MOBCU2: TCS Cu Alloys Mobility Database

Database name:	TCS Cu Alloys Mobility Database	*Database acronym:*	MOBCU
Database owner:	Thermo-Calc Software AB	*Database version:*	2.0

MOBCU2 is a kinetic database containing mobility data for Cu-based alloys. It is suitable for simulation of diffusion controlled phenomena using the add-on Diffusion Module (DICTRA) and/or Precipitation Module (TC-PRISMA). It can also be used with any Thermo-Calc programming interface (e.g. TQ-Interface or TC-API) in your own application programming needs. MOBCU is intended for use in combination with the TCCU thermodynamic database.

Applications

Together with the Diffusion Module (DICTRA) and a thermodynamic database for Cu-alloys (e.g. TCCU) use the MOBCU2 database to study diffusion-controlled phenomena in copper alloys, e.g. microsegregation during solidification, homogenisation kinetics, growth/dissolution kinetics of precipitates, interdiffusion, and so forth. You can also use it with the Precipitation Module (TC-PRISMA) to simulate concurrent nucleation, growth, and coarsening of precipitates in Cu-based alloys.

Included Elements (29)

Ag	Al	As	Au	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

FCC_A1 LIQUID

The above phases have diffusion data included in the database. You can include other phases in a diffusion simulation. However, these phases are treated as so-called diffusion *NONE*, i.e. there is no diffusion considered in these other phases. Any phase not listed above is automatically entered as diffusion *NONE* in the DICTRA module in Thermo-Calc, as long as a thermodynamic description for the phases is retrieved prior to reading data from the mobility database.

Assessed Systems

FCC_A1

The database contains assessed impurity diffusion data in Cu for all 26 alloying elements. Complete and critical assessments for FCC_A1 in 37 binary, 26 ternary, and 1 quaternary systems have also been included.

LIQUID

Data for diffusion in liquid Cu alloys have also been assessed or estimated for all elements in the database. Complete and critical assessments of 12 binary systems for liquid phase have been included.

Limits

The database is applicable for most commercial Cu-based alloys, care should be taken with alloys including high amounts of alloying elements. 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 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 to improve future releases.