Am-U (Americium-Uranium)

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The Am-U phase diagram was calculated by [1993Oga] using a regular solution model (see [1999Oka]). The phase diagram was incomplete, as low-temperature allotropes of both terminal elements were not taken into account.

Figure 1 shows a complete Am-U phase diagram calculated by [2010Kur] based on the thermodynamic database created consistently for actinide elements.

Table 1 shows Am-U crystal structure data. The approximate composition range for each phase was read from the phase diagram.

References

1993Oga: T. Ogawa, Alloying Behaviour Among U, Np, Pu, and Am Predicted with the Brewer Bond Model, *J. Alloys Compd.*, 1993, **194**(1), p 1-7
1999Oka: H. Okamoto, Am-U (Americium-Uranium), *J. Phase Equilib.*, 1999, **20**(4), p 452
2010Kur: K. Kurata, Thermodynamic Database on U-Pu-Zr-Np-Am-Fe Alloy System II—Evaluation of Np, Am, and Fe Containing Systems, *IOP Conference Series: Mater. Sci. Eng.*, 2010, **9**, 12023, 8 pp

Table 1 Am-U crystal structure data

Phase	Composition, at.% U	Pearson symbol	Space group	Strukturbericht designation	Prototype
(γAm)	0 to 1.5	<i>cI2</i>	<i>Im</i> $\bar{3}$ <i>m</i>	<i>A2</i>	W
(βAm)	0	<i>cF4</i>	<i>Fm</i> $\bar{3}$ <i>m</i>	<i>A1</i>	Cu
(αAm)	0	<i>hP4</i>	<i>P6</i> ₃ / <i>mmc</i>	<i>A3'</i>	αLa
(γU)	98 to 100	<i>cI2</i>	<i>Im</i> $\bar{3}$ <i>m</i>	<i>A2</i>	W
(βU)	100	<i>tP30</i>	<i>P4</i> ₂ / <i>mnm</i>	<i>A_b</i>	βU
(αU)	100	<i>oC4</i>	<i>Cmcm</i>	<i>A20</i>	αU

Fig. 1 Am-U phase diagram [2010Kur]