

Low-temperature crystallization of amorphous Fe₆₈Cr₁₈Mo₂B₁₂ alloys

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Abstrak

A range of microstructure as a result of low-temperature crystallization of amorphous alloy based on the composition Fe₆₈Cr₁₈Mo₂B₁₂ prepared by chill block melt spinning casting has been investigated using x-ray diffractometer and transmission electron microscope. Low-temperature crystallization of the amorphous alloy produced a very fine microstructure consisting of Fe; body centered tetragonal Fe₃B and a small proportion of orthorhombic Fe₃B. The body centered tetragonal Fe₃B was found to contain fine and coarse faults with lead to streaking in selected area diffraction patterns. The crystallization of the present material is proposed to occur by primary crystallization of solid solution ferritic phase followed by a eutectic reaction of Fe+Fe₃B.