

Title (en)
METHOD FOR PRODUCING A LEAN DUPLEX STAINLESS STEEL

Title (de)
VERFAHREN ZUR HERSTELLUNG EINES LEAN DUPLEX EDELSTAHL

Title (fr)
PROCÉDÉ DE PRODUCTION D'UN ACIER INOXYDABLE LEAN DUPLEX

Publication
EP 3239344 B1 20211020 (EN)

Application
EP 15873672 A 20151224

Priority

- KR 20140191170 A 20141226
- KR 2015014235 W 20151224

Abstract (en)
[origin: EP3239344A1] The present invention relates to lean duplex stainless steel having a dual-phase structure of an austenite phase and a ferrite phase, and a method for producing the lean duplex stainless steel, the lean duplex stainless steel according to one embodiment of the present invention, as a ferrite-austenite stainless steel, having the preferred stacking fault energy (SFE) value of the austenite phase, expressed by the formula 2 below, of 19-37 and critical strain value range, within which the strain-induced martensite phases occurs, of 0.1-0.25. $SFE = 25.7 + 1.59 \times Ni / K Ni \## K Ni \times V^3 + V^3 + 0.795 \times Cu / K Cu \## K Cu \times V^3 + V^3 \## 0.85 \times Cr / K Cr \## K Cr \times V^3 + V^3 + 0.001 \times Cr / K Cr \## K Cr + V^3 + V^3 \times 2 + 38.2 \times N / K N \## K N \times V^3 + V^3 \times 0.5 \## 2.8 \times Si / K Si \## K Si \times V^3 + V^3 \## 1.34 \times Mn / K Mn \## K Mn + V^3 + V^3 + 0.06 \times Mn / K Mn \## K Mn \times V^3 + V^3 \times 2$ where Ni, Cu, Cr, N, Si and Mn indicate the overall content (wt.%) of the respective constituent element, and K(x) is the distribution index of respective constituent element (x) and is expressed by the formula 3 below, and $V^{(3)}$ is the component ratio of austenite (in the 0.45-0.75 range). $K x = \text{amount of element } x \text{ in ferrite phase} / \text{amount of element } x \text{ in austenite phase}$

IPC 8 full level
B22D 11/124 (2006.01); **B22D 11/055** (2006.01); **B22D 11/16** (2006.01); **B22D 11/22** (2006.01); **C21D 6/00** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/34** (2006.01); **C22C 38/42** (2006.01); **C22C 38/44** (2006.01); **C22C 38/58** (2006.01); **C22C 38/46** (2006.01); **C22C 38/48** (2006.01); **C22C 38/50** (2006.01)

CPC (source: CN EP US)
B22D 11/055 (2013.01 - CN EP US); **B22D 11/124** (2013.01 - CN EP US); **B22D 11/16** (2013.01 - CN EP US); **B22D 11/22** (2013.01 - EP US); **C21D 6/004** (2013.01 - EP US); **C22C 38/001** (2013.01 - CN EP US); **C22C 38/02** (2013.01 - CN EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/34** (2013.01 - CN EP 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 38/58** (2013.01 - CN EP US); **C21D 2211/001** (2013.01 - EP US); **C21D 2211/005** (2013.01 - EP US)

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

DOCDB simple family (publication)
EP 3239344 A1 20171101; **EP 3239344 A4 20180530**; **EP 3239344 B1 20211020**; CN 107107173 A 20170829; CN 107107173 B 20191101; JP 2018503741 A 20180208; JP 6484716 B2 20190313; KR 101766550 B1 20170810; KR 20160080275 A 20160707; US 2017326628 A1 20171116; WO 2016105145 A1 20160630

DOCDB simple family (application)
EP 15873672 A 20151224; CN 201580071241 A 20151224; JP 2017530070 A 20151224; KR 2015014235 W 20151224; KR 20150185726 A 20151224; US 201515536391 A 20151224