Database name:	TCS Ti-alloys Mobility Database	Database acronym:	MOBTi1
Database owner:	Thermo-Calc Software AB	Database version:	1.0
Database segment:	Titanium alloys		

Brief Description

MOBTi1 is a kinetic database containing mobility data for Ti-based alloys present in a format suitable for simulation of diffusion controlled phenomena using the DICTRA simulation software, and/or for use together with any Thermo-Calc programming interface.

MOBTi1 is primarily intended for use in combination with the TTTI thermodynamic database, but is also compatible for use in combination with the SSOL thermodynamic databases.

Applications

Used together with the DICTRA software and a thermodynamic database for Ti-alloys (e.g. TTTI) the MOBTi1 database can be used in order to study several different phenomena of interest to titanium alloys, such as solidification, growth/dissolution kinetics of alpha and minor precipitates, etc.

Included Elements (9)

Al Cr Mo Nb Sn Ta Ti V Zr

Included Phases

BCC_A2 HCP_A3 LIQUID

Please note that apart from above phases for which diffusion data is indeed included in the database, then also other phases may be included in a DICTRA simulation. However, these other phases will be treated as so-called diffusion “NONE”, i.e. there will be no diffusion considered in such phases. Phases which are not listed above will automatically be entered as diffusion “NONE” in DICTRA, provided a thermodynamic description for such phases has been retrieved prior to reading data from the mobility database.

Assessed Systems

BCC_A2:

The database contains assessed impurity diffusion data in Ti for all included elements. It also includes complete and critical assessments for BCC_A2 in the following binary and ternary systems.

Al-Ti Al-V Cr-Ti Cr-V Mo-Ti Nb-Ti Sn-Ti Ta-Ti Ti-V Ti-Zr Ti-Al-V

HCP_A3:

The database contains assessed impurity diffusion data in Ti for all included elements. It also includes complete and critical assessments for HCP_A3 in the following binary systems.

Al-Ti Al-V Ti-V

LIQUID:

Due to lack of consistent data we estimate that most of the elements diffuse like Ti.

Limits

The database is applicable for most commercial Ti-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 in order to improve any future release.

Scientific Models & References

See the Thermo-Calc Software reference list and reference library at: http://www.thermocalc.com/resources/

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