

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization

International Bureau

(43) International Publication Date
10 April 2025 (10.04.2025)



(10) International Publication Number
WO 2025/073518 A1

(51) International Patent Classification:

A61L 27/44 (2006.01) *B33Y 70/00* (2020.01)
A61L 27/46 (2006.01) *B33Y 80/00* (2015.01)
B33Y 10/00 (2015.01) *C08L 67/04* (2006.01)

DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT,
LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE,
SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(21) International Application Number:

PCT/EP2024/076590

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii))

(22) International Filing Date:

23 September 2024 (23.09.2024)

Published:

— with international search report (Art. 21(3))

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

23201581.8 04 October 2023 (04.10.2023) EP

(71) Applicant: **EVONIK OPERATIONS GMBH** [DE/DE];

Rellinghauser Strasse 1-11, 45128 Essen (DE).

(72) Inventors: **GOTTSTEIN, Thomas**; Albergstr. 4, 64832

Babenhausen (DE). **SEIBEL, Manuel**; Leo-Grewenig-
Strasse 7, 64625 Bensheim (DE). **SCHATTKA, Jan
Hendrik**; Erbacher Straße 89b, 64287 Darmstadt (DE).
GRIMM, Silko; Atzenheimweg 1c, 64380 Rossdorf (DE).

(74) Agent: **EVONIK PATENT ASSOCIATION**; c/o Evonik

Industries AG, Function Legal - IP Management, Bau
1042A, PB15, Paul-Baumann-Strasse 1, 45772 Marl (DE).

(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,
KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA,
NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,
RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every

kind of regional protection available): ARIPO (BW, CV,
GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST,
SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ,
RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ,

(54) Title: POLYCAPROLACTONE HAVING IMPROVED SLS 3D-PRINTING SINTERING PROPERTIES

(57) **Abstract:** The present invention refers to a compound particle for 3D printing obtained by hot melt extruding 50 to 90 wt.-% at least one polycaprolactone based polymer; 10 to 50 wt.-% of at least one filler; and optionally up to 5 wt.-% of at least one additive into pellets, wherein the total weight of the components is 100 wt.-%, and thereafter milling the pellets to obtain the compound particle. Furthermore, the present invention refers to a composition for 3D printing comprising a) 94 to 99 wt.-% of at least one compound particle according to the present invention; b) 1 to 6 wt.-% of at least one filler; and c) optionally up to 5 wt.-% of at least one additive; wherein the total weight of a) to c) is 100 wt.-%. Moreover, the present invention refers to a 3D printing method comprising the compound particle or the composition according to the present invention, the article obtained by the 3D printing method and its use as a substitute for bones or a scaffold for broken bones.



WO 2025/073518 A1