



Database name: CCT Cemented Carbides Database
Database acronym: CCC1 **Database version:** 1.0
Database owner: CCT
Database segment: Cemented Carbides

Brief description

CCC1 offers a high-accuracy thermodynamic description of systems relevant to production of cemented carbides. It has been developed within CCT (Centre for Computational Thermodynamics), involving a university (KTH – Royal Institute of Technology, Stockholm), a research institute (Swerea KIMAB), and several Swedish industrial partners.

Applications

Cemented carbides (hard materials).

Included Elements

C Co Nb Ta Ti W

Included Phases

BCC_A2	CO7NB2	KSI_CARBI	M3C2	MU_PHASE
CEMENTITE	FCC_A1	LAVES	M6C	R_PHASE
CO3NB	GAS:G	LIQUID:L	M7C3	TI2CO
CO3TA	GRAPHITE	M12C	MC_ETA	TI2N
CO3W	HCP_A3	M23C6	MC_SHP	MU_PHASE
BCC_A2	CO7NB2	KSI_CARBI	M3C2	R_PHASE
CEMENTITE	FCC_A1	LAVES	M6C	TI2CO
CO3NB	GAS:G	LIQUID:L	M7C3	TI2N
CO3TA	GRAPHITE	M12C	MC_ETA	
CO3W	HCP_A3	M23C6	MC_SHP	
BCC_A2	CO7NB2	KSI_CARBI	M3C2	

Assessed Systems

All possible binary and ternary systems have been evaluated, and information from higher order systems has been taken into account.

For all phases a description of the molar volumes and thermal expansion is included, and thus the volume fractions of phases, densities, etc. for complex alloys can be calculated. The variation of the volumes with composition is described too.

Limits

Combinations of several critically-assessed systems can calculate and extrapolate higher-order multicomponent systems. Such extrapolations require experience and understanding and the producer or vendor should be contacted if problems occur. Critical calculations must always be verified by equilibrium experimental data; it is the user's responsibility to verify the calculations but Thermo-Calc Software is interested to know about any significant deviations in order to improve any future release.

Scientific Models & References

See the Thermo-Calc Software reference list available at:

http://www.thermocalc.com/DOWNLOAD_AREA/References.html