

Pandat™ 2024

Database Manual

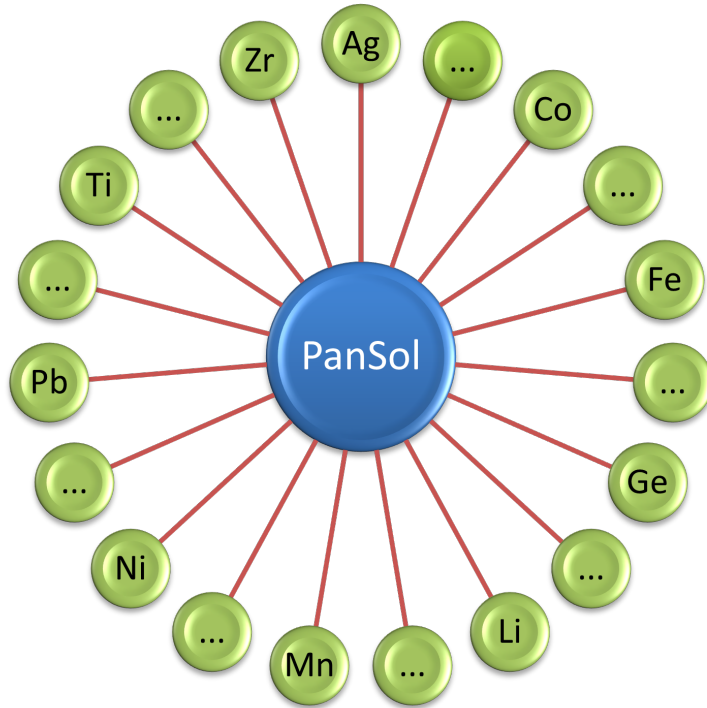


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PanSolution

Thermodynamic Database for Multiple Binary Systems



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Contents

PanSolution	1
1 Thermodynamic Database	1
1.1 General Information	1

1 Thermodynamic Database

1.1 General Information

This database includes **79** elements and covers a total of **846** binary systems. A total of **2124** phases including various multicomponent solution phases and many important intermetallic compounds have been assessed in PanSolution database. The composition ranges are limited to the assessed binary systems. Extrapolation to the ternaries may not be accurate.

PanSolution database can be used as a reference library for binary phase diagrams. User can obtain a lot of useful information via calculations, such as phase composition range, invariant reactions, liquidus temperatures and so on. User may also examine phase stabilities in ternary or high order systems via simple assumption of extrapolation.

Binary Systems (846)

Ag-Al(10) Ag-Au(10) Ag-B(10) Ag-Bi(10) Ag-Ca(10) Ag-Ce(10) Ag-Co(10)
Ag-Cr(10) Ag-Cu(10) Ag-Dy(10) Ag-Er(10) Ag-Fe(10) Ag-Ga(10) Ag-Gd(10)
Ag-Ge(10) Ag-Hg(10) Ag-Ho(10) Ag-In(10) Ag-Ir(10) Ag-La(10) Ag-Mg(10)
Ag-Mn(10) Ag-Mo(10) Ag-Na(10) Ag-Nd(10) Ag-Ni(10) Ag-Os(10) Ag-Pb(10)
Ag-Pd(10) Ag-Pr(10) Ag-Pt(10) Ag-Re(10) Ag-Rh(10) Ag-Ru(10) Ag-Sb(10)
Ag-Sc(10) Ag-Si(10) Ag-Sm(10) Ag-Sn(10) Ag-Sr(10) Ag-Tb(10) Ag-Te(10)
Ag-Ti(10) Ag-V(10) Ag-W(10) Ag-Y(10) Ag-Yb(10) Ag-Zn(10) Ag-Zr(10)
Al-As(10) Al-Au(10) Al-B(10) Al-Ba(10) Al-Be(10) Al-Bi(10) Al-C(10)
Al-Ca(10) Al-Ce(10) Al-Co(10) Al-Cr(10) Al-Cu(10) Al-Er(10) Al-Fe(10)
Al-Ga(10) Al-Gd(10) Al-Ge(10) Al-Hf(10) Al-Hg(10) Al-Ho(10) Al-In(10)
Al-Ir(10) Al-K(10) Al-La(10) Al-Li(10) Al-Lu(10) Al-Mg(10) Al-Mn(10)
Al-Mo(10) Al-Na(10) Al-Nb(10) Al-Nd(10) Al-Ni(10) Al-P(10) Al-Pb(10)
Al-Pd(10) Al-Pr(10) Al-Pt(10) Al-Re(10) Al-Ru(10) Al-Sb(10) Al-Sc(10)
Al-Si(10) Al-Sm(10) Al-Sn(10) Al-Sr(10) Al-Ta(10) Al-Th(10) Al-Ti(10)

Al-U(10)	Al-V(10)	Al-W(10)	Al-Y(10)	Al-Yb(10)	Al-Zn(10)	Al-Zr(10)
As-Au(10)	As-Bi(10)	As-Fe(10)	As-Ga(10)	As-Ge(10)	As-In(10)	As-P(10)
As-Pb(10)	As-Pt(10)	As-Sb(10)	As-Zn(10)	Au-B(10)	Au-Bi(10)	Au-Co(10)
Au-Cu(10)	Au-Er(10)	Au-Fe(10)	Au-Ga(10)	Au-Ge(10)	Au-Hf(10)	Au-Ho(10)
Au-In(10)	Au-Ir(10)	Au-La(10)	Au-Mn(10)	Au-Mo(10)	Au-Ni(10)	Au-Os(10)
Au-Pb(10)	Au-Pr(10)	Au-Pt(10)	Au-Ru(10)	Au-Sb(10)	Au-Si(10)	Au-Sn(10)
Au-Te(10)	Au-Ti(10)	Au-Tl(10)	Au-Tm(10)	Au-Zn(10)	Au-Zr(10)	B-Ba(10)
B-C(10)	B-Ca(10)	B-Ce(10)	B-Co(10)	B-Cr(10)	B-Cu(10)	B-Fe(10)
B-Hf(10)	B-La(10)	B-Mg(10)	B-Mn(10)	B-Mo(10)	B-Nb(10)	B-Nd(10)
B-Ni(10)	B-Pr(10)	B-Pt(10)	B-Re(10)	B-Sc(10)	B-Si(10)	B-Sr(10)
B-Ta(10)	B-Ti(10)	B-V(10)	B-W(10)	B-Zr(10)	Ba-Ca(10)	Ba-Cu(10)
Ba-Eu(10)	Ba-Li(10)	Ba-Pb(10)	Ba-Ru(10)	Ba-Sc(10)	Ba-Si(10)	Ba-Sr(10)
Ba-Y(10)	Ba-Yb(10)	Be-Cu(10)	Be-Si(10)	Bi-Cd(10)	Bi-Cr(10)	Bi-Cu(10)
Bi-Fe(10)	Bi-Ga(10)	Bi-Gd(10)	Bi-Ge(10)	Bi-Hg(10)	Bi-Ho(10)	Bi-In(10)
Bi-K(10)	Bi-Li(10)	Bi-Lu(10)	Bi-Mg(10)	Bi-Mn(10)	Bi-Na(10)	Bi-Nd(10)
Bi-Ni(10)	Bi-Pb(10)	Bi-Pd(10)	Bi-Sb(10)	Bi-Se(10)	Bi-Si(10)	Bi-Sn(10)
Bi-Tb(10)	Bi-Ti(10)	Bi-Tm(10)	Bi-U(10)	Bi-V(10)	Bi-Y(10)	Bi-Zn(10)
C-Ce(10)	C-Co(10)	C-Cr(10)	C-Fe(10)	C-Ge(10)	C-Hf(10)	C-La(10)
C-Li(10)	C-Mg(10)	C-Mn(10)	C-Mo(10)	C-Nb(10)	C-Ni(10)	C-Pr(10)
C-Pt(10)	C-Pu(10)	C-Re(10)	C-Rh(10)	C-Ru(10)	C-Si(10)	C-Ta(10)
C-Ti(10)	C-V(10)	C-W(10)	C-Zr(10)	Ca-Ce(10)	Ca-Cu(10)	Ca-Fe(10)
Ca-Ga(10)	Ca-Gd(10)	Ca-La(10)	Ca-Li(10)	Ca-Mg(10)	Ca-Mn(10)	Ca-Mo(10)
Ca-Na(10)	Ca-Nd(10)	Ca-Ni(10)	Ca-Pb(10)	Ca-Pr(8)	Ca-Pu(10)	Ca-Ru(10)
Ca-Sb(10)	Ca-Sc(10)	Ca-Si(10)	Ca-Sn(10)	Ca-Sr(10)	Ca-Tb(10)	Ca-Ti(10)
Ca-V(10)	Ca-Y(10)	Ca-Yb(10)	Ca-Zn(10)	Cd-Cu(10)	Cd-Fe(10)	Cd-Ga(10)
Cd-Ge(10)	Cd-Hg(10)	Cd-In(10)	Cd-Mg(10)	Cd-Mo(10)	Cd-Na(10)	Cd-Pb(10)
Cd-Sb(10)	Cd-Se(10)	Cd-Si(10)	Cd-Te(10)	Cd-Tl(10)	Cd-V(10)	Cd-Zn(10)
Ce-Co(10)	Ce-Cr(8)	Ce-Cu(10)	Ce-Fe(10)	Ce-La(10)	Ce-Li(10)	Ce-Mg(10)

Ce-Mn(10)	Ce-Mo(10)	Ce-Nb(8)	Ce-Ni(10)	Ce-Pr(10)	Ce-Pt(10)	Ce-Sb(10)
Ce-Sc(10)	Ce-Si(10)	Ce-Sn(10)	Ce-Ta(8)	Ce-Ti(10)	Ce-V(10)	Ce-W(8)
Ce-Y(10)	Ce-Zn(10)	Ce-Zr(10)	Co-Cr(10)	Co-Cu(10)	Co-Er(10)	Co-Fe(10)
Co-Ga(10)	Co-Ge(10)	Co-Hf(10)	Co-Ho(10)	Co-La(10)	Co-Mg(10)	Co-Mn(10)
Co-Mo(10)	Co-Nb(10)	Co-Ni(10)	Co-Os(10)	Co-P(5)	Co-Pb(10)	Co-Pd(10)
Co-Pr(10)	Co-Pt(10)	Co-Re(10)	Co-Sb(10)	Co-Sc(10)	Co-Si(10)	Co-Sm(10)
Co-Sn(10)	Co-Ta(10)	Co-Th(10)	Co-Ti(10)	Co-U(10)	Co-V(10)	Co-W(10)
Co-Y(10)	Co-Zn(10)	Co-Zr(10)	Cr-Cu(10)	Cr-Fe(10)	Cr-Ga(10)	Cr-Ge(10)
Cr-Hf(10)	Cr-Ir(10)	Cr-La(10)	Cr-Li(10)	Cr-Mg(10)	Cr-Mn(10)	Cr-Mo(10)
Cr-Na(10)	Cr-Nb(10)	Cr-Nd(10)	Cr-Ni(10)	Cr-Os(10)	Cr-Pb(10)	Cr-Pd(10)
Cr-Pr(8)	Cr-Pt(10)	Cr-Re(10)	Cr-Rh(10)	Cr-Ru(10)	Cr-Sc(10)	Cr-Si(10)
Cr-Sn(10)	Cr-Ta(10)	Cr-Ti(10)	Cr-U(10)	Cr-V(10)	Cr-W(10)	Cr-Y(10)
Cr-Yb(10)	Cr-Zn(10)	Cr-Zr(10)	Cs-In(10)	Cs-K(10)	Cs-Na(10)	Cs-Nb(10)
Cs-Rb(10)	Cs-V(10)	Cu-Dy(10)	Cu-Er(10)	Cu-Eu(10)	Cu-Fe(10)	Cu-Ga(10)
Cu-Gd(10)	Cu-Ge(10)	Cu-Hf(10)	Cu-Hg(10)	Cu-Ho(10)	Cu-In(10)	Cu-Ir(10)
Cu-La(10)	Cu-Li(10)	Cu-Mg(10)	Cu-Mn(10)	Cu-Mo(10)	Cu-Na(10)	Cu-Nb(10)
Cu-Nd(10)	Cu-Ni(10)	Cu-Pb(10)	Cu-Pd(10)	Cu-Pr(10)	Cu-Pt(10)	Cu-Pu(10)
Cu-Re(10)	Cu-Ru(10)	Cu-Sb(10)	Cu-Sc(10)	Cu-Se(10)	Cu-Si(10)	Cu-Sm(10)
Cu-Sn(10)	Cu-Sr(10)	Cu-Ta(10)	Cu-Th(10)	Cu-Ti(10)	Cu-Tl(10)	Cu-Tm(10)
Cu-V(10)	Cu-W(10)	Cu-Y(10)	Cu-Yb(10)	Cu-Zn(10)	Cu-Zr(10)	Dy-Er(10)
Dy-Fe(10)	Dy-Mg(10)	Dy-Mn(10)	Dy-Ni(10)	Dy-Sb(10)	Er-Fe(10)	Er-Mg(10)
Er-Sb(10)	Er-Sc(10)	Er-Si(10)	Er-V(10)	Er-Y(10)	Er-Yb(10)	Eu-In(10)
Eu-Mg(10)	Eu-Pb(10)	Eu-Pd(10)	Fe-Gd(10)	Fe-Hf(10)	Fe-Li(10)	Fe-Mg(10)
Fe-Mn(10)	Fe-Mo(10)	Fe-Nb(10)	Fe-Nd(10)	Fe-Ni(10)	Fe-Pb(10)	Fe-Pd(10)
Fe-Pr(10)	Fe-Pt(10)	Fe-Pu(10)	Fe-Re(10)	Fe-Ru(10)	Fe-Sb(10)	Fe-Sc(10)
Fe-Se(10)	Fe-Si(10)	Fe-Sm(10)	Fe-Sn(10)	Fe-Sr(10)	Fe-Ta(10)	Fe-Tb(10)
Fe-Th(10)	Fe-Ti(10)	Fe-U(10)	Fe-V(10)	Fe-W(10)	Fe-Y(10)	Fe-Zn(10)
Fe-Zr(10)	Ga-Ge(10)	Ga-Hg(10)	Ga-In(10)	Ga-Mg(10)	Ga-N(10)	Ga-P(10)

Ga-Pb(10)	Ga-Pd(10)	Ga-Pt(10)	Ga-Sb(10)	Ga-Sn(10)	Ga-Tl(10)	Ga-U(10)
Ga-Zn(10)	Gd-Mg(10)	Gd-Mn(10)	Gd-Mo(10)	Gd-Ni(10)	Gd-Pd(10)	Gd-Sb(10)
Gd-Sc(10)	Gd-Si(10)	Gd-Sm(10)	Gd-Ti(10)	Gd-Zn(10)	Gd-Zr(10)	Ge-Hf(10)
Ge-In(10)	Ge-K(10)	Ge-Mg(10)	Ge-Mn(10)	Ge-Mo(10)	Ge-Na(10)	Ge-Nb(10)
Ge-Ni(10)	Ge-P(10)	Ge-Pb(10)	Ge-Pd(10)	Ge-Pt(10)	Ge-Ru(10)	Ge-S(10)
Ge-Sb(10)	Ge-Sc(10)	Ge-Se(10)	Ge-Si(10)	Ge-Sn(10)	Ge-Sr(10)	Ge-Ta(10)
Ge-Te(10)	Ge-Ti(10)	Ge-Tl(10)	Ge-V(10)	Ge-W(10)	Ge-Zn(10)	Hf-Mn(10)
Hf-Mo(10)	Hf-Nb(10)	Hf-Ni(10)	Hf-Os(10)	Hf-Si(10)	Hf-Sn(10)	Hf-Ta(10)
Hf-Ti(10)	Hf-V(10)	Hf-W(10)	Hf-Y(10)	Hf-Zr(10)	Hg-In(10)	Hg-Mg(10)
Hg-Pb(10)	Hg-Te(10)	Hg-Tl(10)	Hg-Zn(10)	Ho-Mg(10)	Ho-Mn(10)	Ho-Mo(10)
Ho-Sb(10)	Ho-V(10)	In-Ir(10)	In-Ni(10)	In-P(10)	In-Pb(10)	In-Pd(10)
In-Pt(10)	In-Sb(10)	In-Si(10)	In-Sn(10)	In-V(10)	In-Yb(10)	In-Zn(10)
Ir-Ni(10)	Ir-Os(10)	Ir-Pd(10)	Ir-Pt(10)	Ir-Rh(10)	Ir-Ru(10)	Ir-Ti(10)
Ir-Zr(10)	K-Na(10)	K-Rb(10)	La-Mg(10)	La-Mn(10)	La-Mo(10)	La-Nb(10)
La-Ni(10)	La-Re(10)	La-Sb(10)	La-Sc(10)	La-Sn(10)	La-Ta(10)	La-V(10)
La-W(10)	La-Zn(10)	Li-Mg(10)	Li-Mn(10)	Li-Na(10)	Li-Sc(10)	Li-Si(10)
Li-Sn(10)	Li-Sr(10)	Li-V(10)	Li-Zn(10)	Li-Zr(10)	Lu-Pb(10)	Lu-Sb(10)
Mg-Mn(10)	Mg-Nd(10)	Mg-Ni(10)	Mg-Pb(10)	Mg-Pr(10)	Mg-Pu(10)	Mg-Ru(10)
Mg-Sb(10)	Mg-Sc(10)	Mg-Si(10)	Mg-Sm(10)	Mg-Sn(10)	Mg-Sr(10)	Mg-Tb(10)
Mg-Ti(10)	Mg-Y(10)	Mg-Yb(10)	Mg-Zn(10)	Mg-Zr(10)	Mn-Mo(10)	Mn-Ni(10)
Mn-No(10)	Mn-Os(5)	Mn-Pb(10)	Mn-Pd(10)	Mn-Pr(10)	Mn-Pt(10)	Mn-Ru(10)
Mn-Sc(10)	Mn-Si(10)	Mn-Sm(10)	Mn-Sn(10)	Mn-Sr(10)	Mn-Ta(10)	Mn-Ti(10)
Mn-U(10)	Mn-V(10)	Mn-W(10)	Mn-Y(10)	Mn-Zn(10)	Mn-Zr(10)	Mo-Nb(10)
Mo-Ni(10)	Mo-Pd(10)	Mo-Pr(8)	Mo-Pt(10)	Mo-Pu(10)	Mo-Re(10)	Mo-Ru(10)
Mo-Si(10)	Mo-Sn(10)	Mo-Ta(10)	Mo-Th(10)	Mo-Ti(10)	Mo-U(10)	Mo-V(10)
Mo-W(10)	Mo-Y(10)	Mo-Zr(10)	N-Ni(10)	N-Si(10)	N-Ta(10)	N-Ti(10)
N-V(10)	N-Zr(10)	Na-Ni(10)	Na-Rb(10)	Na-Si(10)	Na-Sr(10)	Na-Zn(10)
Nb-O(10)	Nb-Pt(10)	Nb-Re(10)	Nb-Si(10)	Nb-Sn(10)	Nb-Ta(10)	Nb-Th(10)

Nb-Ti(10)	Nb-U(10)	Nb-V(10)	Nb-W(10)	Nb-Y(10)	Nb-Zr(10)	Nd-Ni(10)
Nd-Sb(10)	Nd-Ti(10)	Nd-W(10)	Nd-Zn(10)	Ni-Os(10)	Ni-Pb(10)	Ni-Pd(10)
Ni-Pr(10)	Ni-Pt(10)	Ni-Re(10)	Ni-Rh(10)	Ni-Ru(10)	Ni-Sb(10)	Ni-Se(10)
Ni-Si(10)	Ni-Sm(10)	Ni-Sn(10)	Ni-Sr(10)	Ni-Ta(10)	Ni-Tb(10)	Ni-Th(10)
Ni-Ti(10)	Ni-U(10)	Ni-V(10)	Ni-W(10)	Ni-Y(10)	Ni-Zn(10)	Ni-Zr(10)
Np-Zr(10)	Os-Si(10)	P-Sb(10)	P-Si(10)	Pb-Pd(10)	Pb-Pt(10)	Pb-Pu(10)
Pb-Sb(10)	Pb-Se(10)	Pb-Si(10)	Pb-Sn(10)	Pb-Te(10)	Pb-Tl(10)	Pb-U(10)
Pb-Yb(10)	Pb-Zn(10)	Pb-Zr(10)	Pd-Rh(10)	Pd-Ru(10)	Pd-S(10)	Pd-Sb(10)
Pd-Si(10)	Pd-Sn(10)	Pd-Te(10)	Pd-Ti(10)	Pd-Y(10)	Pd-Zn(10)	Pd-Zr(10)
Pr-Sb(10)	Pr-Y(10)	Pr-Zn(10)	Pt-Re(10)	Pt-Rh(10)	Pt-Si(10)	Pt-Sn(10)
Pt-Ta(10)	Pt-Ti(10)	Pt-V(10)	Pt-W(10)	Pt-Zr(10)	Pu-U(10)	Pu-Zr(10)
Re-Si(10)	Re-Ta(10)	Re-Ti(10)	Re-U(10)	Re-W(10)	Re-Zr(10)	Ru-Si(10)
Ru-Ti(10)	Ru-U(10)	Ru-Y(10)	Ru-Zr(10)	Sb-Si(10)	Sb-Sn(10)	Sb-Tb(10)
Sb-Te(10)	Sb-Tm(10)	Sb-Yb(10)	Sb-Zn(10)	Sc-Si(10)	Sc-Sn(10)	Sc-Sr(10)
Sc-Th(10)	Sc-Ti(10)	Sc-W(10)	Sc-Y(10)	Sc-Yb(10)	Sc-Zn(10)	Sc-Zr(10)
Se-Sn(10)	Se-Te(10)	Si-Sn(10)	Si-Sr(10)	Si-Ta(10)	Si-Te(10)	Si-Ti(10)
Si-U(10)	Si-V(10)	Si-W(10)	Si-Y(10)	Si-Yb(10)	Si-Zn(10)	Si-Zr(10)
Sm-Zn(10)	Sn-Sr(10)	Sn-Ti(10)	Sn-V(10)	Sn-W(5)	Sn-Y(10)	Sn-Zn(10)
Sn-Zr(10)	Sr-Ti(10)	Sr-V(10)	Sr-Y(10)	Sr-Zn(10)	Ta-Th(10)	Ta-Ti(10)
Ta-U(10)	Ta-V(10)	Ta-W(10)	Ta-Zr(10)	Te-Zn(10)	Th-Ti(10)	Th-U(10)
Th-Zn(10)	Th-Zr(10)	Ti-U(10)	Ti-V(10)	Ti-W(10)	Ti-Zr(10)	Tl-Zn(10)
U-V(10)	U-W(10)	U-Zr(10)	V-W(10)	V-Y(10)	V-Zn(10)	V-Zr(10)
W-Y(10)	W-Zr(10)	Y-Yb(10)	Y-Zn(10)	Y-Zr(10)	Zn-Zr(10)	