

TCCU2: TCS Cu-based Alloys Database

<i>Database name:</i>	TCS Cu-based Alloys Database	<i>Database acronym:</i>	TCCU
<i>Database owner:</i>	Thermo-Calc Software AB	<i>Database version:</i>	2.0

Brief Description

TCCU contains most of the important Cu-based alloy phases within a 29-element framework. It can be used with Thermo-Calc and the add-on Diffusion Module (DICTRA) and/or Precipitation Module (TC-PRISMA) for a wide range of compositions from pure Cu to complex commercial copper alloys.

Included Elements (29)

Ag Al Au As B Be Bi C Ca Cd Co Cr Cu Fe Mg
Mn Mo Nb Ni O P Pb Pt Se Si Sn Ti Zn Zr

Included Phases

TCCU contains 234 different solution phases and intermetallic compounds. The extended information sheet has a complete list of the phases and models and constituents. Note that compounds having the same crystal structure may have been merged into one phase. A selection of phases is shown below:

Liquid	FCC_A1	FCC_L12	BCC_A2	BCC_B2	HCP_A3
HCP_ZN	RHOMBO_A7	GAMMA_D82	GAMMA_D83	GAMMA_H	SIGMA
CU15SI4_EPSILON	CU33SI7_DELTA	CUSI_ETA	CU56SI11_GAMMA	FE5SN3_D82	NIBE7
CU3SN	CUSN_GAMMA	CU10SN3	CU6SN5_LT	CU41SN11	CU6SN5_HT
ALCU_ETA	ALCU_EPS	ALCU_ZETA	AL2CU_C16	ALCU_DEL	ALCU_PRIME
CUZR2_C11B	CO2SI_C23	AG3SN_L60	CUMG2	CU51ZR14	BE2CU
NI3SN_D019	NI2SI_HT	ZRM5_C15B	NI5SI2	MG2SI_C1	MG2NI
CU16MG6SI7	CU4MNSN	CU3MG2SI	CU5MN4SI	CUMNZN	CU2TIZR
CU3SE2	CUSE2	CU7AS3	CDCU2	CD3CU4	AG5ZN8
AL5FE2	AL5FE4	AL13FE4	CU4TI3	CU4TI1	CUTI_B11
CU3TI2	MN11SI19	MN6SI	NI11ZR9	PSI	SN3ZR5
CU3P	AL11CU5MN3	CO2SI_HT	FESI2_L	COZN_HT	ALCU3MN2

Assessed Systems

123 binary systems and 48 ternary have been assessed. These binaries and ternaries can be calculated in Thermo-Calc with the BINARY and TERNARY Modules, respectively.

Limits

As in the spirit of the CALPHAD method, predictions can be made for multicomponent systems by extrapolation into multicomponent space of data critically evaluated and assessed based on binary, ternary and in some cases higher order systems. However, critical calculations must always be verified by equilibrium experimental data; it is the user's responsibility to verify the calculations but Thermo-Calc Software AB is interested to know about any significant deviations in order to improve any future release.