

Phase Equilibria, Crystallographic and Thermodynamic Data of Binary Alloys

List of Alloys (ordered alphabetically)

Ac	Ag-Cr	Ag-Mo	Ag-Se	Al-Au	Al-Ho	Al-Pu	Al-Y	Am-Rh	As-Cu
Ac-Au	Ag-Cs	Ag-N	Ag-Si	Al-B	Al-In	Al-Re	Al-Yb	Am-Ru	As-Dy
Ac-B	Ag-Cu	Ag-Na	Ag-Sm	Al-Ba	Al-Ir	Al-Rh	Al-Zn	Am-S	As-Er
Ac-Cr	Ag-Dy	Ag-Nb	Ag-Sn	Al-Be	Al-K	Al-Ru	Al-Zr	Am-Sb	As-Eu
Ac-H	Ag-Er	Ag-Nd	Ag-Sr	Al-Bi	Al-La	Al-S	Am	Am-Se	As-Fe
Ac-Mo	Ag-Eu	Ag-Ni	Ag-Ta	Al-C	Al-Li	Al-Sb	Am-B	Am-Si	As-Ga
Ac-O	Ag-Fe	Ag-O	Ag-Tb	Al-Ca	Al-Lu	Al-Sc	Am-Be	Am-Te	As-Gd
Ac-Pt	Ag-Ga	Ag-Os	Ag-Te	Al-Cd	Al-Mg	Al-Se	Am-C	Ar	As-Ge
Ac-S	Ag-Gd	Ag-P	Ag-Th	Al-Ce	Al-Mn	Al-Si	Am-Co	Ar-Mo	As-H
Ag	Ag-Ge	Ag-Pb	Ag-Ti	Al-Co	Al-Mo	Al-Sm	Am-Cr	As	As-Hf
Ag-Al	Ag-H	Ag-Pd	Ag-Tl	Al-Cr	Al-N	Al-Sn	Am-Fe	As-Au	As-Hg
Ag-As	Ag-Hf	Ag-Pm	Ag-Tm	Al-Cs	Al-Na	Al-Sr	Am-H	As-B	As-Ho
Ag-Au	Ag-Hg	Ag-Po	Ag-U	Al-Cu	Al-Nb	Al-Ta	Am-Ir	As-Ba	As-In
Ag-B	Ag-Ho	Ag-Pr	Ag-V	Al-Dy	Al-Nd	Al-Tb	Am-La	As-Be	As-K
Ag-Ba	Ag-In	Ag-Pt	Ag-W	Al-Er	Al-Ni	Al-Tc	Am-Mo	As-Bi	As-La
Ag-Be	Ag-Ir	Ag-Pu	Ag-Y	Al-Eu	Al-Np	Al-Te	Am-N	As-C	As-Li
Ag-Bi	Ag-K	Ag-Rb	Ag-Yb	Al-Fe	Al-O	Al-Th	Am-Ni	As-Ca	As-Lu
Ag-C	Ag-Kr	Ag-Re	Ag-Zn	Al-Ga	Al-Os	Al-Ti	Am-O	As-Cd	As-Mg
Ag-Ca	Ag-La	Ag-Rh	Ag-Zr	Al-Gd	Al-P	Al-Tl	Am-Os	As-Ce	As-Mn
Ag-Cd	Ag-Li	Ag-Ru	Al	Al-Ge	Al-Pb	Al-Tm	Am-Pd	As-Co	As-Mo
Ag-Ce	Ag-Lu	Ag-S	Al-Am	Al-H	Al-Pd	Al-U	Am-Pt	As-Cr	As-N
Ag-Co	Ag-Mg	Ag-Sb	Al-As	Al-Hf	Al-Pr	Al-V	Am-Pu	As-Cs	As-Na
	Ag-Mn	Ag-Sc		Al-Hg	Al-Pt	Al-W			As-Nb

As-Nd	As-Te	Au-Cu	Au-Ni	Au-Tc	B-Eu	B-Pa	B-V	Ba-La	Ba-Sr
As-Ni	As-Th	Au-Dy	Au-Np	Au-Te	B-Fe	B-Pb	B-W	Ba-Li	Ba-Tb
As-Np	As-Ti	Au-Er	Au-O	Au-Th	B-Ga	B-Pd	B-Y	Ba-Mg	Ba-Te
As-O	As-Tl	Au-Eu	Au-Os	Au-Ti	B-Gd	B-Pm	B-Yb	Ba-Mn	Ba-Ti
As-Os	As-Tm	Au-Fe	Au-P	Au-Tl	B-Ge	B-Pr	B-Zn	Ba-Mo	Ba-Tl
As-P	As-U	Au-Ga	Au-Pa	Au-Tm	B-H	B-Pt	B-Zr	Ba-N	Ba-Tm
As-Pa	As-V	Au-Gd	Au-Pb	Au-U	B-Hf	B-Pu	Ba	Ba-Na	Ba-V
As-Pb	As-W	Au-Ge	Au-Pd	Au-V	B-Hg	B-Re	Ba-Be	Ba-Nd	Ba-Y
As-Pd	As-Y	Au-H	Au-Po	Au-W	B-Ho	B-Rh	Ba-Bi	Ba-Ni	Ba-Yb
As-Pr	As-Yb	Au-He	Au-Pr	Au-Y	B-In	B-Ru	Ba-Br	Ba-O	Ba-Zn
As-Pt	As-Zn	Au-Hf	Au-Pt	Au-Yb	B-Ir	B-S	Ba-C	Ba-P	Be
As-Pu	As-Zr	Au-Hg	Au-Pu	Au-Zn	B-La	B-Sb	Ba-Ca	Ba-Pb	Be-Bi
As-Rb	Au	Au-Ho	Au-Rb	Au-Zr	B-Li	B-Sc	Ba-Cd	Ba-Pd	Be-C
As-Re	Au-B	Au-In	Au-Re	B	B-Lu	B-Se	Ba-Cl	Ba-Po	Be-Ca
As-Rh	Au-Ba	Au-Ir	Au-Rh	B-Ba	B-Mg	B-Si	Ba-Cs	Ba-Pr	Be-Cd
As-Ru	Au-Be	Au-K	Au-Ru	B-Be	B-Mn	B-Sm	Ba-Cu	Ba-Pt	Be-Ce
As-S	Au-Bi	Au-La	Au-S	B-Bi	B-Mo	B-Sn	Ba-Eu	Ba-Pu	Be-Cm
As-Sb	Au-Br	Au-Li	Au-Sb	B-C	B-N	B-Sr	Ba-F	Ba-Rb	Be-Co
As-Sc	Au-C	Au-Lu	Au-Sc	B-Ca	B-Na	B-Ta	Ba-Fe	Ba-Rh	Be-Cr
As-Se	Au-Ca	Au-Mg	Au-Se	B-Cd	B-Nb	B-Tb	Ba-Ga	Ba-S	Be-Cs
As-Si	Au-Cd	Au-Mn	Au-Si	B-Ce	B-Nd	B-Tc	Ba-Ge	Ba-Sb	Be-Cu
As-Sm	Au-Ce	Au-Mo	Au-Sm	B-Co	B-Ni	B-Th	Ba-H	Ba-Sc	Be-Dy
As-Sn	Au-Cl	Au-N	Au-Sn	B-Cr	B-Np	B-Ti	Ba-Hg	Ba-Se	Be-Er
As-Sr	Au-Co	Au-Na	Au-Sr	B-Cu	B-O	B-Tl	Ba-I	Ba-Si	Be-Eu
As-Ta	Au-Cr	Au-Nb	Au-Ta	B-Dy	B-Os	B-Tm	Ba-In	Ba-Sm	Be-Fe
As-Tb	Au-Cs	Au-Nd	Au-Tb	B-Er	B-P	B-U	Ba-K	Ba-Sn	Be-Ga

Be-Gd	Be-Pm	Be-Y	Bi-I	Bi-Rh	Bk	C-Dy	C-Po	C-Zn	Ca-Lu
Be-Ge	Be-Po	Be-Yb	Bi-In	Bi-Ru	Bk-H	C-Er	C-Pr	C-Zr	Ca-Mg
Be-H	Be-Pr	Be-Zn	Bi-Ir	Bi-S	Bk-Mo	C-Eu	C-Pt	Ca	Ca-Mn
Be-Hf	Be-Pt	Be-Zr	Bi-K	Bi-Sb	Bk-Pt	C-Fe	C-Pu	Ca-Cd	Ca-Mo
Be-Hg	Be-Pu	Bi	Bi-La	Bi-Sc	Br	C-Gd	C-Rb	Ca-Ce	Ca-N
Be-Ho	Be-Re	Bi-Br	Bi-Li	Bi-Se	Br-Ca	C-Ge	C-Re	Ca-Cl	Ca-Na
Be-In	Be-Rh	Bi-Ca	Bi-Lu	Bi-Si	Br-Cd	C-Hf	C-Rh	Ca-Co	Ca-Nb
Be-Ir	Be-Ru	Bi-Cd	Bi-Mg	Bi-Sm	Br-Cf	C-Hg	C-Ru	Ca-Cr	Ca-Nd
Be-K	Be-S	Bi-Ce	Bi-Mn	Bi-Sn	Br-Cs	C-Ho	C-Sb	Ca-Cs	Ca-Ni
Be-La	Be-Sb	Bi-Cl	Bi-Mo	Bi-Sr	Br-K	C-Ir	C-Sc	Ca-Cu	Ca-O
Be-Li	Be-Sc	Bi-Cm	Bi-N	Bi-Ta	Br-In	C-K	C-Se	Ca-Dy	Ca-P
Be-Lu	Be-Se	Bi-Co	Bi-Na	Bi-Tb	Br-K	C-La	C-Si	Ca-Er	Ca-Pb
Be-Mg	Be-Si	Bi-Cr	Bi-Nb	Bi-Te	Br-Mo	C-Li	C-Sm	Ca-Eu	Ca-Pd
Be-Mn	Be-Sm	Bi-Cs	Bi-Nd	Bi-Th	Br-Na	C-Lu	C-Sr	Ca-F	Ca-Pm
Be-Mo	Be-Sn	Bi-Cu	Bi-Ni	Bi-Ti	Br-Rb	C-Mg	C-Ta	Ca-Fe	Ca-Po
Be-N	Be-Sr	Bi-Dy	Bi-O	Bi-Tl	Br-Sc	C-Mn	C-Tb	Ca-Ga	Ca-Pr
Be-Na	Be-Ta	Bi-Er	Bi-Os	Bi-Tm	Br-Sr	C-Mo	C-Tc	Ca-Gd	Ca-Pt
Be-Nb	Be-Tb	Bi-Eu	Bi-P	Bi-U	Br-Te	C-Na	C-Th	Ca-Ge	Ca-Pu
Be-Nd	Be-Tc	Bi-Fe	Bi-Pb	Bi-V	C	C-Nb	C-Ti	Ca-H	Ca-Rb
Be-Ni	Be-Te	Bi-Ga	Bi-Pd	Bi-W	C-Ca	C-Nd	C-Tl	Ca-Hg	Ca-Rh
Be-Np	Be-Th	Bi-Gd	Bi-Po	Bi-Xe	C-Cd	C-Ni	C-Tm	Ca-I	Ca-S
Be-O	Be-Ti	Bi-Ge	Bi-Pr	Bi-Y	C-Ce	C-Np	C-U	Ca-In	Ca-Sb
Be-Os	Be-Tm	Bi-H	Bi-Pt	Bi-Yb	C-Co	C-Os	C-V	Ca-Ir	Ca-Sc
Be-P	Be-U	Bi-Hf	Bi-Pu	Bi-Zn	C-Cr	C-Pa	C-W	Ca-K	Ca-Se
Be-Pa	Be-V	Bi-Hg	Bi-Rb	Bi-Zr	C-Cs	C-Pb	C-Y	Ca-La	Ca-Si
Be-Pd	Be-W	Bi-Ho	Bi-Re		C-Cu	C-Pd	C-Yb	Ca-Li	Ca-Sm

Ca-Sn	Cd-Ge	Cd-Po	Cd-Zr	Ce-N	Ce-Tb	Cl-K	Cm-Si	Co-Nd	Co-Th
Ca-Sr	Cd-H	Cd-Pr	Ce	Ce-Na	Ce-Te	Cl-La	Co	Co-Ni	Co-Ti
Ca-Tb	Cd-Hf	Cd-Pt	Ce-Cl	Ce-Nb	Ce-Th	Cl-Mo	Co-Cr	Co-Np	Co-Tl
Ca-Te	Cd-Hg	Cd-Pu	Ce-Co	Ce-Nd	Ce-Ti	Cl-Na	Co-Cu	Co-O	Co-Tm
Ca-Ti	Cd-Ho	Cd-Rb	Ce-Cr	Ce-Ni	Ce-Tl	Cl-Nd	Co-Dy	Co-Os	Co-U
Ca-Tl	Cd-I	Cd-Rh	Ce-Cu	Ce-O	Ce-Tm	Cl-Ni	Co-Er	Co-P	Co-V
Ca-Tm	Cd-In	Cd-S	Ce-Dy	Ce-Os	Ce-U	Cl-Pd	Co-Fe	Co-Pb	Co-W
Ca-U	Cd-K	Cd-Sb	Ce-Er	Ce-P	Ce-V	Cl-Rb	Co-Ga	Co-Pd	Co-Y
Ca-V	Cd-Kr	Cd-Sc	Ce-Eu	Ce-Pb	Ce-Y	Cl-Sc	Co-Gd	Co-Pr	Co-Yb
Ca-W	Cd-La	Cd-Se	Ce-F	Ce-Pd	Ce-Yb	Cl-Sn	Co-Ge	Co-Pt	Co-Zn
Ca-Y	Cd-Li	Cd-Si	Ce-Fe	Ce-Pm	Ce-Zn	Cl-Sr	Co-H	Co-Pu	Co-Zr
Ca-Yb	Cd-Lu	Cd-Sm	Ce-Ga	Ce-Po	Ce-Zr	Cl-Te	Co-Hf	Co-Re	Cr
Ca-Zn	Cd-Mg	Cd-Sn	Ce-Gd	Ce-Pr	Cf	Cl-Th	Co-Hg	Co-Rh	Cr-Cs
Cd	Cd-Mn	Cd-Sr	Ce-Ge	Ce-Pt	Cf-Mo	Cl-Tl	Co-Ho	Co-Ru	Cr-Cu
Cd-Ce	Cd-Mo	Cd-Tb	Ce-H	Ce-Pu	Cf-O	Cl-Tm	Co-In	Co-S	Cr-Dy
Cd-Cl	Cd-N	Cd-Tc	Ce-Hf	Ce-Re	Cf-Pt	Cl-Y	Co-Ir	Co-Sb	Cr-Er
Cd-Co	Cd-Na	Cd-Te	Ce-Hg	Ce-Rh	Cf-S	Cl-Yb	Co-K	Co-Sc	Cr-Eu
Cd-Cr	Cd-Nb	Cd-Th	Ce-Ho	Ce-Ru	Cf-Sb	Cm	Co-La	Co-Se	Cr-Fe
Cd-Cs	Cd-Nd	Cd-Ti	Ce-I	Ce-S	Cl	Cm-Cr	Co-Li	Co-Si	Cr-Ga
Cd-Cu	Cd-Ni	Cd-Tl	Ce-In	Ce-Sb	Cl-Cs	Cm-Ir	Co-Lu	Co-Sm	Cr-Gd
Cd-Dy	Cd-Np	Cd-Tm	Ce-Ir	Ce-Sc	Cl-Dy	Cm-Mo	Co-Mg	Co-Sn	Cr-Ge
Cd-Er	Cd-O	Cd-U	Ce-La	Ce-Se	Cl-Er	Cm-N	Co-Mn	Co-Sr	Cr-H
Cd-Eu	Cd-P	Cd-V	Ce-Lu	Ce-Si	Cl-Gd	Cm-O	Co-Mo	Co-Ta	Cr-Hf
Cd-Fe	Cd-Pb	Cd-Y	Ce-Mg	Ce-Sm	Cl-Hg	Cm-Pd	Co-N	Co-Tb	Cr-Hg
Cd-Ga	Cd-Pd	Cd-Yb	Ce-Mn	Ce-Sn	Cl-In	Cm-Pt	Co-Na	Co-Tc	Cr-Ho
Cd-Gd	Cd-Pm	Cd-Zn	Ce-Mo	Ce-Ta		Cm-Rh	Co-Nb	Co-Te	Cr-I

Cr-In	Cr-Rh	Cs-Fe	Cs-S	Cu-K	Cu-Re	Dy	Dy-Po	Dy-Zn	Er-Pb
Cr-Ir	Cr-Ru	Cs-Ga	Cs-Sb	Cu-La	Cu-Rh	Dy-Er	Dy-Pr	Dy-Zr	Er-Pd
Cr-K	Cr-S	Cs-Ge	Cs-Se	Cu-Li	Cu-Ru	Dy-Fe	Dy-Pt	Er	Er-Pm
Cr-La	Cr-Sb	Cs-H	Cs-Sn	Cu-Lu	Cu-S	Dy-Ga	Dy-Pu	Er-Fe	Er-Po
Cr-Li	Cr-Sc	Cs-Hf	Cs-Sr	Cu-Mg	Cu-Sb	Dy-Gd	Dy-Re	Er-Ga	Er-Pr
Cr-Lu	Cr-Se	Cs-Hg	Cs-Te	Cu-Mn	Cu-Sc	Dy-Ge	Dy-Rh	Er-Gd	Er-Pt
Cr-Mg	Cr-Si	Cs-I	Cs-Ti	Cu-Mo	Cu-Se	Dy-H	Dy-Ru	Er-Ge	Er-Pu
Cr-Mn	Cr-Sm	Cs-In	Cs-Tl	Cu-N	Cu-Si	Dy-Hg	Dy-S	Er-H	Er-Re
Cr-Mo	Cr-Sn	Cs-Ir	Cs-V	Cu-Na	Cu-Sm	Dy-Ho	Dy-Sb	Er-Hf	Er-Rh
Cr-N	Cr-Ta	Cs-K	Cs-Zn	Cu-Nb	Cu-Sn	Dy-I	Dy-Se	Er-Hg	Er-Ru
Cr-Na	Cr-Tb	Cs-Li	Cs-Zr	Cu-Nd	Cu-Sr	Dy-In	Dy-Si	Er-Ho	Er-S
Cr-Nb	Cr-Tc	Cs-Mg	Cu	Cu-Ni	Cu-Ta	Dy-Ir	Dy-Sm	Er-I	Er-Sb
Cr-Nd	Cr-Te	Cs-Mo	Cu-Dy	Cu-Np	Cu-Tb	Dy-La	Dy-Sn	Er-In	Er-Sc
Cr-Ni	Cr-Th	Cs-N	Cu-Er	Cu-O	Cu-Tc	Dy-Lu	Dy-Ta	Er-Ir	Er-Se
Cr-Np	Cr-Ti	Cs-Na	Cu-Eu	Cu-Os	Cu-Te	Dy-Mg	Dy-Tb	Er-La	Er-Si
Cr-O	Cr-Tm	Cs-Nb	Cu-Fe	Cu-P	Cu-Th	Dy-Mn	Dy-Tc	Er-Lu	Er-Sm
Cr-Os	Cr-U	Cs-O	Cu-Ga	Cu-Pa	Cu-Ti	Dy-Mo	Dy-Te	Er-Mg	Er-Sn
Cr-P	Cr-V	Cs-Os	Cu-Gd	Cu-Pb	Cu-Tl	Dy-N	Dy-Th	Er-Mn	Er-Ta
Cr-Pb	Cr-W	Cs-P	Cu-Ge	Cu-Pd	Cu-Tm	Dy-Nd	Dy-Ti	Er-Mo	Er-Tb
Cr-Pd	Cr-Y	Cs-Pb	Cu-H	Cu-Pm	Cu-U	Dy-Ni	Dy-Tl	Er-N	Er-Tc
Cr-Pr	Cr-Yb	Cs-Pd	Cu-Hf	Cu-Po	Cu-V	Dy-O	Dy-Tm	Er-Nb	Er-Te
Cr-Pt	Cr-Zn	Cs-Pr	Cu-Hg	Cu-Pr	Cu-W	Dy-Os	Dy-U	Er-Nd	Er-Th
Cr-Pu	Cr-Zr	Cs-Pt	Cu-Ho	Cu-Pt	Cu-Y	Dy-P	Dy-V	Er-Ni	Er-Ti
Cr-Ra	Cs	Cs-Rb	Cu-I	Cu-Pu	Cu-Yb	Dy-Pb	Dy-W	Er-O	Er-Tl
Cr-Rb	Cs-Cu	Cs-Rh	Cu-In	Cu-Ra	Cu-Zn	Dy-Pd	Dy-Y	Er-Os	Er-Tm
Cr-Re	Cs-F	Cs-Ru	Cu-Ir	Cu-Rb	Cu-Zr	Dy-Pm	Dy-Yb	Er-P	Er-U

Er-V	Eu-Ni	Eu-Zn	Fe-Kr	Fe-S	Fr	Ga-O	Ga-Tl	Gd-O	Gd-Tl
Er-W	Eu-O	Eu-Zr	Fe-La	Fe-Sb	Fr-Mg	Ga-Os	Ga-Tm	Gd-Os	Gd-Tm
Er-Y	Eu-P	F	Fe-Li	Fe-Sc	Fr-Mo	Ga-P	Ga-U	Gd-P	Gd-U
Er-Yb	Eu-Pb	F-In	Fe-Lu	Fe-Se	Ga	Ga-Pb	Ga-V	Gd-Pb	Gd-V
Er-Zn	Eu-Pd	F-K	Fe-Mg	Fe-Si	Ga-Pd	Ga-Pd	Ga-W	Gd-Pd	Gd-W
Er-Zr	Eu-Po	F-Li	Fe-Mn	Fe-Sm	Ga-Gd	Ga-Pm	Ga-Y	Gd-Pm	Gd-Y
Es	Eu-Pt	F-Mg	Fe-Mo	Fe-Sn	Ga-Ge	Ga-Pr	Ga-Yb	Gd-Po	Gd-Yb
Es-Mo	Eu-Pu	F-Mo	Fe-N	Fe-Sr	Ga-Hf	Ga-Pt	Ga-Zn	Gd-Pr	Gd-Zn
Es-O	Eu-Re	F-Na	Fe-Na	Fe-Ta	Ga-Hg	Ga-Pu	Ga-Zr	Gd-Pt	Gd-Zr
Eu	Eu-S	F-Ni	Fe-Nb	Fe-Tb	Ga-Ho	Ga-Rb	Gd	Gd-Pu	Ge
Eu-Fe	Eu-Sb	F-Rb	Fe-Nd	Fe-Tc	Ga-I	Ga-Re	Gd-Ge	Gd-Re	Ge-H
Eu-Ga	Eu-Sc	F-Sm	Fe-Ni	Fe-Te	Ga-In	Ga-Rh	Gd-H	Gd-Rh	Ge-Hf
Eu-Ge	Eu-Se	F-Sn	Fe-Np	Fe-Th	Ga-Ir	Ga-Ru	Gd-Hg	Gd-Ru	Ge-Hg
Eu-H	Eu-Si	F-Sb	Fe-O	Fe-Ti	Ga-K	Ga-S	Gd-Ho	Gd-S	Ge-Ho
Eu-Hf	Eu-Sm	F-Yb	Fe-Os	Fe-Tl	Ga-La	Ga-Sb	Gd-I	Gd-Sb	Ge-I
Eu-Hg	Eu-Sn	Fe	Fe-P	Fe-Tm	Ga-Li	Ga-Sc	Gd-In	Gd-Sc	Ge-In
Eu-Ho	Eu-Ta	Fe-Ga	Fe-Pb	Fe-U	Ga-Lu	Ga-Se	Gd-Ir	Gd-Se	Ge-Ir
Eu-In	Eu-Te	Fe-Gd	Fe-Pd	Fe-V	Ga-Mg	Ga-Si	Gd-La	Gd-Si	Ge-K
Eu-Ir	Eu-Th	Fe-Ge	Fe-Pm	Fe-W	Ga-Mn	Ga-Sm	Gd-Lu	Gd-Sm	Ge-La
Eu-La	Eu-Ti	Fe-H	Fe-Pr	Fe-Y	Ga-Mo	Ga-Sn	Gd-Mg	Gd-Sn	Ge-Li
Eu-Mg	Eu-Tl	Fe-Hf	Fe-Pt	Fe-Yb	Ga-N	Ga-Sr	Gd-Mn	Gd-Ta	Ge-Lu
Eu-Mn	Eu-U	Fe-Hg	Fe-Pu	Fe-Zn	Ga-Na	Ga-Ta	Gd-Mo	Gd-Tb	Ge-Mg
Eu-Mo	Eu-V	Fe-Ho	Fe-Rb	Fe-Zr	Ga-Nb	Ga-Tb	Gd-N	Gd-Tc	Ge-Mn
Eu-N	Eu-W	Fe-In	Fe-Re	Fm	Ga-Nd	Ga-Te	Gd-Nb	Gd-Te	Ge-Mo
Eu-Nb	Eu-Y	Fe-Ir	Fe-Rh	Fm-Mo	Ga-Ni	Ga-Th	Gd-Nd	Gd-Th	Ge-N
	Eu-Yb	Fe-K	Fe-Ru		Ga-Np	Ga-Ti	Gd-Ni	Gd-Ti	Ge-Na

Ge-Nb	Ge-Th	H-Nd	H-Tl	Hf-Na	Hf-U	Hg-Pd	Hg-V	Ho-Pt	I
Ge-Nd	Ge-Ti	H-Ni	H-Tm	Hf-Nb	Hf-V	Hg-Po	Hg-W	Ho-Pu	I-In
Ge-Ni	Ge-Tl	H-Np	H-U	Hf-Ni	Hf-W	Hg-Pr	Hg-Y	Ho-Re	I-K
Ge-O	Ge-Tm	H-Os	H-V	Hf-O	Hf-Y	Hg-Pt	Hg-Yb	Ho-Rh	I-La
Ge-Os	Ge-U	H-Pa	H-W	Hf-Os	Hf-Yb	Hg-Pu	Hg-Zn	Ho-Ru	I-Mg
Ge-P	Ge-V	H-Pb	H-Y	Hf-P	Hf-Zn	Hg-Rb	Hg-Zr	Ho-S	I-Mo
Ge-Pb	Ge-W	H-Pd	H-Yb	Hf-Pd	Hf-Zr	Hg-Re	Ho	Ho-Sb	I-Na
Ge-Pd	Ge-Y	H-Po	H-Zn	Hf-Po	Hg	Hg-Rh	Ho-I	Ho-Sc	I-Nd
Ge-Pr	Ge-Yb	H-Pr	H-Zr	Hf-Pr	Hg-Ho	Hg-Ru	Ho-In	Ho-Se	I-Ni
Ge-Pt	Ge-Zn	H-Pt	He	Hf-Pt	Hg-In	Hg-S	Ho-Ir	Ho-Si	I-Pr
Ge-Pu	Ge-Zr	H-Pu	He-K	Hf-Pu	Hg-Ir	Hg-Sb	Ho-La	Ho-Sm	I-Rb
Ge-Rb	H	H-Rb	He-Li	Hf-Rb	Hg-K	Hg-Sc	Ho-Lu	Ho-Sn	I-Se
Ge-Re	H-Hf	H-Re	He-Mo	Hf-Re	Hg-La	Hg-Se	Ho-Mg	Ho-Ta	I-Sr
Ge-Rh	H-Hg	H-Rh	He-Na	Hf-Rh	Hg-Li	Hg-Si	Ho-Mn	Ho-Tb	I-Tb
Ge-Ru	H-Ho	H-Ru	He-Ni	Hf-Ru	Hg-Lu	Hg-Sm	Ho-Mo	Ho-Tc	I-Te
Ge-S	H-In	H-Sb	Hf	Hf-S	Hg-Mg	Hg-Sn	Ho-N	Ho-Te	I-Th
Ge-Sb	H-Ir	H-Sc	Hf-Hg	Hf-Sb	Hg-Mn	Hg-Sr	Ho-Nd	Ho-Th	I-Tl
Ge-Sc	H-K	H-Se	Hf-In	Hf-Sc	Hg-Mo	Hg-Ta	Ho-Ni	Ho-Tl	I-W
Ge-Se	H-La	H-Si	Hf-Ir	Hf-Se	Hg-N	Hg-Tb	Ho-O	Ho-Tm	I-Y
Ge-Si	H-Li	H-Sm	Hf-K	Hf-Si	Hg-Na	Hg-Tc	Ho-Os	Ho-U	In
Ge-Sm	H-Lu	H-Sn	Hf-Li	Hf-Sn	Hg-Nb	Hg-Te	Ho-P	Ho-V	In-Ir
Ge-Sn	H-Mg	H-Sr	Hf-Mg	Hf-Ta	Hg-Nd	Hg-Th	Ho-Pb	Ho-W	In-K
Ge-Sr	H-Mn	H-Ta	Hf-Mg	Hf-Tc	Hg-Ni	Hg-Ti	Ho-Pd	Ho-Y	In-Kr
Ge-Ta	H-Mo	H-Tb	Hf-Mn	Hf-Te	Hg-O	Hg-Tl	Ho-Pm	Ho-Yb	In-La
Ge-Tb	H-Na	H-Th	Hf-Mo	Hf-Th	Hg-Os	Hg-Tm	Ho-Po	Ho-Zn	In-Li
Ge-Te	H-Nb	H-Ti	Hf-N	Hf-Ti	Hg-Pb	Hg-U	Ho-Pr	Ho-Zr	

In-Lu	In-Si	Ir-N	Ir-Sn	K-Pb	Kr-Sn	La-Si	Li-Os	Lr	Lu-Si
In-Mg	In-Sm	Ir-Na	Ir-Sr	K-Pd	La	La-Sm	Li-P	Lr-Mo	Lu-Sm
In-Mn	In-Sn	Ir-Nb	Ir-Ta	K-Pu	La-Lu	La-Sn	Li-Pb	Lu	Lu-Sn
In-Mo	In-Sr	Ir-Nd	Ir-Tb	K-Rb	La-Mg	La-Ta	Li-Pd	Lu-Mg	Lu-Ta
In-N	In-Ta	Ir-Ni	Ir-Tc	K-Rh	La-Mn	La-Tb	Li-Pt	Lu-Mn	Lu-Tb
In-Na	In-Tb	Ir-Np	Ir-Te	K-Ru	La-Mo	La-Te	Li-Pu	Lu-Mo	Lu-Tc
In-Nb	In-Te	Ir-O	Ir-Th	K-S	La-N	La-Th	Li-Rb	Lu-N	Lu-Te
In-Nd	In-Th	Ir-Os	Ir-Ti	K-Sb	La-Nb	La-Ti	Li-Re	Lu-Nd	Lu-Th
In-Ni	In-Ti	Ir-P	Ir-Tm	K-Se	La-Nd	La-Tl	Li-Rh	Lu-Ni	Lu-Ti
In-O	In-Tl	Ir-Pa	Ir-U	K-Si	La-Ni	La-Tm	Li-Ru	Lu-O	Lu-Tl
In-Os	In-Tm	Ir-Pb	Ir-V	K-Sn	La-O	La-U	Li-S	Lu-Os	Lu-Tm
In-P	In-U	Ir-Pd	Ir-W	K-Sr	La-Os	La-V	Li-Sb	Lu-P	Lu-U
In-Pb	In-V	Ir-Pm	Ir-Y	K-Ta	La-P	La-W	Li-Se	Lu-Pb	Lu-V
In-Pd	In-W	Ir-Pr	Ir-Yb	K-Te	La-Pb	La-Y	Li-Si	Lu-Pd	Lu-W
In-Pm	In-Y	Ir-Pt	Ir-Zr	K-Th	La-Pd	La-Yb	Li-Sn	Lu-Pm	Lu-Y
In-Pr	In-Yb	Ir-Pu	K	K-Ti	La-Pm	La-Zn	Li-Sr	Lu-Po	Lu-Yb
In-Pt	In-Zn	Ir-Rb	K-Li	K-Tl	La-Pr	La-Zr	Li-Ta	Lu-Pr	Lu-Zn
In-Pu	In-Zr	Ir-Re	K-Mg	K-U	La-Pt	Li	Li-Tc	Lu-Pt	Lu-Zr
In-Rb	Ir	Ir-Rh	K-Mo	K-V	La-Pu	Li-Mg	Li-Te	Lu-Pu	Md
In-Re	Ir-K	Ir-Ru	K-N	K-W	La-Re	Li-Mn	Li-Ti	Lu-Re	Md-Mo
In-Rh	Ir-La	Ir-S	K-Na	K-Zn	La-Rh	Li-Mo	Li-Tl	Lu-Rh	Mg
In-Ru	Ir-Li	Ir-Sb	K-Nb	K-Zr	La-Ru	Li-N	Li-U	Lu-Ru	Mg-Mn
In-S	Ir-Lu	Ir-Sc	K-Ni	Kr	La-S	Li-Na	Li-V	Lu-S	Mg-Mo
In-Sb	Ir-Mg	Ir-Se	K-O	Kr-Mo	La-Sb	Li-Nb	Li-W	Lu-Sb	Mg-N
In-Sc	Ir-Mn	Ir-Si	K-Os	Kr-Na	La-Sc	Li-Ni	Li-Zn	Lu-Se	Mg-Na
In-Se	Ir-Mo	Ir-Sm	K-P	Kr-Pb	La-Se	Li-O	Li-Zr		

Mg-Nb	Mg-Sn	Mn-Pb	Mn-V	Mo-Ra	Mo-Y	N-Th	Na-Sb	Nb-Re	Nd-Os
Mg-Nd	Mg-Sr	Mn-Pd	Mn-W	Mo-Rb	Mo-Yb	N-Ti	Na-Se	Nb-Rh	Nd-P
Mg-Ni	Mg-Ta	Mn-Pm	Mn-Y	Mo-Re	Mo-Zn	N-Tl	Na-Si	Nb-Ru	Nd-Pb
Mg-Np	Mg-Tb	Mn-Pr	Mn-Yb	Mo-Rh	Mo-Zr	N-Tm	Na-Sn	Nb-S	Nd-Pd
Mg-O	Mg-Tc	Mn-Pt	Mn-Zn	Mo-Rn	N	N-U	Na-Sr	Nb-Sb	Nd-Pm
Mg-Os	Mg-Te	Mn-Pu	Mn-Zr	Mo-Ru	N-Na	N-V	Na-Ta	Nb-Sc	Nd-Pr
Mg-P	Mg-Th	Mn-Re	Mo	Mo-S	N-Nb	N-W	Na-Te	Nb-Se	Nd-Pt
Mg-Pa	Mg-Ti	Mn-Rh	Mo-N	Mo-Sb	N-Nd	N-Y	Na-Th	Nb-Si	Nd-Pu
Mg-Pb	Mg-Tl	Mn-Ru	Mo-Na	Mo-Sc	N-Ni	N-Yb	Na-Ti	Nb-Sm	Nd-Re
Mg-Pd	Mg-Tm	Mn-S	Mo-Nb	Mo-Se	N-Np	N-Zn	Na-Tl	Nb-Sn	Nd-Rh
Mg-Pm	Mg-U	Mn-Sb	Mo-Nd	Mo-Si	N-Os	N-Zr	Na-U	Nb-Ta	Nd-Ru
Mg-Po	Mg-V	Mn-Sc	Mo-Ne	Mo-Sm	N-Pa	Na	Na-V	Nb-Tc	Nd-S
Mg-Pr	Mg-W	Mn-Se	Mo-Ni	Mo-Sn	N-Pb	Na-Nb	Na-W	Nb-Te	Nd-Sb
Mg-Pt	Mg-Y	Mn-Si	Mo-No	Mo-Sr	N-Pd	Na-Ne	Na-Zn	Nb-Th	Nd-Sc
Mg-Pu	Mg-Yb	Mn-Sm	Mo-Np	Mo-Ta	N-Pr	Na-Ni	Na-Zr	Nb-Ti	Nd-Se
Mg-Ra	Mg-Zn	Mn-Sn	Mo-O	Mo-Tb	N-Pu	Na-O	Nb	Nb-Tl	Nd-Si
Mg-Rb	Mg-Zr	Mn-Sr	Mo-Os	Mo-Tc	N-Rb	Na-Os	Nb-Nd	Nb-U	Nd-Sm
Mg-Re	Mn	Mn-Ta	Mo-P	Mo-Te	N-Re	Na-Pb	Nb-Ni	Nb-V	Nd-Sn
Mg-Rh	Mn-Mo	Mn-Tb	Mo-Pa	Mo-Th	N-Sc	Na-Pd	Nb-O	Nb-W	Nd-Sr
Mg-Ru	Mn-N	Mn-Tc	Mo-Pb	Mo-Ti	N-Se	Na-Po	Nb-Os	Nb-Y	Nd-Ta
Mg-S	Mn-Nb	Mn-Te	Mo-Pd	Mo-Tl	N-Si	Na-Pt	Nb-P	Nb-Yb	Nd-Tb
Mg-Sb	Mn-Nd	Mn-Th	Mo-Pm	Mo-Tm	N-Sm	Na-Pu	Nb-Pb	Nb-Zn	Nd-Te
Mg-Sc	Mn-Ni	Mn-Ti	Mo-Po	Mo-U	N-Sn	Na-Rb	Nb-Pd	Nb-Zr	Nd-Th
Mg-Se	Mn-Np	Mn-Tl	Mo-Pr	Mo-V	N-Sr	Na-Rh	Nb-Pt	Nd	Nd-Ti
Mg-Si	Mn-O	Mn-Tm	Mo-Pt	Mo-W	N-Ta	Na-Ru	Nb-Pu	Nd-Ni	Nd-Tl
Mg-Sm	Mn-P	Mn-U	Mo-Pu	Mo-Xe	N-Te	Na-S	Nb-Rb	Nd-O	Nd-Tm

Nd-U	Ni-Sm	Np-Rh	O-Sb	Os-Pt	Os-Zr	P-Tl	Pb-S	Pd-Re	Pm
Nd-V	Ni-Sn	Np-Ru	O-Sc	Os-Pu	P	P-Tm	Pb-Sb	Pd-Rh	Pm-Po
Nd-W	Ni-Sr	Np-S	O-Se	Os-Rb	P-Pa	P-U	Pb-Sc	Pd-Ru	Pm-Pr
Nd-Y	Ni-Ta	Np-Sb	O-Si	Os-Re	P-Pb	P-V	Pb-Se	Pd-S	Pm-Pu
Nd-Yb	Ni-Tb	Np-Se	O-Sm	Os-Rh	P-Pd	P-W	Pb-Si	Pd-Sb	Pm-Rh
Nd-Zn	Ni-Tc	Np-Si	O-Sn	Os-Ru	P-Pr	P-Y	Pb-Sm	Pd-Sc	Pm-Ru
Nd-Zr	Ni-Te	Np-Sn	O-Sr	Os-S	P-Pt	P-Yb	Pb-Sn	Pd-Se	Pm-Sm
Ni	Ni-Th	Np-Te	O-Ta	Os-Sb	P-Pu	P-Zn	Pb-Sr	Pd-Si	Pm-Tb
Ni-Np	Ni-Ti	Np-Tl	O-Tb	Os-Sc	P-Rb	P-Zr	Pb-Tb	Pd-Sm	Pm-Th
Ni-O	Ni-Tl	Np-U	O-Tc	Os-Se	P-Re	Pa	Pb-Te	Pd-Sn	Pm-Tl
Ni-Os	Ni-Tm	Np-W	O-Te	Os-Si	P-Rh	Pa-Pt	Pb-Th	Pd-Sr	Pm-Tm
Ni-P	Ni-U	Np-Zr	O-Th	Os-Sm	P-Ru	Pa-Rh	Pb-Ti	Pd-Ta	Pm-V
Ni-Pb	Ni-V	O	O-Ti	Os-Sn	P-S	Pa-Sb	Pb-Tl	Pd-Tb	Pm-W
Ni-Pd	Ni-W	O-Os	O-Tl	Os-Ta	P-Sb	Pa-Th	Pb-Tm	Pd-Tc	Pm-Y
Ni-Pm	Ni-Y	O-Pa	O-Tm	Os-Tb	P-Sc	Pa-W	Pb-U	Pd-Te	Po
Ni-Pr	Ni-Yb	O-Pb	O-U	Os-Tc	P-Se	Pb	Pb-V	Pd-Th	Po-Pr
Ni-Pt	Ni-Zn	O-Pd	O-V	Os-Te	P-Si	Pb-Pd	Pb-W	Pd-Ti	Po-Pt
Ni-Pu	Ni-Zr	O-Pm	O-W	Os-Th	P-Sm	Pb-Pm	Pb-Y	Pd-Tl	Po-S
Ni-Re	Np	O-Po	O-Y	Os-Ti	P-Sn	Pb-Po	Pb-Yb	Pd-Tm	Po-Sc
Ni-Rh	Np-O	O-Pr	O-Yb	Os-Tm	P-Sr	Pb-Pr	Pb-Zn	Pd-U	Po-Sm
Ni-Ru	Np-Os	O-Pt	O-Zn	Os-U	P-Ta	Pb-Pt	Pb-Zr	Pd-V	Po-Sr
Ni-S	Np-P	O-Pu	O-Zr	Os-V	P-Tb	Pb-Pu	Pd	Pd-W	Po-Ta
Ni-Sb	Np-Pd	O-Rb	Os	Os-W	P-Tc	Pb-Rb	Pd-Pr	Pd-Y	Po-Tb
Ni-Sc	Np-Pt	O-Re	Os-P	Os-Y	P-Te	Pb-Rh	Pd-Pt	Pd-Yb	Po-Ti
Ni-Se	Np-Pu	O-Rh	Os-Pd	Os-Yb	P-Th	Pb-Ru	Pd-Pu	Pd-Zn	Po-Tm
Ni-Si	Np-Re	O-Ru	Os-Pr	Os-Zn	P-Ti		Pd-Rb	Pd-Zr	

Po-W	Pr-W	Pt-V	Pu-V	Rb-Zr	Rh	Ru	S-Se	Sb-Ta	Sc-V
Po-Y	Pr-Y	Pt-W	Pu-W	Re	Rh-Ru	Ru-S	S-Si	Sb-Tb	Sc-W
Po-Yb	Pr-Zn	Pt-Y	Pu-Y	Re-Rh	Rh-S	Ru-Sb	S-Sm	Sb-Te	Sc-Y
Po-Zn	Pt	Pt-Yb	Pu-Yb	Re-Ru	Rh-Sb	Ru-Sc	S-Sn	Sb-Th	Sc-Yb
Po-Zr	Pt-Pu	Pt-Zn	Pu-Zn	Re-S	Rh-Sc	Ru-Se	S-Sr	Sb-Ti	Sc-Zn
Pr	Pt-Rb	Pt-Zr	Pu-Zr	Re-Sb	Rh-Se	Ru-Si	S-Ta	Sb-Tl	Sc-Zr
Pr-Pt	Pt-Re	Pu	Ra	Re-Sc	Rh-Si	Ru-Sm	S-Tb	Sb-Tm	Se
Pr-Pu	Pt-Rh	Pu-Re	Ra-S	Re-Se	Rh-Sm	Ru-Sn	S-Tc	Sb-U	Se-Si
Pr-Re	Pt-Ru	Pu-Rh	Ra-Se	Re-Si	Rh-Sn	Ru-Ta	S-Te	Sb-V	Se-Sm
Pr-Rh	Pt-S	Pu-Ru	Ra-W	Re-Sm	Rh-Sr	Ru-Tb	S-Th	Sb-W	Se-Sn
Pr-Ru	Pt-Sb	Pu-S	Rb	Re-Sn	Rh-Ta	Ru-Tc	S-Ti	Sb-Y	Se-Sr
Pr-S	Pt-Sc	Pu-Sb	Rb-Rh	Re-Ta	Rh-Tb	Ru-Te	S-Tl	Sb-Yb	Se-Ta
Pr-Sb	Pt-Se	Pu-Sc	Rb-Ru	Re-Tb	Rh-Tc	Ru-Th	S-Tm	Sb-Zn	Se-Tb
Pr-Se	Pt-Si	Pu-Se	Rb-S	Re-Tc	Rh-Te	Ru-Ti	S-U	Sb-Zr	Se-Te
Pr-Si	Pt-Sm	Pu-Si	Rb-Sb	Re-Te	Rh-Th	Ru-Tm	S-V	Sc	Se-Th
Pr-Sm	Pt-Sn	Pu-Sm	Rb-Se	Re-Th	Rh-Ti	Ru-U	S-W	Sc-Se	Se-Ti
Pr-Sn	Pt-Sr	Pu-Sn	Rb-Si	Re-Ti	Rh-Tm	Ru-V	S-Y	Sc-Si	Se-Tl
Pr-Ta	Pt-Ta	Pu-Sr	Rb-Sn	Re-Tm	Rh-U	Ru-W	S-Yb	Sc-Sn	Se-Tm
Pr-Tb	Pt-Tb	Pu-Ta	Rb-Sr	Re-U	Rh-V	Ru-Y	S-Zn	Sc-Sr	Se-U
Pr-Te	Pt-Tc	Pu-Tb	Rb-Te	Re-V	Rh-W	Ru-Yb	S-Zr	Sc-Ta	Se-V
Pr-Th	Pt-Te	Pu-Te	Rb-Ti	Re-W	Rh-Y	Ru-Zn	Sb	Sc-Tb	Se-W
Pr-Ti	Pt-Th	Pu-Th	Rb-Tl	Re-Y	Rh-Yb	Ru-Zr	Sb-Se	Sc-Tc	Se-Y
Pr-Tl	Pt-Ti	Pu-Ti	Rb-V	Re-Yb	Rh-Zn	S	Sb-Si	Sc-Te	Se-Yb
Pr-Tm	Pt-Tl	Pu-Tl	Rb-W	Re-Zn	Rh-Zr	S-Sb	Sb-Sm	Sc-Th	Se-Zn
Pr-U	Pt-Tm	Pu-Tm	Rb-Zn	Re-Zr		S-Sc	Sb-Sn	Sc-Ti	Se-Zr
Pr-V	Pt-U	Pu-U					Sb-Sr	Sc-U	

Si

Si-Sm
Si-Sn
Si-Sr
Si-Ta
Si-Tb
Si-Tc
Si-Te
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Si-Tl
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Si-V
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Si-Y
Si-Yb
Si-Zn
Si-Zr

Sm

Sm-Sn
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Y-Zr
Yb
Yb-Zn
Yb-Zr
Zn
Zn-Zr