

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
21 March 2024 (21.03.2024)



(10) International Publication Number
WO 2024/059441 A1

(51) International Patent Classification:

C08F 6/02 (2006.01) C08L 23/22 (2006.01)
C08F 210/12 (2006.01) B60C 1/00 (2006.01)
C08F 110/10 (2006.01)

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/US2023/073294

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))

(22) International Filing Date:

01 September 2023 (01.09.2023)

(25) Filing Language:

English

(26) Publication Language:

English

Published:

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

(30) Priority Data:

63/405,925 13 September 2022 (13.09.2022) US

(71) Applicant: **EXXONMOBIL CHEMICAL PATENTS INC.** [US/US]; 5200 Bayway Drive, Baytown, TX 77520 (US).

(72) Inventors: **JACOB, Sunny**; 1603 Rustic Oak Lane, Seabrook, TX 77586 (US). **MATTUPALLI, Ramki**; 05-29, 82 Bayshore Road, Singapore 469993 (SG). **LI, Lili**; 203, Unit 4, 8 Longquanxiang, Boshan, Zibo, Shandong, 255200 (CN). **LASSARD, Stephen, A.**; 8574 Jo Lee Drive, Denham Springs, LA 70706 (US).

(74) Agent: **KATO, Derek, M.** et al.; Exxonmobil Technology And Engineering Company, Tech & IP Law - Chemicals, P.O. Box 2149, Baytown, TX 77520-2149 (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, 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,

(54) Title: CONTROLLED MOLECULAR WEIGHT DISTRIBUTION OF ISOBUTYLENE-BASED ELASTOMER COMPOSITIONS AND METHODS RELATED THERETO

(57) Abstract: Methods for controlling molecular weight distribution of elastomer compositions and, in particular isobutylene-based elastomer compositions, particularly for use in tire compositions such as innerliners. A polymerization medium comprising monomers, diluent, and a catalyst system are polymerized in a reactor. Molecular weight distribution is controlled using post-polymerization processing to achieve a Mooney Relaxation Index of greater than about 2.5.

WO 2024/059441 A1