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(88) Date of publication of the international search report:

19 April 2012

(54) Title: SOLID TEREPHTHALIC ACID COMPOSITION

(57) Abstract: A solid terephthalic acid composition and a process for producing terephthalic acid from para-xylene. The process comprises forming a mixture comprising the para-xylene, a solvent, a bromine source, and a catalyst; and oxidizing the para-xylene by contacting the mixture with an oxidizing agent at oxidizing conditions to produce a solid oxidation product comprising terephthalic acid, para-toluic acid, 4-carboxybenzaldehyde. The solvent comprises a carboxylic acid having from 1 to 7 carbon atoms and an dialkyl imidazolium ionic liquid; and the catalyst comprises at least one of cobalt, titanium, manganese, chromium, copper, nickel, vanadium, iron, molybdenum, tin, cerium, and zirconium. The solid terephthalic acid composition comprises, less than about 4,000 ppm-wt 4-carboxybenzaldehyde content, and more than about 2,000 ppm-wt a para-toluic acid.



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**A. CLASSIFICATION OF SUBJECT MATTER***C07C 63/26(2006.01)i, C07C 63/06(2006.01)i, C07C 51/21(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 63/26; B01J 23/46; C07C 51/16; B01J 23/44; C07C 51/265; C07C 51/42

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: terephthalic acid, p-toluic acid, 4-carboxybenzaldehyde, 4-CBA, composition.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 04394299 A (PUSKAS, IMRE et al.) 19 July 1983 See column 10, lines 43-58; Table I.	1-9
X A	US 04323699 A (NORVAL, STEPHEN V.) 06 April 1982 See example 7.	1-2,5-6 3-4,7-9
A	US 04380662 A (HANOTIER, JACQUES D. V. et al.) 19 April 1983 See examples 1-6, comparative examples A & B.	1-9
A	US 2009-0326265 A1 (HASHMI, SYED AZAHAR et al.) 31 December 2009 See Table 1.	1-9

 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

18 JANUARY 2012 (18.01.2012)

Date of mailing of the international search report

**18 JANUARY 2012 (18.01.2012)**

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.: 10  
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:

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/US2011/040602**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 04394299 A	19.07.1983	US 04467110 A	21.08.1984
US 04323699 A	06.04.1982	EP 0041785 A1	16.12.1981
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