

## Al – Sr (Aluminum – Strontium)

### Phase diagram

For an optimization of thermodynamic properties and phase equilibria of ternary Al-Mg-Sr alloys, Chartrand et al. [94 Cha] had, of course, first to evaluate critically the constituting bordering binary systems, that is, also, the system Al-Sr. In comparison to the binary phase equilibria of Al-Sr [94 Cha] found some disagreement to the diagram given in [Landolt-Börnstein]. Therefore the optimized diagram is shown here (see Fig. 1). In Fig. 2 the phase equilibria at high Al-concentrations are given in an enlarged version.

Alcock et al. [89 Alc] have calculated the phase diagram. Srikanth et al. [91 Sri] have calculated the phase diagram, too. The results deviate strongly from the assessed phase diagram published by Alcock et al. [89 Alc] in the region  $> 70$  at% Sr.

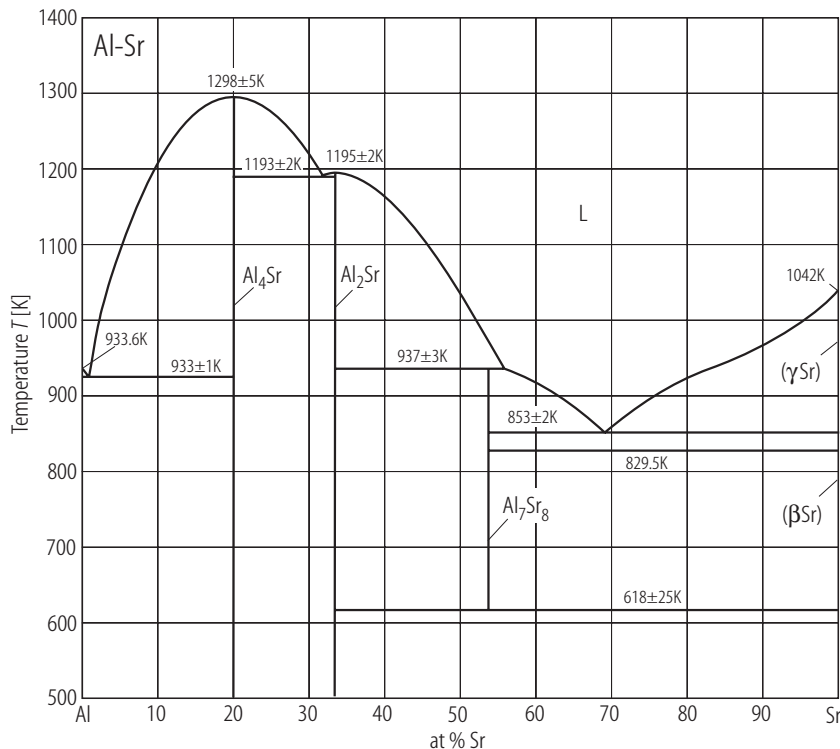
### Thermodynamics

Using the Knudsen method and pseudo-isopiestic technique Srikanth et al. [91 Sri] have determined thermodynamic activities in liquid Al-Sr alloys. Within the thermodynamic evaluation also the thermodynamic activities of the components have been determined. The results are plotted in Fig. 1.

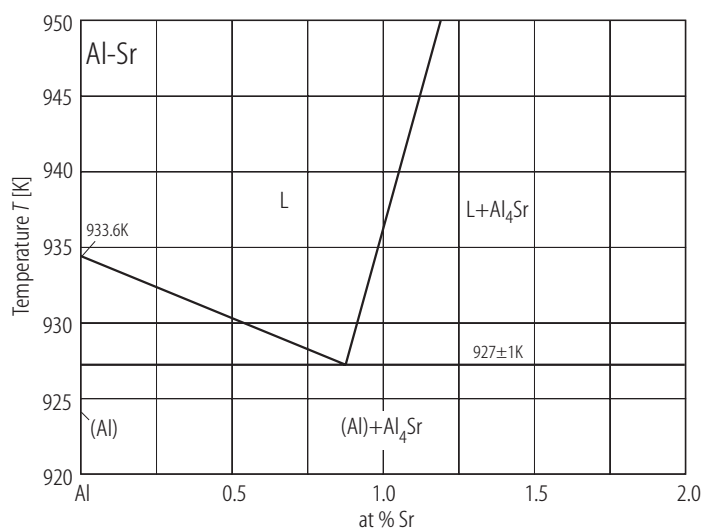
In the frame of the optimization process mentioned above [94 Cha] have calculated enthalpies of mixing of liquid alloys. The results obtained for 1070 K and for 1773 K are plotted in Fig. 3. These results are in good agreement with experimental data obtained by [83 Som] and [85 Esi].

On the basis of thermodynamic data available, [94 Cha] calculated the excess entropies of liquid alloys. The data obtained are given in Fig. 4.

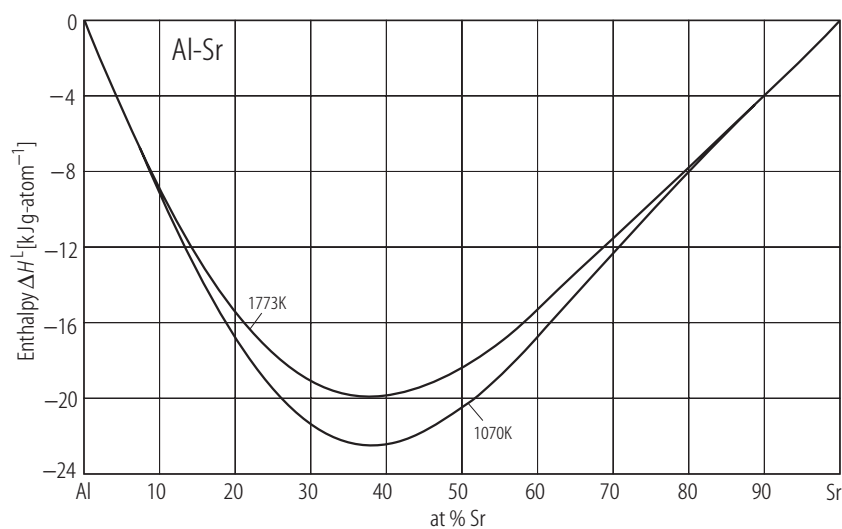
### Figures



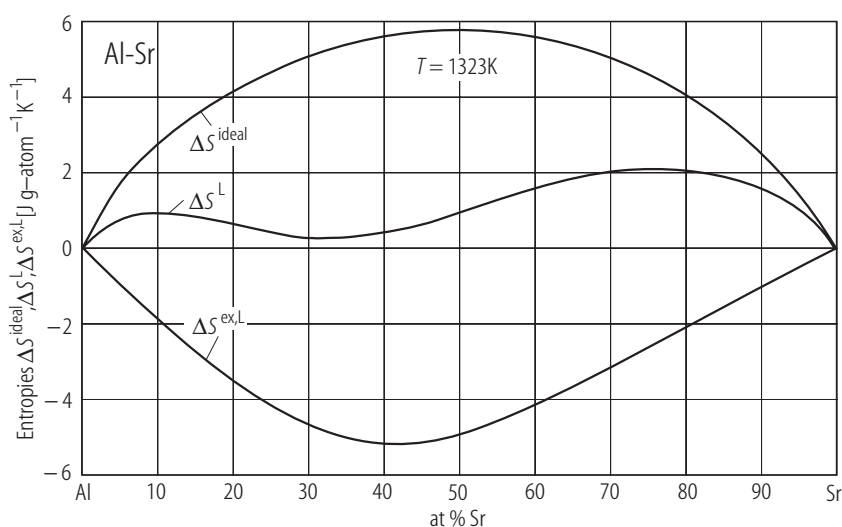
**Fig. 1.** Al–Sr. Optimized phase diagram [94 Cha].



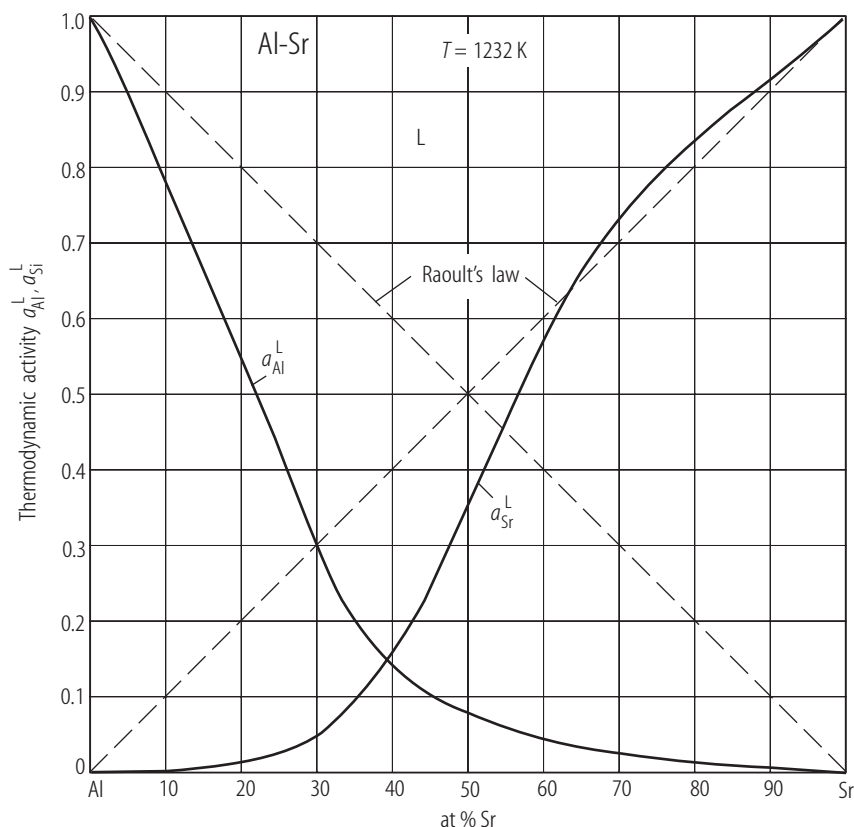
**Fig. 2.** Al-Sr. Phase equilibria in the range of high Al-concentrations in an enlarged version [94 Cha].



**Fig. 3.** Al-Sr. Calculated  $\Delta H^L$  as a function of concentration [94 Cha].



**Fig. 4.** Al-Sr. Excess entropy of mixing of liquid alloys at 1323 K [94 Cha].



**Fig. 5. Al–Sr.** Thermodynamic activities of liquid Al–Sr alloys at 1323 K [91 Sri].

### References

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