

Title (en)
LOW-CHROMIUM CORROSION-RESISTANT HIGH-STRENGTH POLYCRYSTALLINE HIGH-TEMPERATURE ALLOY AND PREPARATION METHOD THEREFOR

Title (de)
KORROSIONSBESTÄNDIGE HOCHFESTE POLYKRISTALLINE HOCHTEMPERATURLEGIERUNG MIT NIEDRIGEM CHROMGEHALT UND VERFAHREN ZU IHRER HERSTELLUNG

Title (fr)
ALLIAGE POLYCRISTALLIN À HAUTE TEMPÉRATURE, À HAUTE RÉSISTANCE MÉCANIQUE ET RÉSISTANT À LA CORROSION, À FAIBLE TENEUR EN CHROME, ET SON PROCÉDÉ DE PRÉPARATION

Publication
EP 3985139 A4 20230726 (EN)

Application
EP 20821820 A 20200612

Priority
• CN 201910515309 A 20190614
• CN 2020095958 W 20200612

Abstract (en)
[origin: EP3985139A1] A low-chromium corrosion-resistant high-strength polycrystalline superalloy and a method for preparing the same, the superalloy comprising the following elements in percent by weight: from 15 to 18% chromium, from 15% to 20% cobalt, from 0.5% to 1.5% titanium, from 3.5% to 4.5% aluminum, from 5% to 8.5% tungsten, less than or equal to 0.5% silicon, less than or equal to 0.5% manganese, from 0.5% to 1.5% niobium, from 0.03% to 0.08% carbon, and balance being nickel; after the raw material is smelted, the ingot is subjected to homogenization, hot rolling, and finally heat treatment. The yield strengths of the alloy disclosed are higher than 850MPa and 550MPa at room temperature and at 850 °C, respectively; and after the alloy is exposed to fireside corrosion ($N_{2-15\%}CO_{2-3.5\%}O_{2-0.1\%}SO_{2-0.1\%}$) at 850 °C for 500 hours, the weight change is less than 0.2mg/cm². Besides, the alloy has a superior structural stability during 850 °C thermal exposure.

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

CPC (source: CN EP)
C22C 1/023 (2013.01 - CN EP); **C22C 19/056** (2013.01 - CN EP); **C22F 1/10** (2013.01 - CN EP)

Citation (search report)
• [XA] EP 2354262 A1 20110810 - HITACHI LTD [JP]
• [A] US 5882586 A 19990316 - TAMURA ITARU [JP], et al
• [A] US 2015336217 A1 20151126 - OTT MICHAEL [DE], et al
• [A] US 4769087 A 19880906 - GENEUREUX PAUL D [US], et al
• See also references of WO 2020249113A1

Designated contracting state (EPC)
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EP 3985139 A1 20220420; **EP 3985139 A4 20230726**; CN 110106398 A 20190809; CN 110106398 B 20200818; WO 2020249113 A1 20201217

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