

**Crystal Data:** Hexagonal. *Point Group:* 3m. Prismatic crystals display {10 $\bar{1}$  1}, {11 $\bar{2}$  0}, {10 $\bar{1}$  1} and {02 $\bar{2}$  1}, to 0.2 mm.

**Physical Properties:** *Parting:* Distinct on {0001}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 7.5 VHN = 1417 (1210-1530) (50 g load). D(meas.) = 3.32(2) D(calc.) = 3.213

**Optical Properties:** Transparent. *Color:* Dark green with a yellowish brown tint. *Streak:* Yellowish brownish green. *Luster:* Resinous. *Optical Class:* Uniaxial (-).  $\omega = 1.786(5)$   $\epsilon = 1.729(5)$  *Pleochroism:* Strong, *O* = dark brownish green; *E* = yellowish green.

**Cell Data:** *Space Group:* R3m.  $a = 16.1908(4)$   $c = 7.4143(2)$   $Z = 3$

**X-ray Powder Pattern:** Sludyanka, Lake Baikal, Russia. 2.61 (100), 6.53 (90), 3.05 (90), 2.07 (90), 4.03 (80), 3.57 (70), 1.95 (50)

Chemistry:	(1)		(1)
SiO <sub>2</sub>	33.05	Na <sub>2</sub> O	2.50
TiO <sub>2</sub>	0.41	K <sub>2</sub> O	0.32
B <sub>2</sub> O <sub>3</sub>	[9.59]	F	0.13
Al <sub>2</sub> O <sub>3</sub>	4.30	H <sub>2</sub> O	[2.60]
Cr <sub>2</sub> O <sub>3</sub>	1.48	$-\text{O} = \text{F}_2$	0.06
V <sub>2</sub> O <sub>3</sub>	38.56	Total	101.10
MgO	8.21		

(1) Sludyanka, Lake Baikal, Russia; average of 8 electron microprobe analyses supplemented by FTIR spectrometry, B<sub>2</sub>O<sub>3</sub> and H<sub>2</sub>O calculated from stoichiometry; corresponds to  $X(\text{Na}_{0.88}\text{K}_{0.07}\square_{0.05})^Y(\text{V}^{3+}_{2.46}\text{Mg}_{0.48}\text{Ti}_{0.06})^Z(\text{V}^{3+}_{3.14}\text{Mg}_{1.74}\text{Al}_{0.91}\text{Cr}^{3+}_{0.21})^T[(\text{Si}_{5.99}\text{Al}_{0.01})\text{O}_{18}]^B(\text{BO}_3)_3^V(\text{OH})_3^W[\text{O}_{0.78}(\text{OH})_{0.14}\text{F}_{0.08}]$ .

**Polymorphism & Series:** Complete solid-solution exists with vanadium-dravite, oxy-chromium-dravite, vanadio-oxy-chromium-dravite, and oxy-dravite.

**Mineral Group:** Tourmaline supergroup, alkali group, oxy-subgroup 3.

**Occurrence:** In Cr-V-bearing calcite-quartz-diopside metamorphic rocks (granulite facies).

**Association:** Quartz, calcite, Cr-V-bearing diopside, tremolite, di- and trioctahedral micas, Mg-Fe-V-Cr spinels, uvarovite-goldmanite, escolaitite-karelianite, kosmochlor-natalyite, V-bearing titanite and anatase, Cr-V-bearing dravite, pyrite, barite.

**Distribution:** From the Sludyanka complex, Southern Lake Baikal region, Russia.

**Name:** Formerly known as “vanadium-dravite”. As an oxy-dravite with dominant vanadium in the Y and Z sites and magnesium the dominant divalent cation in Z.

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow.

**References:** (1) Bosi, F., L.Z. Reznitskii, and E.V. Sklyarov (2013) Oxy-vanadium-dravite, NaV<sub>3</sub>(V<sub>4</sub>Mg<sub>2</sub>)(Si<sub>6</sub>O<sub>18</sub>)(BO<sub>3</sub>)<sub>3</sub>(OH)<sub>3</sub>O: Crystal structure and redefinition of the “vanadium-dravite” tourmaline. *Amer. Mineral.*, 98, 501-505. (2) Bosi, F., L. Reznitskii, U. Hålenius, and H. Skogby (2016) Crystal chemistry of Al-V-Cr oxy-tourmalines from Sludyanka complex, Lake Baikal, Russia. *Eur. J. Mineral.*, 29, 457-472. (3) Reznitsky, L.Z., E.V. Sklyarov, Z.V. Ushchapovskaya, N.V. Nartova, A.A. Kashaev, N.S. Karmanov, S.V. Kanakin, A.S. Smolin, and E.A. Nekrosova (2001) Vanadiumdravite, NaMg<sub>3</sub>V<sub>6</sub>[Si<sub>6</sub>O<sub>18</sub>][BO<sub>3</sub>]<sub>3</sub>(OH)<sub>4</sub>, a new mineral of the tourmaline group. *Zap. Vses. Mineral. Obshch.*, 130(2), 59-72 (in Russian). (4) (2002) *Amer. Mineral.*, 87(10), 1512 (abs. ref. 3).