

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING (NOTES omitted)

### SHAPING

## B22 CASTING; POWDER METALLURGY

**B22F WORKING METALLIC POWDER; MANUFACTURE OF ARTICLES FROM METALLIC POWDER; MAKING METALLIC POWDER** (processes or devices for granulating materials in general [B01J 2/00](#); making ceramics by compacting or sintering [C04B](#), e.g. [C04B 35/64](#); for the production of metals as such, see class [C22](#); reduction or decomposition of metal compounds in general [C22B](#); making alloys by powder metallurgy [C22C](#); electrolytic production of metal powder [C25C 5/00](#))

#### NOTES

1. This subclass covers the making of metallic powder only insofar as powder with specific physical characteristics is made;
2. In this subclass, the following terms or expressions are used with the meanings indicated:
  - "metallic powder" covers powders containing a substantial proportion of non-metallic material;
  - "powder" includes somewhat larger particles which are worked, obtained or behave in a manner similar to powder, e.g. fibres.

#### WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[B22F 3/035](#)

covered by

[B22F 3/03](#)

|             |  |             |   |
|-------------|--|-------------|---|
| <b>1/00</b> | <b>Special treatment of metallic powder, e.g. to facilitate working, to improve properties</b> {(treatment of powder by mechanical means, e.g. by grinding, milling, rolling <a href="#">B22F 9/04</a> ); <b>Metallic powders per se, e.g. mixtures of particles of different composition</b> ( <a href="#">C04</a> , <a href="#">C08</a> take precedence; {amorphous powder <a href="#">B22F 9/002</a> )} | 1/0059      | . . {Metallic powders mixed with a lubricating or binding agent or organic material}  |
|             |  | 1/0062      | . . . {Powders coated with organic material}  |
|             |  | 2001/0066   | . . . {Organic binder comprising a mixture or obtained by reaction of more than one component other than solvent, lubricant}  |
| 1/0003      | . {Metallic powders <i>per se</i> ; Mixtures of metallic powders; Metallic powders mixed with a lubricating or binding agent (making ferrous alloys using a mixture of prealloyed powders <a href="#">C22C 33/0207</a> )}  | 1/007       | . . . {Non-organic or metal salt binders or lubricants}   |
| 1/0007      | . . {Metallic powder characterised by its shape or structure, e.g. fibre structure}  | 1/0074      | . . . {Organic materials comprising a solvent, e.g. for slip casting}   |
| 1/0011      | . . . {Metallic powder characterised by size or surface area only}   | 1/0077      | . . . {Mixtures obtained by warm mixing}  |
| 1/0014      | . . . . {by size mixtures or distribution}   | 1/0081      | . {Special treatment of metallic powder, e.g. to facilitate working, to improve properties (coating with organic material <a href="#">B22F 1/0062</a> )}                                |
| 1/0018      | . . . . {Nanometer sized particles}  | 1/0085      | . . {Thermal or thermo-mechanical treatment}  |
| 1/0022      | . . . . . {Dispersions or suspensions thereof}   | 1/0088      | . . {Chemical treatment, e.g. passivation}  |
| 1/0025      | . . . . . {Nanofibres or nanotubes}  | 2001/0092   | . . . {Making a dispersion}   |
| 2001/0029   | . . . . . {Hollow particles, including tubes and shells}   | 1/0096      | . . {Treatment resulting in the production of agglomerates}   |
| 2001/0033   | . . . . . {Flake form nanoparticles}   | 1/02        | . comprising coating of the powder {(coating with organic material <a href="#">B22F 1/0062</a> ; chemical surface treatment <a href="#">B22F 1/0088</a> )}                              |
| 2001/0037   | . . . . . {Complex form nanoparticles, e.g.. prism, pyramid, octahedron}   | 1/025       | . . {Metallic coating}  |
| 1/004       | . . . {Fibre structure ( <a href="#">B22F 1/0025</a> takes precedence)}  | <b>3/00</b> | <b>Manufacture of workpieces or articles from metallic powder characterised by the manner of compacting or sintering; Apparatus specially adapted therefor {; Presses and furnaces}</b> |
| 1/0044      | . . . {Nanometer size structures}  |             |   |
| 1/0048      | . . . {Spherical powder}   |             |   |
| 1/0051      | . . . . {Hollow particles}   | 3/001       | . {Starting from powder comprising reducible metal compounds (making ferrous alloys starting from compounds <a href="#">C22C 33/0235</a> )}   |
| 1/0055      | . . . {Flake form powders}   |             |   |

|           |   |           |   |
|-----------|---|-----------|---|
| 3/002     | . {Manufacture of articles essentially made from metallic fibres}   | 2003/1057 | . . . . . {for control or data processing, e.g. algorithms}   |
| 3/003     | . {Apparatus, e.g. furnaces (in general <a href="#">F27B</a> )}   | 2003/1058 | . . . . . {Support structures for the 3D object during manufacturing, e.g. using sacrificial material}                              |
| 3/004     | . {Filling molds with powder (feeding material to presses in general <a href="#">B30B 15/302</a> )}   | 2003/1059 | . . . . . {for cleaning or recycling}   |
| 3/005     | . {Loading or unloading powder metal objects (transport in general <a href="#">B65G</a> )}  | 3/11      | . . Making porous workpieces or articles  |
| 3/006     | . {Amorphous articles}  | 3/1103    | . . . {with particular physical characteristics}  |
| 3/007     | . . {by diffusion starting from non-amorphous articles prepared by powder metallurgy}   | 2003/1106 | . . . . . {Product comprising closed porosity}  |
| 3/008     | . {Selective deposition modelling ( <a href="#">B22F 3/1055</a> takes precedence)}  | 3/1109    | . . . . . {Inhomogenous pore distribution (composite layers of porous nature <a href="#">B22F 7/002</a> )}                          |
| 3/02      | . Compacting only   | 3/1112    | . . . . . {comprising hollow spheres or hollow fibres}  |
| 2003/023  | . . {Lubricant mixed with the metal powder}   | 3/1115    | . . . . . {comprising complex forms, e.g. honeycombs}   |
| 2003/026  | . . {Mold wall lubrication or article surface lubrication}  | 3/1118    | . . . . . {comprising internal reinforcements}  |
| 3/03      | . . Press-moulding apparatus therefor   | 3/1121    | . . . {by using decomposable, meltable or sublimateable fillers}  |
| 2003/031  | . . . {with punches moving in different directions in different planes}   | 3/1125    | . . . . . {involving a foaming process}   |
| 2003/033  | . . . {with multiple punches working in the same direction}   | 2003/1128 | . . . . . {Foaming by expansion of dissolved gas, other than with foaming agent}  |
| 3/04      | . . by applying fluid pressure {, e.g. by cold isostatic pressing [CIP]}  | 2003/1131 | . . . . . {Foaming in a liquid suspension and decomposition}  |
| 3/045     | . . . {Semi-isostatic pressure}   | 3/1134    | . . . . . {Inorganic fillers (carbonaceous or paper filler <a href="#">B22F 3/1121</a> )}   |
| 3/06      | . . by centrifugal forces   | 3/1137    | . . . . . {by coating porous removable preforms}  |
| 3/08      | . . by explosive forces {(generating shock waves in general <a href="#">G10K 15/043</a> )}  | 3/114     | . . . {the porous products being formed by impregnation ( <a href="#">B22F 3/1137</a> , <a href="#">B22F 3/26</a> take precedence)} |
| 3/087     | . . using high energy impulses, e.g. magnetic field impulses  | 3/1143    | . . . {involving an oxidation, reduction or reaction step}  |
| 3/093     | . . using vibrations {or friction}  | 3/1146    | . . . {After-treatment maintaining the porosity ( <a href="#">B22F 3/114</a> takes precedence)}                                     |
| 3/10      | . Sintering only  | 3/115     | . by spraying molten metal, i.e. spray sintering, spray casting   |
| 3/1003    | . . {Use of special medium during sintering, e.g. sintering aid}  | 3/12      | . Both compacting and sintering (by forging <a href="#">B22F 3/17</a> )   |
| 3/1007    | . . . {Atmosphere ( <a href="#">B22F 3/1021</a> takes precedence)}  | 3/1208    | . . {Containers or coating used therefor}   |
| 3/101     | . . . . {Changing atmosphere}   | 3/1216    | . . . {Container composition}   |
| 2003/1014 | . . . {Getter}  | 3/1225    | . . . . {Glass}   |
| 3/1017    | . . {Multiple heating or additional steps ( <a href="#">B22F 3/101</a> takes precedence)}   | 3/1233    | . . . . {Organic material}  |
| 3/1021    | . . . {Removal of binder or filler (removal of binder from ceramics <a href="#">C04B 35/638</a> )}  | 3/1241    | . . . . {layered}   |
| 3/1025    | . . . . {not by heating only}   | 3/125     | . . . {Initially porous container}  |
| 3/1028    | . . . {Controlled cooling}  | 3/1258    | . . . {Container manufacturing}   |
| 2003/1032 | . . {comprising a grain growth inhibitor}   | 3/1266    | . . . . {by coating or sealing the surface of the preformed article, e.g. by melting}   |
| 3/1035    | . . {Liquid phase sintering}  | 3/1275    | . . . . {by coating a model and eliminating the model before consolidation}   |
| 3/1039    | . . {by reaction ( <a href="#">B22F 3/001</a> , <a href="#">B22F 3/23</a> take precedence)}   | 3/1283    | . . . . {Container formed as an undeformable model eliminated after consolidation}  |
| 2003/1042 | . . {with support for articles to be sintered}  | 3/1291    | . . . . {Solid insert eliminated after consolidation}   |
| 2003/1046 | . . . {with separating means for articles to be sintered}   | 3/14      | . . simultaneously  |
| 3/105     | . . by using electric current {other than for infra-red radiant energy}, laser radiation or plasma ( <a href="#">B22F 3/11</a> takes precedence) {; by ultrasonic bonding ( <a href="#">B22F 3/115</a> takes precedence)} | 2003/145  | . . . {by warm compacting, below debinding temperature}   |
| 2003/1051 | . . . {by electric discharge}   | 3/15      | . . . Hot isostatic pressing  |
| 2003/1052 | . . . {assisted by energy absorption enhanced by the coating or powder}   | 2003/153  | . . . . {apparatus specific to HIP}   |
| 2003/1053 | . . . {by induction}  | 3/156     | . . . . {by a pressure medium in liquid or powder form}   |
| 2003/1054 | . . . {by microwave}  | 3/16      | . . in successive or repeated steps   |
| 3/1055    | . . . {Selective sintering, i.e. stereolithography (selective sintering of powdered plastics <a href="#">B29C 64/153</a> )}   | 3/162     | . . . {Machining, working after consolidation}  |
| 2003/1056 | . . . . {Apparatus components, details or accessories}  | 3/164     | . . . {Partial deformation or calibration}  |
|           |   | 2003/166  | . . . . {Surface calibration, blasting, burnishing, sizing, coining}  |

|             |   |             |  |
|-------------|---|-------------|--|
| 3/168       | . . . . {Local deformation}   | 5/106       | . . {Tube or ring forms}   |
| 3/17        | . by forging  | 5/12        | . of wires {(of tubes <a href="#">B22F 5/10</a> )}   |
| 3/172       | . . {Continuous compaction, e.g. rotary hammering (with axial pressure and without reduction of section <a href="#">B22F 3/204</a> )}                     | <b>7/00</b> | <b>Manufacture of composite layers, workpieces, or articles, comprising metallic powder, by sintering the powder, with or without compacting {wherein at least one part is obtained by sintering or compression (application of coating layers by use of metal powders, see <a href="#">C23C</a>)}</b> |
| 2003/175    | . . {by hot forging, below sintering temperature}   | 7/002       | . {of porous nature}   |
| 3/177       | . . {Rocking die forging}   | 7/004       | . . {comprising at least one non-porous part}  |
| 3/18        | . by using pressure rollers   | 7/006       | . . . {the porous part being obtained by foaming}  |
| 2003/185    | . . {by hot rolling, below sintering temperature}   | 7/008       | . {characterised by the composition}   |
| 3/20        | . by extruding  | 7/02        | . of composite layers {( <a href="#">B22F 7/002</a> takes precedence)}   |
| 2003/202    | . . {with back pressure}  | 7/04        | . . with one or more layers not made from powder, e.g. made from solid metal   |
| 3/204       | . . {Continuous compaction with axial pressure and without reduction of section}  | 2007/042    | . . . {characterised by the layer forming method}  |
| 2003/206    | . . {Hydrostatic or hydraulic extrusion}  | 2007/045    | . . . . {accompanied by fusion or impregnation}  |
| 2003/208    | . . {Warm or hot extruding}   | 2007/047    | . . . . {non-pressurised baking of the paste or slurry containing metal powder}  |
| 3/22        | . for producing castings from a slip  | 7/06        | . of composite workpieces or articles from parts, e.g. to form tipped tools {( <a href="#">B22F 7/002</a> takes precedence)}   |
| 3/222       | . . {by freeze-casting or in a supercritical fluid}   | 7/062       | . . {involving the connection or repairing of preformed parts}   |
| 3/225       | . . {by injection molding}  | 7/064       | . . . {using an intermediate powder layer}   |
| 3/227       | . . {by organic binder assisted extrusion}  | 2007/066    | . . . {using impregnation}   |
| 3/23        | . involving a self-propagating high-temperature synthesis or reaction sintering step {(making cermets by reaction sintering <a href="#">C22C 1/058</a> )} | 2007/068    | . . . {repairing articles}   |
| 3/24        | . After-treatment of workpieces or articles {( <a href="#">B22F 3/1146</a> takes precedence)}   | 7/08        | . . with one or more parts not made from powder {( <a href="#">B22F 7/062</a> takes precedence)}   |
| 2003/241    | . . {Chemical after-treatment on the surface}   | <b>8/00</b> | <b>Manufacture of articles from scrap or waste metal particles</b>   |
| 2003/242    | . . . {Coating}   | <b>9/00</b> | <b>Making metallic powder or suspensions thereof</b>   |
| 2003/244    | . . . {Leaching}  | 2009/001    | . {from scrap particles}   |
| 2003/245    | . . {Making recesses, grooves etc on the surface by removing material}  | 9/002       | . {amorphous or microcrystalline}  |
| 2003/247    | . . {Removing material: carving, cleaning, grinding, hobbing, honing, lapping, polishing, milling, shaving, skiving, turning the surface}                 | 9/004       | . . {by diffusion, e.g. solid state reaction}  |
| 2003/248    | . . {Thermal after-treatment}   | 9/005       | . . . {Transformation into amorphous state by milling}   |
| 3/26        | . . Impregnating {(making ferrous alloys by impregnation <a href="#">C22C 33/0242</a> )}  | 9/007       | . . {Transformation of amorphous into microcrystalline state}  |
| <b>5/00</b> | <b>Manufacture of workpieces or articles from metallic powder characterised by the special shape of the product</b>                                       | 9/008       | . . {Rapid solidification processing}  |
| 2005/001    | . {Cutting tools, earth boring or grinding tool other than table ware}  | 9/02        | . using physical processes   |
| 2005/002    | . {Tools other than cutting tools}  | 9/023       | . . {Hydrogen absorption}  |
| 5/003       | . {Articles made for being fractured or separated into parts}   | 9/026       | . . {Spray drying of solutions or suspensions}   |
| 2005/004    | . {Article comprising helical form elements ( <a href="#">B22F 5/085</a> takes precedence)}   | 9/04        | . . starting from solid material, e.g. by crushing, grinding or milling {( <a href="#">C22C 1/1084</a> takes precedence); crushing, grinding or milling, in general, see the relevant subclasses, e.g. <a href="#">B02C</a> }  |
| 2005/005    | . {Article surface comprising protrusions}  | 2009/041    | . . . {by mechanical alloying, e.g. blending, milling}   |
| 5/006       | . {of flat products, e.g. sheets ( <a href="#">B22F 3/1103</a> takes precedence; by using pressure rollers only see <a href="#">B22F 3/18</a> )}          | 2009/042    | . . . {using a particular milling fluid}   |
| 5/007       | . {of moulds}   | 2009/043    | . . . {by ball milling}  |
| 5/008       | . {of engine cylinder parts or of piston parts other than piston rings (of piston rings <a href="#">B22F 5/02</a> )}                                      | 2009/044    | . . . {by jet milling}   |
| 5/009       | . {of turbine components other than turbine blades (of turbine blades <a href="#">B22F 5/04</a> )}  | 2009/045    | . . . {by other means than ball or jet milling}  |
| 5/02        | . of piston rings   | 2009/046    | . . . . {by cutting}   |
| 5/04        | . of turbine blades   | 2009/047    | . . . . {by rolling}   |
| 5/06        | . of threaded articles, e.g. nuts   | 2009/048    | . . . {by pulverising a quenched ribbon}   |
| 5/08        | . of toothed articles, e.g. gear wheels; of cam discs   | 2009/049    | . . . {by pulverising at particular temperature}   |
| 5/085       | . . {with helical contours}   | 9/06        | . . starting from liquid material  |
| 5/10        | . of articles with cavities or holes, not otherwise provided for in the preceding subgroups   | 2009/065    | . . . {Melting inside a liquid, e.g. making spherical balls}   |
| 2005/103    | . . {Cavity made by removal of insert}  |             |  |

|                |  |                |  |
|----------------|--|----------------|--|
| 9/08           | . . . by casting, e.g. through sieves or in water, by atomising or spraying (using electric discharge <a href="#">B22F 9/14</a> )      | 2201/02        | . Nitrogen   |
| 2009/0804      | . . . . {Dispersion in or on liquid, other than with sieves}   | 2201/03        | . Oxygen   |
| 2009/0808      | . . . . . {Mechanical dispersion of melt, e.g. by sieves}  | 2201/04        | . CO or CO <sub>2</sub>  |
| 2009/0812      | . . . . . {Pulverisation with a moving liquid coolant stream, by centrifugally rotating stream}  | 2201/05        | . Water or water vapour  |
| 2009/0816      | . . . . . {by casting with pressure or pulsating pressure on the metal bath}   | 2201/10        | . Inert gases  |
| 9/082          | . . . . . {atomising using a fluid (using centrifugal force <a href="#">B22F 9/10</a> )}   | 2201/11        | . . Argon  |
| 2009/0824      | . . . . . {with a specific atomising fluid}  | 2201/12        | . . Helium   |
| 2009/0828      | . . . . . {with water}   | 2201/20        | . Use of vacuum  |
| 2009/0832      | . . . . . {Handling of atomising fluid, e.g. heating, cooling, cleaning, recirculating}  | 2201/30        | . Carburising atmosphere   |
| 2009/0836      | . . . . . {with electric or magnetic field or induction}   | 2201/32        | . Decarburising atmosphere   |
| 2009/084       | . . . . . {combination of methods}   | 2201/40        | . Metal compounds  |
| 2009/0844      | . . . . . {in controlled atmosphere}   | 2201/50        | . air  |
| 2009/0848      | . . . . . {Melting process before atomisation}   | <b>2202/00</b> | <b>Treatment under specific physical conditions</b>                          |
| 2009/0852      | . . . . . {Electroslag melting}  | 2202/01        | . Use of vibrations  |
| 2009/0856      | . . . . . {Skull melting}  | 2202/03        | . Treatment under cryogenic or supercritical conditions                      |
| 2009/086       | . . . . . {Cooling after atomisation}  | 2202/05        | . Use of magnetic field  |
| 2009/0864      | . . . . . {by oil, other non-aqueous fluid or fluid-bed cooling}   | 2202/06        | . Use of electric fields   |
| 2009/0868      | . . . . . {by injection of solid particles in the melt stream}   | 2202/07        | . by induction   |
| 2009/0872      | . . . . . {by water}   | 2202/09        | . Use of non-gravitational conditions  |
| 2009/0876      | . . . . . {by gas}   | 2202/11        | . Use of irradiation   |
| 2009/088       | . . . . . {Fluid nozzles, e.g. angle, distance}  | 2202/13        | . Use of plasma  |
| 2009/0884      | . . . . . {Spiral fluid}   | 2202/15        | . Use of fluidised beds  |
| 2009/0888      | . . . . . {casting construction of the melt process, apparatus, intermediate reservoir, e.g. tundish, devices for temperature control} | 2202/17        | . use of centrifugal or vortex forces  |
| 2009/0892      | . . . . . {casting nozzle; controlling metal stream in or after the casting nozzle}  | <b>2203/00</b> | <b>Controlling</b>   |
| 2009/0896      | . . . . . {particle transport, separation: process and apparatus}  | 2203/01        | . To-be-deleted with administrative transfer to <a href="#">B22F 2203/00</a> |
| 9/10           | . . . . using centrifugal force  | 2203/03        | . for feed-back  |
| 9/12           | . . starting from gaseous material   | 2203/05        | . thermal expansion  |
| 9/14           | . . using electric discharge   | 2203/11        | . temperature, temperature profile   |
| 9/16           | . . using chemical processes   | 2203/13        | . pressure   |
| 2009/165       | . . {Chemical reaction in an Ionic Liquid [IL] ( <a href="#">B22F 2009/245</a> takes precedence)}                                      | 2203/15        | . weight   |
| 9/18           | . . with reduction of metal compounds  | <b>2207/00</b> | <b>Aspects of the compositions, gradients</b>                                |
| 9/20           | . . . starting from solid metal compounds  | 2207/01        | . Composition gradients  |
| 9/22           | . . . using gaseous reductors  | 2207/03        | . . of the metallic binder phase in cermets                                  |
| 9/24           | . . . starting from liquid metal compounds, e.g. solutions   | 2207/05        | . . . eta-phase  |
| 2009/245       | . . . . {Reduction reaction in an Ionic Liquid [IL]}   | 2207/07        | . . Particles with core-rim gradient   |
| 9/26           | . . . using gaseous reductors  | 2207/11        | . Gradients other than composition gradients, e.g. size gradients            |
| 9/28           | . . . starting from gaseous metal compounds  | 2207/13        | . . Size gradients   |
| 9/30           | . . with decomposition of metal compounds, e.g. by pyrolysis   | 2207/15        | . . Temperature gradients  |
| 9/305          | . . . {of metal carbonyls}   | 2207/17        | . . density or porosity gradients  |
| <b>2201/00</b> | <b>Treatment under specific atmosphere</b>   | 2207/20        | . Cooperating components   |
| 2201/01        | . Reducing atmosphere  | <b>2301/00</b> | <b>Metallic composition of the powder or its coating</b>                     |
| 2201/013       | . . Hydrogen   | 2301/05        | . Light metals   |
| 2201/016       | . . NH <sub>3</sub>  | 2301/052       | . . Aluminium  |
|                |  | 2301/054       | . . Alkali metals, i.e. Li, Na, K, Rb, Cs, Fr                                |
|                |  | 2301/056       | . . Alkaline metals, i.e. Ca, Sr, Ba, Ra                                     |
|                |  | 2301/058       | . . Magnesium  |
|                |  | 2301/10        | . Copper   |
|                |  | 2301/15        | . Nickel or cobalt   |
|                |  | 2301/155       | . . Rare Earth - Co or -Ni intermetallic alloys                              |
|                |  | 2301/20        | . Refractory metals  |
|                |  | 2301/205       | . . Titanium, zirconium or hafnium   |
|                |  | 2301/25        | . Noble metals, i.e. Ag Au, Ir, Os, Pd, Pt, Rh, Ru                           |
|                |  | 2301/255       | . . Silver or gold   |
|                |  | 2301/30        | . Low melting point metals, i.e. Zn, Pb, Sn, Cd, In, Ga                      |
|                |  | 2301/35        | . Iron   |

- 2301/355 . . Rare Earth - Fe intermetallic alloys
- 2301/40 . Intermetallics other than rare earth-Co or -Ni or -Fe intermetallic alloys
- 2301/45 . Rare earth metals, i.e. Sc, Y, Lanthanides (57-71)
- 2302/00 Metal Compound, non-Metallic compound or non-metal composition of the powder or its coating**
- 2302/05 . Boride
- 2302/10 . Carbide
- 2302/105 . . Silicium carbide (SiC)
- 2302/15 . Carbonitride
- 2302/20 . Nitride
- 2302/205 . Cubic boron nitride
- 2302/25 . Oxide
- 2302/253 . . Aluminum oxide (Al<sub>2</sub>O<sub>3</sub>)
- 2302/256 . . Silicium oxide (SiO<sub>2</sub>)
- 2302/30 . Oxynitride
- 2302/35 . Complex boride, carbide, carbonitride, nitride, oxide or oxynitride
- 2302/40 . Carbon, graphite
- 2302/403 . . Carbon nanotube
- 2302/406 . . Diamond
- 2302/45 . Others, including non-metals
- 2303/00 Functional details of metal or compound in the powder or product,**
- 2303/01 . Main component
- 2303/05 . Compulsory alloy component
- 2303/10 . Optional alloy component
- 2303/15 . Intermetallic
- 2303/20 . Coating by means of particles
- 2303/25 . Coating by means of fibres
- 2303/30 . Coating alloy
- 2303/35 . Molten metal infiltrating a metal preform
- 2303/40 . Layer in a composite stack of layers, workpiece or article
- 2303/405 . . Support layer
- 2303/45 . Part of a final mixture to be processed further
- 2304/00 Physical aspects of the powder**
- 2304/05 . Submicron size particles
- 2304/052 . . Particle size below 1nm
- 2304/054 . . Particle size between 1 and 100 nm
- 2304/056 . . Particle size above 100 nm up to 300 nm
- 2304/058 . . Particle size above 300 nm up to 1 micrometer
- 2304/10 . Micron size particles, i.e. above 1 micrometer up to 500 micrometer
- 2304/15 . Millimeter size particles, i.e. above 500 micrometer
- 2998/00 Supplementary information concerning processes or compositions relating to powder metallurgy**
- 2998/10 . Processes characterised by the sequence of their steps
- 2999/00 Aspects linked to processes or compositions used in powder metallurgy**