

Title (en)  
Injection moulding composition containing metal oxide for making metal shapes

Title (de)  
Metalloxide enthaltende Spritzgiessmassen zur Herstellung von Metallformkörpern

Title (fr)  
Masse à moulage d'injection en contenant des oxides métalliques pour la fabrication d'objets en métaux

Publication  
**EP 0853995 A1 19980722 (DE)**

Application  
**EP 98100066 A 19980105**

Priority  
DE 19700277 A 19970107

Abstract (en)  
Moulding material containing 20-50 vol.% of a powder of one or more metal oxides, optionally together with metal carbides and/or nitrides which are not reduced by hydrogen, in a fluid binder,  $\geq 65$  vol.% of the powder having NOTGREATER 0.5  $\mu\text{m}$  particle size, with the remainder having NOTGREATER 1  $\mu\text{m}$  particle size, and  $\geq 90$  vol.% of the powder consisting of metal oxides, which are reduced by hydrogen. Preferably, the fluid binder is an organic polymer. Also claimed is the use of hydrogen-reducible metal oxides of particle size NOTGREATER 0.5  $\mu\text{m}$  for producing injection moulding materials. Further claimed is a method of producing metal mouldings by injection moulding the above moulding material, removing the binder and then reducing and sintering the resulting moulding in the presence of hydrogen.

Abstract (de)  
Die Formmasse enthält in einem fließfähigen Bindemittel 20 bis 50 Vol.-%, bezogen auf das Gesamtvolumen der Formmasse, eines Pulvers aus einem oder mehreren Metalloxiden und gegebenenfalls nicht mit Wasserstoff reduzierbaren Metallcarbiden und/oder Metallnitriden, wobei mindestens 65 Vol.-% des Pulvers eine Teilchengröße von maximal 0,5  $\mu\text{m}$  und der Rest des Pulvers eine Teilchengröße von maximal 1  $\mu\text{m}$  aufweisen, und mindestens 90 Vol.-% des Pulvers aus mit Wasserstoff reduzierbaren Metalloxiden bestehen. Als mit Wasserstoff reduzierbare Metalloxide werden  $\text{Fe}_2\text{O}_3$ ,  $\text{FeO}$ ,  $\text{Fe}_3\text{O}_4$ ,  $\text{NiO}$ ,  $\text{CoO}$ ,  $\text{Co}_3\text{O}_4$ ,  $\text{CuO}$ ,  $\text{Cu}_2\text{O}$ ,  $\text{Ag}_2\text{O}$ ,  $\text{Bi}_2\text{O}_3$ ,  $\text{WO}_3$ ,  $\text{MoO}_3$ ,  $\text{SnO}$ ,  $\text{SnO}_2$ ,  $\text{CdO}$ ,  $\text{PbO}$ ,  $\text{Pb}_3\text{O}_4$ ,  $\text{PbO}_2$ ,  $\text{Cr}_2\text{O}_3$  oder Gemische davon eingesetzt.

IPC 1-7  
**B22F 3/11**; **C22C 1/04**; **C22C 1/05**; **C04B 35/638**; **C04B 35/65**

IPC 8 full level  
**C04B 35/00** (2006.01); **B22F 3/00** (2006.01); **B22F 3/02** (2006.01); **B22F 3/11** (2006.01); **B22F 3/22** (2006.01); **C04B 35/638** (2006.01); **C04B 35/65** (2006.01); **C22C 1/04** (2006.01); **C22C 1/05** (2006.01)

CPC (source: EP KR US)  
**B22F 3/001** (2013.01 - EP KR US); **B22F 3/22** (2013.01 - EP US); **B22F 3/225** (2013.01 - EP KR US); **B22F 2998/00** (2013.01 - EP US); **B22F 2998/10** (2013.01 - EP KR US); **B22F 2999/00** (2013.01 - EP KR US)

C-Set (source: EP US)  
1. **B22F 2998/00** + **B22F 3/225**  
2. **B22F 2998/10** + **B22F 3/1021** + **B22F 3/1007**  
3. **B22F 2999/00** + **B22F 3/1007** + **B22F 2201/013**

Citation (search report)  
• [XP] US 5686676 A 19971111 - JECH DAVID E [US], et al  
• [A] US 5190898 A 19930302 - TER MAAT JOHAN H H [US], et al  
• [A] US 4604259 A 19860805 - WHITMAN CHARLES I [US]  
• [A] US 4415528 A 19831115 - WIECH JR RAYMOND E [US]  
• [A] US 5417917 A 19950523 - TAKAHARA KUNIYOSHI [JP], et al  
• [X] PATENT ABSTRACTS OF JAPAN vol. 018, no. 015 (C - 1151) 12 January 1994 (1994-01-12)

Cited by  
WO2013113880A1; WO2021132854A1; WO2014170242A1; US10961384B2

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

DOCDB simple family (publication)  
**US 6080808 A 20000627**; AT E209076 T1 20011215; DE 19700277 A1 19980709; DE 59802182 D1 20020103; EP 0853995 A1 19980722; EP 0853995 B1 20011121; ES 2168690 T3 20020616; JP H10298606 A 19981110; KR 100516081 B1 20051206; KR 19980070378 A 19981026; TW 495532 B 20020721

DOCDB simple family (application)  
**US 283398 A 19980105**; AT 98100066 T 19980105; DE 19700277 A 19970107; DE 59802182 T 19980105; EP 98100066 A 19980105; ES 98100066 T 19980105; JP 157098 A 19980107; KR 19980000178 A 19980107; TW 87100140 A 19980107