

Title (en)

PROCESS FOR MANUFACTURING AN ALUMINIUM ALLOY PART

Title (de)

VERFAHREN ZUR HERSTELLUNG EINES ALUMINIUMLEGIERUNGSTEILS

Title (fr)

PROCEDE DE FABRICATION D'UNE PIECE EN ALLIAGE D'ALUMINIUM

Publication

**EP 3860789 A1 20210811 (FR)**

Application

**EP 19801953 A 20191003**

Priority

- FR 1871133 A 20181005
- FR 1908678 A 20190730
- FR 2019052348 W 20191003

Abstract (en)

[origin: WO2020070452A1] The invention relates to a process for manufacturing a part comprising a formation of successive solid metal layers (201...20n) that are stacked on top of one another, each layer describing a pattern defined using a numerical model (M), each layer being formed by the deposition of a metal (25), referred to as solder, the solder being subjected to an input of energy so as to start to melt and to constitute, by solidifying, said layer, wherein the solder takes the form of a powder (25), the exposure of which to an energy beam (32) results in melting followed by solidification so as to form a solid layer (201...20n). The process is characterized in that the solder (25) is an aluminum alloy comprising at least the following alloy elements: - Fe, in a weight fraction of from 1 to 3.7 %, preferably from 1 to 3.6 %; - Zr and/or Hf and/or Er and/or Sc and/or Ti, in a weight fraction of from 0.5 to 4 %, preferably from 1 to 4 %, more preferably from 1.5 to 3.5 %, even more preferably from 1.5 to 2 % each, and in a weight fraction of less than or equal to 4 %, preferably less than or equal to 3 %, more preferably less than or equal to 2 % in total; - Si, in a weight fraction of from 0 to 4 %, preferably from 0.5 to 3 %; - V, in a weight fraction of from 0 to 4 %, preferably from 0.5 to 3 %. The invention also relates to a part obtained by this process. The alloy used in the additive manufacturing process according to the invention makes it possible to obtain parts having remarkable features.

IPC 8 full level

**B22F 3/105** (2006.01); **B22F 1/00** (2022.01); **B33Y 40/00** (2020.01); **B33Y 70/00** (2020.01); **C22C 1/04** (2006.01)

CPC (source: EP US)

**B22F 1/00** (2013.01 - EP US); **B22F 3/24** (2013.01 - EP); **B22F 10/22** (2021.01 - EP US); **B22F 10/25** (2021.01 - EP US); **B22F 10/28** (2021.01 - EP US); **B22F 10/64** (2021.01 - EP US); **B22F 12/41** (2021.01 - US); **B23K 9/04** (2013.01 - EP); **B23K 9/173** (2013.01 - EP); **B23K 9/23** (2013.01 - EP); **B23K 26/0006** (2013.01 - EP); **B23K 26/342** (2015.10 - EP); **B33Y 40/00** (2014.12 - EP); **B33Y 40/20** (2020.01 - US); **B33Y 70/00** (2014.12 - EP US); **C21D 1/18** (2013.01 - US); **C22C 1/0416** (2013.01 - EP US); **C22C 21/00** (2013.01 - EP US); **C22C 21/003** (2013.01 - US); **C22F 1/04** (2013.01 - US); **B22F 3/15** (2013.01 - EP); **B22F 2003/248** (2013.01 - US); **B22F 2301/052** (2013.01 - US); **B22F 2301/205** (2013.01 - US); **B22F 2301/35** (2013.01 - US); **B22F 2998/10** (2013.01 - EP US); **B23K 2103/10** (2018.08 - EP); **B33Y 10/00** (2014.12 - US); **B33Y 40/20** (2020.01 - EP); **Y02P 10/25** (2015.11 - EP)

C-Set (source: EP US)

1. **B22F 2998/10 + B22F 10/28 + B22F 2003/248 + B22F 3/15**
2. **B22F 2998/10 + B22F 10/22 + B22F 3/15**
3. **B22F 2998/10 + B22F 10/28 + B22F 3/15**
4. **B22F 2998/10 + B22F 10/25 + B22F 2003/248**
5. **B22F 2998/10 + B22F 10/22 + B22F 2003/248**
6. **B22F 2998/10 + B22F 10/28 + B22F 2003/248**
7. **B22F 2998/10 + B22F 10/25 + B22F 3/15**
8. **B22F 2998/10 + B22F 10/22 + B22F 2003/248 + B22F 3/15**
9. **B22F 2998/10 + B22F 10/25 + B22F 2003/248 + B22F 3/15**

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)

**WO 2020070452 A1 20200409**; CN 112805105 A 20210514; CN 112805105 B 20231201; CN 112805107 A 20210514; CN 112805107 B 20231027; EP 3860788 A1 20210811; EP 3860788 B1 20240717; EP 3860789 A1 20210811; FR 3086873 A1 20200410; FR 3086873 B1 20220527; FR 3086954 A1 20200410; FR 3086954 B1 20211210; US 11692240 B2 20230704; US 2021230716 A1 20210729; US 2021331244 A1 20211028

DOCDB simple family (application)

**FR 2019052347 W 20191003**; CN 201980065522 A 20191003; CN 201980065700 A 20191003; EP 19801952 A 20191003; EP 19801953 A 20191003; FR 1871133 A 20181005; FR 1908678 A 20190730; US 201917282262 A 20191003; US 201917282285 A 20191003