Section II: Phase Diagram Evaluations

90Gan: W. Gan and Z. Jin, "Phase Equilibria in the Mo-Ni-Co and Mo-Ni-Fe System at 1000 °C," *J. Less-Common Met.*, 160(1), 29-33 (1990). (Experimental)

91Goz: E. Gozlan, M. Bamberger, S.F. Drinfeld, B. Prinz, and J. Klodt, "Topologically Close Packed Precipitations and Phase Diagrams of Ni-Mo-Cr and Ni-Mo-Fe and of Ni-Mo-Fe with Constant Additions of Cr," *Mater. Sci. Eng. A*, 141(1), 85-95 (1991). (Experimental; #)

92Fri: K. Frisk, "An Experimental and Theoretical Study of the Phase Equilibria in the Fe-Mo-Ni System," *Metall. Trans. A*, 23(2), 639-649 (1992). (Experimental; Review; #)

92Sat: S. Sato, F. Urushihara, and T. Suzuki, "Metastable Miscibility Gap of Fe-Mo-Ni Ternary Alloy System," *Nippon Kinzoku Gakkai-Si*, 56(4), 378-383 (1992) in Japanese. (Experimental.)

#Indicates presence of a phase diagram.

Fe-Mo-Si (Iron-Molybdenum-Silicon)

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The phase equilibria of this system were reviewed by [88Ray]. The evaluated results were presented as: (1) a liquidus projection covering the entire composition range; (2) an isothermal section at 800 °C, which depicts three ternary compounds Fe_2MoSi_2 (τ_1), FeMo_3Si (τ_2), and N (the R-phase of the Fe-Mo binary system, stabilized by Si, is also present at this temperature as a ternary phase); (3) a tentative isothermal section at room temperature; (4) a vertical section along the $\text{FeSi-Mo}_5\text{Si}_3$ line; and (5) reaction sequences that cover temperatures from the solidification range to the ambient.

Update

An isothermal section at 1280 °C in the composition range of 20 to 70 at.% Mo and 0 to 50 at.% Si was determined by [79Sin]. 99.9% purity starting metals were melted in an electric arc furnace. The alloys were annealed at 1280 °C for 4 days and quenched in water. The phase equilibria were studied by X-ray powder diffraction and metallography. The isothermal section at 1280 °C determined by [79Sin] is redrawn in Fig. 1. Three MgZn₂-type Laves phase-related structures were found

Fig. 1a Fe-Mo-Si partial isothermal section at 1280 °C in at.% [79Sin].

Fig. 1b Fe-Mo-Si partial isothermal section at 1280 °C in wt.% [79Sin].