## Dravertite $CuMg(SO_4)_2$

**Crystal Data**: Monoclinic. *Point Group*: 2/*m*. As crusts of coarse spherulites, to 1 mm, with a rough surface formed by crude crystals to 0.02 mm. *Twinning*: Polysynthetic twins, very thin twin lamellae form "belts" crossing some grains, observed under the microscope.

**Physical Properties**: *Cleavage*: One direction, imperfect. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = ~ 3.5 D(meas.) = n.d. D(calc.) = 3.508 Water soluble and hydroscopic.

**Optical Properties**: Transparent to translucent. *Color*: Colorless to light blue, with a greenish hue; light brown; colorless with slight bluish tint in plane polarized light. *Streak*: White.
*Luster*: Vitreous.
*Optical Class*: Biaxial (-). $\alpha = 1.624(3)$ $\beta = 1.661(3)$ $\gamma = 1.663(3)$ $2V$(meas.) = $35(10)^o$
$2V$(calc.) = $26^o$ *Dispersion*: Distinct, $r > v$.

**Cell Data**: *Space Group*: $P2_1/n$. $a = 4.8141(3)$ $b = 8.4443(5)$ $c = 6.7731(4)$ $\beta = 94.598(5)^o$ Z = 2

**X-ray Powder Pattern**: Second Scoria Cone, Tolbachik volcano, Kamchatka, Russia.
2.637 (100), 4.175 (68), 2.430 (68), 3.666 (64), 3.579 (63), 3.443 (59), 2.719 (41)

| **Chemistry**: | (1) | (2) |
|---|---|---|
| MgO | 11.00 | 14.39 |
| MnO | 0.16 | |
| CuO | 31.18 | 28.42 |
| ZnO | 2.62 | |
| $SO_3$ | 54.76 | 57.19 |
| Total | 99.72 | 100.00 |

(1) Second Scoria Cone, Tolbachik volcano, Kamchatka, Russia; average of 7 electron microprobe analyses supplemented by FTIR spectroscopy; corresponds to $Mg_{0.79}Mn_{0.01}Cu_{1.14}Zn_{0.09}S_{1.99}O_8$.
(2) $CuMg(SO_4)_2$.

**Occurrence**: Forms sublimates around active fumaroles.

**Association**: Dolerophanite, euchlorine, tenorite, hematite, langbeinite, steklite, fedotovite, wulffite, anhydrite, anglesite (Arsenatnaya fumarole); euchlorine, chalcocyanite, steklite, alumoklyuchevskite, piypite, parawulffite, cryptochalcite, dolerophanite, hematite, tenorite, vergasovaite, cupromolybdite, yaroshevskite, ziesite (Yadovitaya fumarole).

**Distribution**: From the Arsenatnaya and Yadovitaya fumaroles, Second Scoria Cone, Northern Breakthrough, Tolbachik volcano, Kamchatka, Far-Eastern Region, Russia.

**Name**: Honors the Russian mineralogist and geologist Petr Lyudovikovich Dravert (1879-1945) for his significant contribution to the mineralogy of Siberia.

**Type Material**: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (95001).

**References**: (1) Pekov, I.V., N.V. Zubkova, A.A. Agakhanov, V.O. Yapaskurt, N.V. Chukanov, D.I. Belakovskiy, E.G. Sidorov and D.Y. Pushcharovsky (2017) Dravertite, $CuMg(SO_4)_2$, a new mineral species from the Tolbachik volcano, Kamchatka, Russia. Eur. J. Mineral., 29(2), 323-330. (2) (2018) Amer. Mineral., 103, 659-660 (abs. ref. 1).