Title (en)

METHOD OF MAKING A HIGH STRENGTH, HIGH TOUGHNESS, FATIGUE RESISTANT, PRECIPITATION HARDENABLE STAINLESS STEEL

Title (de)

VERFAHREN ZUR HERSTELLUNG EINES AUSSCHEIDUNGSHÄRTBAREN NICHTROSTENDEN STAHLS MIT HOHER FESTIGKEIT, HOHER ZÄHIGKEIT UND DAUERFESTIGKEIT

Title (fr)

PROCÉDÉ DE RÉALISATION D'UN ACIER INOXYDABLE DURCISSABLE PAR PRÉCIPITATION, RÉSISTANT À LA FATIGUE, À RIGIDITÉ ET À RÉSISTANCE ÉLEVÉES

Publication

EP 2247761 B1 20121219 (EN)

Application

EP 09713773 A 20090227

Priority

- US 2009035548 W 20090227
- US 3259808 P 20080229

Abstract (en)

[origin: WO2009108892A1] A process for making a precipitation hardenable stainless steel alloy is described. The process includes the step of melting a martensitic steel alloy having the following composition in weight percent, about Carbon 0.03 max. Manganese 1.0 max. Silicon 0.75 max. Phosphorus 0.040 max. Sulfur 0.020 max. Chromium 10-13 Nickel 10.5-11.6 Titanium 1.5-1.8 Molybdenum 0.25-1.5 Copper 0.95 max. Aluminum 0.25 max. Niobium 0.3 max. Boron 0.010 max. Nitrogen 0.030 max. and the balance being iron and usual impurities. The process also includes the step of adding calcium to the alloy while molten. The calcium combines with available sulfur and oxygen to form calcium base inclusions selected from the group consisting of calcium sulfides, calcium oxides, calcium oxysulfides, and combinations thereof. In a further step, the alloy is processed to remove at least a portion of the calcium base inclusions. The alloy is then solidified. As a result of the process, the alloy has a matrix containing a sparse dispersion of said calcium-based inclusions and substantially no rare-earth base inclusions.

IPC 8 full level

C21C 7/064 (2006.01); **C22C 38/44** (2006.01); **C22C 38/50** (2006.01)

CPC (source: EP US)

C21C 7/06 (2013.01 - EP US); **C21C 7/064** (2013.01 - EP US); **C21C 7/10** (2013.01 - EP US); **C22C 38/44** (2013.01 - EP US); **C22C 38/50** (2013.01 - EP US); C21C 5/005 (2013.01 - EP US)

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