Title (en)

PROCESS FOR THE THERMOCHEMICAL-HEAT TREATMENT OF CASE-HARDENED STEELS

Title (de)

VERFAHREN ZUR THERMOCHEMISCH-THERMISCHEN BEHANDLUNG VON EINSATZSTÄHLEN

Title (fr)

PROCEDE DE TRAITEMENT THERMOCHIMIQUE-THERMIQUE D'ACIERS DE CEMENTATION

Publication

EP 0627019 B1 19980401 (DE)

Application

EP 93901704 A 19921218

Priority

- DE 4205647 A 19920225
- EP 9202951 W 19921218

Abstract (en)

[origin: DE4205647A1] The invention relates to a process for the thermochemical-heat treatment of case-hardened steels in which an edge region of a workpiece, especially tappets, roller bearing components, drive and clutch components, can be enriched with carbon and nitrogen and subsequently subjected to martensitic hardening. In the process of the invention, carbon nitriding (1) is performed at temperature of 780 to 1050 DEG C with the case-hardening and nitriding of the edge region with 0.4 to 0.9 wt % carbon and 0.1 to 0.8 wt % nitrogen for a period of 1 to 4 hours, carbo-nitriding is followed by quenching (2) of a temperature well below the initial martensite point of the edge region, followed in turn by an annealing process (3) at a temperature of 20 to 40 DEG C above a nitrocarburising temperature at a heating rate of 10 to 30 DEG C per minute over a period of 1 to 2 hours and cooling (4) to room temperature, again followed by the material-removing shaping of the workpiece, after which finally nitrocarburing (6) takes place at a temperature of 500 to 600 DEG C for 60 to 150 minutes and cooling (7) to room temperature. The process of the invention gives the material high wear resistance and carrying capacity even under the heaviest tribologic stress.

IPC 1-7

C23C 8/32; C23C 8/56; C21D 1/78

IPC 8 full level

C21D 1/78 (2006.01); **C23C 8/32** (2006.01); **C23C 8/56** (2006.01)

CPC (source: EP)

C21D 1/78 (2013.01); **C23C 8/32** (2013.01); **C23C 8/56** (2013.01)

Designated contracting state (EPC)

DE FR GB IT

DOCDB simple family (publication)

DE 4205647 A1 19930826; **DE 4205647 C2 19960801**; DE 59209268 D1 19980507; EP 0627019 A1 19941207; EP 0627019 B1 19980401; WO 9317146 A1 19930902

DOCDB simple family (application)

DE 4205647 A 19920225; DE 59209268 T 19921218; EP 9202951 W 19921218; EP 93901704 A 19921218