

Title (en)  
BAINITIC STEEL FOR MOULDS

Title (de)  
BAINITSTAHL FÜR GUSSFORMEN

Title (fr)  
ACIER BAINITIQUE POUR MOULES

Publication  
**EP 2557196 A1 20130213 (EN)**

Application  
**EP 10848625 A 20100408**

Priority  
• BR PI0901378 A 20090403  
• BR 2010000121 W 20100408

Abstract (en)  
1 "BAINITIC STEEL FOR MOULDS", with a composition of alloy elements that consist, in mass percentage, of Carbon between 0.05 and 1.0; Manganese between 0.5 and 3.0; Phosphorous, Boron, Titanium and Vanadium given by the ratio  $NU = [Ti + P + 10 B + (V-0.10)]$ , being the values of NU between 0.02 and 0.30, with titanium always above 0.005, boron always below 0.010 and Vanadium may be partially or totally replaced with Niobium, in the proportion of two parts in mass of niobium for one part of Vanadium; Nickel, Molybdenum and Chromium given by the ratio  $G = [0.13 Ni + 0.60 Mo + 0.26 Cr]$ , with values of G above 0.10 and below 1.0; Sulphur up to 0.10; Silicon between 0.05 and 3.0; Nitrogen below 0.10; Calcium with contents up to 0.02; Aluminum below 0.5, Cobalt lower than 2.0, the remaining being substantially Iron and impurities that cannot be avoided in the elaboration process; for its production the final hardness may be obtained by calm air cooling, directly after hot conformation or by previous heating in furnace, even in blocks with section up to 1000 mm; the values of hardness, in Vickers scale, are defined by the equation:  $HV = (450 \pm 140) \%C + (210 \pm 45)$ , for values between 280 and 450 HV (30 to 45 HRC); for applications of high toughness, the steel of present invention may also be produced with quick cooling, from temperatures above 900°C, in water or oil mediums.

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