

Title (en)  
Iron-chromium-manganese-nickel alloy

Title (de)  
Eisen-Chrom-Mangan-Nickel-Legierung

Title (fr)  
Alliage fer-chrome-manganèse-nickel

Publication  
**EP 2662461 A1 20131113 (DE)**

Application  
**EP 12167011 A 20120507**

Priority  
EP 12167011 A 20120507

Abstract (en)  
Nickel-chromium-manganese alloy comprises 0.005-0.07 wt.% of carbon, 20.5-23 wt.% of chromium, 0.05-1.5 wt.% of silicon, 1.5-6 wt.% of manganese, 1.7-3 wt.% of nickel, 0.15-0.30 wt.% of nitrogen, 0.1-0.8 wt.% of molybdenum, 0.05-4.5 wt.% of copper, up to 0.3 wt.% of cobalt, up to 0.04 wt.% of phosphorus, up to 0.04 wt.% of sulfur, up to 0.2 wt.% of niobium, up to 0.2 wt.% of vanadium, up to 0.2 wt.% of zirconium, up to 0.2 wt.% of tungsten, up to 0.2 wt.% of tantalum, up to 0.1 wt.% of lead, up to 0.1 wt.% of bismuth, up to 0.1 wt.% of tin, and up to 0.1 wt.% of zinc. Nickel-chromium-manganese alloy comprises 0.005-0.07 wt.% of carbon, 20.5-23 wt.% of chromium, 0.05-1.5 wt.% of silicon, 1.5-6 wt.% of manganese, 1.7-3 wt.% of nickel, 0.15-0.30 wt.% of nitrogen, 0.1-0.8 wt.% of molybdenum, 0.05-4.5 wt.% of copper, up to 0.3 wt.% of cobalt, up to 0.04 wt.% of phosphorus, up to 0.04 wt.% of sulfur, up to 0.2 wt.% of niobium, up to 0.2 wt.% of vanadium, up to 0.2 wt.% of zirconium, up to 0.2 wt.% of tungsten, up to 0.2 wt.% of tantalum, up to 0.1 wt.% of lead, up to 0.1 wt.% of bismuth, up to 0.1 wt.% of tin, up to 0.1 wt.% of zinc, up to 0.1 wt.% of selenium, up to 0.1 wt.% of arsenic, up to 0.1 wt.% of titanium, up to 0.05 wt.% of % aluminum, up to 0.05 wt.% of calcium, up to 0.05 wt.% of magnesium, up to 0.05 wt.% of barium, up to 0.05 wt.% of lanthanum, up to 0.05 wt.% of cerium, up to 0.05 wt.% of yttrium, up to 0.05 wt.% of rhenium, up to 0.05 wt.% of oxygen, up to 0.05 wt.% of boron and balance iron including impurities caused by smelting. Independent claims are included for: (1) a component made from the alloy, having at least one mechanical properties at room temperature, where the mechanical properties have  $\geq 420$  N/mm<sup>2</sup> of proof stress (0.2%), a tensile strength of  $\geq 620$  N/mm<sup>2</sup>, an elongation of greater 20%, and a notched impact strength of  $\geq 60$ J; (2) method-I for preparing the alloy, comprising melting the alloy constituents in an induction furnace and then deoxidizing by pan aggregates; and (3) method-II for producing the component, comprising performing the method for producing a cast alloy, and casting the component.

Abstract (de)  
Nickel-Chrom-Mangan-Legierung mit 0,005 bis 0,07 Gew% Kohlenstoff, 20,5 bis 23,0 Gew% Chrom, 0,05 bis 1,5 Gew% Silizium, 1,5 bis 6,0 Gew% Mangan, 1,7 bis 3,0 Gew% Nickel, 0,15 bis 0,30 Gew% Stickstoff, 0,1 bis 0,8 Gew% Molybdän, 0,05 bis 4,5 Gew% Kupfer, bis 0,3 Gew% Kobalt, bis 0,04 Gew% Phosphor, bis 0,04 Gew% Schwefel, bis 0,2 Gew% Niob, bis 0,2 Gew% Vanadium, bis 0,2 Gew% Zirkonium, bis 0,2 Gew% Wolfram, bis 0,2 Gew% Tantal, bis 0,1 Gew% Blei, bis 0,1 Gew% Bismut, bis 0,1 Gew% Zinn, bis 0,1 Gew% Zink, bis 0,1 Gew% Selen, bis 0,1 Gew% Arsen, bis 0,1 Gew% Titan, bis 0,05 Gew% Aluminium, bis 0,05 Gew% Calcium, bis 0,05 Gew% Magnesium, bis 0,05 Gew% Barium, bis 0,05 Gew% Lanthan, bis 0,05 Gew% Cer, bis 0,05 Gew% Yttrium, bis 0,05 Gew% Rhenium, bis 0,05 Gew% Sauerstoff, bis 0,05 Gew% Bor, Rest Eisen einschließlich erschmelzungsbedingter Verunreinigungen.

IPC 8 full level  
**C21D 6/00** (2006.01); **C21D 8/00** (2006.01); **C22C 1/02** (2006.01); **C22C 38/42** (2006.01); **C22C 38/44** (2006.01); **C22C 38/58** (2006.01)

CPC (source: EP)  
**C21C 7/068** (2013.01); **C21D 1/28** (2013.01); **C21D 6/004** (2013.01); **C21D 6/005** (2013.01); **C22C 1/02** (2013.01); **C22C 33/04** (2013.01); **C22C 38/001** (2013.01); **C22C 38/02** (2013.01); **C22C 38/06** (2013.01); **C22C 38/42** (2013.01); **C22C 38/44** (2013.01); **C22C 38/58** (2013.01); **C21D 2211/001** (2013.01); **C21D 2211/005** (2013.01)

Citation (applicant)  
• EP 1327008 B1 20060215 - OUTOKUMPU STAINLESS AB [SE]  
• US 6096441 A 20000801 - HAUSER JEAN-MICHEL [FR], et al  
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• [XD] FR 2119612 A5 19720804 - ARMCO STEEL CORP  
• [AD] EP 1327008 B1 20060215 - OUTOKUMPU STAINLESS AB [SE]  
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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)  
**EP 2662461 A1 20131113**

DOCDB simple family (application)  
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