



- (51) **International Patent Classification:**  
*C08C 19/02* (2006.01) *C08F 8/04* (2006.01)
- (21) **International Application Number:**  
PCT/EP2015/054787
- (22) **International Filing Date:**  
6 March 2015 (06.03.2015)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
14158602.4 10 March 2014 (10.03.2014) EP
- (71) **Applicants:** LANXESS DEUTSCHLAND GMBH [DE/DE]; Kennedyplatz 1, 50569 Köln (DE). N.D. ZELINSKY INSTITUTE OF ORGANIC CHEMISTRY RAS [RU/RU]; Leninsky prospect, 47, Moscow, 119991 (RU).
- (72) **Inventors:** JENTSCH, Joerg-Dietrich; Neuenkamp 61, 51381 Leverkusen (DE). KAULEN, Johannes; Am Steinberg 5, 51519 Odenthal (DE). OBRECHT, Werner; Beethovenstr. 4, 47447 Moers (DE). KUSTOV, Leonid; Khalturinskaya ul., 11-30, Moscow (RU). GREISH, Alexander; Fomichevoy ul., 14-1-46, Moscow (RU). SHOUVALOVA, Elena; Butlerova ul., 2-1-95, Moscow (RU).
- (74) **Common Representative:** LANXESS DEUTSCHLAND GMBH; Kennedyplatz 1, 50569 Köln (DE).
- (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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, 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, 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))

**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))

- (88) **Date of publication of the international search report:**  
30 December 2015



WO 2015/169477 A3

(54) **Title:** PROCESS FOR THE REDUCTION OF NITRILE GROUPS OF HYDROGENATED NITRILE RUBBER

(57) **Abstract:** The present invention relates to a process for the reduction of nitrile groups of partially or completely hydrogenated nitrile rubber to amino groups by hydrogenation in the presence of a Raney-cobalt catalyst.

INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2015/054787

A. CLASSIFICATION OF SUBJECT MATTER  
INV. C08C19/02 C08F8/04  
ADD.  
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED  
Minimum documentation searched (classification system followed by classification symbols)  
C08C C08F  
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	P.M. Göppert: "Aspekte der Hydrierung von Acrylnitril-Butadien-Copolymeren", 2012, Technische Universität München, XP002726607, pages Frontpage,1-126, I-XII, cited in the application page 86 - page 90; table 4.9;7.1 -----	1-13
X	EP 0 842 699 A2 (BASF AG [DE]) 20 May 1998 (1998-05-20) cited in the application column 12, line 49; examples 4-6 column 13, line 42 - line 45 -----	1-13

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search  11 November 2015	Date of mailing of the international search report  18/11/2015
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Mettler, Rolf-Martin

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2015/054787

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0842699	A2	20-05-1998	
		CA 2216802 A1	18-04-1998
		DE 19643126 A1	23-04-1998
		EP 0842699 A2	20-05-1998
		JP H10151350 A	09-06-1998
		US 6121188 A	19-09-2000
-----			