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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.

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- (54) **Title:** PROCESS FOR IMPROVING AROMATICITY OF HEAVY AROMATIC HYDROCARBONS

(57) **Abstract:** A process for producing paraffin extracted clarified slurry oil (raffinate) with improved aromaticity from the feed stock such as clarified slurry oil (CSO) is provided. The obtained paraffin extracted clarified slurry oil with improved aromaticity is suitable for a variety of industrial applications. For example, it can be used as a valuable feedstock for producing carbon black.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/IN2012/000093

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)

IPC: C10G73/-, C10G21/-

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)

WPI; EPODOC; CNPAT; CAPLUS (STN); REGISTRY (STN) raffinate, oil feedstock, BMCI, heat, agitate, stir, separate, paraffin, aromatic, carbon black

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN101250429A (HUNAN CHANGLING PETROCHEMICAL S & T DEV.) 27 Aug. 2008 (27.08.2008) see page 2 line 4 to page 3 line 5 in the description	1-10
X	US5593572A (BETZDEARBORN INC.) 14 Jan. 1997 (14.01.1997) see column 1 lines 45-52	10
A		1-9
A	WO00/52115A1 (BP OIL INTERNATIONAL LIMITED et al.) 08 Sep. 2000 (08.09.2000) see the whole document	1-10
A	WO99/19425A1 (UNIPURE CORPORATION) 22 Apr. 1999 (22.04.1999) see the whole document	1-10
A	GB432168A (EDELEANU GMBH) 22 Jul. 1935 (22.07.1935) see the whole document	1-10

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 07 Sep. 2012 (07.09.2012)	Date of mailing of the international search report 18 Oct. 2012 (18.10.2012)
Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	Authorized officer LIU, Hongyan Telephone No. (86-10)82246701

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IN2012/000093

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN101250429A	27.08.2008	NONE	
US5593572A	14.01.1997	NONE	
WO00/52115A1	08.09.2000	AU2682000A	21.09.2000
		EP1165724A1	02.01.2002
		CN1342192A	27.03.2002
		HU0200331B	28.05.2002
		JP2002538264U	12.11.2002
		ZA200106696A	29.01.2003
		TW524845A	21.03.2003
		AU767706B	20.11.2003
		EP1165724B1	18.08.2004
		DE60013106E	23.09.2004
		US6802960B1	12.10.2004
		SG120105A1	28.03.2006
		CN1198902C	27.04.2005
		HU226800B1	28.10.2009
WO99/19425A1	22.04.1999	AU2702099A	03.05.1999
		US5948242A	07.09.1999
		CN1275156A	29.11.2000
		AU739689B	18.10.2001
		MXPA00003692A	01.09.2001
		MX223557B	19.10.2004
		CN1152118C	02.06.2004
		CA2306133C	16.05.2006
GB432168A	22.07.1935	NONE	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IN2012/000093

Continuation: A. CLASSIFICATION OF SUBJECT MATTER

C10G73/06 (2006.01) i

C10G21/00 (2006.01) i