Rickturnerite $Pb_7O_4[Mg(OH)_4](OH)Cl_3$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As mats, to 16 mm, of flattened fibrous crystals.

Physical Properties: *Cleavage*: Indistinct. *Fracture*: Splintery. *Tenacity*: Brittle. Hardness = ~ 3 VHN = 140 (100 g load). D(meas.) = n.d. D(calc.) = 6.886

Optical Properties: Translucent. *Color*: Pale emerald green, gray in reflected light with abundant greenish gray internal reflections. *Streak*: White. *Luster*: Vitreous.
Optical Class: n.d. n = 1.38 [calculated]
R_1-R_2: (470) 14.9-15.7, (546) 13.8-14.4, (589) 13.6-14.2, (650) 13.4-14

Cell Data: *Space Group*: *Pnma*. a = 5.8034(5) b = 11.3574(9) c = 12.9393(16) Z = 8

X-ray Powder Pattern: Torr Works (Merehead) quarry, England.
6.474 (100), 3.233 (73), 2.867 (57), 5.636 (44), 3.112 (31), 2.635 (25), 4.287 (20)

Chemistry:

	(1)	(2)
PbO	87.70	90.31
MgO	1.79	2.33
CuO	0.14	
Cl	6.62	6.15
H_2O	[2.27]	2.60
$-O=Cl_2$	1.50	1.39
Total	97.02	100.00

(1) Torr Works (Merehead) quarry, England; electron microprobe analyses, H_2O calculated from structure analysis; corresponding to $Pb_{7.16}Mg_{0.81}Cu_{0.03}Cl_{3.40}H_{4.60}O_{8.60}\cdot 1.15H_2O$.
(2) $Pb_7O_4[Mg(OH)_4](OH)Cl_3$.

Occurrence: Part of an assemblage of lead oxychloride minerals that occur in cavities in manganese oxide pods in limestone.

Association: Mereheadite, cerussite, calcite, aragonite, mimetite, hydrocerussite, "plumbonacrite," manganite, pyrolusite, and an uncharacterized lead oxychloride.

Distribution: From the Torr Works (Merehead) quarry, near the village of Cranmore, England.

Name: Honors Rick Turner, geologist and mineral collector, who collected the first specimens.

Type Material: Natural History Museum, London, England (BM 2008,100).

References: (1) Rumsey, M.S., S.V. Krivovichev, O.I. Siidra, C.A. Kirk, C.J. Stanley, and J. Spratt (2012) Rickturnerite, $Pb_7O_4[Mg(OH)_4](OH)Cl_3$, a complex new lead oxychloride mineral. Mineral. Mag., 76(1), 59-73. (2) (2015) Amer. Mineral., 100, 661-662 (abs. ref. 1).