MOBCU3: TCS Cu-based Alloys Mobility Database

MOBCU3 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. MOBCU3 is intended for use in combination with the TCCU3 thermodynamic database.

Database name:	**TCS Cu-based Alloys Mobility Database**
Database acronym:	**MOBCU**
Database owner:	**Thermo-Calc Software AB**
Database version:	**3.0**

Applications

Together with the Diffusion Module (DICTRA) and a thermodynamic database for Cu-alloys (e.g. TCCU) use the MOBCU3 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 (30)

Ag	Al	As	Au	B	Be	Bi	C	Ca	Cd
Co	Cr	Cu	Fe	Ge	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 other 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 Console Mode in the DICTRA module or in Graphical Mode with the Diffusion Calculator), 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 29 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 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.

Database Revision History

If you are interested in the revision history for this or other databases, the information is available in the online help (from Thermo-Calc go to **Help>Online Help**) or in the release notes on our website. For the TCFE (TCS Steel and Fe-alloys) database there is a dedicated page with the history of its development.