

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
19 March 2020 (19.03.2020)



(10) International Publication Number
WO 2020/056057 A1

(51) International Patent Classification:
C08G 16/00 (2006.01) *C08G 65/48* (2006.01)

(21) International Application Number:
PCT/US2019/050693

(22) International Filing Date:
11 September 2019 (11.09.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/729,999 11 September 2018 (11.09.2018) US
62/730,000 12 September 2018 (12.09.2018) US

(71) Applicant: **GREENE, TWEED TECHNOLOGIES, INC.** [US/US]; 1105 North Market Street, Suite 1300, Wilmington, DE 19801 (US).

(72) Inventors: **DAS, Sudipto**; 165 Grove Street, Somerville, NJ 08876 (US). **SONG, Le**; 116 Coachlight Circle, Chalfont, PA 18914 (US). **REGER, Thomas**; 2247 Locust Drive, Lansdale, PA 19446 (US).

(74) Agent: **CALDERONE, Lynda, L.** et al.; Calderone Bullock LLC, Two Greentree Centre, Suite 301, 9000 Lincoln Drive East, Marlton, NJ 08053 (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, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, 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,

(54) Title: CROSS-LINKING COMPOSITIONS FOR FORMING CROSS-LINKED ORGANIC POLYMERS, ORGANIC POLYMER COMPOSITIONS, METHODS OF FORMING THE SAME, AND MOLDED ARTICLES PRODUCED THEREFROM

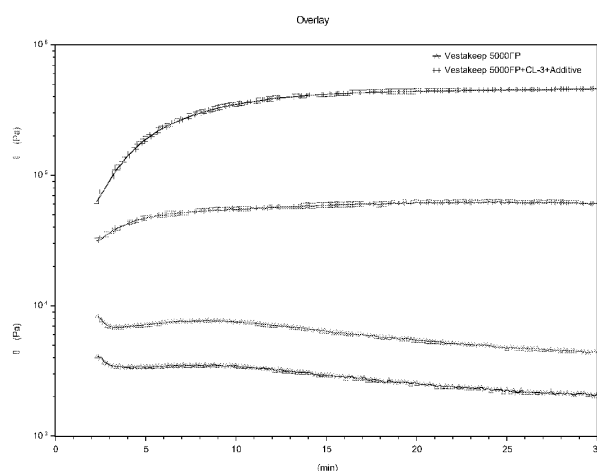


FIG. 6

(57) Abstract: The present invention provides cross-linking compounds having structures as set forth herein for cross-linking organic polymers. Further, polymer compositions include a cross-linking compound and an organic polymer, and in some embodiments the composition further includes a cross-linking reaction additive for controlling the cross-linking reaction rate. In alternate embodiments, the present invention provides cross-linking compositions including a cross-linking compound and a cross-linking reaction additive capable of forming a reactive intermediate oligomer for cross-linking an organic polymer. Further provided are methods of cross-linking organic polymers, organic polymers formed thereby, and molded articles formed from the cross-linked organic polymers. Additionally, methods for forming high glass transition temperature elastomeric materials and methods for forming extrusion-resistant and creep-

[Continued on next page]

SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, 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))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*