

No. 43A-15 Tl₂Cd₂(SO₄)₃, Thallium cadmium sulfate*(M* = 921.78)

1a	Dielectric anomalies and ferroelectricity were found by Brezina et al. in 1972.				72Bre
b	phase	IV	III	II	I
	state		F	F	P
	crystal system	orthorhombic	triclinic	monoclinic	cubic
	space group	P2 ₁ 2 ₁ 2 ₁ -D ₂ ⁴	P1-C ₁ ¹	P2 ₁ -C ₂ ²	P2 ₁ 3-T ⁴
	Θ [°C]	-175 -181	-146 -153	-143 -145	72Bre 75Ike
Transition temperatures: see Table 43A-2-001 in No. 43A-2.					
$\rho_X = 5.473 \cdot 10^3 \text{ kg m}^{-3}$.					
Color: transparent and colorless.					
2a	Crystal growth: evaporation method. Phase diagram of Tl ₂ SO ₄ -CdSO ₄ -H ₂ O system: Fig. 43A-15-001. Solubility: see Fig. 43A-14-001 in No. 43A-14.				72Bre
b	Crystal forms are similar to those of (NH ₄) ₂ Cd ₂ (SO ₄) ₃ : see 2b in No. 43A-13.				
3a	Unit cell parameter: $a = 10.381(2) \text{ \AA}$; see also Table 43A-2-002 in No. 43A-2.				75Ike
b	$Z = 4$.				
4	Thermal expansion: Fig. 43A-15-002.				
5a	Dielectric constant: Fig. 43A-15-003. Hydrostatic pressure effect on the dielectric constant: Fig. 43A-15-004. Phase diagram in regard to p : Fig. 43A-15-005. ($d\theta/dp$) _{$p=0$} : see Table 43A-8-012 in No. 43A-8.				
c	Spontaneous polarization: Fig. 43A-15-006.				
6a	Heat capacity: Fig. 43A-15-007; see also Fig. 43A-10-002 in No. 43A-10. Transition entropy [J mol ⁻¹ K ⁻¹]: $\Delta S_m(\text{IV-III}) = 5.37$, $\Delta S_m(\text{III-II}) = 1.71$, $\Delta S_m(\text{II-I}) = 2.01$.				75Fra
8a	Elastic compliances: Fig. 43A-15-008, Fig. 43A-15-009. Elastic constant determined by Brillouin scattering measurement [$\cdot 10^{10} \text{ N m}^{-2}$]: $c_{11} = 7.80$, $c_{12} = 3.06$, $c_{44} = 1.95$.				75Sai
9a	Refractive index: see Table 43A-2-006, Table 43A-2-007 in No. 43A-2 and Fig. 43A-13-016 in No. 43A-13. Optical absorption: see Fig. 43A-13-018 in No. 43A-13 and Fig. 43A-14-011 in No. 43A-14.				
b	Electrooptic constant: Fig. 43A-15-010; see also Table 43A-2-006 in No. 43A-2.				
d	Optical rotatory power: see Fig. 43A-14-013 in No. 43A-14 and Fig. 43A-2-005 in No. 43A-2.				

43 Langbeinite ($\text{K}_2\text{Mg}_2(\text{SO}_4)_3$) family

10a	Raman scattering: Table 43A-15-001; Fig. 43A-15-011, Fig. 43A-15-012; see also Table 43A-13-009, Table 43A-13-010 in No. 43A-13.	
b	Brillouin scattering: see 8a.	
13b	ESR: see Table 43A-13-014 in No. 43A-13. ESR of Mn^{2+} : Fig. 43A-15-013.	
15a	Domain structure was observed in phases II, III and IV by polarized light.	72Bre