

## Te-V (Tellurium-Vanadium)

### Phase diagram

Mostly from results reported by Terzieff et al. [86Ter1] and Montigne [68Mon1], Smith [89Smi1] has constructed an assessed partial phase diagram. This diagram is limited especially to higher temperature due to experimental difficulties. It has been taken as a source of information to construct Fig. 1.

The more complicated phase equilibria in the range between 32 at% V and 48 at% V are given in an enlarged version in Fig. 2.

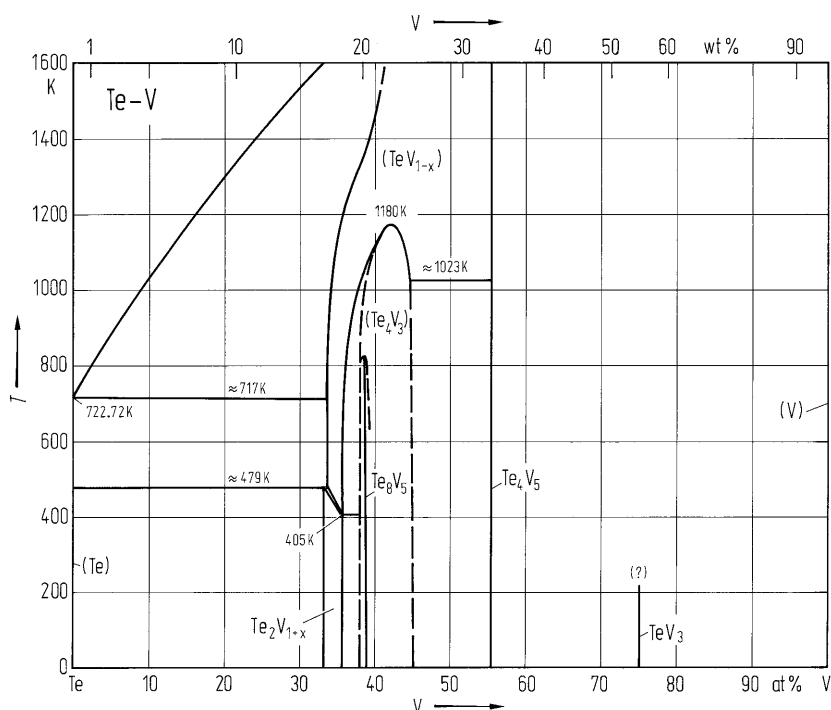
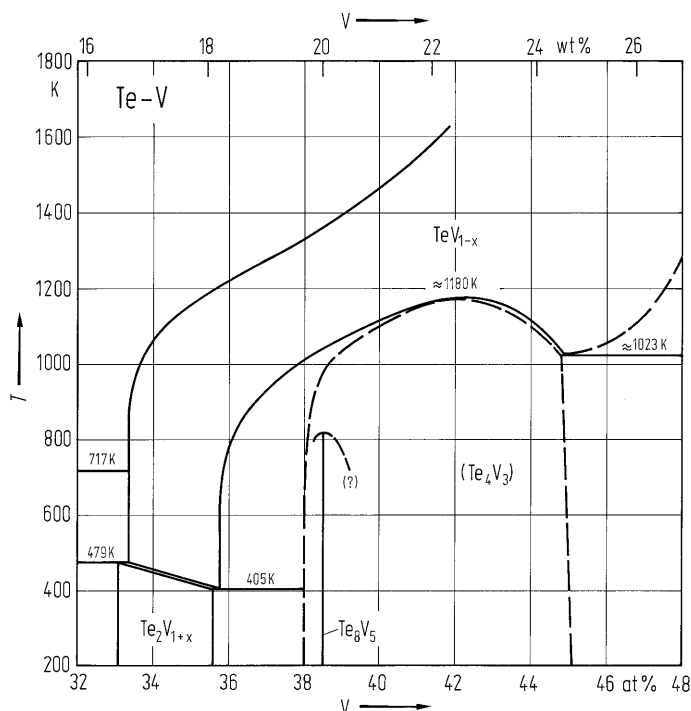


Fig. 1. Te-V. Phase diagram.



**Fig. 2. Te-V.** Partial phase diagram (32...48 at% V).

## Crystal structure

Crystallographic data of intermediate phases are listed in [Table 1](#).

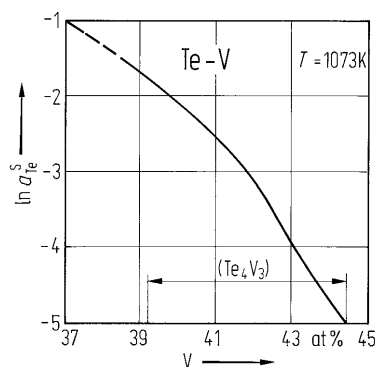
**Table 1. Te-V.** Crystal structure and lattice parameters of intermediate phases.

Phase	Structure	Type	$a$ [nm]	$b$ [nm]	$c$ [nm]	Ref.
$\text{Te}_2\text{V}_{1+x}$	mon		1.8984	0.35947 $\beta = 134.62^\circ$	0.9069	<a href="#">84Bro1</a>
$\text{TeV}_{1-x}$	hex	$\text{CdI}_2$	0.3638		0.6582	<a href="#">84Bro1</a>
$\text{Te}_4\text{V}_3$	mon	$\text{Cr}_3\text{S}_4$	0.6543	0.3680 $\beta = 90.82^\circ$	1.2636	<a href="#">86Ter1</a>
$\text{Te}_8\text{V}_5$	mon		1.2874	0.7580 $\beta = 90.82^\circ$	1.263	<a href="#">68Bru1</a>
$\text{Te}_4\text{V}_5$	mon		1.348	0.3913 $\beta = 93.58^\circ$	1.382	<a href="#">58Gro1</a>

## Thermodynamics

Thermodynamic activities of tellurium within the  $\text{Te}_4\text{V}_3$  phase have been reported by Krachler et al. [[92Kra1](#)]. The natural logarithm of the  $a_{\text{Te}}^S$  values are plotted in [Fig. 3](#) as a function of concentration Te

for 1073 K.



**Fig. 3. Te-V.** Thermodynamic activity for Te in  $(\text{Te}_4\text{V}_3)$  solid solution at 1073 K.

## References

- |        |   |
|--------|---|
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| 68Bru1 | Brunie, S., Chevreton, M.: Bull. Soc. Fr. Mineral. Cristallogr. <b>91</b> (1968) 422                            |
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| 84Bro1 | Bronsema, K.D., Bus, G.W., Wiegers, G.A.: J. Solid State Chem. <b>53</b> (1984) 415                             |
| 86Ter1 | Terzieff, P., Ipser, H., Wachtel, E.: J. Less-Common Met. <b>119</b> (1986) 1                                   |
| 89Smi1 | Smith, J.F., in: "Phase Diagrams of Binary Vanadium Alloys", J.F. Smith (ed.), ASM, Materials Park, Ohio (1989) |
| 92Kra1 | Krachler, R., Ipser, H.: J. Alloys Compounds <b>184</b> (1992) 95   |