

Title (en)
Fe-Mn-Al-C alloy and method for manufacturing the same

Title (de)
Fe-Mn-Al-C-Legierung und Verfahren zu ihrer Herstellung

Title (fr)
Alliage Fe-Mn-Al-C et son procédé de fabrication

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Application
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Priority
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Abstract (en)
An Fe-Mn-Al-C alloy and a method for manufacturing the same are revealed. The Fe-Mn-Al-C alloy whose composition is 23#1/434wt.% Mn, 8#1/49.5wt.% Al, and 1.4#1/41.8wt.% or 1.45#1/41.8 wt.% C, with the balance being iron (Fe) is formed by melting of the above components. Then the alloy is solution heat-treated at 980°C#1/41200°C and then quenched so that microstructure of the alloy is a full austenite phase. And dense nanoscale (Fe,Mn) 3 AlC x carbides (α' -carbides) are formed within austenite matrix by spinodal decomposition during the quenching process. Thereby strength and ductility of the alloy are significantly improved. Moreover, after nitriding treatment, a nitride layer having predominantly aluminum nitride (AlN) with face-center-cubic (FCC) structure and a relatively small amount of iron nitride (Fe 4 N) with FCC structure is formed on surface of the alloy. Thereby surface hardness and corrosion resistance are improved. Thus use efficiency and application efficiency of the alloy are further increased.

IPC 8 full level
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Citation (applicant)
• US 2013081740 A1 20130404 - LIU TZENG-FENG [TW]
• TW 201313923 A 20130401 - UNIV NAT CHIAO TUNG [TW]
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[XD] US 2013081740 A1 20130404 - LIU TZENG-FENG [TW]

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