

Title (en)

HIGH-STRENGTH, LIGHTWEIGHT AUSTENITIC-MARTENSITIC STEEL AND THE USE THEREOF

Title (de)

HOCHFESTER AUSTENITISCH-MARTENSITISCHER LEICHTBAUSTAHL UND SEINE VERWENDUNG

Title (fr)

ACIER AUSTENITIQUE-MARTENSITIQUE A RESISTANCE ELEVEE POUR CONSTRUCTION LEGERE ET SON UTILISATION

Publication

**EP 1896623 A1 20080312 (DE)**

Application

**EP 06761728 A 20060628**

Priority

- DE 2006001124 W 20060628
- DE 102005030413 A 20050628

Abstract (en)

[origin: WO2007000156A1] The invention relates to a high-strength, lightweight austenitic-martensitic steel and the use thereof. The inventive lightweight steel is characterized by a chrome content of more than 0.5 % and less than 18 %, a silicon content of more than 1 % and less than 4 %, a manganese content of more than 2.5 % and less than 30 % and an aluminum content of more than 0.05 to 4 % and lies within an alloy range that is determined by the coordinates of four points ( $\text{Cr}_{\text{SUB}}^{\text{equ}} = 2$ ;  $\text{Ni}_{\text{SUB}}^{\text{equ}} = 2$ ), ( $\text{Cr}_{\text{SUB}}^{\text{equ}} = 2$ ;  $\text{Ni}_{\text{SUB}}^{\text{equ}} = 24$ ), ( $\text{Cr}_{\text{SUB}}^{\text{equ}} = 20$ ;  $\text{Ni}_{\text{SUB}}^{\text{equ}} = 10$ ) and ( $\text{Cr}_{\text{SUB}}^{\text{equ}} = 20$ ;  $\text{Ni}_{\text{SUB}}^{\text{equ}} = 6.5$ ), whereby the chrome and nickel equivalent is calculated from the chemical composition of the steel using the relations (1) and (2):  $\text{Cr}_{\text{SUB}}^{\text{equ}} = \% \text{Cr} + \% \text{Mo} + 1.5 \% \text{Si} + 0.5 \% \text{W} + 0.9 \% \text{Nb} + 4 \% \text{Al} + 4 \% \text{Ti} + 1.5 \% \text{V}$  (1),  $\text{Ni}_{\text{SUB}}^{\text{equ}} = \% \text{Ni} + 30 \% \text{C} + 18 \% \text{N} + 0.5 \% \text{Mn} + 0.3 \% \text{Co} + 0.2 \% \text{Cu} - 0.2 \% \text{Al}$  (2). The indications are in weight percent and the remainder substantially consists of iron and other elements usually present in steel (P, S). The inventive steel can be cold-formed, and is suitable for use as a material for hot- and cold-rolled sheets, strips and tubes, for non-flat semifinished products and non-flat products and retaining elements, for crash-relevant components and reinforcing structural components in the automobile industry, for expendable parts and as a material for weatherproof, corrosion resisting and stainless parts.

IPC 8 full level

**C22C 38/00** (2006.01); **C22C 38/18** (2006.01)

CPC (source: EP KR US)

**C22C 38/02** (2013.01 - EP KR US); **C22C 38/06** (2013.01 - EP KR US); **C22C 38/48** (2013.01 - KR); **C22C 38/58** (2013.01 - EP KR US)

Citation (search report)

See references of WO 2007000156A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)

**WO 2007000156 A1 20070104**; DE 102005030413 B3 20070315; DE 102005030413 C5 20091210; EP 1896623 A1 20080312; KR 20080034903 A 20080422; US 2008247902 A1 20081009

DOCDB simple family (application)

**DE 2006001124 W 20060628**; DE 102005030413 A 20050628; EP 06761728 A 20060628; KR 20087002316 A 20080128; US 99411906 A 20060628