

Title (en)

Process suitable to give a direct protection against the wear corrosion of metallic pieces

Title (de)

Verfahren zum direktem Schutz gegen Verschleiss-Korrosion von metallischen Gegenständen

Title (fr)

Procédé de protection directe contre l'usure-corrosion de pièces métalliques

Publication

EP 0931849 A2 19990728 (EN)

Application

EP 98203391 A 19981009

Priority

IT MI980131 A 19980126

Abstract (en)

In a process suitable to give a direct protection against the corrosion of metallic pieces, a nitrogen diffusion area is realised on the outer layer with a maximum depth of 0.1 mm, and with a nitrogen weight % lower than 2-4%, depending on the steel to be treated. The nitrogen is diffused into the piece and fills the imperfections and the empty areas of the crystal lattice. The temperature at which this first phase takes place goes from 480 to 525 DEG C depending from the steel type and the maximum duration is of 10 hours. Then, both the temperature values and the gas mixture, by introducing an oxidising atmosphere, are changed and the nitrogen diffusion is fully stopped by the oxygen action of the oxidising atmosphere against the iron atoms of the surface. Layers of Fe₃O₄ at 95-99% content are obtained, practically FeO/Fe₂O₃ oxides free, which are formed at temperatures comprised between 505 and 545 DEG C and which are comprised between 2 and 4 µm and containing an oxygen weight % between 25% and 30%. A strong barrier and insulation effect is thereby obtained directly within the steel.

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