

Title (en)
ENVIRONMENTALLY-FRIENDLY, PB-FREE FREE-MACHINING STEEL, AND MANUFACTURING METHOD FOR SAME

Title (de)
UMWELTFREUNDLICHER PB-FREIER AUTOMATENSTAHL UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)
ACIER FACILEMENT USINABLE, SANS PB ET RESPECTUEUX DE L'ENVIRONNEMENT ET SON PROCÉDÉ DE FABRICATION

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Application
EP 09805163 A 20090803

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Abstract (en)
[origin: EP2322680A2] A lead-free free-cutting steel includes, by wt%, about 0.03-0.13% of carbon (C), about 0.1% or less of silicon (Si), about 0.7-2.0% of manganese (Mn), about 0.05-0.15% of phosphorous (P), about 0.2-0.5% of sulfur (S) of, about 0.001-0.01% of boron (B), about 0.1-0.5% of chromium (Cr), about 0.003-0.2% of titanium (Ti), about 0.005-0.015% of nitrogen (N), about 0.03% or less of oxygen (O), residual iron (Fe), and other unavoidable impurities. In the lead-free free-cutting steel, the number of manganese sulfide (MnS) inclusions having a particle size of about 5 μm^2 or more may include in the range of about 300-1000 per mm^2 of a material in a section of a wire rod rolling direction. The present invention is also related to a method of manufacturing an eco-friendly lead-free free-cutting steel by properly controlling a total oxygen content by step in steelmaking steps.

IPC 8 full level
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Citation (search report)
• [X] JP 2000160284 A 20000613 - SUMITOMO METAL IND
• [XA] EP 1507016 A1 20050216 - SUMITOMO METAL IND [JP]
• [A] REYNOLDS J H ET AL: "Improving the machinability of steels for precision forging", MATERIALS AND DESIGN, LONDON, GB, vol. 13, no. 1, 1 January 1992 (1992-01-01), pages 23 - 28, XP024154023, ISSN: 0261-3069, [retrieved on 19920101], DOI: 10.1016/0261-3069(92)90048-M
• See references of WO 2010016702A2

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