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**Database name:** TCS Ni-based Superalloys Database  
**Database acronym:** TCNI1  
**Database owner:** Thermo-Calc Software AB  
**Database segment:** Nickel Based Superalloys

**Database version:** 1.1

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**Brief description**

TCNI1 contains all the important Ni-based superalloy phases within a 7-element framework.

**Applications**

Ni-based superalloy design and engineering.

**Included Elements**

Al Co Cr Ni Re Ti W

**Included Phases**

AL11CR2	AL3NI2	AL8CR5_H	BCC_B2	LIQUID:L
AL11RE4	AL3NI5	AL8CR5_L	C14_LAVES	MTI2
AL11TI5	AL3TI_DO22	AL9CO2	C15_LAVES	MU_AL16NI6TI7
AL12RE	AL4CR	AL9CR4_H	C36_LAVES	MU_PHASE
AL12W	AL4RE	AL9CR4_L	CHI_A12	NI3TI_DO24
AL13CO4	AL4W	ALCR2	CO3W	NI4W
AL13CR2	AL5CO2	ALRE	FCC_A1	NIW
AL2TI	AL5W	ALRE2	FCC_L12	NIW2
AL2W	AL6RE	ALTI_L10	GAS:G	SIGMA
AL3CO	AL77W23	ALTI3_DO19	H_L21	
AL3NI1	AL7W3	BCC_A2	HCP_A3	

**Assessed Systems**

All binary systems constituting in this database have been assessed and can be calculated with the BINARY Module in the Thermo-Calc software. The assessed ternary systems included in the database are the following:

Al-Co-Ni	Al-Cr-Ni	Al-Ni-Ti	Al-Ni-W	Co-Ni-W
Cr-Ni-Re	Cr-Ni-Ti	Cr-Ni-W	Ni-Re-Ti	Ni-Re-W
Ni-Ti-W	Al-Cr-Ti	Al-Ti-W		

**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/Library.htm>