

Title (en)  
CASE-HARDENED STEEL AND CARBURIZED MATERIAL

Title (de)  
EINSATZGEHÄRTETER STAHL UND AUFGEKOHLTES MATERIAL

Title (fr)  
ACIER CÉMENTÉ ET MATÉRIAU CARBURISÉ

Publication  
**EP 2530178 B1 20181024 (EN)**

Application  
**EP 11736785 A 20110126**

Priority  
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• JP 2011000413 W 20110126

Abstract (en)  
[origin: EP2530178A1] The present invention provides a case hardening steel, comprising a component composition including C: 0.10 mass % to 0.35 mass %; Si: 0.01 mass % to 0.50 mass %; Mn: 0.40 mass % to 1.50 mass %; P: 0.02 mass % or less; S: 0.03 mass % or less; Al: 0.04 mass % to 0.10 mass %; Cr: 0.5 mass % to 2.5 mass %; B: 0.0005 mass % to 0.0050 mass %; Nb: 0.003 mass % to 0.080 mass %; Ti: 0.003 mass % or less; N: less than 0.0080 mass %; and balance as Fe and incidental impurities.

IPC 8 full level  
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CPC (source: EP KR)  
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Cited by  
EP2980242A4; AU2019287841B2; CN112292471A; AU2019287840B2; US11332817B2; US11332799B2; US11512375B2; US11326220B2

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