

Title (en)

Wear-resistant, heat-resistant material and use of same

Title (de)

Verschleissbeständiger, warmfester Werkstoff, sowie dessen Verwendung

Title (fr)

Substance active résistant à l'usure et à la chaleur, ainsi que son utilisation

Publication

EP 2354264 B1 20120523 (DE)

Application

EP 10015691 A 20101215

Priority

DE 102010004722 A 20100115

Abstract (en)

[origin: EP2354264A1] The wear-stable, heat-resistant material comprises a hard-phase-rich cast iron-based alloy with a chemical composition. The hard phases are formed as compact hard phases and are dispersively and homogeneously distributed in the alloy in a volume content of 10-50%, where 50% of the hard phases are primary carbide of type MC and 50% of the primary hard phases have a size of 7 μ m at its narrowest point. The alloy parameter is selected, so that a micro-hot hardness adjusts to a testing temperature of 550 HV0.05 to 550[deg] C, 530 HV0.05 to 580[deg] C, 400 HV0.05 to 600[deg] C and 370 HV0.05 to 640[deg] C. The wear-stable, heat-resistant material comprises a hard-phase-rich cast iron-based alloy with a chemical composition. The hard phases are formed as compact hard phases and are dispersively and homogeneously distributed in the alloy in a volume content of 10-50%, where 50% of the hard phases are primary carbide of type MC and 50% of the primary hard phases have a size of 7 μ m at its narrowest point. The alloy parameter is selected, so that a micro-hot hardness adjusts to a testing temperature of 550 HV0.05 to 550[deg] C, 530 HV0.05 to 580[deg] C, 400 HV0.05 to 600[deg] C and 370 HV0.05 to 640[deg] C after a heat treatment. The heat treatment comprises hardening at temperature of 900-1220[deg] C and tempering in secondary hardness range of 480-650[deg] C. The compact hard phases are contained in volume content of 15-50% in the material, where 80% of the compact hard phases are present with the type of MC and 90% of primary hard phases of the type MC at its narrowest point have an extension of 15 μ m. The compact hard phases have a spherical shape. The material has a surface hardness of 48 HRC adjustable by flame hardening at a testing temperature of 640[deg] C. The material has a bending strength of 900 N/mm² and a fracture toughness of 33 MPa \sqrt{m} (0.5). An independent claim is included for a method for producing a wear-stable, heat-resistant material.

IPC 8 full level

C21D 6/00 (2006.01); **C21D 9/00** (2006.01); **C22C 37/00** (2006.01)

CPC (source: EP)

C21D 1/18 (2013.01); **C21D 1/25** (2013.01); **C21D 6/002** (2013.01); **C22C 37/00** (2013.01)

Cited by

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