



(43) International Publication Date
7 September 2012 (07.09.2012)

- (51) **International Patent Classification:**
C07C 29/82 (2006.01) *C07C 31/10* (2006.01)
- (21) **International Application Number:**
PCT/EP2012/000892
- (22) **International Filing Date:**
1 March 2012 (01.03.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
11156389.6 1 March 2011 (01.03.2011) EP
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- (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, 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, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, ML, MR, NE, SN, TD, TG).

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:**
26 October 2012

(54) **Title:** PROCESS FOR PRODUCING HIGHLY PURIFIED N-PROPANOL

(57) **Abstract:** Disclosed is a process for the production of purified n-propanol having a content of n-propyl propionate of less than 0.003 wt.-% as well as the use of the purified n-propanol thus obtainable for the manufacture of medicaments. The process comprises the steps: a) feeding crue n-propanol to a distillation column, b) separately feeding water to said distillation column, c) separating an azeotropic mixture which comprises at least water, n-propanol and organic impurities at the top of the distillation column and d) isolating the purified n-propanol from the bottom of the distillation column.



WO 2012/116817 A3

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2012/000892

A. CLASSIFICATION OF SUBJECT MATTER

INV. C07C29/82 C07C31/10
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)
C07C

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE WPI Week 200875 Thomson Scientific, London, GB; AN 2008-M65620 XP002642201, -& CN 101 225 018 A (ZIBO NUOAO CHEM CO LTD) 23 July 2008 (2008-07-23) see translation attached as annexclaims; figures; examples	1-15
A	----- US 5 866 725 A (UNRUH JERRY D [US] ET AL) 2 February 1999 (1999-02-02) cited in the application the whole document	1-15
A	----- GB 662 608 A (BRITISH CELANESE) 5 December 1951 (1951-12-05) the whole document ----- -/-	1-15



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

28 March 2012

Date of mailing of the international search report

20/08/2012

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2012/000892

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 592 805 A (BERG LLOYD [US] ET AL) 3 June 1986 (1986-06-03) the whole document -----	1-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2012/000892

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 101225018	A	23-07-2008	NONE
US 5866725	A	02-02-1999	AU 753583 B2 24-10-2002
			AU 1377499 A 28-06-1999
			BR 9813493 A 10-10-2000
			CA 2313199 A1 17-06-1999
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			DE 69814925 D1 26-06-2003
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			DK 1053217 T3 15-09-2003
			EP 1053217 A1 22-11-2000
			ES 2199476 T3 16-02-2004
			JP 4061023 B2 12-03-2008
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			PT 1053217 E 31-10-2003
			TW 513397 B 11-12-2002
			US 5866725 A 02-02-1999
			WO 9929643 A1 17-06-1999
			ZA 9811382 A 12-06-2000
GB 662608	A	05-12-1951	NONE
US 4592805	A	03-06-1986	NONE

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2012/000892

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-15

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-15

Process for the production of purified n-propanol

2. claim: 16

Use of purified n-propanol for the manufacture of medicaments
