

Title (en)
COBALT-FREE TUNGSTEN CARBIDE BASED HARD METAL MATERIAL

Title (de)
KOBALTFREIER WOLFRAMKARBID-BASIERTER HARTMETALLWERKSTOFF

Title (fr)
MATÉRIAU MÉTALLIQUE DUR À BASE DE CARBURE DE TUNGSTÈNE EXEMPT DE COBALT

Publication
EP 3885459 A1 20210929 (DE)

Application
EP 20165742 A 20200326

Priority
EP 20165742 A 20200326

Abstract (en)
[origin: WO2021191009A1] Disclosed is a cobalt-free tungsten carbide-based hard-metal material comprising 70-97 wt% of hard-material particles which are at least predominantly formed by tungsten carbide and 3-30 wt% of a metallic binder which is an iron-nickel-based alloy comprising at least iron, nickel and chromium with a ratio of Fe to (Ni + Fe) of $0.70 \leq \text{Fe}/(\text{Fe} + \text{Ni}) \leq 0.95$; a Cr content of $0.5 \text{ wt}\% \leq \text{Cr}/(\text{Fe} + \text{Ni} + \text{Cr})$ and (i) for the range $0.7 \leq \text{Fe}/(\text{Fe} + \text{Ni}) \leq 0.83$: $\text{Cr}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq (-0.625 * (\text{Fe}/(\text{Fe} + \text{Ni})) + 3.2688) \text{ wt}\%$; (ii) for the range $0.83 \leq \text{Fe}/(\text{Fe} + \text{Ni}) \leq 0.85$: $\text{Cr}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq (-27.5 * (\text{Fe}/(\text{Fe} + \text{Ni})) + 25.575) \text{ wt}\%$ and (iii) for the range $0.85 \leq \text{Fe}/(\text{Fe} + \text{Ni}) \leq 0.95$: $\text{Cr}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq 2.2 \text{ wt}\%$; optionally with an Mo content relative to (Fe + Ni + Cr) of $0 \text{ wt}\% \leq \text{Mo}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq 10 \text{ wt}\%$; optionally with a V content relative to (Fe + Ni + Cr) of $0 \text{ wt}\% \leq \text{V}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq 2 \text{ wt}\%$; and unavoidable impurities up to a total of not more than 1 wt% of the hard-metal material.

Abstract (de)
Es wird ein kobaltfreier Wolframkarbid-basierter Hartmetallwerkstoff bereitgestellt, mit 70-97 Gew.-% Hartstoffpartikeln, die zumindest überwiegend durch Wolframkarbid gebildet sind, und 3-30 Gew.-% eines metallischen Binders, der eine Eisen-Nickel-Basislegierung ist, die zumindest Eisen, Nickel und Chrom aufweist, mit einem Verhältnis von Fe zu (Ni + Fe) von $0.70 \leq \text{Fe}/(\text{Fe} + \text{Ni}) \leq 0.95$; einem Cr-Gehalt von $0.5 \text{ Gew.}\% \leq \text{Cr}/(\text{Fe} + \text{Ni} + \text{Cr})$ und (i) für den Bereich $0.7 \leq \text{Fe}/(\text{Fe} + \text{Ni}) \leq 0.83$: $\text{Cr}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq (-0.625 * (\text{Fe}/(\text{Fe} + \text{Ni})) + 3.2688) \text{ Gew.}\%$; (ii) für den Bereich $0.83 \leq \text{Fe}/(\text{Fe} + \text{Ni}) \leq 0.85$: $\text{Cr}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq (-27.5 * (\text{Fe}/(\text{Fe} + \text{Ni})) + 25.575) \text{ Gew.}\%$ und (iii) für den Bereich $0.85 \leq \text{Fe}/(\text{Fe} + \text{Ni}) \leq 0.95$: $\text{Cr}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq 2.2 \text{ Gew.}\%$; mit optional einem Mo-Gehalt im Verhältnis zu (Fe + Ni + Cr) von $0 \text{ Gew.}\% \leq \text{Mo}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq 10 \text{ Gew.}\%$; mit optional einem V-Gehalt im Verhältnis zu (Fe + Ni + Cr) von $0 \text{ Gew.}\% \leq \text{V}/(\text{Fe} + \text{Ni} + \text{Cr}) \leq 2 \text{ Gew.}\%$; und unvermeidlichen Verunreinigungen bis zu insgesamt maximal 1 Gew.-% des Hartmetallwerkstoffs.

IPC 8 full level
C22C 29/06 (2006.01); **C22C 1/05** (2006.01); **C22C 29/08** (2006.01); **C22C 38/00** (2006.01)

CPC (source: EP US)
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Citation (search report)

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Designated contracting state (EPC)
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