

Title (en)
HOT-ROLLED FLAT STEEL PRODUCT AND METHOD FOR THE PRODUCTION THEREOF

Title (de)
WARMGEWALZTES STAHLFLACHPRODUKT UND VERFAHREN ZU SEINER HERSTELLUNG

Title (fr)
PRODUIT D'ACIER PLAT LAMINÉ À CHAUD ET SON PROCÉDÉ DE FABRICATION

Publication
EP 4139492 A1 20230301 (DE)

Application
EP 20721198 A 20200422

Priority
EP 2020061200 W 20200422

Abstract (en)
[origin: WO2021213647A1] The invention relates to a hot-rolled flat steel product of a thickness of < 1.5 mm which has optimized mechanical properties and is particularly suitable for application of a Zn-based corrosion protection layer by hot-dip coating. For this purpose, the flat steel product consists of, in % by mass, C: 0.04 - 0.23 %, Si: 0.04 - 0.54 %, Mn: 1.4 - 2.9 %, Ti + V, wherein the sum of %Ti+%V of the contents in Ti and V is such that 0.005 % < %Ti+%V < 0.15 %, and, in each case, optionally one or more elements of the group „Al, Cr, Mo, B" with contents that are, if applicable, as follows: Al: 0.01 - 1.5 %, sum of %Cr+%Mo of the contents in Cr and M: 0.02 < %Mo+%Cr < 1.4 %, B: 0.0005 - 0.005 %, the remainder consisting of iron and inevitable impurities, among these inevitable impurities being < 0.02 % P, < 0.005 % S, < 0.01 % N and < 0.005 % Nb. The structure of the flat steel product consists of, in percent by area, in sum, 50 - 90 % ferrite and bainite ferrite, 5 - 50 % martensite, 2 - 15 % residual austenite and < 10 % other structure elements. At the same time, the flat steel product has a yield point $R_{p0.2} > 290$ MPa, a tensile strength $R_m > 490$ MPa and an elongation at break A80 which is calculated according to the following formula (1): $A80 [\%] = B - R_m / 37$ with $31 < B < 51$. To at least one surface of the flat steel product a Zn coating is applied by hot-dip coating. The invention also relates to a method for producing a flat steel product of this kind.

IPC 8 full level
C21D 8/02 (2006.01); **C21D 8/04** (2006.01); **C21D 9/46** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/08** (2006.01); **C22C 38/12** (2006.01); **C22C 38/14** (2006.01); **C22C 38/18** (2006.01); **C22C 38/22** (2006.01); **C23C 2/06** (2006.01); **C23C 2/28** (2006.01)

CPC (source: EP US)
B21B 1/463 (2013.01 - US); **B21B 3/02** (2013.01 - US); **C21D 7/13** (2013.01 - US); **C21D 8/0226** (2013.01 - EP); **C21D 8/0263** (2013.01 - EP); **C21D 8/0273** (2013.01 - EP); **C21D 8/0426** (2013.01 - EP); **C21D 8/0463** (2013.01 - EP); **C21D 8/0473** (2013.01 - EP); **C21D 9/46** (2013.01 - EP); **C22C 38/00** (2013.01 - EP); **C22C 38/001** (2013.01 - US); **C22C 38/002** (2013.01 - US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - US); **C22C 38/08** (2013.01 - EP); **C22C 38/12** (2013.01 - EP); **C22C 38/14** (2013.01 - EP); **C22C 38/22** (2013.01 - US); **C22C 38/24** (2013.01 - US); **C22C 38/26** (2013.01 - US); **C22C 38/28** (2013.01 - US); **C22C 38/32** (2013.01 - US); **C22C 38/38** (2013.01 - US); **C23C 2/02** (2013.01 - EP US); **C23C 2/0224** (2022.08 - EP US); **C23C 2/024** (2022.08 - EP US); **C23C 2/06** (2013.01 - EP); **C23C 2/26** (2013.01 - EP US); **C23C 2/29** (2022.08 - EP US); **C23C 2/40** (2013.01 - EP); **C21D 2211/001** (2013.01 - EP); **C21D 2211/002** (2013.01 - EP); **C21D 2211/005** (2013.01 - EP); **C21D 2211/008** (2013.01 - EP); **C22C 38/06** (2013.01 - EP); **C22C 38/18** (2013.01 - EP); **C22C 38/22** (2013.01 - EP)

Citation (search report)
See references of WO 2021213647A1

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

Designated validation state (EPC)
KH MA MD TN

DOCDB simple family (publication)
WO 2021213647 A1 20211028; CN 115427589 A 20221202; EP 4139492 A1 20230301; US 2023151468 A1 20230518

DOCDB simple family (application)
EP 2020061200 W 20200422; CN 202080100125 A 20200422; EP 20721198 A 20200422; US 202017920533 A 20200422