

Title (en)
MAGNETIC MATERIAL FOR MAGNETIC REFRIGERATION

Title (de)
MAGNETISCHES MATERIAL FÜR MAGNETISCHE KÜHLUNG

Title (fr)
MATÉRIAU MAGNÉTIQUE POUR RÉFRIGÉRATION MAGNÉTIQUE

Publication
EP 3739075 A1 20201118 (EN)

Application
EP 18900539 A 20181025

Priority
• JP 2018002895 A 20180111
• JP 2018039676 W 20181025

Abstract (en)
A magnetic material for magnetic refrigeration containing a NaZn_{13} compound represented by $\text{La}_{1-y}\text{Pr}_y\text{Fe}_{1-x-z}\text{Mn}_z\text{Si}_x$ is characterized in that a total amount of a coexistence phase other than the coexisting NaZn_{13} compound is less than or equal to 0.1 volume%, in crystal particles of the NaZn_{13} type compound, an average particle diameter at the time of applying a spherical volume equivalent particle diameter distribution to a logarithmic normal distribution is greater than or equal to 40 μm and less than or equal to 200 μm , and a cumulative probability of a particle diameter distribution having a spherical volume equivalent particle diameter of less than or equal to 40 μm is less than 50%. (In the formula described above, an amount of Si is $0.100 \leq x \leq 0.130$, amounts of Pr and Mn are $0 < y \leq 0.4$ and $0 < z \leq 0.030$, and an amount of H is $1.4 \leq w \leq 1.7$.) Accordingly, a NaZn_{13} type single phase $\text{La}(\text{Fe}, \text{Si})_{13}$ -based magnetic material for magnetic refrigeration is provided in which a hydrogen redistribution is suppressed and a large magnetic entropy change is obtained.

IPC 8 full level
C22C 38/00 (2006.01); **B22F 1/142** (2022.01); **C21D 6/00** (2006.01); **F25B 21/00** (2006.01); **H01F 1/01** (2006.01)

CPC (source: EP US)
B22F 1/142 (2022.01 - EP US); **C22C 38/002** (2013.01 - EP); **C22C 38/005** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP); **C22C 38/04** (2013.01 - EP); **H01F 1/015** (2013.01 - EP); **B22F 2998/10** (2013.01 - EP); **B22F 2999/00** (2013.01 - EP); **C22C 2202/02** (2013.01 - EP)

C-Set (source: EP US)
1. **B22F 2998/10 + B22F 1/142 + B22F 9/04**
2. **B22F 2999/00 + B22F 1/142 + B22F 2201/013**

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
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