Stress Corrosion Cracking of Amorphous Iron Base Alloys

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13at.%P–7at.%C alloy in 1 N HCl. The passive film consists mainly of hydrated chromium oxyhydroxide which is a common major constituent of passive films on crystalline stainless steels. The extremely high corrosion resistance of the amorphous alloy can only in part be attributed to the formation of a protective hydrated chromium oxyhydroxide film.

Stress Corrosion Cracking of Amorphous Iron Base Alloys

Asahi KAWASHIMA, Koji HASHIMOTO and Tsuyoshi MASUMOTO

Corrosion Science, **16** (1976), 935.

The stress corrosion cracking behaviour at room temperature of amorphous Fe-Cr-Ni-P-C alloys subjected to constant strain rates was studied in some acidic solutions containing Cl^- ions. Hydrogen embrittlement of the alloys occurred in the potential region lower than –300 mV relative to the corrosion potential in acidic solutions regardless of Cl^- concentration. In the passive potential region no embrittlement was observed during tests in neutral NaCl solutions and in acidic solutions with low concentrations of Cl^- ions. Only when tensile stress was applied to the specimen in relatively strong acidic solutions containing a certain amount of Cl^- ions, fracture stress decreased in this potential region. The lowering of the fracture stress can also be attributed to hydrogen embrittlement.

Magnetic Domain Structure of an Amorphous Fe-P-C Alloy

Yoshihisa OBI, Hiroyasu FUJIMORI and Hideo SAITO

Japan. J. Appl. Phys., **15** (1976), 611.

The domain structure of an amorphous $Fe_{80}P_{13}C_7$ alloy ribbon produced by the centrifugal solidification technique was investigated using the magnetic powder pattern technique. Two different types of domains (a maze domain and a 180°-domain) were observed on the specimen surface. The relationship between the domain structure and the magnetization process was also investigated. The results showed that some of the 180°-walls, which ran nearly parallel to the long axis of the ribbon, caused the hysteresis in the magnetization curve, while the maze domain was responsible for the difficulty in obtaining the saturation in magnetization. The maze domain arises probably from the uniaxial magnetic anisotropy having the direction of easy magnetization perpendicular to the surface. This anisotropy seems to be caused by the magnetoelastic coupling between positive magnetostriction and internal stress in the specimen.

Magnetic Properties of an Fe-13P-7C Amorphous Ferromagnet — The Effects of Stress, Stress-Annealing and Magnetic-Field Annealing —

Hiroyasu FUJIMORI and Tsuyoshi MASUMOTO

Trans. Japan Inst. Metals, **17** (1976), 175.

Measurements have been made of the magnetization and its hysteresis loop of an Fe-13P-7C amorphous alloy in the form of ribbons. The as-quenched specimen