



Database name:	TCS Nuclear Fuels Database	Database version:	2.1
Database acronym:	TCNF2		
Database owner:	Thermo-Calc Software AB		
Database segment:	Nuclear Fuel Cells		

Brief description

Database for nuclear fuel cells.

Applications

Research and engineering of nuclear fuel cells.

Included Elements

Am Np Pu U Zr C N O H He

Included Phases

104 possible phases have been considered in this database.

Assessed Systems

TCNF2 contains thermodynamic data for the Am-Np-Pu-U-Zr-C-N-O-H-He system. Included data are available for the following phase types:

- Gaseous Mixture: Am-Np-Pu-U-Zr-C-N-O-H-He-/-
- Liquid Solutions/Compounds: Am-Np-Pu-U-Zr-C-N-O-H (incl. metallic-/carbide-/nitride-/oxide-/hydride-liquids)
- Alloy Solutions/Compounds: Am-Np-Pu-U-Zr-C-N-O
- Oxide Solutions/Compounds: Am-Np-Pu-U-Zr-O
- Hydride Solutions/Compounds: Am-Np-Pu-U-Zr-H
- Carbide Solutions/Compounds: Am-Np-Pu-U-Zr-C
- Nitride Solutions/Compounds: Am-Np-Pu-U-Zr-N
- Other Inorganic/Organic Liquid/Solid Compounds: C-N-O-H-(Np-U)

Validation

Appropriate Calculation/Simulation Types (if TCNF2 is used alone):

- * Phase diagrams and property diagrams of Am-Np-Pu-U-Zr alloys.
- * Simulating heterogeneous interactions among Am-Np-Pu-U-Zr alloys, Am-Np-Pu-U-Zr-C-N-O-H-He (neutral or charged) gaseous mixture, and Am-Np-Pu-U-Zr hydrides/oxides/carbides/nitrides, as well as some inorganic or organic substances.

When the TCNF2 database is used in any combination with other suitable databases (such as SSOL, SSUB, TCMP2, TCFE, TCNI, TTNI/TI/AL/MG, NUMT, NUOX, TCAQ, AQS, SALT, etc.), the possible calculation/simulation types can be tremendously expanded.

Limits

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