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(54) Title: IMPROVED PROCESS FOR THE RECOVERY OF TEREPHTHALIC ACID

(57) Abstract: A method for the recovery of carboxylic acid is disclosed. The method comprises the steps of introducing a liquid slurry comprising water, crystallized carboxylic acid such as terephthalic acid, isophthalic acid, trimellitic acid, and impurities into a high pressure rotary filter; filtering said slurry and collecting at least some of the solid portion; passing the collected solid portion to a rotary valve comprising a temperature control system; controlling the temperature in the rotary valve through the temperature control system; and removing the solid portion from the rotary valve. The rotary valve comprises a valve case and a rotor, and the temperature control system controls the temperature difference between the valve case and the rotor.



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**INTERNATIONAL SEARCH REPORT**

International application No

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**A. CLASSIFICATION OF SUBJECT MATTER**

INV. C07C51/43 C07C51/47 C07C63/24 C07C63/26 C07C63/307

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 B01D

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 practical, 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.
Y	WO 01/49647 A (INCA INTERNATIONAL S.P.A.) 12 July 2001 (2001-07-12) abstract; claims page 5, lines 16-18	1-9
Y	WO 95/19335 A (IMPERIAL CHEMICAL INDUSTRIES PLC) 20 July 1995 (1995-07-20) cited in the application abstract; claims 10,14,18 pages 13-15	1-9
Y	WO 93/24440 A (IMPERIAL CHEMICAL INDUSTRIES PLC) 9 December 1993 (1993-12-09) abstract; claim 27; figure 5 pages 19-21	1-9
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See patent family annex.

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- \*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
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Date of the actual completion of the international search

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 92/18454 A (AMOCO CORPORATION) 29 October 1992 (1992-10-29) abstract; claims page 8, lines 32-36 -----	1-9
Y	WO 00/71226 A (BAKER HUGHES INCORPORATED) 30 November 2000 (2000-11-30) abstract; claims 1,4,7,8,10,16,17; figure 1 -----	1-9

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2008/003093

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0149647	A	12-07-2001	AU 1725401	A 16-07-2001
			BR 0016947	A 10-09-2002
			CA 2395533	A1 12-07-2001
			CN 1414940	A 30-04-2003
			EP 1250308	A1 23-10-2002
			JP 2003519205	T 17-06-2003
WO 9519335	A	20-07-1995	AU 1323895	A 01-08-1995
			CN 1143947	A 26-02-1997
			ZA 9500013	A 08-07-1996
WO 9324440	A	09-12-1993	AU 681078	B2 21-08-1997
			AU 4081593	A 30-12-1993
			BR 9306434	A 15-09-1998
			CA 2136621	A1 09-12-1993
			CN 1085889	A 27-04-1994
			EP 0642490	A1 15-03-1995
			JP 7507291	T 10-08-1995
			SG 52279	A1 28-09-1998
			US 5583254	A 10-12-1996
WO 9218454	A	29-10-1992	AT 157343	T 15-09-1997
			BR 9205884	A 23-08-1994
			DE 69221858	D1 02-10-1997
			DE 69221858	T2 02-04-1998
			EP 0579715	A1 26-01-1994
			ES 2104910	T3 16-10-1997
			JP 3342011	B2 05-11-2002
			JP 6506461	T 21-07-1994
			RU 2109007	C1 20-04-1998
			SG 80528	A1 22-05-2001
WO 0071226	A	30-11-2000	AU 5157200	A 12-12-2000
			BR 0010920	A 01-07-2003
			CA 2373162	A1 30-11-2000
			CN 1423574	A 11-06-2003
			EP 1225964	A1 31-07-2002
			MX PA01012034	A 06-05-2002