

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 April 2009 (16.04.2009)

PCT

(10) International Publication Number
WO 2009/048472 A1

(51) International Patent Classification:

C08L 77/00 (2006.01) *C08L 27/10* (2006.01)
B29C 47/40 (2006.01) *C08L 23/28* (2006.01)
C08G 81/02 (2006.01)

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(21) International Application Number:

PCT/US2007/081116

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(22) International Filing Date: 11 October 2007 (11.10.2007)

(25) Filing Language: English

(26) Publication Language: English

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

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(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, LV, MC, MT, 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).

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Published:
— *with international search report*

(54) Title: EFFICIENT MIXING PROCESS FOR PRODUCING THERMOPLASTIC ELASTOMER COMPOSITION

(57) Abstract: A durable, flexible, impermeable thermoplastic elastomer composition is produced using a dynamic vulcanization process conducted in a high shear mixer at elevated temperature. The composition comprises cured particles of a first halogenated isobutylene-containing elastomer and particles of a second elastomer having at least one functional group capable of reacting with and grafting to a polyamide, the particles of the first and second elastomers dispersed in a continuous thermoplastic polyamide matrix, said process comprising: (1) dispersing a curative in the halogenated elastomer and forming a pre-compounded, preferably pelletized composition; (2) introducing polyamide resin and optional stabilizers into the mixer and shearing and heating to melt the polyamide and form a mixture; (3) introducing a nylon plasticizer to reduce the viscosity of the polyamide mixture to substantially match that of the pre-compounded elastomer under mixing conditions; (4) introducing pellets of the pre-compounded elastomer into the mixer and initiating dynamic vulcanization of the elastomer and polyamide components; (5) introducing the second elastomer and continuing heating and shearing to disperse the second elastomer and substantially complete dynamic vulcanization; and delivering the thermoplastic elastomer composition from the mixer. Such compositions are particularly useful in applications such as tire innerliners and barrier films or layers.

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