

Title (en)
STEEL SHEET AND STEEL PIPE

Title (de)
STAHLBLECH UND STAHLROHR

Title (fr)
TÔLE D'ACIER ET TUYAU EN ACIER

Publication
EP 4092149 A4 20230503 (EN)

Application
EP 20914216 A 20200117

Priority
JP 2020001478 W 20200117

Abstract (en)
[origin: EP4092149A1] This steel plate has a predetermined chemical composition, a metallographic structure in a thickness middle portion includes, by area%, 0% to 80% of polygonal ferrite and one or two selected from acicular ferrite and bainite, a remainder is an M-A phase, and an effective grain size is 15.0 μm or less, a metallographic structure in a surface layer that is a range of 1.0 mm in a thickness direction from a surface includes, by area%, a total of 95% or more of one or two selected from acicular ferrite and bainite, and a remainder is an M-A phase, and a maximum hardness in the surface layer is 250 HV0.1 or less.

IPC 8 full level
C22C 38/00 (2006.01); **C21D 1/78** (2006.01); **C22C 38/58** (2006.01)

CPC (source: EP KR)
C21D 1/78 (2013.01 - EP); **C22C 38/001** (2013.01 - 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); **C22C 38/12** (2013.01 - EP); **C22C 38/14** (2013.01 - EP); **C22C 38/16** (2013.01 - EP); **C22C 38/20** (2013.01 - EP); **C22C 38/22** (2013.01 - EP); **C22C 38/26** (2013.01 - EP); **C22C 38/28** (2013.01 - EP); **C22C 38/32** (2013.01 - EP); **C22C 38/42** (2013.01 - EP KR); **C22C 38/44** (2013.01 - EP KR); **C22C 38/58** (2013.01 - KR); **C21D 1/02** (2013.01 - EP); **C21D 8/0205** (2013.01 - EP); **C21D 8/0226** (2013.01 - EP); **C21D 8/0263** (2013.01 - EP); **C21D 8/105** (2013.01 - EP); **C21D 9/08** (2013.01 - EP); **C21D 9/46** (2013.01 - EP); **C21D 9/50** (2013.01 - EP); **C21D 2211/002** (2013.01 - EP KR); **C21D 2211/005** (2013.01 - EP KR); **C21D 2221/10** (2013.01 - EP)

Citation (search report)

- [X] JP 6344538 B1 20180620
- [X] JP 6587041 B1 20191009
- [A] EP 3042976 A1 20160713 - NIPPON STEEL & SUMITOMO METAL CORP [JP]
- [A] ZHANG JIMING ET AL: "Formation mechanism of nanoscale transformation twinning in ultra-low-carbon high-strength pipeline steels", JOURNAL OF MATERIAL SCIENCE, KLUWER ACADEMIC PUBLISHERS, DORDRECHT, vol. 54, no. 24, 22 August 2019 (2019-08-22), pages 14950 - 14960, XP036891892, ISSN: 0022-2461, [retrieved on 20190822], DOI: 10.1007/S10853-019-03930-W
- See also references of WO 2021144953A1

Designated contracting state (EPC)
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DOCDB simple family (publication)
EP 4092149 A1 20221123; **EP 4092149 A4 20230503**; BR 112022008897 A2 20220823; CN 114846163 A 20220802; CN 114846163 B 20231024; JP 7295470 B2 20230621; JP WO2021144953 A1 20210722; KR 20220098786 A 20220712; WO 2021144953 A1 20210722

DOCDB simple family (application)
EP 20914216 A 20200117; BR 112022008897 A 20200117; CN 202080088409 A 20200117; JP 2020001478 W 20200117; JP 2021570595 A 20200117; KR 20227020090 A 20200117