

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
28 July 2005 (28.07.2005)

PCT

(10) International Publication Number
WO 2005/068517 A1

(51) International Patent Classification⁷: **C08F 10/02**, 6/04

OK 74006 (US). YU, Youlu [CA/US]; 1532 Whitney Lane, Bartlesville, OK 74006 (US).

(21) International Application Number:

PCT/US2005/000227

(74) Agent: **HUSEMAN, Cheryl, L.**; 10001 Six Pines Drive, The Woodlands, TX 77380 (US).

(22) International Filing Date: 5 January 2005 (05.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

10/754,373 9 January 2004 (09.01.2004) US

(71) Applicant (for all designated States except US):
CHEVRON PHILLIPS CHEMICAL COMPANY, LP [US/US]; 10001 Six Pines Drive, The Woodlands, TX 77380 (US).

(72) Inventors; and

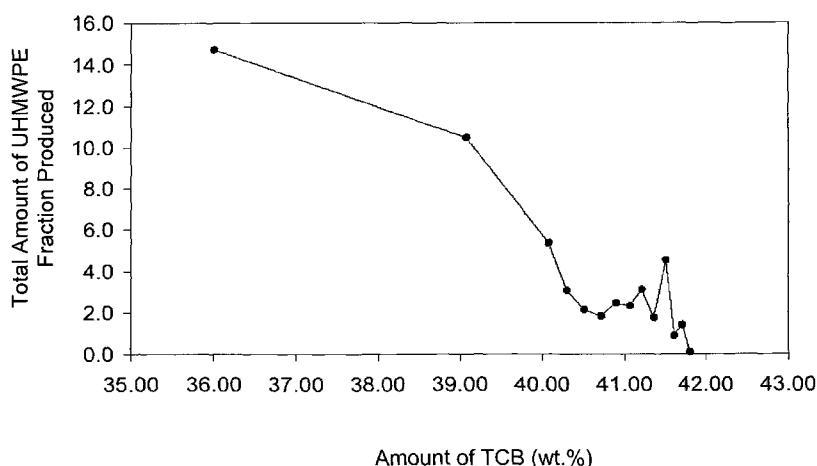
(75) Inventors/Applicants (for US only): **TSO, Chung, C.** [US/US]; 5641 Chestnut Hill, Bratlesville, OK 74006 (US). **HILDEBRAND, Melvin** [US/US]; 320 Ridgescree, OK 74006, Bartlesville, OK 74006 (US). **DESLAURIERS, Paul, J.** [US/US]; 1031 Kings Circle, Bartlesville,

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE FRACTIONS HAVING NARROW MOLECULAR WEIGHT DISTRIBUTIONS AND METHODS OF MAKING AND USING THE SAME



(57) Abstract: Polymer fractions such as polyethylene fractions can be produced that have a PDT less than 2.3 and a $M_{w,}$ greater than 1,000,000 g/mol, 3,000,000 g/mol, or 6,000,000 g/mol. Such polyethylene fractions are separated from a UHMWPE parent polymer by first dissolving the parent polymer in a relatively good solvent. The conditions employed for such dissolution are selected to reduce the degradation of the parent polymer. The resulting parent solution is transported into a fractionation column in which a support is disposed. The fractionation column is thereafter operated at conditions effective to form a precipitate on the support comprising the desired polyethylene fraction. The polyethylene fraction may then be recovered from the fractionation column by repeatedly displacing a solvent/non-solvent mixture into the column to dissolve the polyethylene fraction. The relative concentrations of the solvent and the non-solvent are based on a solvent gradient profile of the polyethylene parent polymer.

WO 2005/068517 A1



Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.