

## Title (en)

980 MPA-GRADE BAINITE HIGH HOLE EXPANSION STEEL AND MANUFACTURING METHOD THEREFOR

## Title (de)

980 BAINITSTAHL MIT HOHER LOCHEXPANSION IN MPA-QUALITÄT UND HERSTELLUNGSVERFAHREN DAFÜR

## Title (fr)

ACIER À FORTE EXPANSION DE TROU EN BAINITE DE QUALITÉ 980 MPA ET PROCÉDÉ DE FABRICATION DE CELUI-CI

## Publication

**EP 4206351 A4 20240320 (EN)**

## Application

**EP 21860563 A 20210830**

## Priority

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## Abstract (en)

[origin: EP4206351A1] Disclosed are a 980 MPa-grade bainite high hole expansion steel and a manufacturing method therefor. The steel contains the following chemical components in percentages by weight: 0.05-0.10% of C, 0.5-2.0% of Si, 1.0-2.0% of Mn, P≤0.02%, S≤0.003%, 0.02-0.08% of Al, N≤0.004%, Mo≥0.1%, 0.01-0.05% of Ti, Cr≤0.5%, B≤0.002%, O≤0.0030%, and the balance of Fe and other inevitable impurities. The high hole expansion steel of the present invention has a yield strength of ≥800 MPa and a tensile strength of ≥980MPa, has a good elongation rate (the transverse A<sub><sub>50</sub></sub> being ≥11%) and hole expansion performance (the hole expansion ratio being ≥40%), and can be applied to a position on a chassis part of a passenger car, such as a control arm and a vice frame, where high strength and thinning are required.

## IPC 8 full level

**C22C 38/02** (2006.01); **C21D 8/02** (2006.01); **C22C 33/04** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/20** (2006.01); **C22C 38/22** (2006.01); **C22C 38/24** (2006.01); **C22C 38/26** (2006.01); **C22C 38/28** (2006.01); **C22C 38/32** (2006.01); **C22C 38/42** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01); **C22C 38/48** (2006.01); **C22C 38/50** (2006.01); **C22C 38/54** (2006.01)

## CPC (source: CN EP KR US)

**B21B 37/56** (2013.01 - KR); **C21D 1/02** (2013.01 - EP); **C21D 1/18** (2013.01 - EP); **C21D 1/19** (2013.01 - EP); **C21D 1/26** (2013.01 - KR); **C21D 1/60** (2013.01 - EP); **C21D 1/84** (2013.01 - EP US); **C21D 6/001** (2013.01 - US); **C21D 6/002** (2013.01 - EP US); **C21D 6/004** (2013.01 - EP US); **C21D 6/005** (2013.01 - EP); **C21D 6/008** (2013.01 - EP); **C21D 8/0205** (2013.01 - CN EP US); **C21D 8/021** (2013.01 - EP); **C21D 8/0226** (2013.01 - CN EP KR US); **C21D 8/0247** (2013.01 - EP); **C21D 8/0263** (2013.01 - CN EP); **C21D 8/0278** (2013.01 - EP US); **C21D 9/0081** (2013.01 - KR); **C21D 9/46** (2013.01 - EP); **C21D 9/52** (2013.01 - KR US); **C22C 33/04** (2013.01 - CN US); **C22C 38/001** (2013.01 - EP KR US); **C22C 38/002** (2013.01 - EP US); **C22C 38/02** (2013.01 - CN EP US); **C22C 38/04** (2013.01 - CN EP US); **C22C 38/06** (2013.01 - CN EP KR US); **C22C 38/08** (2013.01 - EP US); **C22C 38/12** (2013.01 - EP US); **C22C 38/14** (2013.01 - EP US); **C22C 38/16** (2013.01 - EP US); **C22C 38/20** (2013.01 - CN EP); **C22C 38/22** (2013.01 - CN EP KR US); **C22C 38/24** (2013.01 - CN EP KR US); **C22C 38/26** (2013.01 - CN EP KR US); **C22C 38/28** (2013.01 - CN EP KR US); **C22C 38/32** (2013.01 - CN EP KR US); **C22C 38/34** (2013.01 - EP KR US); **C22C 38/38** (2013.01 - EP KR US); **C22C 38/42** (2013.01 - CN EP US); **C22C 38/44** (2013.01 - CN EP US); **C22C 38/46** (2013.01 - CN EP US); **C22C 38/48** (2013.01 - CN EP US); **C22C 38/50** (2013.01 - CN EP US); **C22C 38/54** (2013.01 - CN EP US); **C22C 38/58** (2013.01 - EP KR US); **C23G 3/02** (2013.01 - KR); **C21D 2211/001** (2013.01 - EP); **C21D 2211/002** (2013.01 - CN EP KR US); **C23G 1/08** (2013.01 - EP)

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- [I] EP 3584337 A1 20191225 - JFE STEEL CORP [JP]
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- See also references of WO 2022042731A1

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