

Title (en)

HIGH STRENGTH FUEL PIPING MATERIAL FOR HYDROGEN MOBILITY

Title (de)

HOCHFESTES KRAFTSTOFFLEITUNGSMATERIAL FÜR DIE WASSERSTOFFMOBILITÄT

Title (fr)

MATÉRIAU DE TUYAUTERIE DE CARBURANT À HAUTE RÉSISTANCE POUR LA MOBILITÉ HYDROGÈNE

Publication

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Application

EP 23175028 A 20230524

Priority

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Abstract (en)

An objective of the present disclosure is to provide a high strength and lightweight fuel pipe for a mobility by increasing a nickel equivalent, configuring an alloy composition having price competitiveness, and designing optimized pipe dimensions to a pipe for carrying hydrogen formed in the alloy composition under applicable pressure. According to the objective, the present disclosure provides an alloy material having a Ni equivalent (Ni_{eq}) over 28.5% by controlling the composition of C, Si, Mn, P, S, Ni, Cr, and Mo, a pipe is machined using the alloy material, and a high-strength pipe of about 1/8 hard is provided by applying a strength increasing technology using work hardening and heat treatment.

IPC 8 full level

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Citation (applicant)

- KR 20220010184 A 20220125 - POSCO [KR]
- WO 2015098981 A1 20150702 - UNIV KYUSHU NAT UNIV CORP [JP], et al
- US 2011026650 A1 20110203 - MOLINA ALBERT [ES], et al
- KR 20180111416 A 20181011 - LG ELECTRONICS INC [KR]
- THORSTEN MICHLER, JOERG NAUMANN, MARTIN HOCK, KARL BERRETH, MICHAEL P. BALOGHERICH, SATTLER: "Microstructural properties controlling hydrogen environment embrittlement of cold worked 316 type austenitic stainless steels", MATERIALS SCIENCE & ENGINEERING A, vol. 628, 2015, pages 252 - 261
- T. YAMADAH, KOBAYASHI: "Criteria for Selecting Materials to be Used for Hydrogen Station Equipment", J. HIGH PRESS. GAS SAF. INST. JAPAN, vol. 49, 2013, pages 885 - 893
- S. MATSUOKAJI, YAMABEH, MATSUNAGA: "Criteria for determining hydrogen compatibility and the mechanisms for hydrogen-assisted, surface crack growth in austenitic stainless steels", ENG. FRACT. MECH., vol. 153, 2016, pages 103 - 127, XP029417081, DOI: 10.1016/j.engfracmech.2015.12.023

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