

Title (en)
STEEL FOR MECHANICAL STRUCTURE EXCELLING IN STRENGTH, DUCTILITY AND TOUGHNESS AND PROCESS FOR PRODUCING THE SAME

Title (de)
STAHL FÜR EINE MECHANISCHE STRUKTUR MIT HERVORRAGENDER FESTIGKEIT, BIEGBARKEIT UND HÄRTE SOWIE HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)
ACIER POUR STRUCTURE MÉCANIQUE EXCELLENT EN MATIÈRE DE RÉSISTANCE, DUCTILITÉ ET TÉNACITÉ ET SON PROCÉDÉ DE FABRICATION

Publication
EP 1900838 A1 20080319 (EN)

Application
EP 06780846 A 20060630

Priority

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- JP 2005195739 A 20050705
- JP 2005326844 A 20051111
- JP 2006079070 A 20060322

Abstract (en)
A steel for machine structural use with a better strength-ductility-toughness balance than maraging steel and applications thereof are provided. The steel for machine structural use with excellent strength, ductility, and toughness contains, in percent by mass, more than 0.30% to 0.5% of carbon, 1.0% or less of silicon, 1.5% or less of manganese, 0.025% or less of aluminum, 0.3% to 0.5% of molybdenum, and 0.0005% to 0.01% of boron, and the balance is iron and incidental impurities. The steel has a structure including at least 90% by volume of martensitic structure. The martensitic structure includes blocks having a size of 1.5 μm or less. Dissolved boron is contained in an amount of at least 0.0005% and is present at boundaries of prior austenite grains in a concentration at least 1.5 times that in the prior austenite grains.

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