

Title (en)

Shape memory alloys based on iron, manganese and silicon

Title (de)

Auf Eisen, Mangan und Silizium basierende Formgedächtnislegierungen

Title (fr)

Alliages à mémoire de forme à base de fer, de manganèse et de silicium

Publication

EP 2141251 B1 20161228 (DE)

Application

EP 09162774 A 20090616

Priority

CH 9682008 A 20080625

Abstract (en)

[origin: EP2141251A1] Shape memory alloy comprises a base alloy of manganese, silicon, chromium and nickel and a residual mass fraction of iron, a mass fraction of at least 0.2 wt.% of vanadium and a specifically injected mass portion of at least 0.2 wt.% of carbon and/or nitrogen in the form of precipitated vanadium carbide precipitates and/or vanadium nitride precipitates. Independent claims are included for: (1) the use of a shape-memory alloy in civil engineering, preferably for the constriction of supports, internally prestressed cement-bound workpieces or to create improved anchoring elements, where the shape-memory alloy exhibits austenite transition temperature area with a width of less than 80[deg] C, preferably at least 40[deg] C; and (2) a process for producing a shape memory alloy, comprising melting manganese, silicon, chromium, nickel, and a mass fraction of iron, according to a subsequent addition of a mass fraction of vanadium takes place, after which a targeted addition of a mass fraction of carbon takes place and these solid shape-memory alloy is treated by a solution treatment at 1050-1150[deg] C for 5-10 hours, where a heat aging for 1-2 hours at a temperature of 650-900[deg] C is carried out to form vanadium carbide precipitates in the shape memory alloy.

IPC 8 full level

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CPC (source: EP)

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Cited by

DE102018129640A1; DE102018119296A1; CN111235491A; EP3511435A4; DE102013101378A1; CN105378129A; WO2020030358A1; WO2019175065A1; WO2014026299A1; WO2020104290A1; WO2014146733A1; US10920305B2; WO2020234341A1; FR3096382A1; WO2018219463A1; WO2018219514A1; WO2020108754A1

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