

Title (en)  
STEEL MATERIAL AND PRODUCTION METHOD THEREFOR

Title (de)  
STAHLMATERIAL UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)  
MATÉRIAU EN ACIER ET SON PROCÉDÉ DE FABRICATION

Publication  
**EP 3835446 A4 20211013 (EN)**

Application  
**EP 19859087 A 20190904**

Priority  
• JP 2018170656 A 20180912  
• JP 2019034830 W 20190904

Abstract (en)  
[origin: EP3835446A1] Provided are a steel material and a method of producing the same. The steel material has a chemical composition containing, in mass%, C: 0.10-2.50 %, Mn: 8.0-45.0 %, P: ≤ 0.300 %, S: ≤ 0.1000 %, Ti: 0.10-5.00 %, Al: 0.001-5.000 %, N: ≤ 0.5000 %, and O: ≤ 0.1000 %, where C, Ti, and Mn satisfy  $25([C] - 12.01[Ti]/47.87) + [Mn] \geq 25$  ([C], [Ti] and [Mn] are a content of each element in mass%), with the balance being Fe and inevitable impurities, and a microstructure containing ≥ 90 % of an austenite phase and ≥ 0.2 % of Ti carbides in area ratio. Such a microstructure can be obtained by heating the steel material having the chemical composition to a temperature of ≥ 950 °C, and then cooling the steel material at a cooling rate of > 1 °C/s in a temperature range between 900-500 °C. A steel material excellent in wear resistance is thus obtained. By adjusting the hardness of the austenite phase to ≥ 200 HV, the impact wear resistance is remarkably improved.

IPC 8 full level  
**C21D 8/02** (2006.01); **C21D 9/46** (2006.01); **C22C 30/02** (2006.01); **C22C 37/00** (2006.01); **C22C 37/08** (2006.01); **C22C 38/00** (2006.01); **C22C 38/60** (2006.01)

CPC (source: EP KR)  
**C21D 6/001** (2013.01 - EP); **C21D 6/002** (2013.01 - EP); **C21D 6/004** (2013.01 - EP); **C21D 6/005** (2013.01 - EP); **C21D 8/021** (2013.01 - EP); **C21D 8/0226** (2013.01 - EP KR); **C21D 8/0263** (2013.01 - EP); **C21D 9/46** (2013.01 - EP KR); **C22C 30/00** (2013.01 - EP); **C22C 30/02** (2013.01 - KR); **C22C 37/08** (2013.01 - KR); **C22C 38/00** (2013.01 - EP); **C22C 38/001** (2013.01 - EP KR); **C22C 38/002** (2013.01 - EP); **C22C 38/005** (2013.01 - EP); **C22C 38/02** (2013.01 - EP); **C22C 38/04** (2013.01 - EP KR); **C22C 38/06** (2013.01 - EP KR); **C22C 38/08** (2013.01 - EP); **C22C 38/12** (2013.01 - EP); **C22C 38/14** (2013.01 - EP KR); **C22C 38/16** (2013.01 - EP); **C22C 38/26** (2013.01 - EP); **C22C 38/28** (2013.01 - EP); **C22C 38/36** (2013.01 - EP); **C22C 38/38** (2013.01 - EP); **C22C 38/42** (2013.01 - KR); **C22C 38/44** (2013.01 - EP KR); **C22C 38/46** (2013.01 - EP KR); **C22C 38/48** (2013.01 - KR); **C22C 38/50** (2013.01 - EP); **C22C 38/54** (2013.01 - EP KR); **C22C 38/58** (2013.01 - EP); **C22C 38/60** (2013.01 - EP KR); **C21D 2211/001** (2013.01 - EP KR); **C21D 2211/004** (2013.01 - EP)

Citation (search report)  
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• See references of WO 2020054553A1

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