Title (en)

HYDROGEN-EMBRITTLEMENT-RESISTANT STEEL ROD WITH HIGH MECHANICAL CHARACTERISTICS

Title (de)

FORMDRAHT AUS STAHL MIT HOHEN MECHANISCHEN EIGENSCHAFTEN UND BESTÄNDIGKEIT GEGEN WASSERSTOFF-VERSPRÖDUNG

Title (fr)

FIL DE FORME EN ACIER À HAUTES CARACTÉRISTIQUES MÉCANIQUES RESISTANT À LA FRAGILISATION PAR L'HYDROGÈNE

Publication

EP 3527677 B1 20230628 (FR)

Application

EP 19166357 A 20110323

Priority

- FR 1002286 A 20100531
- EP 11719592 A 20110323
- FR 2011000167 W 20110323

Abstract (en)

[origin: CA2801355A1] This profiled wire, of NACE grade, made of low-alloy carbon steel intended to be used in the offshore oil exploitation sector, is characterized in that it has the following chemical composition, expressed in percentages by weight of the total mass: 0.75 < % C < 0.95; 0.30 < % Mn < 0.85; Cr = 0.4%; V = 0.16%; Si = 1.40% and preferably = 0.15%; and optionally no more than 0.06% Al, no more than 0.1% Ni and no more than 0.1% Cu, the balance being iron and the inevitable impurities arising from smelting the metal in the liquid state, and in that the steel is obtained, from hot-rolled rod stock cooled down to room temperature, and then having a diameter of about 5 to 30 mm, by subjecting this starting rod firstly to a thermomechanical treatment comprising two successive steps carried out in order, namely an isothermal quench, giving it a homogeneous perlitic microstructure, followed by a mechanical transformation operation carried out cold with an overall degree of work-hardening (or reduction ratio) of between 50 and 80% at most, so as to give the wire its definitive shape, and in that the profiled wire thus obtained is then subjected to a restoration heat treatment of short duration carried out below Ac1 (preferably between 410 and 710°C), giving it the desired final mechanical properties.

IPC 8 full level

C21D 9/52 (2006.01); **C21D 1/20** (2006.01); **C21D 6/00** (2006.01); **C21D 8/06** (2006.01); **C21D 9/58** (2006.01); **C21D 9/64** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/08** (2006.01); **C22C 38/12** (2006.01); **C22C 38/16** (2006.01); **C22C 38/20** (2006.01); **C22C 38/22** (2006.01); **C22C 38/24** (2006.01); **C22C 38/32** (2006.01); **C22C 38/40** (2006.01); **C22C 38/42** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01)

CPC (source: CN EP KR US)

C21D 1/18 (2013.01 - US); **C21D 1/20** (2013.01 - CN KR US); **C21D 6/002** (2013.01 - US); **C21D 6/004** (2013.01 - US); **C21D 6/005** (2013.01 - EP US); **C21D 6/008** (2013.01 - US); **C21D 8/06** (2013.01 - EP US); **C21D 8/065** (2013.01 - CN EP US); **C21D 9/52** (2013.01 - EP US); **C21D 9/525** (2013.01 - CN EP KR US); **C21D 9/58** (2013.01 - EP US); **C21D 9/64** (2013.01 - CN EP US); **C22C 38/001** (2013.01 - EP US); **C22C 38/02** (2013.01 - CN EP KR US); **C22C 38/04** (2013.01 - CN EP KR US); **C22C 38/06** (2013.01 - CN EP US); **C22C 38/08** (2013.01 - CN EP US); **C22C 38/12** (2013.01 - CN EP US); **C22C 38/16** (2013.01 - CN EP US); **C22C 38/18** (2013.01 - CN EP US); **C22C 38/20** (2013.01 - EP US); **C22C 38/22** (2013.01 - EP US); **C22C 38/24** (2013.01 - EP US); **C22C 38/32** (2013.01 - EP US); **C22C 38/40** (2013.01 - EP US); **C22C 38/42** (2013.01 - EP US); **C22C 38/44** (2013.01 - EP US); **C22C 38/46** (2013.01 - EP US); **C22C 38/54** (2013.01 - EP US); C21D 2211/009 (2013.01 - EP US)

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