

Title (en)  
METHOD OF COATING METALLIC SURFACES WITH CARBIDES

Publication  
**EP 0112206 B1 19870204 (FR)**

Application  
**EP 83402215 A 19831117**

Priority  
FR 8219283 A 19821118

Abstract (en)  
[origin: EP0112206A1] 1. A process for forming a chemical coating in a vapour phase of halogenides, of the surface of metallic parts which must have a high hardness, resulting in the obtainment of monophase superficial layers of carbides of metallic elements of the following series : silicon, titanium, vanadium, chromium, zirconium, niobium, hafnium, tantalum and tungsten, this process, which does not comprise a prior ionic nitriding, being constituted by a gaseous cementation treatment of halogenides of at least one of the aforementioned metallic elements, at temperatures between 800 degrees and 1100 degrees C, during periods between 2 and 20 hours, characterised in that the halogenides of said metallic elements are obtained by using a cement maintained at a distance from the surface to be coated and comprising as sole constituents : at least one of said addition metallic elements, either in the form of ferro-alloy, or in the technically pure state in the metallic form ; an addition of ammonium chloride or fluoride in a proportion between 0.2 and 1.5% by weight of the total mass of the cement ; and an addition of powdered carbon in a proportion between 0.1% and 1.5% of the total mass of the cement, the atmosphere employed being constituted by a neutral gas.

IPC 1-7  
**C23C 12/02**

IPC 8 full level  
**C23C 12/02** (2006.01)

CPC (source: EP)  
**C23C 12/02** (2013.01)

Cited by  
CN112299882A; GB2204326A; GB2204326B; GB2204327A; GB2204327B

Designated contracting state (EPC)  
AT BE CH DE FR GB IT LI LU NL SE

DOCDB simple family (publication)  
**EP 0112206 A1 19840627; EP 0112206 B1 19870204**; AT E25406 T1 19870215; DE 3369705 D1 19870312; FR 2536422 A1 19840525

DOCDB simple family (application)  
**EP 83402215 A 19831117**; AT 83402215 T 19831117; DE 3369705 T 19831117; FR 8219283 A 19821118