

**Crystal Data:** Hexagonal. *Point Group:*  $\bar{3} 2/m, 3m$ , or  $32$ . As thin, six-sided crystals, platy to tabular on (0001), showing  $\{01\bar{1}5\}$  and  $\{0001\}$ , to 2 mm; as cryptocrystalline crusts. *Twinning:* On  $\{0001\}$ .

**Physical Properties:** *Fracture:* Hackly. *Tenacity:* Fragile [sic]. Hardness = 2  
D(meas.) = 4.42 (synthetic). D(calc.) = 4.417

**Optical Properties:** Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Opalescent. *Optical Class:* Uniaxial (+).  $\omega = 2.06$   $\epsilon = \sim 2.11$   $2V(\text{meas.}) = \text{Small}$ , observed on strained plates.

**Cell Data:** *Space Group:*  $R\bar{3}m, R3m$ , or  $R32$ .  $a = 10.0175(3)$   $c = 44.014(2)$   $Z = 3$

**X-ray Powder Pattern:** Sharm Abhur Cove, Saudi Arabia.  
2.5313 (100), 2.8915 (70), 4.139 (50), 3.404 (50), 2.8175 (50), 3.271 (35), 3.244 (35)

Chemistry:	(1)	(2)
Sn	73.4	73.44
Cl	15.7	16.71
O	11.0	9.43
H	0.4	0.42
Total	100.5	100.00

(1) Sharm Abhur Cove, Saudi Arabia; Sn by wet chemical analysis, Cl by ion-specific electrode, O by neutron activation, H by CHN analyzer. (2)  $\text{Sn}_{21}\text{O}_6\text{Cl}_{16}(\text{OH})_{14}$ .

**Occurrence:** In blisterlike protuberances on the surface of a tin ingot recovered from a ship wrecked possibly 100 years ago (Sharm Abhur cove, Saudi Arabia).

**Association:** Romarchite, kutnohorite, aragonite.

**Distribution:** From the cargo of a ship wrecked in a Red Sea cove known as Sharm Abhur, about 30 km north of Jiddah, Saudi Arabia. From the cargo of a ship wrecked off Hidra, Norway. From a ship wrecked about 30 km north-northwest of St. Ives, Cornwall, England.

**Name:** For the Saudi Arabian locality at Sharm Abhur Cove.

**Type Material:** Royal Ontario Museum, Toronto, Canada; National Museum of Natural History, Washington, D.C., USA, 162403.

**References:** (1) Matzko, J.J., H.T. Evans, Jr., M.E. Mrose, and P. Aruscavage (1985) Abhurite, a new tin hydroxychloride mineral, and a comparative study with a synthetic basic tin chloride. *Can. Mineral.*, 23, 233–240. (2) (1989) *Amer. Mineral.*, 74, 500 (abs. ref. 1). (3) Von Schnering, H.G., R. Nesper, and H. Pelshenke (1981)  $\text{Sn}_{21}\text{Cl}_{16}(\text{OH})_{14}\text{O}_6$ , das sogenannte basische Zinn(II)-chlorid. *Zeits. Naturforsch.*, 36b, 1551–1560 (in German with English abs.). (4) Edwards, R., R.D. Gillard, and P.A. Williams (1992) The stabilities of secondary tin minerals: abhurite and its relationships to Sn(II) and Sn(IV) oxides and oxyhydroxides. *Mineral. Mag.*, 56, 221–226.