

Title (en)

STEEL FOR SURFACE HARDENING WITH HIGH EDGE HARDNESS AND WITH A FINE DUCTILE CORE STRUCTURE

Title (de)

STAHL ZUM OBERFLÄCHENHÄRTEN MIT HOHER RANDHÄRTE UND MIT EINEM FEINEN DUKTILEN KERNGEFÜGE

Title (fr)

ACIER POUR LE DURCISSEMENT DE SURFACE AYANT UNE DURETÉ SUPERFICIELLE ÉLEVÉE ET UNE STRUCTURE DE BASE DUCTILE FINE

Publication

EP 3853389 A1 20210728 (DE)

Application

EP 19773026 A 20190917

Priority

- DE 102018122858 A 20180918
- EP 2019074872 W 20190917

Abstract (en)

[origin: WO2020058269A1] The invention relates to a steel, which during surface hardening without subsequent expansion annealing not only has the potential to develop a hardened surface layer having a high surface, in particular amounting to more than 820 HV1, but also has a viscous, fine-grained core structure and simultaneously has good weldability. For this purpose, a steel according to the invention consists of (in % by weight) C: 0.10 - 0.19%, Si: $\leq 0.15\%$, Mn: $\leq 1.0\%$, P: $\leq 0.015\%$, S: $\leq 0.015\%$, Cr: 0.2 - 1.0%, Ni: 0.7 - 2.0%, Mo: 0.5 - 1.0%, N: $\leq 0.015\%$, Al: 0.010 - 0.060%, Cu: $\leq 0.20\%$, B: $\leq 0.005\%$, and also in each case optionally one or more elements from the group "W, Ti, Nb, V, Ta" in contents according to the following proportions W: 0.15 - 0.65 %, Ti: 0.01 - 0.04 %, Nb: 0.015 - 0.05 %, Ta: 0.01 - 0.04 %, V: 0.04 - 0.12 %, and the remainder consists of iron and unavoidable contaminants.

IPC 8 full level

C21D 1/06 (2006.01); **C21D 9/40** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01); **C22C 38/48** (2006.01); **C22C 38/50** (2006.01); **C22C 38/54** (2006.01); **C23C 8/22** (2006.01); **F16G 13/00** (2006.01)

CPC (source: EP US)

C21D 9/0068 (2013.01 - US); **C21D 9/40** (2013.01 - EP); **C22C 38/001** (2013.01 - US); **C22C 38/02** (2013.01 - US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - EP US); **C22C 38/44** (2013.01 - EP US); **C22C 38/46** (2013.01 - EP); **C22C 38/48** (2013.01 - EP); **C22C 38/50** (2013.01 - EP); **C22C 38/54** (2013.01 - EP US); **C23C 8/22** (2013.01 - EP); **C23C 8/32** (2013.01 - EP); **F16G 13/00** (2013.01 - EP); **C21D 1/06** (2013.01 - EP)

Citation (search report)

See references of WO 2020058269A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

WO 2020058269 A1 20200326; CN 112714799 A 20210427; EP 3853389 A1 20210728; US 2022074034 A1 20220310

DOCDB simple family (application)

EP 2019074872 W 20190917; CN 201980060879 A 20190917; EP 19773026 A 20190917; US 201917277005 A 20190917