





**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))*
- *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:**  
22 November 2012

**Published:**

- *with international search report (Art. 21(3))*

**A. CLASSIFICATION OF SUBJECT MATTER***C07C 31/20(2006.01)i, C07C 31/22(2006.01)i, B01J 19/24(2006.01)i, C07B 63/00(2006.01)i*

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 31/20; C07C 29/80; C07C 29/74; C07C 29/00; B01D 3/00; B01J 19/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: biobased, propylene glycol, ethylene glycol, glycerol, propylene oxide, glycidol, oxirane.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 2009-149047 A1 (HUNTSMAN PETROCHEMICAL CORPORATION) 10 December 2009 See abstract & claim 1.	15 1-14
X A	US 2010-0036175 A1 (FRANKE, OLIVER et al.) 11 February 2010 See paragraphs [0013]-[0014] & claims 1-5.	15 1-14
X A	US 2008-0103339 A1 (BLOOM, PAUL) 01 May 2008 See claim 1.	15 1-14
X A	US 2008-0275277 A1 (KALAGIAS, PETER) 06 November 2008 See claim 1.	15 1-14
X A	US 2008-0274019 A1 (BEGGIN, JOSEPH ROBERT et al.) 06 November 2008 See claim 17.	15 1-14

 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 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

27 SEPTEMBER 2012 (27.09.2012)

Date of mailing of the international search report

**28 SEPTEMBER 2012 (28.09.2012)**

Name and mailing address of the ISA/KR

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**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:

Invention group I (Claims 1-14): A process for removing propylene oxide and glycidol, or preventing formation of them, from biobased propylene glycol, biobased ethylene glycol, or both.

Invention group II (Claim 15): Biobased propylene glycol or ethylene glycol.

The common technical feature linking invention groups I-II together is biobased propylene glycol or ethylene glycol.

However, the feature is already disclosed in the prior art documents (See WO 2009/149047 A1 (10 December 2009), US 2010/0036175 A1 (11 February 2010), US 2008/0103339 A1 (01 May 2008), US 2008/0275277 A1 (06 November 2008), and US 2008/0274019 A1 (06 November 2008).). Thus, the invention groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because the above mentioned technical feature fails to contribute over the prior art within the meaning of PCT Rule 13.2.

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 fee, this Authority did not invite payment of any additional fee.
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.:

**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.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2012/026728**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009-149047 A1	10.12.2009	EP 2300400 A1 US 2011-0112335 A1	30.03.2011 12.05.2011
US 2010-0036175 A1	11.02.2010	CA 2667493 A1 CN 101522600 A DE 102006050751 A1 EP 2077985 A1 JP 2010-507598 A US 7812200 B2 WO 2008-049470 A1	02.05.2008 02.09.2009 08.05.2008 15.07.2009 11.03.2010 12.10.2010 02.05.2008
US 2008-0103339 A1	01.05.2008	US 2008-0228014 A1 US 7928148 B2 US 8153847 B2 WO 2008-051540 A2 WO 2008-051540 A3	18.09.2008 19.04.2011 10.04.2012 02.05.2008 26.06.2008
US 2008-0275277 A1	06.11.2008	BR P10711699 A2 CA 2650302 A1 CN 101528651 A EP 2038243 A1 MX 2008012560 A WO 2008-057317 A1	29.11.2011 15.05.2008 09.09.2009 25.03.2009 14.10.2008 15.05.2008
US 2008-0274019 A1	06.11.2008	WO 2008-133939 A1	06.11.2008