

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 August 2004 (19.08.2004)

PCT

(10) International Publication Number
WO 2004/069917 A3

(51) International Patent Classification⁷: **C08J 9/18**, 9/20

(21) International Application Number:
PCT/US2004/001824

(22) International Filing Date: 23 January 2004 (23.01.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/442,761 27 January 2003 (27.01.2003) US

(71) Applicant: **NOVA CHEMICALS INC.** [US/US]; West-
pointe Center, 1550 Coraopolis Heights Road, Moon,
Township, PA 15108 (US).

(72) Inventors: **ARCH, Paul, Edward**; 1104 Harrow Hill
Court, Coraopolis, PA 15108-9011 (US). **NIEMANN,**
Edwin; 603 Westview Dr., Beaver, PA 15009 (US).

(74) Agent: **KIKEL, Suzanne**; Nova Chemicals Inc., 400
Frankfort Road, Monaca, PA 15061 (US).

(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, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,
GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
23 September 2004

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: FOAMABLE INTERPOLYMER RESIN PARTICLES CONTAINING LIMONENE AS A BLOWING AID

(57) Abstract: Interpolymer resin particles comprised of 20% to 80% by weight polyolefin, e.g. polyethylene and 80% to 20% by weight of an in situ polymerized vinyl aromatic resin, e.g. polystyrene or poly(styrene.butyl acrylate) and forming an interpenetrating network of polyolefin and vinyl aromatic resin particles. The interpolymer particles are impregnated with a volatile hydrocarbon blowing agent, and limonene, e.g. d-limonene, ranging from about 0.1 to about 5 parts, preferably 0.1 to 1 part by weight, based on 100 parts by weight of the interpolymer particles, for improved expandability and a pleasant fragrance.



WO 2004/069917 A3