Title (en)

HIGH TOUGHNESS BAINITIC STEEL WHEEL FOR RAIL TRANSIT, AND MANUFACTURING METHOD THEREFOR

Title (de)

BAINITISCHES STAHLRAD MIT HOHER ZÄHIGKEIT FÜR DEN SCHIENENVERKEHR UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)

ROUE EN ACIER BAINITIQUE À TÉNACITÉ ÉLEVÉE POUR TRANSPORT FERROVIAIRE ET SON PROCÉDÉ DE FABRICATION

Publication

EP 3483298 A4 20190724 (EN)

Application

EP 17823657 A 20170706

Priority

- CN 201610527582 A 20160706
- CN 2017091930 W 20170706

Abstract (en)

[origin: EP3483298A1] The present invention provides a high-toughness bainitic steel wheel for rail transit and a manufacturing method therefor. The steel wheel includes elements with the following weight percents: carbon C: 0.10-0.40%, silicon Si: 1.00-2.00%, manganeseMn: 1.00-2.50%, nickel Ni: 0.20-1.00%, rare earth RE: 0.001-0.040%, phosphorus P #¤ 0.020%, and sulphur S#¤0.020%, where the remaining is iron and unavoidable residual elements, and 2.00%#¤Si+Mn #¤4.00%. Compared with the prior technology, in the present invention, by using design of chemical compositions of steel and production and manufacturing processes, especially a heat treatment process and technology, a rim of the wheel obtains a carbide-free bainitic structure, and a web and a wheel hub obtain a metallographic structure based on granular bainitic and supersaturated ferritic. The wheel has comprehensive mechanical properties such as high yield strength, toughness, and low-temperature toughness, and good service performance. In addition, costs are reduced, thereby improving a service life and comprehensive efficiency of the wheel, bringing specific economic and social benefits.

IPC 8 full level

C22C 38/02 (2006.01); **C21D 1/18** (2006.01); **C21D 1/28** (2006.01); **C21D 6/00** (2006.01); **C21D 9/34** (2006.01); **C22C 38/00** (2006.01); **C22C 38/04** (2006.01); **C22C 38/08** (2006.01)

CPC (source: CN EP)

C21D 1/18 (2013.01 - EP); **C21D 1/28** (2013.01 - EP); **C21D 6/001** (2013.01 - EP); **C21D 6/005** (2013.01 - EP); **C21D 6/008** (2013.01 - EP); **C21D 9/34** (2013.01 - CN EP); **C22C 38/005** (2013.01 - CN EP); **C22C 38/02** (2013.01 - CN EP); **C22C 38/04** (2013.01 - CN EP); **C22C 38/08** (2013.01 - CN EP); C21D 2211/002 (2013.01 - CN)

Citation (search report)

- [AD] CN 1800427 A 20060712 - MAANSHAN IRON & STEEL CO LTD [CN]
- [A] CN 105671429 A 20160615 - INNER MONGOLIA 1ST MACH GROUP
- [A] EP 1538231 A1 20050608 - LUCCHINI SIDERMECCANICA S P A [IT]
- [A] CN 103409689 A 20131127 - INNER MONGOLIA BAOTOU STEEL UNION CO LTD
- [A] CN 1256323 A 20000614 - UNIV QINGHUA [CN]
- [A] EP 1553202 A1 20050713 - KOBE STEEL LTD [JP], et al
- See references of WO 2018006845A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 3483298 A1 20190515; **EP 3483298 A4 20190724**; CN 106048430 A 20161026; CN 106048430 B 20171103; JP 2019524994 A 20190905; JP 6765496 B2 20201007; WO 2018006845 A1 20180111

DOCDB simple family (application)

EP 17823657 A 20170706; CN 201610527582 A 20160706; CN 2017091930 W 20170706; JP 2019500284 A 20170706