



## Al Alloys

The Al alloys module in JMatPro deals with the following elements:

Al B **Bi\*** C Ca Co Cr Cu Fe H La Li Mg Mn **Mo\*** Ni Pb Sc Si Sn Sr Ti V Zn Zr

and the following phases:

AL LIQUID AL11RE3\_ALPHA AL13CR4SI4 AL20CU2MN3 AL2CU  
AL2SI2M AL3FE AL3M\_DO22 AL3M\_DO23 AL3M\_L12 AL3NI AL3NI2  
AL3RE\_DO19 AL4C3 AL4M\_D13 AL4SIC4 AL5CU2MG8SI6 AL6MN  
AL7CR AL7CU2M AL7CU4NI AL8FEMG3SI6 AL8SIC7 AL9M2  
ALFESI\_ALPHA ALFESI\_BETA ALLI AL3MG2 ALLISI ALPHA  
E\_ALCRMGMN GRAPHITE ZN\_HCP MGZN2 **ALB2\*** MB2 MC MG2SI  
MG2X\_C1 PB\_FCC LIQ\_2 R\_ALCULI SIC SILICON S\_AL2CUMG  
T1\_ALCULI T1\_PRIME T2\_ALCULI TAU\_ALLIMG TB\_ALCULI  
T\_ALCUMGZN SN AL13CO4 ZN\_FCC GAS  
**ALFEMOSI\* BI\* EPSILON\_BIPB\***

\* denotes additions made in version 6.1

In addition it considers the following meta-stable phases:

GP BETA" BETA\_PRIME B\_PRIME  
ETA\_PRIME S\_PRIME THETA\_PRIME T\_PRIME

## Co alloys

The Co alloys module in JMatPro deals with the following elements:

Al B C Co Cr Cu Fe Hf Mn Mo N Nb Ni O Pt Re Ru Si Ta Ti V W Zr

and the following phases:

LIQUID GAMMA DELTA ETA GAMMA\_PRIME MU LAVES SIGMA  
G\_PHASE P\_PHASE R\_PHASE M2(C,N) M23C6 MC M6C M7C3  
M3B2 MB2 NI2M NIMO MN HCP\_A3 COBALT\_HCP



## Fe alloys

The Fe alloys module in JMatPro deals with the following elements:

Al B C Co Cr Cu Fe Mg Mn Mo N Nb Ni O P S Si Ta Ti V W

and the following phases:

LIQUID AUSTENITE FERRITE CEMENTITE CHI DELTA ETA LAVES  
GRAPHITE M2(C,N) M(C,N) M23C6 M3C2 M7C3 M6C MC\_SHP  
CR2B FE2B FE3B M3B2 MB2\_C32 M2O3 M3O4 M2SIO4 M2P  
M3P MG3N2 MGS MNS MOP MO\_B2 MS\_B81 MULLITE ALN  
(FE,NI)AL FE4N FETIP G\_PHASE MU\_PHASE PI\_PHASE  
R\_PHASE SIGMA SIO2 SPINEL\_AB2O4 TI4C2S2 Z\_PHASE MN BN  
CU ALPHA\_CR KSI\_CARBIDE GAS

Important: this list includes all the phases and elements available for Fe alloys as a whole. For the JMatPro sub-modules General Steels, Stainless Steels and Cast Iron these are reduced to sets limited to elements and phases relevant to the material type. For more details on this please evaluate the demo version of JMatPro.

## Mg alloys

The Mg alloys module in JMatPro deals with the following elements:

Al Ca Ce Cu Fe Gd La Mg Mn Nd Sc Si **Sn\*** Sr Y Zn Zr

and the following phases:

LIQUID MG MG2CU MGZN2 MG2CA MGCU2 AL2RE MG12RE  
MG17SR2 MG24Y5 MG2SI MG2ZN3 MG3RE\_D03 MG41RE5  
MG5GD MGZN MG17AL12 AL11MN4 AL11RE3\_ALPHA AL2FE  
AL2ZR AL3FE AL3RE\_DO19 AL3ZR AL4MN AL4M\_D13 AL5FE2  
AL8MN5 FE ALPHA\_MN BETA\_MN PHI\_ALMGZN Q\_AL7CU3MG6  
T\_ALCUMGZN ALPHA\_ZR  
**MG2SN\* CA2SN\* CA2MG6ZN3\* CA2MG5ZN13\***  
**T\_MGZNCE\* I\_MGYZN\* W\_MGYZN\* X\_MGYZN\* Z\_MGYZN\***

\* denotes additions made in version 6.1



## Ni alloys

The Ni alloys module in JMatPro deals with the following elements:

Al B C Co Cr Cu Fe Hf Mn Mo N Nb Ni O Pt Re Ru Si Ta Ti V W Zr

and the following phases:

LIQUID GAMMA GAMMA\_PRIME GAMMA" DELTA ETA LAVES  
MU SIGMA GRAPHITE G\_PHASE MC M2(C,N) M23C6 M6C M7C3  
M2B\_ORTH M2B\_TETR M3B2 M3B MB2 MB\_ORTH M3O4 M2O3  
M2SIO4 MO\_B2 MULLITE NI2M NI5M NI3SI\_H NI5SI2 NI7M2  
NIMO PI\_PHASE P\_PHASE R\_PHASE SIO2 SPINEL\_AB2O4  
Z\_PHASE NIAL LIQUID\_O MN\_HCP\_A3 COBALT\_HCP PTAL  
PT2AL\_H PT2AL\_L PT3AL PT5AL3 L10 A4B\_D1 BCC CR3NI5SI2  
CR5B3 CR3X\_A15

## Ti alloys

The Ti alloys module in JMatPro deals with the following elements:

Al B C Cr Cu Fe H Mn Mo N Nb Ni O Re Ru Si Sn Ta Ti V Zr

and the following phases:

LIQUID ALPHA BETA LAVES MC ALPHA\_TIMN BETA\_TIMN C15\_FCC  
CHI\_A12 GAS TIB2 TIH2 SIC TI2CU TI2NI TI3AL TI5SI3 TIB  
TIM\_B2 TIZRSI



## Solder alloys

The solder alloys module in JMatPro deals with the following elements:

Ag Al Au Bi Cu In Ni Pb Sb Sn Zn

and the following phases:

SN LIQUID PB BI...IN...ZN AG3SN NIAL INSB AG9IN4 AGIN2  
AL2AU AL2CU AL3AU8 AL3NI AL3NI2 NI5AL3 ALAU ALAU4 NI3AL  
ALPHA1\_AUZN ALPHA2\_AUZN ALPHA3\_AUZN ALPHA\_ALAU2  
AU11ZN14 AU2BI AU2PB AU4IN3SN3 AU5SN AU5ZN3 AU7IN3  
AUIIN AUIIN2 AUNI2SN4 AUPB2 AUPB3 AUSB2 AUSN2 AUSN4  
CU6SN5 CU6SN5\_PRIME BETA\_ALAU2 BETA\_AUIIN\_H BETA\_AUIIN\_L  
BETA\_CUSB BETA\_NIZN BI3IN5 BI3NI BIIN BIIN2 CU10SN3  
CU11IN9 CU11SB2 CU2IN3SN CU2SB CU3SN CU41SN11 CU7IN3  
CU9SB2 DELTA\_ALCU EPSILON1\_AUZN EPSILON\_ALCU  
EPSILON\_PBIN ETA\_ALCU ETA\_CUIN\_L FCC\_A1 GAMMA2\_AUZN  
GAMMA3\_AUZN GAMMA\_ALAU2 GAMMA\_AUIIN GAMMA\_CUIN  
ZETA\_AG(SN,IN) IN7NI3 IN9NI13 INNI INSN\_GAMMA NI3SN4  
NI5SB2 NISB2 NIZN8 PSI\_AUIIN SB17ZN23\_H SB17ZN23\_L  
SB19ZN31 SB2SN3 SB4ZN6 SB9ZN11 SBSN SBZN BETA\_IN  
ZETA\_ALCU

## Zr alloys

The Zr alloys module in JMatPro deals with the following elements:

C Cr Fe H Hf N Nb Ni O Si Sn Zr

and the following phases:

LIQUID ALPHA BETA LAVES ZR(C,N) ZR2M ZR2SI ZR3FE ZR3SI  
ZR3SI2 ZR5FE4NB ZR7FESN2 ZRSN2 ZR4SN A5B3 C15\_FCC  
MH2