

## GCE2: TCS Geochemical/Environmental Database

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Database name (acronym):	<b>TCS Geochemical/Environmental Database (GCE)</b>
Database owner:	<b>Thermo-Calc Software AB</b>
Database version:	<b>2.4</b>

GCE2 is a database containing about 600 minerals. It is used in applications such as geochemistry, geophysics, hydro-metallurgy, aqueous chemistry and environmental chemistry.

### Included Elements (46)

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Ag	Al	Ar	As	Au	B	Ba	Be	Br	C
Ca	Cd	Cl	Co	Cr	Cs	Cu	F	Fe	Ga
Gd	H	Hg	I	K	Li	Mg	Mn	Mo	N
Na	Ni	O	P	Pb	Rb	S	Se	Si	Sn
Sr	Ti	U	V	W	Zn				

### Included Phases

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GCE2 contains critically assessed temperature-, pressure- and composition-dependent data for minerals (silicates, oxides, hydroxides, halides, carbonates, sulfides, sulfates, nitrates, phosphates, etc.). The Birch-Murnaghan model for the pressure dependence of EOS is used. The applicable temperatures range from 298.15 K to about 6000 K and pressures from 1 bar to 1000 kbar (100 GPa). The compounds are treated as either stoichiometric or solution phases. A metallic liquid solution phase is included, but currently there is no data for melt mixture phases with e.g., oxide/silicate/carbonate/sulfide/sulphate/... species (of neutral or charged forms).

▶ [GCE2 List of Phases](#)

GCE2 is compatible with almost all other thermodynamic databases available from Thermo-Calc. Especially, when combined with the AQS database, GCE can be applied to investigate complex heterogeneous interactions among minerals, aqueous solutions and sub-critical H<sub>2</sub>O over a wide temperature - pressure - composition range.

### Assessed Systems

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All phases have been critically assessed and treated by appropriate thermodynamic models.

## Limits

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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.

## GCE2 List of Phases

Phase Models		
ACANTHITE	:AG2S:	
ACMITE	:NAFESI2O6:	
ADULARIA	:KALSIO8:	
AKERMANITE	:CA2MGSIO7:	
AL_SMECTITE	:AL_SMECTITE:	
AL2S3O12	:AL2S3O12:	
ALABANDITE	:MNS:	
ALBITE	:NAALSIO8:	
ALBITE_HIGH	:NAALSIO8:	
ALMANDINE	:FE3AL2SIO12:	
ALUNITE	:KALS2O8:	
AMESITE	:MG4ALAL2ALSIO10O8H8:	
ANALCIME	:NAALSIO6_H2O:	
ANATASE	:TIO2:	
ANDALUSITE	:AL2SIO5:	
ANDRADITE	:CA3FE2SIO12:	
ANGLESITE	:PBSO4:	
ANHYDRITE	:CASO4:	
ANKERITE	:CAFECO3:	
ANNITE	:KFE3ALSIO10O2H2:	
ANORTHITE	:CAAL2SIO8:	

<i>Phase Models</i>		
ANTHOPHYLLITE	:MG7SI8O22O2H2:	
ANTIGORITE	:MG48SI34O85O62H62:	
ANTLERITE	:CU3SO4O6H6:	
AR_GAS	:AR:	
ARAGONITE	:CACO3:	
ARSENOPYRITE	:FESAS:	
AZURITE	:CU3O2H2C2O6:	
BA2U2O7	:BA2U2O7:	
BA3UO6	:BA3UO6:	
BARITE	:BASO4:	
BAU2O7	:BAU2O7:	
BAUO4	:BAUO4:	
BAYERITE	:ALO3H3:	
BCC_A2	:AG AL AS AU B BA BE CA CO CR CS CU FE GA GD K LI MG MN MO NA NI O P PB RB S SI SN SR TI U V W ZN:B C N VA:	2 SUBL, SITES 1.00: 3.00:
BCT_A5	:AG AL CD GA NI PB SN TI ZN:	
BERNDTITE	:SNS2:	
BETA_FAYALITE	:FE2SIO4:	
BETA_FORSTERITE	:MG2SIO4:	
BETA_QUARTZ	:SIO2:	
BETA_RHOMBO_B	:B:	
BIXBYITE	:MN2O3:	

<i>Phase Models</i>		
BOEHMITE	:ALOOH:	
BORNITE	:CU5FES4:	
BROCHANTITE	:CU4SO4O6H6:	
BRUCITE	:MGO2H2:	
BUNSENITE	:NIO:	
C1O1_GAS	:C1O1:	
C1O1S1_GAS	:C1O1S1:	
C1O2_GAS	:C1O2:	
CA_MONTMORILLONITE	:CA.165AL2.33SI3.67O12H2:	
CA_TSCHERMAK	:CAAL2SIO6:	
CALCITE	:CACO3:	
CASO4_H1O_5	:CASO4_HO.5:	
CASSITERITE	:SNO2:	
CATTIERITE	:COS2:	
CAUO4	:CAUO4:	
CBCC_A12	:AL CO CR FE MG MN NI SI SN TI V ZN:C N VA:	2 SUBL, SITES 1.00: 1.00:
CELADONITE	:KMGALSIO4O10O2H2:	
CELESTITE	:SRSO4:	
CEMENTITE	:CO CR FE MN MO NI V W:C N:	2 SUBL, SITES 3.00: 1.00:
CERUSSITE	:PBCO3:	
CH4_GAS	:CH4:	
CHALCANTHITE	:CUSO4_H10O5:	

<i>Phase Models</i>		
CHALCEDONY	:SIO2:	
CHALCOCITE	:CU2S:	
CHALCOPYRITE	:CUFES2:	
CHI_A12	:CR FE:CR MO W:CR FE MO W:	3 SUBL, SITES 24.00: 10.00: 24.00:
CHLORAPATITE	:CA5P3O12CL:	
CHLORARGYRITE	:AGCL:	
CHLORITE_MIX1	:CHLORITE_MIX1:	
CHLORITE_MIX2	:CHLORITE_MIX2:	
CHRYSOCHOLLA	:CUSIO3_H4O2:	
CHRYSOTILE	:MG3SI2O5O4H4:	
CINNABAR	:HGS:	
CLINOCHLORE	:MG4MGAL2SISI2O10O8H8:	
CLINODIOPSIDE	:CAMGSI2O6:	
CLINOENSTATITE	:MG2SI2O6:	
CLINOFERROSILITE	:FE2SI2O6:	
CLINOHEDENBERGITE	:CAFESI2O6:	
CLINOZOISITE	:CA2ALAL2SI3O12OH:	
CLINOZOISITE_LOW	:CA2ALAL2SI3O12OH:	
CO_PENTLANDITE	:CO9S8:	
CO3O4	:CO3O4:	
COESITE	:SIO2:	

<i>Phase Models</i>		
COFFINITE	:USIO4:	
COO	:COO:	
COO2H2	:COO2H2:	
COO3H3	:COO3H3:	
COPPER	:CU:	
CORDIERITE	:MG2AL4SI5O18:	
CORUNDUM	:AL2O3:	
COSO4	:COSO4:	
COVELLITE	:CUS:	
CRISTOBALITE	:SIO2:	
CS2U2O7	:CS2U2O7:	
CS2U4O12	:CS2U4O12:	
CS2UO4	:CS2UO4:	
CUB_A13	:AG AL CO CR FE MG MN NI SI SN TI V ZN:C N VA:	2 SUBL, SITES 1.00: 1.00:
CUB_A15	:MO TI:AL:	2 SUBL, SITES 3.00: 1.00:
CUCO3	:CUCO3:	
CUMMINGTONITE	:MG7SI8O22O2H2:	
CUO2H2	:CUO2H2:	
CUPRITE	:CU2O:	
CUSO4	:CUSO4:	
CUSO4_CUO	:CUSO4_CUO:	
CUSO4_H2O	:CUSO4_H2O:	

<i>Phase Models</i>		
CUSO4_H6O3	:CUSO4_H6O3:	
DAPHNITE	:FE4FEAL2SISi2O10O8H8:	
DEERITE	:FE18Si12O40O10H10:	
DIAMOND	:C:	
DIAMOND_A4	:AL B C SI SN TI ZN:	
DIASPORE	:ALOOH:	
DICKITE	:AL2Si2O5O4H4:	
DOLOMITE	:CAMGCO3:	
DOLOMITE_DISORDERED	:CAMGCO3:	
DOLOMITE_ORDERED	:CAMGCO3:	
DRAVITE	:NAMG3AL6B3O9Si6O18OH:	
EASTONITE	:KMG2AL3Si2O10O2H2:	
EDENITE	:NACA2MG5ALSi7O22O2H2:	
EPIDOTE	:CA2FEAL2Si3O12OH:	
EPSOMITE	:MGSO4_H14O7:	
FAYALITE	:FE2SiO4:	
FCC_A1	:AG AL AS AU B BA BE CA CD CO CR CS CU FE GA GD K LI MG MN MO NA NI O P PB RB S SI SN SR TI U V W ZN:B C N VA:	2 SUBL, SITES 1.00: 1.00:
FE_AMESITE	:FE4ALAL2ALSi2O10O8H8:	
FE_ANTHOPHYLLITE	:FE7Si8O22O2H2:	
FE_CARPOLITE	:FEAL2Si2O6O4H4:	
FE_CELADONITE	:KFEALSi4O10O2H2:	



<i>Phase Models</i>		
FE_CHLORITIOIDE	:FEAL2SIO5O2H2:	
FE_CORDIERITE	:FE2AL4SI5O18:	
FE_GLAUCOPHANE	:NA2FE3AL2SI8O22O2H2:	
FE_HORNBLLENDE	:CA2FE4AL2SI7O22O2H2:	
FE_ILMENITE	:FETIO3:	
FE_PEROVSKITE	:FESIO3:	
FE_RIEBECKITE	:NA2FE3FE2SI8O22O2H2:	
FE_STAUROLITE	:FE4AL18SI7.5O44O4H4:	
FE_TALC	:FE2FESISI3O10O2H2:	
FE_TREMOLITE	:CA2FE5SI8O22O2H2:	
FE_TS_TALC	:FE2ALALSI3O10O2H2:	
FE_TSCHERMAK	:FEAL2SIO6:	
FE2S3O12	:FE2S3O12:	
FECN_CHI	:FE:C N:	2 SUBL, SITES 5.00: 2.00:
FEO2H2	:FEO2H2:	
FEO3H3	:FEO3H3:	
FESO4	:FESO4:	
FESO4_H14O7	:FESO4_H14O7:	
FLUORAPATITE	:CA5P3O12F:	
FLUORITE	:CAF2:	
FORSTERITE	:MG2SIO4:	
GALENA	:PBS:	

Phase Models		
GAMMA_FAYALITE	:FE2SIO4:	
GAMMA_FORSTERITE	:MG2SIO4:	
GAS	:H2 O2 H2O S2 H2S SO2 CH4 C1O2 C1O1 C1O1S1 N2 N1H3 AR:	
GEHLENITE	:CA2AL2SIO7:	
GIBBSITE	:ALO3H3:	
GLAUCOPHANE	:NA2MG3AL2SI8O22O2H2:	
GODLEVSKITE	:NIS.857:	
GOETHITE	:FEOOH:	
GOLD	:AU:	
GRAPHITE	:C:	
GROSSULAR	:CA3AL2SI3O12:	
GRUNERITE	:FE7SI8O22O2H2:	
GYPSUM	:CASO4_H4O2:	
H2_GAS	:H2:	
H2O_GAS	:H2O:	
H2S_GAS	:H2S:	
HALITE	:NACL:	
HALLOYSITE	:AL2SI2O5O4H4:	
HAUSMANNITE	:MN3O4:	
HCP_A3	:AG AL AS AU B BA BE CA CD CO CR CS CU FE GA GD HG K LI MG MN MO NA NI PB RB SI SN SR TI U V W ZN:B C N VA:	2 SUBL, SITES 1.00: 0.50:
HEAZLEWOODITE	:NI3S2:	

<i>Phase Models</i>		
HEMATITE	:FE2O3:	
HEMATITE_HIGH	:FE2O3:	
HERCYNITE	:FEAL2O4:	
HERZENBERGITE	:SNS:	
HEXAGONAL_A8	:SE:	
HOLLAND	:KALSIO8:	
HORNBLLENDE	:CA2MG4AL2SI7O22O2H2:	
HP_CLINODIOPSIDE	:CAMGSI2O6:	
HP_CLINOENSTATITE	:MG2SI2O6:	
HYDROUS_CORDIERITE	:MG2AL4SI5O18_H2O:	
HYDROXYAPATITE	:CA5P3O12OH:	
ILLITE_CLBASE2	:ILLITE_CLBASE2:	
ILLITE_CLBASE5	:ILLITE_CLBASE5:	
ILLITE_CLBASIN2	:ILLITE_CLBASIN2:	
ILLITE_CLBASIN5	:ILLITE_CLBASIN5:	
ILLITE_MIX1	:ILLITE_MIX1:	
ILLITE_MIX2	:ILLITE_MIX2:	
ILLITE_MIX3	:ILLITE_MIX3:	
ILMENITE	:MGSIO3:	
IRON_BCC	:FE:	
JADEITE	:NAALSI2O6:	
JAIPURITE	:COS:	

<i>Phase Models</i>		
JOHNNSENITE	:CAMNSI2O6:	
K_BEIDELLITE	:K_BEIDELLITE:	
K_FELDSPAR	:KALSIO8:	
K_FELDSPAR_H2O	:KALSIO8_H2O:	
K_MERLIONITE	:K_MERLIONITE:	
K_MONTMORILLONITE	:K.33AL2.33SI3.67O10O2H2:	
K2CO3	:K2CO3:	
K2O	:K2O:	
K2SO4	:K2SO4:	
K2UO4	:K2UO4:	
KALSILITE	:KALSIO4:	
KAOLINITE	:AL2SI2O5O4H4:	
KEROLITE	:MG3SI4O10O2H2_H2O:	
KOH	:KOH:	
KYANITE	:AL2SIO5:	
LAMBDA_PHASE	:CO:CO:	2 SUBL, SITES 2.00: 1.00:
LAVES_C14	:AL CO CR CU FE MG MN NI TI ZN:AL CO CR CU FE MG MN NI TI ZN:	2 SUBL, SITES 2.00: 1.00:
LAVES_C15	:AL CO CR CU FE MG NI SI TI ZN:AL CO CR CU FE MG NI SI TI ZN:	2 SUBL, SITES 2.00: 1.00:
LAVES_C36	:AL CO CR CU MG NI ZN:AL CO CR CU MG NI ZN:	2 SUBL, SITES 2.00: 1.00:
LAVES_PHASE	:CR FE:MO W:	2 SUBL, SITES 2.00: 1.00:
LAWSONITE	:CAAL2SI2O7O2H2_H2O:	
LEONHARDITE	:CA2AL4SI8O24_H12O7:	

<b>Phase Models</b>		
LEUCIT	:KFESI2O6:	
LI2UO4	:LI2UO4:	
LIME	:CAO:	
LINNAEITE	:CO3S4:	
LIQUID:L	:AG AL AS AU BA BE CA CD CO CR CS CU FE GA GD K LI MG MN MO NA NI PB RB SE SI SN SR TI U V W ZN B C N O P S HG BR2 I2 MG2SN:	
LOW_CLINODIOPSIDE	:CAMGSI2O6:	
LOW_CLINOENSTATITE	:MG2SI2O6:	
M12C	:CO:W:C:	3 SUBL, SITES 6.00: 6.00: 1.00:
M23C6	:CO CR FE MN NI V:CO CR FE MN MO NI V W:C:	3 SUBL, SITES 20.00: 3.00: 6.00:
M3C2	:CR FE MN MO V W:C:	2 SUBL, SITES 3.00: 2.00:
M5C2	:FE MN V:C:	2 SUBL, SITES 5.00: 2.00:
M6C	:CO FE NI:MO W:CO FE MO NI W:C:	4 SUBL, SITES 2.00: 2.00: 2.00: 1.00:
M7C3	:CO CR FE MN MO NI V W:C:	2 SUBL, SITES 7.00: 3.00:
MAGNESITE	:MGCO3:	
MAGNETITE	:FE3O4:	
MAGNETITE_HIGH	:FE3O4:	
MAJORITE	:MG4SI4O12:	
MALACHITE	:CU2O2H2CO3:	
MANGANOSITE	:MNO:	
MARCASITE	:FES2:	

<i>Phase Models</i>		
MARGARITE	:CAAL4SI2O10O2H2:	
MARIALITE	:NA3AL3SI9O24_NACL:	
MC_ETA	:MO W:C VA:	2 SUBL, SITES 1.00: 1.00:
MC_SHP	:MO W:C:	2 SUBL, SITES 1.00: 1.00:
MEIONITE_CARNONATE	:CA3AL6SI6O24_CACO3:	
MEIONITE_DISORDER	:CA3AL6SI6O24_CACO3:	
MEIONITE_INTER	:CA3AL6SI6O24_CACO3:	
MEIONITE_ORDER	:CA3AL6SI6O24_CACO3:	
MEIONITE_SULFATE	:CA3AL6SI6O24_CASO4:	
MERCURY	:HG:	
MERWINITE	:CA3MGSIO8:	
MESOLITE	:MESOLITE:	
METACINNABAR	:HGS:	
MG_BEIDELLITE	:MG_BEIDELLITE:	
MG_CARPHOLITE	:MGAL2SI2O6O4H4:	
MG_CHLORITODE	:MGAL2SIO5O2H2:	
MG_PEROVSKITE	:MGSIO3:	
MG_RIEBECKITE	:NA2MG3AL2SI8O22O2H2:	
MG_SMECTITE	:MG_SMECTITE:	
MG_STAUROLITE	:MG4AL18SI7.5O44O4H4:	
MG_TSCHERMAK	:MGAL2SIO6:	
MG2ALSIO6N	:MG2ALSIO6/-:	

<i>Phase Models</i>		
MGALSI2O6P	:MGALSI2O6/+:	
MGSO4	:MGSO4:	
MGUO4	:MGUO4:	
MICROCLINE	:KALSI3O8:	
MILLERITE	:NIS:	
MIZZONITE	:NACA3AL5SI7CO27:	
MNSO4	:MNSO4:	
MOLYBDITE	:MOO3:	
MONOCLINIC_S	:S:	
MONTICELLITE	:CAMGSIO4:	
MOO2	:MOO2:	
MU_PHASE	:CO CR FE NI:MO W:CO CR FE MO NI W:	3 SUBL, SITES 7.00: 2.00: 4.00:
MUSCOVITE	:KAL3SI3O10O2H2:	
N1H3_GAS	:N1H3:	
N2_GAS	:N2:	
NA_MERLIONITE	:NA_MERLIONITE:	
NA_MONTMORILLONITE	:NA.33AL2.33SI3.67O12H2:	
NA_PHLOGOPITE	:NAMG3ALSI3O10O2H2:	
NA2O	:NA2O:	
NA2SO4	:NA2SO4:	
NA2SO4_H2O010	:NA2SO4_H2O010:	

<i>Phase Models</i>		
NA2U2O7	:NA2U2O7:	
NA2UO4	:NA2UO4:	
NA3UO4	:NA3UO4:	
NAOH	:NAOH:	
NATROLITE	:NA2AL2SI3O10_H4O2:	
NAUO3	:NAUO3:	
NEPHELINE	:NAALSIO4:	
NESQUEHONITE	:MGCO3_H6O3:	
NICKEL	:NI:	
NICO3	:NICO3:	
NIO2H2	:NIO2H2:	
NIO3H3	:NIO3H3:	
NISO4	:NISO4:	
NISO4_H12O6_BLUE	:NISO4_H12O6:	
NISO4_H12O6_GREEN	:NISO4_H12O6:	
NISO4_H14O7	:NISO4_H14O7:	
NORDSTRANDITE	:ALO3H3:	
O2_GAS	:O2:	
OPAL	:SIO2_HO.5:	
ORTHOCLASE	:KALSIO8:	
ORTHODIOPSIDE	:CAMGSI2O6:	
ORTHOENSTATITE	:MG2SI2O6:	



<i>Phase Models</i>		
ORTHOFEMGSI	:FEMGSI2O6:	
ORTHOFERROSILITE	:FE2SI2O6:	
ORTHOHEDENBERGITE	:CAFESI2O6:	
ORTHOMGFESI	:MGFESI2O6:	
ORTHORHOMBIC_A20	:FE U:	
ORTHORHOMBIC_CMCA	:GA:	
ORTHORHOMBIC_FC	:S:	
ORTHORHOMBIC_I2	:I2:	
P_PHASE	:CR FE NI:CR FE MO NI:MO:	3 SUBL, SITES 24.00: 20.00: 12.00:
PARAGONITE	:NAAL3SI3O10O2H2:	
PARGASITE	:NACA2MG4AL3SI6O22O2H2:	
PB3O4	:PB3O4:	
PBCO3_PB2O2	:PBCO3_PB2O2:	
PBCO3_PBO	:PBCO3_PBO:	
PBO_RED	:PBO:	
PBO_YELLOW	:PBO:	
PBO2	:PBO2:	
PBO2H2	:PBO2H2:	
PBS2O3	:PBS2O3:	
PBSO4_PB2O2	:PBSO4_PB2O2:	
PBSO4_PB4O4	:PBSO4_PB4O4:	

<b>Phase Models</b>		
PBSO4_PBO	:PBSO4_PBO:	
PERICLASE	:MGO:	
PHLOGOPITE	:KMG3ALSIO10O2H2:	
PI_PHASE	:CR:FE NI:N:	3 SUBL, SITES 12.80: 7.20: 4.00:
POLYDYMITE	:NI3S4:	
PORTLANDITE	:CAO2H2:	
PREHNITE	:CA2AL2SIO10O2H2:	
PROTODIOPSIDE	:CAMGSI2O6:	
PROTOENSTATITE	:MG2SIO6:	
PSEUDO_WOLLOSINITE	:CASIO3:	
PUMPELLYITE	:CA4AL5MGSIO6O21O7H7:	
PYRITE	:FES2:	
PYROLUSITE	:MNO2:	
PYROPE	:MG3AL2SIO12:	
PYROPHYLLITE	:AL2SIO4O10O2H2:	
PYROXMANGITE	:MNSIO3:	
PYRRHOTITE_FE_877S	:FE.877S:	
PYRRHOTITE_FES	:FES:	
Q_PHASE	:AL:CU:MG:	3 SUBL, SITES 7.00: 3.00: 6.00:
QUARTZ	:SIO2:	
R_PHASE	:CO CR FE NI:MO W:CO CR FE MO NI W:	3 SUBL, SITES 27.00: 14.00: 12.00:

<i>Phase Models</i>		
RANKINITE	:CA3SI2O7:	
RB2UO4	:RB2UO4:	
RED_P	:AS P:	
RHODOCHROSITE	:MNCO3:	
RHODONITE	:MNSIO3:	
RHOMBO_A10	:CD HG:	
RHOMBOHEDRAL_A7	:AS P PB SN ZN:	
ROMARCHITE	:SNO:	
RUTHERFORDINE	:UO2CO3:	
RUTILE	:TIO2:	
S_PHASE	:AL:CU:MG:	3 SUBL, SITES 2.00: 1.00: 1.00:
S2_GAS	:S2:	
SANIDINE	:KALSIO8:	
SCHOEPITE	:UO2O2H2_H2O:	
SCHORL	:NAFE3AL6B3O9SI6O18OH:	
SCOLECITE	:CAAL2SI3O10_H6O3:	
SEPIOLITE	:MG4SI6O15O2H2_H12O6:	
SIDERITE	:FECO3:	
SIDEROPHYLLITE	:KFE2AL3SI2O10O2H2:	
SIGMA	:AL CO FE MN NI:CR MO TI V W:AL CO CR FE MN MO NI TI V W:	3 SUBL, SITES 8.00: 4.00: 18.00:
SILLIMANITE	:AL2SIO5:	

<i>Phase Models</i>		
SILVER	:AG:	
SMECTITE_MIX	:SMECTITE_MIX:	
SMITHSONITE	:ZNCO3:	
SO2_GAS	:SO2:	
SPESSARTINE	:MN3AL2SI3O12:	
SPHALERITE	:ZNS:	
SPHENE	:CATISIO5:	
SPINEL	:MGAL2O4:	
SPURRITE	:CA4SI2O8_CACO3:	
SRUO4	:SRUO4:	
STILBITE	:STILBITE:	
STISHOVITE	:SIO2:	
STRONTIANITE	:SRCO3:	
SUDOITE_IDEAL	:MG2AL4SI3O10O8H8:	
SUDOITE_MIX	:SUDOITE_MIX:	
SYLVITE	:KCL:	
TALC	:MG2MGSISI3O10O2H2:	
TENORITE	:CUO:	
TEPHROITE	:MN2SIO4:	
TETRAGONAL_A6	:CD GA HG PB SN ZN:	
TETRAGONAL_U	:FE U:	
TI2O3	:TI2O3:	

<i>Phase Models</i>		
TI3O5	:TI3O5:	
TI4O7	:TI4O7:	
TILLEYITE	:CA3SI2O7_CA2C2O6:	
TIN	:SN:	
TIO	:TIO:	
TREMOLITE	:CA2MG5SI8O22O2H2:	
TRIDYMIT	:SIO2:	
TS_TALC	:MG2ALALSIO10O2H2:	
U2C3	:U2C3:	
U2F9	:U2F9:	
U2O2CL5	:U2O2CL5:	
U2O3F6	:U2O3F6:	
U2O4AS2O7	:U2O4AS2O7:	
U2O4CL3	:U2O4CL3:	
U2O4P2O7	:U2O4P2O7:	
U2S3	:U2S3:	
U2SE3	:U2SE3:	
U3AS4	:U3AS4:	
U3O5F8	:U3O5F8:	
U3O6AS2O8	:U3O6AS2O8:	
U3O6P2O8	:U3O6P2O8:	
U3O6P2O8_H8O4	:U3O6P2O8_H8O4:	

<i>Phase Models</i>		
U3O7	:U3O7:	
U3O8	:U3O8:	
U3P4	:U3P4:	
U3S5	:U3S5:	
U3SE4	:U3SE4:	
U3SE5	:U3SE5:	
U4F17	:U4F17:	
U4O9_ALPHA	:U4O9:	
U4O9_BELTA	:U4O9:	
U5O12CL	:U5O12CL:	
UAS	:UAS:	
UAS2	:UAS2:	
UBE13	:UBE13:	
UBR2CL	:UBR2CL:	
UBR2CL2	:UBR2CL2:	
UBR3	:UBR3:	
UBR3CL	:UBR3CL:	
UBR4	:UBR4:	
UBR5	:UBR5:	
UBRCL2	:UBRCL2:	
UBRCL3	:UBRCL3:	
UC	:UC:	

<i>Phase Models</i>		
UC1_94	:UC1.94:	
UCL2F2	:UCL2F2:	
UCL2I2	:UCL2I2:	
UCL3	:UCL3:	
UCL3F	:UCL3F:	
UCL3I	:UCL3I:	
UCL4	:UCL4:	
UCL5	:UCL5:	
UCL6	:UCL6:	
UCLF3	:UCLF3:	
UCLI3	:UCLI3:	
UF3	:UF3:	
UF4	:UF4:	
UF4_H5O2_5	:UF4_H5O2.5:	
UF5_ALPHA	:UF5:	
UF5_BELTA	:UF5:	
UF6	:UF6:	
UH2P2O8_H8O4	:UH2P2O8_H8O4:	
UI3	:UI3:	
UI4	:UI4:	
ULVOSPINEL	:FE2TIO4:	
UN	:UN:	

<i>Phase Models</i>		
UN1_59	:UN1.59:	
UN1_73	:UN1.73:	
UO2_AMORPHOUS	:UO2:	
UO2_FUEL	:UO2:	
UO2AS2O6	:UO2AS2O6:	
UO2BR2	:UO2BR2:	
UO2BR2_H2O	:UO2BR2_H2O:	
UO2BR2_H6O3	:UO2BR2_H6O3:	
UO2BROH_H4O2	:UO2BROH_H4O2:	
UO2CL	:UO2CL:	
UO2CL2	:UO2CL2:	
UO2CL2_H2O	:UO2CL2_H2O:	
UO2CL2_H6O3	:UO2CL2_H6O3:	
UO2CLOH_H4O2	:UO2CLOH_H4O2:	
UO2F2	:UO2F2:	
UO2F2_H6O3	:UO2F2_H6O3:	
UO2FOH_H2O	:UO2FOH_H2O:	
UO2FOH_H4O2	:UO2FOH_H4O2:	
UO2HPO4_H8O4	:UO2HPO4_H8O4:	
UO2I2O6	:UO2I2O6:	
UO2N2O6	:UO2N2O6:	
UO2N2O6_H12O6	:UO2N2O6_H12O6:	



<i>Phase Models</i>		
UO2N2O6_H2O	:UO2N2O6_H2O:	
UO2N2O6_H4O2	:UO2N2O6_H4O2:	
UO2N2O6_H6O3	:UO2N2O6_H6O3:	
UO2O2H2	:UO2O2H2:	
UO2SO3	:UO2SO3:	
UO2SO4	:UO2SO4:	
UO2SO4_H5O2_5	:UO2SO4_H5O2.5:	
UO2SO4_H6O3	:UO2SO4_H6O3:	
UO2SO4_H7O3_5	:UO2SO4_H7O3.5:	
UO3_ALPHA	:UO3:	
UO3_BELTA	:UO3:	
UO3_GAMMA	:UO3:	
UO3_H1_8O_9	:UO3_H1.8O.9:	
UOBR2	:UOBR2:	
UOBR3	:UOBR3:	
UOCL	:UOCL:	
UOCL2	:UOCL2:	
UOCL3	:UOCL3:	
UOF2	:UOF2:	
UOF2_H2O	:UOF2_H2O:	
UOF4	:UOF4:	
UOFOH	:UOFOH:	

<i>Phase Models</i>		
UOFOH_H1O_5	:UOFOH_HO.5:	
UP	:UP:	
UP2	:UP2:	
UP2O7	:UP2O7:	
UPO5	:UPO5:	
URANINITE	:UO2:	
URANIUM	:U:	
URANOPHANE	:CAU2O4SI2O6O2H2:	
US	:US:	
US1_90	:US1.90:	
US2	:US2:	
US2O6	:US2O6:	
US2O8	:US2O8:	
US2O8_H16O8	:US2O8_H16O8:	
US2O8_H8O4	:US2O8_H8O4:	
US3	:US3:	
USE	:USE:	
USE2_ALPHA	:USE2:	
USE2_BELTA	:USE2:	
USE3	:USE3:	
V3C2	:FE MN V:C:	2 SUBL, SITES 3.00: 2.00:
VAESITE	:NIS2:	

<i>Phase Models</i>		
VESUVIANITE	:CA19MG2AL11SI18O69O9H9:	
WAD	:K2SI4O9:	
WHITE_P	:P:	
WILLEMITE	:ZN2SIO4:	
WITHERITE	:BACO3:	
WOLLASTONITE	:CASIO3:	
WURTZITE	:ZNS:	
WUSTITE_FEO	:FEO:	
WUSTITE_FEO1_5	:FEO1.5:	
ZINCBLENDE_B3	:AL GA:AS P:	2 SUBL, SITES 0.50: 0.50:
ZINCITE	:ZNO:	
ZNSIO3	:ZNSIO3:	
ZNSO4	:ZNSO4:	
ZNSO4_H12O6	:ZNSO4_H12O6:	
ZNSO4_H14O7	:ZNSO4_H14O7:	
ZNSO4_H2O	:ZNSO4_H2O:	
ZOISITE	:CA2ALAL2SI3O12OH:	