

Title (en)

STEEL MEMBER AND STEEL PLATE AND MANUFACTURING METHOD FOR THEM

Title (de)

STAHELEMENT UND STAHLPLATTE SOWIE HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)

ÉLÉMENT EN ACIER ET TÔLE D'ACIER, ET LEURS PROCÉDÉS DE PRODUCTION

Publication

EP 3372702 B1 20220727 (EN)

Application

EP 16862027 A 20161031

Priority

- JP 2015218435 A 20151106
- JP 2016082223 W 20161031

Abstract (en)

[origin: EP3372702A1] Provided is a steel member which exhibits high strength and sufficiently excellent toughness of the thicknesswise central portion even when PWHT is performed for a long time after welding. The steel member includes C, Si, Mn, P, S, Al, Cu, Ni, Cr, Mo, N, B, and V in a defined range, wherein Nb content is suppressed to 0.005% or less, Ti content is suppressed to 0.001% or less, and the total content of Ca, Mg, REM, and Zr is suppressed to 0.0010% or less, the balance being iron and inevitable impurities, and wherein a thickness is 100 mm or less, a structure in the thicknesswise central portion satisfies all the following (a) and (b), and Charpy absorbed energy at -38°C is 100 J or more: (a) a structure is at least one of tempered bainite and tempered martensite, and (b) a value represented by D/d is 54 or less, where D is an average equivalent circle diameter of crystal grains surrounded by large angle grain boundaries with crystal misorientation of 15° or more between two adjacent crystal grains, and d is a maximum diameter of grain boundary carbide.

IPC 8 full level

C22C 38/00 (2006.01); **C21D 8/02** (2006.01); **C21D 9/00** (2006.01); **C21D 9/50** (2006.01); **C22C 38/54** (2006.01)

CPC (source: EP KR)

C21D 1/18 (2013.01 - EP); **C21D 1/26** (2013.01 - EP); **C21D 6/002** (2013.01 - EP); **C21D 8/02** (2013.01 - KR); **C21D 8/0205** (2013.01 - EP); **C21D 8/0247** (2013.01 - EP); **C21D 9/46** (2013.01 - EP); **C21D 9/50** (2013.01 - EP KR); **C22C 38/02** (2013.01 - EP KR); **C22C 38/04** (2013.01 - EP); **C22C 38/06** (2013.01 - KR); **C22C 38/42** (2013.01 - EP KR); **C22C 38/44** (2013.01 - EP KR); **C22C 38/46** (2013.01 - EP); **C22C 38/48** (2013.01 - EP); **C22C 38/50** (2013.01 - EP); **C22C 38/54** (2013.01 - EP KR); **C21D 2201/05** (2013.01 - EP); **C21D 2211/002** (2013.01 - EP KR); **C21D 2211/008** (2013.01 - EP KR)

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 3372702 A1 20180912; **EP 3372702 A4 20190403**; **EP 3372702 B1 20220727**; CN 108350539 A 20180731; CN 108350539 B 20210427; JP 2017088938 A 20170525; JP 6735082 B2 20200805; KR 102106766 B1 20200506; KR 20180075659 A 20180704; WO 2017077967 A1 20170511

DOCDB simple family (application)

EP 16862027 A 20161031; CN 201680062919 A 20161031; JP 2015218435 A 20151106; JP 2016082223 W 20161031; KR 20187015414 A 20161031