

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
20 April 2023 (20.04.2023)



(10) International Publication Number
WO 2023/064761 A1

(51) International Patent Classification:
C08L 23/08 (2006.01) *B32B 27/32* (2006.01)

(21) International Application Number:
PCT/US2022/077896

(22) International Filing Date:
11 October 2022 (11.10.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/256,252 15 October 2021 (15.10.2021) US

(71) Applicant: **DOW GLOBAL TECHNOLOGIES LLC**
[US/US]; 2211 H.H. Dow Way, Midland, Michigan 48674 (US).

(72) Inventors: **GARG, Akanksha**; c/o The Dow Chemical Company, 230 Abner Jackson Parkway, Lake Jackson, Texas 77566 (US). **ZENG, Yongchao**; c/o The Dow Chemical Company, 230 Abner Jackson Parkway, Lake Jackson, Texas 77566 (US). **HEITSCH, Andrew T.**; c/o The Dow Chemical Company, 230 Abner Jackson Parkway, Lake Jackson, Texas 77566 (US). **THURBER, Christopher M.**; c/o The Dow Chemical Company, 433 Building, 633 Washington Street, Midland, Michigan 48667 (US). **PEREZ, Carmelo Declet**; c/o The Dow Chemical Company, 2301 North Brazosport Boulevard, Freeport, Texas 77541 (US). **DEGROOT, Jacquelyn A.**; c/o The Dow Chemical Company, 2301 North Brazosport Boulevard, Freeport, Texas 77541 (US). **WANG, Jin**; c/o The Dow Chemical Company, 433 Building, 633 Washington Street, Midland, Michigan 48674 (US). **KAPUR, Mridula**; c/o The Dow Chemical Company, 230 Abner Jackson Parkway, Lake Jackson, Texas 77566 (US). **CHAUDHARY, Amit K.**; c/o The Dow

(54) Title: POLYMER BLENDS COMPRISING POST-CONSUMER RECYCLED RESIN

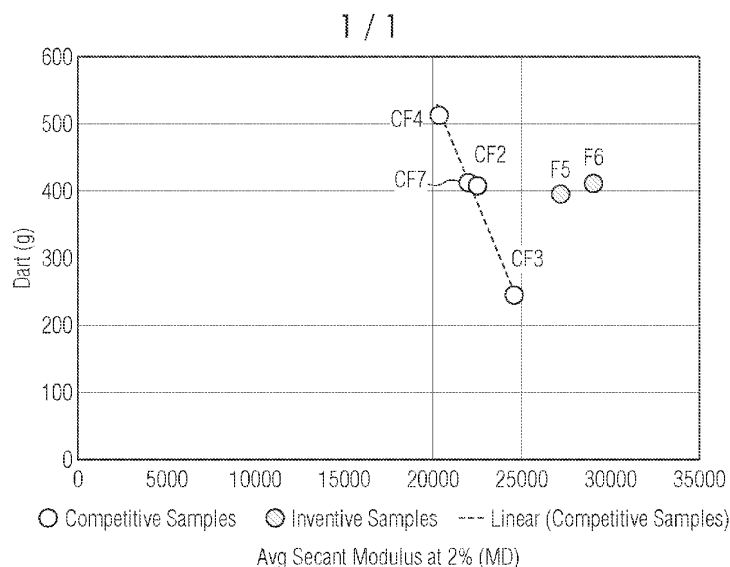


FIG. 1

(57) Abstract: Embodiments of the present disclosure are directed to post-consumer recycled (PCR) resin formulations comprising: PCR resin comprising a blend of polyethylene recovered from post-consumer material, pre-consumer material, or combinations thereof; and virgin polyethylene resin formulation, wherein the virgin polyethylene resin formulation comprises: a density from 0.910 to 0.950 g/cc, an improved comonomer content distribution (iCCD) wt. fraction greater than 30 wt.% at a temperature range of 35 to 90 °C, and an iCCD wt. fraction greater than 8 wt.% at a temperature range of 99 to 115 °C. The PCR resin formulation comprises an overall density of from 0.910 to 0.930 g/cc; an iCCD second elution peak occurring at a temperature greater than 99 °C; an iCCD wt. fraction greater than 6 wt.% at a temperature range of 99 to 115 °C; and an iCCD wt. fraction greater than 60 wt.% at a temperature range of 35 to 90 °C.

[Continued on next page]

Chemical Company, 230 Abner Jackson Parkway, Lake Jackson, Texas 77566 (US).

(74) **Agent: MOLLOY, Matthew A.** et al.; Dinsmore & Shohl LLP, One South Main Street, Suite 1300, Dayton, Ohio 45402 (US).

(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, ME, MG, MK, MN, 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, GH, GM, KE, LR, LS, MW, MZ, NA, RW, 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, 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).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*