

**substance:**  $\text{TiS}_{3-x}$   
**property:** crystal structure, physical properties

$\text{TiS}_{3-x}$  ( $0 \leq x \leq ?$ )

(S: structure (space group), CG: crystal growth, C: colour).

(The references in the last column refer to all data of this document)

**lattice parameters**

$a$	4.955 Å	S: $\text{ZrSe}_3$ -type, $C_{2h}^2 - P2_1/m$	61G,
$b$	3.401 Å	CG: sublimed from polycrystalline	63H,
$c$	S.775 Å	mass with excess sulfur at 610°C	75F
$\beta$	97.32°	C: graphite	

**resistivity**

$\rho_b$	4.0 Ω cm	n-type, synthetic single crystal
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**Seebeck coefficient**

$S_b$	− 500 μV K <sup>−1</sup>	n-type, synthetic single crystal
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**energy gap**

$E_g$	0.9 eV	n-type, synthetic single crystal	optical gap
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**Figures to this document:**

**phase diagram:** Fig. 1

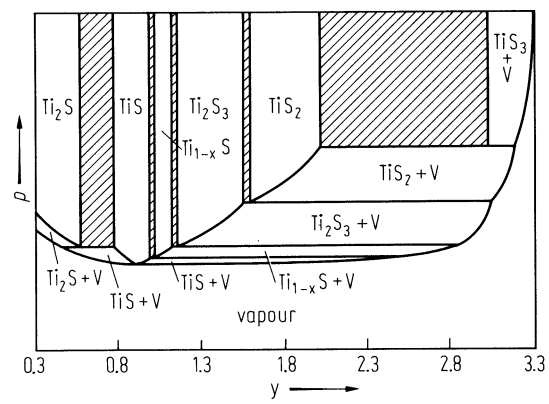
**electrical conductivity:** Fig. 2

## References:

- 61G Grimmeiss, H. G., Rabenau, A., Hahn, H., Ness, P.: Z. Elektrochem. 65 (1961) 776.
- 63H Haraldsen, H., Kjekshus, A., Rost, E., Steffensen, A.: Acta Chem. Scand. 17 (1963) 1283.
- 67G Gilles, P. W.: Applications of fundamental Thermodynamics to Metallurgical processes, Fitterer, G. R. (ed.), New York: Gordon and Breach, Science Publishers Inc. 1967, p. 281.
- 75F Furuseth, S., Brattas, L., Kjekshus, A.: Acta Chem. Scand. 29A (1975) 623.

**Fig. 1.**

Ti – S. Schematic pressure – composition diagram of the Ti – S system [67G]. y: atomic ratio S/Ti.



**Fig. 2.**

$\text{TiS}_3$ . Electrical conductivity vs. reciprocal temperature. The designated temperatures for each curve indicate the sublimation and condensation temperatures during crystal growth [61G].  $\sigma$  in  $\Omega^{-1} \text{ cm}^{-1}$ ,  $\sigma \parallel b$ .

