2O	1.20
K_2O	0.07
H_2O	[9.24]
Total	[96.93]

(1) Derrag, Algeria; by electron microprobe, H_2O from theoretical formula; corresponding to $(Na_{0.38}K_{0.01})_{\Sigma=0.39}Mg_{8.02}Al_{0.99}(Si_{6.57}Al_{1.43})_{\Sigma=8.00}O_{20}(OH)_{10}$.

Polymorphism & Series: A 1:1 regular interstratification of trioctahedral chlorite and talc.

Occurrence: In dolostone, metamorphosed below 400 °C, with evaporites.

Association: Talc, chlorite, phlogopite, tourmaline.

Distribution: From El Mourdur Hill, near Derrag, 35 km west of Ksar El Boukhari, Tell Atlas Mountains, Algeria.

Name: For Dr. Holger Kulke, geologist of Essen, Germany, who provided the original specimen.

Type Material: Ruhr University, Bochum, Germany; National Museum of Natural History, Washington, D.C., USA, 147361.

References: (1) Abraham, K., W. Schreyer, O. Medenbach, and W. Gebert (1980) Kulkeite, ein geordnetes 1:1 Mixed-Layer-Mineral zwischen Klinochlor und Talk. Fortschr. Mineral., Beiheft 1, 58, 4–5 (in German). (2) (1981) Amer. Mineral., 66, 218 (abs. ref. 1). (3) Schreyer, W., O. Medenbach, K. Abraham, W. Gebert, and W.F. Müller (1982) Kulkeite, a new metamorphic phyllosilicate mineral: ordered 1:1 chlorite/talc mixed layer. Contr. Mineral. Petrol., 80, 103–109.