

Title (en)

Steel having excellent properties of workability by machine tools and, after a hardening thermal treatment, excellent mechanical properties and process for the production thereof

Title (de)

Stahl mit ausgezeichneten Eigenschaften, Verformbarkeit mit Werkzeugmaschinen, nach Härtungswärmebehandlung, ausgezeichneten mechanischen Eigenschaften und Verfahren zu seiner Herstellung

Title (fr)

Acier possédant d'excellentes propriétés au formage par machine-outils, après un traitement thermique de durcissement, propriétés mécaniques excellentes et procédé de fabrication

Publication

**EP 1283277 A1 20030212 (EN)**

Application

**EP 02010286 A 20020521**

Priority

IT MI20011402 A 20010702

Abstract (en)

A steel having excellent workability properties by machine-tools and, after a hardening thermal treatment, excellent mechanical properties and almost non existent size variations and internal tensions, comprising an amount lower than 0.25% by weight of carbon; 2,5 to 4,5% by weight of nickel; 2,5 to 4,55 by weight of molybdenum; an amount lower than 0.25% by weight of vanadium and amounts comprised between 0 and 1,1% by weight of at least one of the elements selected from manganese, silicon and chromium; the remaining up to 100 being iron, impurities excluded.  
<IMAGE>

IPC 1-7

**C22C 38/44**; **C22C 38/46**; **C21D 1/18**; **C21D 6/00**

IPC 8 full level

**C21D 1/18** (2006.01); **C21D 6/00** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01)

CPC (source: EP)

**C21D 1/18** (2013.01); **C21D 6/00** (2013.01); **C21D 6/004** (2013.01); **C22C 38/44** (2013.01); **C22C 38/46** (2013.01)

Citation (search report)

- [XA] US 3954517 A 19760504 - JATCZAK CHESTER F, et al
- [XA] US 3912553 A 19751014 - WAID GEORGE M, et al
- [XA] US 2707680 A 19550503 - SUCCOP JOHN A
- [XA] EP 0475804 A1 19920318 - CREUSOT LOIRE [FR]
- [XA] US 2624687 A 19530106 - MCMULLAN ORIN W
- [XA] GB 753491 A 19560725 - HEPPENSTALL CO
- [A] EP 0431557 A1 19910612 - DAIDO STEEL CO LTD [JP]
- [A] US 5645794 A 19970708 - BEGUINOT JEAN [FR], et al
- [A] US 3869318 A 19750304 - HELLMAN PER INGVAR, et al
- [A] EP 1036852 A1 20000920 - HITACHI METALS LTD [JP]
- [XA] PATENT ABSTRACTS OF JAPAN vol. 014, no. 215 (C - 0716) 8 May 1990 (1990-05-08)
- [XA] PATENT ABSTRACTS OF JAPAN vol. 018, no. 191 (C - 1186) 4 April 1994 (1994-04-04)

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

DOCDB simple family (publication)

**EP 1283277 A1 20030212**; **EP 1283277 B1 20070620**; AT E365235 T1 20070715; DE 60220749 D1 20070802; DE 60220749 T2 20080306; ES 2289028 T3 20080201; IT MI20011402 A0 20010702; IT MI20011402 A1 20030102; PT 1283277 E 20070927

DOCDB simple family (application)

**EP 02010286 A 20020521**; AT 02010286 T 20020521; DE 60220749 T 20020521; ES 02010286 T 20020521; IT MI20011402 A 20010702; PT 02010286 T 20020521