

Title (en)

SURFACE TREATMENT METHOD FOR METAL PRODUCT AND METAL PRODUCT

Title (de)

OBERFLÄCHENBEHANDLUNGSVERFAHREN FÜR METALLPRODUKT SOWIE METALLPRODUKT

Title (fr)

PROCÉDÉ DE TRAITEMENT DE SURFACE POUR PRODUIT MÉTALLIQUE ET PRODUIT MÉTALLIQUE

Publication

**EP 3460090 A1 20190327 (EN)**

Application

**EP 17799342 A 20170515**

Priority

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Abstract (en)

Provided is a surface treatment method capable of continuously forming a uniform nanocrystalline structure along the surface of a metal product regardless of whether the metal product is hard or soft. In the present invention, a substantially spherical spray powder having a median diameter of 1-20  $\mu\text{m}$  and a fall velocity in the air of 10 sec/m or more is sprayed onto a metal product at a spray pressure of 0.05-0.5 MPa. Thus even when the metal product is made of a soft material in a range from the surface of the metal product to a predetermined depth along the surface, it is possible to form a uniform continuous nanocrystalline structure layer in which nanocrystals are micronized to an average crystal grain size of not more than 300 nm, preferably not more than 100 nm, without forming a laminar worked structure, impart a high compression residual stress of from about -180 MPa up to the order of -1200 MPa, and strengthen the surface of the metal product.

IPC 8 full level

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