

Title (en)  
SEAMLESS AUSTENITE HEAT-RESISTANT ALLOY TUBE

Title (de)  
NAHTLOSES UND WÄRMEBESTÄNDIGES AUSTENITISCHES LEGIERUNGSRÖHR

Title (fr)  
TUBE EN ALLIAGE RÉSISTANT À LA CHALEUR EN AUSTÉNITE SANS SOUDURE

Publication  
**EP 2781612 A4 20160302 (EN)**

Application  
**EP 12850463 A 20121107**

Priority  
• JP 2011249875 A 20111115  
• JP 2012078788 W 20121107

Abstract (en)  
[origin: EP2781612A1] A seamless austenitic heat-resistant alloy tube used by fillet-welding the outer surface thereof directly, having a chemical composition consisting, by mass percent, of C: 0.03-0.15%, Si#±1%, Mn#±2%, P#±0.03%, S#±0.01%, Ni: 35-60%, Cr: 18-38%, W: 3-11%, Ti: 0.01-1.2%, Al#±0.5%, B: 0.0001-0.01%, N#±0.02%, and O#±0.008%, and at least one element selected from Zr: 0.01-0.5%, Nb: 0.01-0.5%, and V: 0.01-0.5%, with the balance being Fe and impurities, wherein an average grain diameter  $d$   $\mu\text{m}$  at the center of the wall thickness of the tube is 1000  $\mu\text{m}$  or smaller and satisfies the formula ( $d$ #±1500-2.5×10<sup>5</sup> ×B), the thickness of an oxide layer on the outer surface of the tube is 15  $\mu\text{m}$  or smaller. The tube of the present invention is excellent in weld crack resistance and capable of restraining the generation of cracks in a HAZ at the time of welding.

IPC 8 full level  
**C22C 19/05** (2006.01); **C22C 30/00** (2006.01); **C22C 30/02** (2006.01); **C22F 1/10** (2006.01)

CPC (source: EP)  
**C22C 19/05** (2013.01); **C22C 19/053** (2013.01); **C22C 19/055** (2013.01); **C22C 19/058** (2013.01); **C22C 30/00** (2013.01); **C22C 30/02** (2013.01); **C22F 1/10** (2013.01)

Citation (search report)  
• [A] EP 2206796 A1 20100714 - SUMITOMO METAL IND [JP]  
• See references of WO 2013073423A1

Cited by  
EP3581669A4; EP3760753A4; US11248297B2; WO2019224289A1; US11268195B2

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 2781612 A1 20140924; EP 2781612 A4 20160302; EP 2781612 B1 20180606**; CN 103946403 A 20140723; CN 103946403 B 20160217; IN 3492DEN2014 A 20150626; JP 2013104109 A 20130530; JP 5212533 B2 20130619; KR 101632520 B1 20160621; KR 20140091061 A 20140718; PL 2781612 T3 20181130; WO 2013073423 A1 20130523

DOCDB simple family (application)  
**EP 12850463 A 20121107**; CN 201280056250 A 20121107; IN 3492DEN2014 A 20140430; JP 2011249875 A 20111115; JP 2012078788 W 20121107; KR 20147015980 A 20121107; PL 12850463 T 20121107