

## Title (en)

Method and device for manufacturing a hard metal or cermet powder mixture

## Title (de)

Verfahren und Vorrichtung zur Herstellung einer Hartmetall- oder Cermetpulvermischung

## Title (fr)

Procédé et dispositif destinés à la fabrication d'un mélange de poudre de métal dur ou de cermet

## Publication

**EP 1900421 A1 20080319 (DE)**

## Application

**EP 07017710 A 20070911**

## Priority

DE 102006043581 A 20060912

## Abstract (en)

The production of hard metal mixture or cermet mixture for the powder metallurgy processing to hard metal pieces and cermet pieces and for thermal coatings, comprises preparing the powdered mixture components in grit size suitable for the mixture, homogenizing all mixture ingredients including dispersion liquid without freely movable grinding body in a dispersion device (1) working according to the rotor-stator principle and removing the dispersion liquid from the homogenized suspension. The suspension is produced from the mixture components and the dispersion liquid before homogenizing. The production of hard metal mixture or cermet mixture for the powder metallurgy processing to hard metal pieces and cermet pieces and for thermal coatings, comprises preparing the powdered mixture components in grit size suitable for the mixture, homogenizing all mixture ingredients including dispersion liquid without freely movable grinding body in a dispersion device (1) working according to the rotor-stator principle and removing the dispersion liquid from the homogenized suspension. The suspension is produced from the mixture components and the dispersion liquid before homogenizing. The dispersion device brings shearing forces through tool part surfaces moving itself relatively counter-rotating to each other into an operating volume present between these surfaces. The suspension is supplied to a dispersion device. The suspension passes through several times to the dispersion device with a fixed number of throughputs in batch wise manner. The suspension is detained at a separation by dispersing additives. The dispersion liquid is removed by spray-drying or in the eddy current. The suspension presents itself in a gap volume during the homogenizing step, which forms the operating volume between rotor and stator. The peripheral speed of the rotor is 15-40 m/min during homogenizing of the suspension. The duration of the homogenization is 20-40 min. Un-sintered hard metal-reflux material is supplied to the mixture components in prepared form before pre-grinding. The mixture is directly supplied to the further processing like secondary plasticization, shaping, sintering and/or pruning after removing the dispersion liquid. An independent claim is included for a device for the production of hard metal mixture or cermet mixture.

## Abstract (de)

Das verbesserte Verfahren zur Herstellung einer Hartmetall- oder Cermetmischung zeichnet sich dadurch aus, dass die Einsatz-Pulver der Hartstoff- und Bindemetall-Komponenten in einer für die zu fertigende Haftmetalllegierung geeigneten Korngröße bereitgestellt werden, dass alle Mischungsbestandteilen in einer Dispergier- oder Mahlfüssigkeit ohne frei bewegliche Mahlkörper in einer nach dem Rotor-Stator-Prinzip arbeitenden Dispergiervorrichtung mittels großer Scherkräfte in einem konischen Spalt zwischen Rotor und Stator homogenisiert und dispergiert werden und schließlich die Dispergierflüssigkeit aus der Mischung entfernt wird. Das Verfahren kann batchweise oder kontinuierlich geführt werden und ermöglicht es gegenüber herkömmlichen Verfahren erheblich Energie und Zeit einzusparen. Die Verarbeitung zu Hartmetallprodukten erfolgt anschließend auf bekannte Weise.

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- [A] DE 19901305 A1 20000720 - STARCK H C GMBH CO KG [DE]
- [A] WO 02079532 A2 20021010 - PLANSEE TIZIT AG [AT], et al
- [A] WO 02079531 A2 20021010 - PLANSEE TIZIT AG [AT], et al
- [A] DE 2314768 A1 19741003 - SUPRATON AUER & ZUCKER
- [A] WO 0018529 A1 20000406 - SANDVIK AB [SE], et al
- [A] GB 753139 A 19560718 - ROSWELL BLAINE SHURTS
- [A] GB 792227 A 19580319 - PHILIP ARTHUR LEICESTER FLINT
- [A] EP 1472061 A1 20041103 - WATSON BROWN HSM LTD [GB]

## Cited by

EP3154732A4; CN112935241A; CN111014695A; CN110385171A; CN114653426A; WO2013057136A2; US9777349B2; EP2584057A1; US10471512B2; US11224916B2

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