

Title (en)
AN ULTRA-THIN FLEXIBLE TUBE MADE OF AN ALLOY AND THE MANUFACTURE PROCESS THEREOF

Title (de)
ULTRADÜNNES FLEXIBLES ROHR AUS EINER LEGIERUNG UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)
TUBE FLEXIBLE ULTRA FIN CONSTITUÉ D'UN ALLIAGE ET SON PROCÉDÉ DE FABRICATION

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Application
EP 07816391 A 20070920

Priority
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Abstract (en)
[origin: EP2210965A1] The present invention provides an ultra-thin flexible tube made of an alloy consisting of, in % by weight, Cr: 17 to 23, Ti: 0.1 to 0.35, Cu: 0.4 to 8.5, Mo: 0.2 to 2.4, Co: 0.01 to 0.06, Ni: 0.3 to 2.0, Nb: 0.2 to 1.0, V: 0.05 to 0.4, B: 0.001 to 0.020, Si: <1.0, Mn: <1.0, C: <0.020, N: <0.020, P: <0.035, S: <0.025, Mg: <0.005, O: <0.006, Al: <0.08, and the balance of Fe and inevitable impurities. The manufacture process of the tube comprises the following steps: cold-rolling to form an alloy sheet, quenching and tempering, flattening, slivering precisely, preparing roll, cleaning, positioning, rolling and shaping, welding, thermal retardation, detecting defect and marking, rectifying circularity and determining diameter, and coiling. The tube has a thickness of 0.04 mm to 0.2 mm, a corrosion resistance to chlorine of more than 100ppm which is more than 50% higher than the corrosion resistance of copper material, a strength about 1 time higher than that of copper material, a ductility similar to that of copper material, and a thermal power higher than that of conventional copper tubes. The tube could be used as a high-efficiency radiating tube in various air conditioners or refrigerating apparatus.

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Citation (search report)
• [XAI] WO 2006132164 A1 20061214 - JFE STEEL CORP [JP], et al
• [XA] JP H04280948 A 19921006 - NIPPON YAKIN KOGYO CO LTD
• [XAI] EP 1170392 A1 20020109 - KAWASAKI STEEL CO [JP]
• [XAI] EP 1227168 A1 20020731 - KAWASAKI STEEL CO [JP]
• [A] EP 0435003 A1 19910703 - NIPPON STEEL CORP [JP]
• [A] JP H01165752 A 19890629 - KAWASAKI STEEL CO, et al
• [A] JP H11172369 A 19990629 - KAWASAKI STEEL CO
• [A] US 4690798 A 19870901 - NARUTANI TETSU [JP], et al
• [A] EP 0478790 A1 19920408 - NISSHIN STEEL CO LTD [JP]
• [A] EP 1310575 A1 20030514 - KAWASAKI STEEL CO [JP]
• See references of WO 2008151479A1

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