Title (en)

Process of continuous colouring of a stainless steel and installation of implementation of the process

Title (de)

Verfahrensweise ununterbrochener Färbung eines Substrates aus rostfreiem Stahl und Vorrichtung der Umsetzung der Verfahrensweise

Title (fr)

Procédé de coloration en continu d'un substrat en acier inoxydable et installation de mise en oeuvre du procédé

Publication

**EP 1865081 A1 20071212 (FR)**

Application

**EP 06291130 A 20060606**

Priority

EP 06291130 A 20060606

Abstract (en)

The process for continuous coloring of a stainless steel or nickel-based alloy containing chromium substrate, comprises unwinding the substrate in a heating zone at a reference temperature of 800-1500[deg] C to obtain an oxidized surface layer. A thickness of the oxidized surface layer is less than 200 nm. A ratio between a content of chromium and iron is higher than 0.02 in the oxidized layer. The substrate is cooled at = 70[deg] C. A substrate surface preparation is carried out before an introduction of substrate into the heating zone for homogenizing the substrate. The process for continuous coloring of a stainless steel or nickel-based alloy containing chromium substrate, comprises unwinding the substrate in a heating zone at a reference temperature of 800-1500[deg] C to obtain an oxidized surface layer. A thickness of the oxidized surface layer is less than 200 nm. A ratio between a content of chromium and iron is higher than 0.02 in the oxidized layer. The substrate is cooled at = 70[deg] C. A substrate surface preparation is carried out before an introduction of substrate into the heating zone for homogenizing the substrate. After cooling, the substrate is contacted with an aqueous solution of phosphoric acid and then rinsed with water. After coloring, the substrate is subjected to a cold plastic deformation (known as skin pass) to obtain a deformation rate of 5-15%. The substrate having a stainless steel wire has a diameter lower than 32 mm, and the substrate having a stainless steel bar has a diameter higher than 2 mm and a length = 12 m. An operation of cold plastic deformation of the stainless steel- wire and bar is a wire drawing operation. The substrate is unwinded in the heating zone through a passage in an enclosure under an inert atmosphere. Independent claims are included for: (1) an installation for manufacturing a stainless steel or nickel-based alloy containing chromium substrate; and (2) a stainless steel or nickel-based alloy containing chromium substrate.

Abstract (fr)

L'invention concerne un procédé de coloration en continu d'un substrat en acier inoxydable ou en alliage base nickel contenant du chrome, selon lequel on fait défiler le substrat dans une zone de chauffage réglée à une température de consigne comprise entre 800 et 1500°C, afin d'obtenir une couche oxydée en surface présentant une épaisseur inférieure à 200 nm et un rapport entre les teneurs en chrome et en fer supérieur à 0,02, puis on refroidit le substrat à une température inférieure ou égale à 70°C, ainsi qu'une installation de mise en oeuvre du procédé.

IPC 8 full level

**C21D 9/52** (2006.01); **C21D 9/56** (2006.01); **C23C 8/10** (2006.01); **C23C 8/80** (2006.01); **C23C 22/08** (2006.01); **C23C 22/50** (2006.01)

CPC (source: EP)

**C21D 9/52** (2013.01); **C21D 9/56** (2013.01); **C23C 8/10** (2013.01); **C23C 8/80** (2013.01); **C23C 22/08** (2013.01); **C23C 22/50** (2013.01)

Citation (search report)

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Designated contracting state (EPC)

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