

CAVELIER

ABOGADOS

www.cavelier.com
cavelier@cavelier.com

EDIFICIO SISKI
CARRERA 4 No.
BOGOTA 8, COLOMBIA SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

Teléfono: (57-1) 347 3611
Telefax: (57-1) 211 8650
60



No. 07-055683- -00003-0000

Fecha: 2008-09-25 16:54:35 Dep. 2020 NULCRLACIONI
Tra. 11 PATENTEIYII Eje. 378 FASENACIONALI
Act. 329 CTOINFORMACION Folios: 7

Señora Jefe de la
DIVISION DE NUEVAS CREACIONES
Superintendencia de Industria y Comercio
E. S. D.

Trámite : 011
Evento : 379
Actuación : 411

Referencia : Expediente No. 07-055683
Asunto : Solicitud de patente para: **REDUCCIÓN DE EMISIONES
NO_x EN PROCESOS FCC DE QUEMADO TOTAL**
Solicitante : W.R. GRACE & CO.-CONN.
Clase : B01D 053/086
Fecha solicitud: Junio 1 de 2007

1. Yo Emilio FERRERO, obrando como apoderado del solicitante en el asunto antes identificado, presento junto con este memorial copia del Reporte de Examen Preliminar de Patentabilidad el cual no había sido presentado junto con el memorial radicado el 05 de septiembre de 2007, por no haber sido expedido para esa fecha. Este Reporte no presenta anexos debido a que no hubo modificaciones a la solicitud original en la fase internacional.

2. Solicito atentamente que se continúe con el trámite de la presente solicitud de patente.

Señora Jefe,

EMILIO FERRERO

T.P.A. No. 31.929

COLO-06032-841-010-9
JMS\JMS\ID-135094\WPCL6032
No. M-2008-135094\JMS

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
BEVERLY J. ARTALE
7500 GRACE DRIVE
COLUMBIA, MD 21044

PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Rule 71.1)

Date of mailing
(day/month/year)

03 JUL 2008

Applicant's or agent's file reference

W9558-01

IMPORTANT NOTIFICATION

International application No.

PCT/US05/39093

International filing date (day/month/year)

31 October 2005 (31.10.2005)

Priority date (day/month/year)

02 November 2004 (02.11.2004)

Applicant

W. R. GRACE & CO. - CONN.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the *PCT Applicant's Guide*.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPEA/ US

Mail Stop PCT, Attn: IPEA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

M. M. Nguyen

Telephone No. (571) 272-1700

Form PCT/IPEA/416 (January 2004)

Beverly J. Artale
July 24, 08

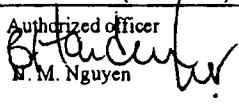
PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference W9558-01	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/US05/39093	International filing date (day/month/year) 31 October 2005 (31.10.2005)	Priority date (day/month/year) 02 November 2004 (02.11.2004)	
International Patent Classification (IPC) or national classification and IPC IPC: Please See Continuation Sheet USPC: 423/235,239.1,239.2;208/113,122,124;502/38,41,52			
Applicant W. R. GRACE & CO. - CONN.			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☐ (sent to the applicant and to the International Bureau) a total of ___ sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).			
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application			
Date of submission of the demand 12 May 2006 (12.05.2006)		Date of completion of this report 22 June 2008 (22.06.2008)	
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer  M. M. Nguyen Telephone No. (571) 272-1700	

Form PCT/IPEA/409 (cover sheet)(April 2007)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US05/39093

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ the international application as originally filed/furnished
- ☒ the description:
 pages 1-23 as originally filed/furnished
 pages* NONE received by this Authority on _____
 pages* NONE received by this Authority on _____
- ☒ the claims:
 pages 24 and 25 as originally filed/furnished
 pages* NONE as amended (together with any statement) under Article 19
 pages* NONE received by this Authority on _____
 pages* NONE received by this Authority on _____
- ☒ the drawings:
 pages 1-4 as originally filed/furnished
 pages* NONE received by this Authority on _____
 pages* NONE received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

5. ☐ This report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 70.2(e)).

** If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US05/39093

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Continuation of IPC:

C10G 11/04(2006.01), 11/18(2006.01); B01J 23/63(2006.01), 23/78(2006.01), 23/83(2006.01), 23/96(2006.01), 35/00(2006.01); B01D 53/86(2006.01)

V. 2. Citations and Explanations:

Claims 1-15 lack novelty under PCT Article 33(2) as being anticipated by Yaluris et al (U.S. P.G. Publication 2004/0074809).

Yaluris discloses a process for minimizing reduced N-species and NOx emissions from partial or incomplete combustion FCCU regenerators comprising the use of an oxidative additive comprising (i) at least 1 wt-% of an acidic metal oxide, (ii) at least 0.5 wt-% of an alkali or alkaline earth metal oxide, (iii) at least 0.1 wt-% of an oxygen storage metal oxide and (iv) at least 0.1 ppm of a noble metal such as Pt, Pd, Rh, Ir, Os, Ru or Re (note claims 1, 12, 35). Yaluris discloses in Examples 4 and 7 the treatment in a regenerator test unit of a feed comprising NO and CO over an additive C consisting of 68.7% Al₂O₃, 4.9% SiO₂, 21.2% CeO₂, 4.9% Na₂O, and 790 ppm Pd. The additives may be used as separate particles along with the cracking catalyst or may be incorporated into the cracking catalyst at component. The circulating catalyst inventory may contain CO combustion promoters based on supported Pt as additional catalytic material (note paragraph [0061]). The additive is used in an amount of 0.01-50 wt-% of the cracking catalyst inventory (note paragraph [0066]).

The catalytic additive of Yaluris is considered to contain all components of the NOx reduction additive defined in independent claim 1 of the present application.

Yaluris defines the full burn combustion mode of an FCCU regenerator as producing an oxygen excess and NOx in the gas effluent. Depending on the oxygen flow into the regenerator, this regenerator effluent gas further contains reduced nitrogen species such as ammonia and CO (note paragraph [0005], [0009]-[0010]).

Claims 1-15 lack an inventive step under PCT Article 33(3) as being obvious over Peters et al (US patent 6,165,933) in view of Blanton, Jr. et al (US patent 4,290,878) and Meguerian et al (US patent 4,300,997).

Peters 933 discloses a process for reducing NOx emission and promoting CO combustion in the regeneration step of a FCCU comprising

Supplemental Box

the use of a cracker component and of a promoter component comprising (i) an acidic oxide support such as alumina, (ii) an alkali or alkaline earth metal such as Na (1-10 wt-%), (iii) a transition metal oxide such as Ceria (2-50 wt-%) for oxygen storage and (iv) Pd (>100 ppmw). The promoter component is either intergraded into the FCC catalyst particles or as separate additive particles (note claim 1).

The difference is Peters '933 does not disclose the additive component further contains at least 0.1 ppm of a noble metal selected from Pt, Ir, Rh, OS, Ru, Rh and mixtures thereof.

The problem to be solved by the present invention may therefore be regarded as to provide a process for reducing NOx emission and promoting CO combustion using an alternative additive.
Meguerian discloses the use of a Pd-Ru (0.01-100 ppmw) oxidation promoter with a cracking catalyst to promote CO combustion while reducing NOx formation in FCC catalyst regenerators (note claims 1-7).
In view of the teaching of Meguerian '997, it would be obvious for the skilled person to combine the oxidation promoter of Meguerian '997 with the promoter as disclosed in Peters '933 and this obtain an additive comprising both Pd and Ru as second noble metal to provide the same advantage of reduced NOx emissions and promoted CO combustion.

Dependent claims 2-15 do not appear to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step.

Blanton '878 discloses the use of Pt as CO combustion promoter and Rh or Ir as NOx suppressing agent in FCC catalyst regenerators (note claims 1-3).

This document could also serve in combination with Peters '933 for assessing the inventive step of the present invention.

Claims 1-15 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

----- NEW CITATIONS -----