



Database name: TCS Materials Processing Database
Database acronym: TCMP2 **Database version:** 2.5
Database owner: Thermo-Calc Software AB
Database segment: Metals Processing

Brief description

TCMP2 is a database for liquid slag, metallic liquid, various solid phases and gaseous species.

Applications

Materials processing and environmental controls in steel/alloy production and metallurgical engineering, environment-friendly recycling/re-melting/re-processing treatments of industrial, chemical and nuclear wastes, as well as sintering, incineration and combustion processes.

Included Elements

Ag Al Ar B Bi C Ca Cd Cl Co Cr Cu F Fe H K Mg
Mn Mo N Na Nb Ni O P Pb S Sb Si Sn Ti U V W
Zn

Included Phases

Many types of multicomponent stoichiometric and non-ideal solution phases are available in the database, such as: melt (metallic/non-metallic liquid mixture); slag (oxide/silicate/sulfide/ phosphate/fluoride... liquid mixture); gas (gaseous mixture); metallic/non-metallic solid solutions (e.g., FCC, BCC, HCP, DIAMOND, BCT, TETRAGONAL, RHOMBOHEDRAL, CHI, CEMENTITE, M23C6, M3C2, M6C, M7C3, KSI_CARBIDE, MONI_DELTA, T13M, M3SI, M5SI, LAVES, MU and SIGMA, and other carbides, nitrides, silicides, phosphides and borides); and many stoichiometric solids and solids solutions (e.g., metals, oxides, hydroxides, silicates, sulfides, sulfates, nitrates, nitrites, phosphates, phosphites, carbonates, borates, halides, and other inter-metallic/non-metallic compounds). Total amount of different phases is 734.

Assessed Systems

All phases have been critically assessed and treated by some appropriate thermodynamic models (e.g. the Sublattice Model for solid solutions and liquid mixture phases, the Kapoor-Frohberg-Gaye Cell Model for slag phase, the Ideal Gas Model for gas mixture phase, the Inden Model for magnetic contributions, etc.), which are applicable over a wide temperature-pressure-composition range.

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