Qandilite \((\text{Mg}^{2+})_2(\text{Ti}, \text{Fe}^{3+}, \text{Al})\text{O}_4\)

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Crystal Data: Cubic. Point Group: 4/m 3 2/m. As octahedral crystals and granular, to 2.3 mm.

Physical Properties: Cleavage: \{111\}, perfect. Tenacity: Brittle. Hardness = \(\sim7\) VHN = 960–1045, average 998 (100 g load). D(meas.) = 4.03–4.08 D(calc.) = 4.04 Strongly magnetic.


Cell Data: Space Group: \(Fd\bar{3}m\) (synthetic \(\text{Mg}_2\text{TiO}_4\)). \(a = 8.4376(5)\) \(Z = 8\)

X-ray Powder Pattern: Dupezech Mountain, Iraq.

2.533 (100), 1.486 (60), 1.617 (50), 2.101 (45), 2.971 (30), 1.0938 (30), 0.9704 (25)

Chemistry:

\[
\begin{array}{c|cc}
    & (1) & (2) \\
\hline
    \text{SiO}_2 & 0.02 &  \\
    \text{TiO}_2 & 26.41 & 27.34 \\
    \text{Al}_2\text{O}_3 & 4.83 & 3.33 \\
    \text{Fe}_2\text{O}_3 & 28.27 & 27.01 \\
    \text{Cr}_2\text{O}_3 & 0.13 &  \\
    \text{FeO} & 10.32 & 14.62 \\
    \text{MnO} & 0.76 & 1.89 \\
    \text{MgO} & 29.62 & 26.47 \\
\hline
    \text{Total} & 100.23 & 100.79 \\
\end{array}
\]

(1) Dupezech Mountain, Iraq; by electron microprobe, average of four grains, \(\text{Fe}^{2+}\) and \(\text{Fe}^{3+}\) by wet methods; corresponds to \((\text{Mg}_{1.32}\text{Fe}_{0.41}\text{Fe}^{3+}_{0.26}\text{Mn}_{0.02})\Sigma=2.01(\text{Ti}_{0.60}\text{Fe}^{3+}_{0.23}\text{Al}_{0.17})\Sigma=1.00\text{O}_4\).

(2) Konder massif, Russia; by electron microprobe.

Mineral Group: Spinel group.

Occurrence: In a forsterite skarn (Dupezech Mountain, Iraq); in a periclase-forsterite skarn (Kangerdlugssuaq, Greenland); in the contact zone of an alkaline ultramafic massif (Konder massif, Russia).

Association: Forsterite, spinel, perovskite, calcite (Dupezech Mountain, Iraq); geikielite, spinel, periclase, forsterite (Konder massif, Russia).

Distribution: On Dupezech Mountain, near Hero Town, Qala-Dizeh, Iraq. From near Kangerdlugssuaq, Greenland. In the Konder massif, Aldan Shield, Sakha, Russia.

Name: For the occurrence in rocks of the Qandil Group, Iraq.

Type Material: Strathclyde University, Glasgow; Royal Scottish Museum, Edinburgh, Scotland; National Science Museum, Tokyo, Japan; National School of Mines, Paris, France.

References:


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