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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 October 2025 (16.10.2025)

WIPO | PCT

(10) International Publication Number
WO 2025/216983 A1

(51) International Patent Classification:
C08F 210/16 (2006.01) *B01J 19/18* (2006.01)
B01J 19/24 (2006.01) *C08F 4/659* (2006.01)

(21) International Application Number:
PCT/US2025/023154

(22) International Filing Date:
04 April 2025 (04.04.2025)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/575,922 08 April 2024 (08.04.2024) US

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

(72) Inventors: **EWART, Sean W.**; c/o The Dow Chemical Company, 230 Abner Jackson Parkway, Lake Jackson, Texas 77566 (US). **JIN, Yi**; c/o The Dow Chemical Company, 230 Abner Jackson Parkway, Lake Jackson, Texas 77566 (US). **YU, Ying**; c/o The Dow Chemical Company, 230 Abner Jackson Parkway, Lake Jackson, Texas 77566 (US). **GEMOETS, Frederik**; c/o Dow Benelux B.V., Herbert H. Dowweg 5, 4542 NM Terneuzen (NL).

(74) Agent: **FANE, Brian M.** et al.; Dinsmore & Shohl LLP, One South Main Street, Fifth Third Center, 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, 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, UY, 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, 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).

(54) Title: PROCESS FOR THE PRODUCTION OF POLYETHYLENES

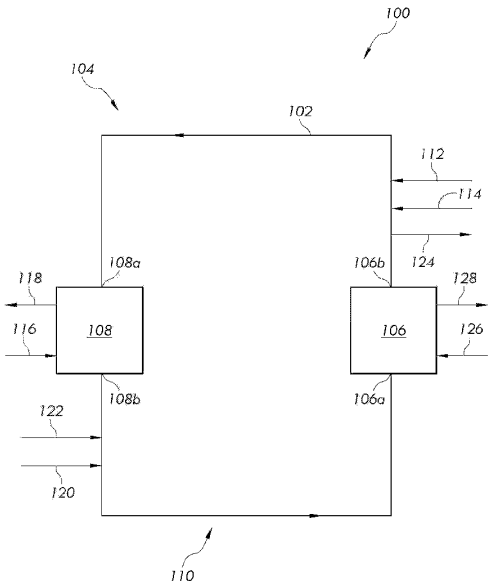


FIG. 1

(57) Abstract: According to some embodiments, a process for forming an ethylene-based polymer may comprise: introducing catalyst to a loop reactor through at least two catalyst injection points, where: the loop comprises a first half and a second half, and the first catalyst injection point is in the first half of the loop and the second catalyst injection point is in the second half of the loop; and polymerizing the ethylene and copolymer while controlling one or more polymerization conditions such that: a ratio of an amount of polymerization in the first half to an amount of polymerization in the second half is from 0.7 to 1.3; a ratio of the heat of polymerization in the first half to the heat of polymerization in the second half is from 0.7 to 1.3; or both, thereby forming the ethylene-based polymer.

WO 2025/216983 A1

[Continued on next page]

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))*