Title (en)

Hot-worked steel alloy

Title (de)

Warmarbeitsstahl-Legierung

Title (fr)

Alliage d'acier pour travail à chaud

Publication

EP 2194155 A1 20100609 (DE)

Application

EP 09450215 A 20091116

Priority

AT 18152008 A 20081120

Abstract (en)

The hot working steel alloy consists of alloy elements having carbon (0.37-0.40 wt.%), silicon (0.18-0.26 wt.%), manganese (0.50-0.58 wt.%), chromium (4.90-5.10 wt.%), molybdenum (1.65-1.80 wt.%), vanadium (0.52-0.60 wt.%), nitrogen (0.012-0.015 wt.%), phosphorus (0.005 wt.%), sulfur (0.003 wt.%), nickel (0.10 wt.%), tungsten (0.10 wt.%), copper (0.10 wt.%), cobalt (0.10 wt.%), titanium (0.008 wt.%), niobium (0.03 wt.%), oxygen (0.003 wt.%), boron (0.001 wt.%), arsenic (0.01 wt.%), tin (0.0025 wt.%) and/or antimony, and impurity elements and/or iron as remnant. The hot working steel alloy consists of alloy elements having carbon (0.37-0.40 wt.%), silicon (0.18-0.26 wt.%), manganese (0.50-0.58 wt.%), chromium (4.90-5.10 wt.%), molybdenum (1.65-1.80 wt.%), vanadium (0.52-0.60 wt.%), nitrogen (0.012-0.015 wt.%), phosphorus (0.005 wt.%), sulfur (0.003 wt.%), nickel (0.10 wt.%), tungsten (0.10 wt.%), copper (0.10 wt.%), cobalt (0.10 wt.%), titanium (0.008 wt.%), niobium (0.03 wt.%), oxygen (0.003 wt.%), boron (0.001 wt.%), arsenic (0.01 wt.%), tin (0.0025 wt.%), antimony (0.01 wt.%), zinc (0.001 wt.%), calcium (0.0002 wt.%) and/or magnesium (0.0002 wt.%) and impurity elements and/or iron as remnant.

Abstract (de)

Die Erfindung bezieht sich auf eine Warmarbeitsstahl-Legierung, enthaltend die Elemente Kohlenstoff (C), Silicium (Si), Mangan (Mn), Chrom (Cr), Molybdän (Mo), Vanadin (V), Stickstoff (N) und Verunreinigungselemente sowie Eisen als Rest. Um bei einer thermischen Vergütung eine hohe Härte und eine verbesserte Zähigkeit des Werkstoffes auch bei niedrigen Abkühlraten zu erreichen, ist erfindungsgemäß vorgesehen, dass die Legierungselemente Gehalte in Gew.-% von aufweisen.

IPC 8 full level

C22C 38/22 (2006.01); **C22C 38/24** (2006.01)

CPC (source: EP US)

C21D 1/18 (2013.01 - US); **C21D 6/004** (2013.01 - US); **C21D 6/005** (2013.01 - US); **C21D 6/008** (2013.01 - US); **C21D 8/005** (2013.01 - US); **C22C 38/001** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/22** (2013.01 - EP US); **C22C 38/24** (2013.01 - EP US); **C22C 38/44** (2013.01 - US); **C22C 38/46** (2013.01 - US)

Citation (search report)

- [A] EP 0733719 A1 19960925 - BOEHLER EDELSTAHL [AT]
- [A] EP 1300482 A1 20030409 - BOEHLER EDELSTAHL [AT]
- [A] EP 0939140 A1 19990901 - BOEHLER EDELSTAHL [AT]
- [A] SCHNEIDER R. ET AL: "EFFECTS OF DIFFERENT ALLOYING ELEMENTS ON THE HARDNESS PROFILE OF NITRIDED HOT-WORK TOOL STEELS", BHM BERG- UND HÜTTENMÄNNISCHE MONATSHEFTE, vol. 151, no. 3, 1 March 2006 (2006-03-01) - 31 March 2006 (2006-03-31), pages 105 - 109, XP002574215, ISSN: 0005-8912, DOI: 10.1007/BF03165181

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Designated contracting state (EPC)

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 SE SI SK SM TR

Designated extension state (EPC)

AL BA RS

DOCDB simple family (publication)

AT 506790 A4 20091215; **AT 506790 B1 20091215**; AT E487805 T1 20101115; AU 2009238307 A1 20100603; AU 2009238307 B2 20131219; AU 2009238307 C1 20140313; BR PI0904501 A2 20110208; CA 2686071 A1 20100520; CA 2686071 C 20140128; DE 502009000171 D1 20101223; EP 2194155 A1 20100609; EP 2194155 B1 20101110; ES 2353192 T3 20110228; PL 2194155 T3 20110429; SI 2194155 T1 20110131; US 2010150772 A1 20100617; US 2015292067 A1 20151015; ZA 200908201 B 20110223

DOCDB simple family (application)

AT 18152008 A 20081120; AT 09450215 T 20091116; AU 2009238307 A 20091117; BR PI0904501 A 20091117; CA 2686071 A 20091117; DE 502009000171 T 20091116; EP 09450215 A 20091116; ES 09450215 T 20091116; PL 09450215 T 20091116; SI 200930014 T 20091116; US 201514750222 A 20150625; US 62188209 A 20091119; ZA 200908201 A 20091120