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No. 10-123067 - 00003-0000

Fecha: 2011-01-17 15:18:06 Dep. 2020 DIR.NUEVASCR
Tra. 11 PATENTEIYII Eve: 379 FASENACIONALII
Act. 444 RESPUESTAREQUE Folios: 11

REF:	Expediente No.	10-123.067
	Patente de Invención:	"ADITIVOS DE ENCOLADO PARA EL PAPEL, SU PROCESO DE PREPARACION, Y SU USO"
	Solicitud Internacional:	PCT/EP2009/054931
	Titular:	Akzo Nobel N.V.

RESPUESTA A REQUERIMIENTO OFICIO No 15749 NOTIFICADO EL 3 DE DICIEMBRE DE 2010

HUMBERTO RUBIO CAMACHO, mayor de edad, domiciliado en Bogotá, D.C., identificado con la cédula de ciudadanía número 17.192.062 de Bogotá, abogado en ejercicio, portador de la Tarjeta Profesional No. 50.007 expedida por el Consejo Superior de la Judicatura, actuando en carácter de **APODERADO** de la Sociedad **Akzo Nobel N.V.**, domiciliada en Velperweg 76, NL-6824 BM Arnhem, Países Bajos; encontrándome dentro del término legal para dar contestación al auto proferido por su Despacho mediante Oficio No. 15749 notificado por fijación en lista el 3 de Diciembre de 2010, me permito manifestar y anexar:

- 1- Acogiendo la observación del examinador y con el propósito de aclarar el capítulo reivindicatorio presentado el 5 de Octubre de 2010 (folios 53-62), me permito manifestar a su Despacho que estas modificaciones fueron presentadas en Fase Internacional, según consta en los anexos del Examen Preliminar Internacional de Patentabilidad emitido por la Oficina Internacional, cuya copia estamos anexando y que podrá ser verificada en la página Web de la WIPO.

Teniendo en cuenta lo expuesto anteriormente y una vez aportados los documentos requeridos, solicito muy respetuosamente continuar con el trámite correspondiente.

Atentamente,

HUMBERTO RUBIO CAMACHO
C.C. 17.192.062 de Bogotá
T.P. 50.007 Consejo Superior
de la Judicatura.
COD. 4134

10/2728/P000899



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(WO/2009/133021) PAPER SIZING ADDITIVES, THEIR PREPARATION PROCESS, AND THEIR USE

[Biblio. Data](#) [Description](#) [Claims](#) [National Phase](#) [Notices](#) [Documents](#)

International Application Status

Date	Title		
17.01.2011	International Application Status Report	view	download

Published International Application

Date ▼	Title		
05.11.2009	Initial Publication with ISR (A1 45/2009)	view	download

Related Documents on file at the International Bureau ([more information](#))

Date ▼	Title		
01.12.2010	International Preliminary Report on Patentability Chapter II (IPEA/409)	view	download
29.10.2010	Written Opinion of the International Search Authority	view	download
29.10.2010	International Preliminary Report on Patentability Chapter II (IPEA/409) (replaced)	view	download
24.08.2010	Notice Informing the Applicant of the Communication of the International Application to the Designated Offices (IB/308)	view	download
29.07.2010	Notification of the Recording of a Change (IB/306)	view	download
28.07.2010	Request for Change under Rule 92bis	view	download
25.01.2010	Notification of the Recording of a Change (IB/306)	view	download
21.01.2010	Request for Change under Rule 92bis	view	download
20.01.2010	Notification of the Recording of a Change (IB/306)	view	download
20.01.2010	Power of Attorney	view	download
20.01.2010	Request for Change under Rule 92bis	view	download
24.11.2009	Notice Informing the Applicant of the Communication of the International Application to the Designated Offices (IB/308)	view	download
05.11.2009	Request form (RO/101)	view	download
05.11.2009	Application Body as Filed	view	download
05.11.2009	Cover Letter	view	download

05.11.2009	Validation Log	view	download
05.11.2009	Notification of receipt of record copy (IB/301)	view	download
05.11.2009	US 61/053,582 15.05.2008 (Pr. Doc.)	view	download
05.11.2009	Notification Concerning Submission or Transmittal of Priority Document (IB/304)	view	download
05.11.2009	EP 08155398.4 29.04.2008 (Pr. Doc.)	view	download
05.11.2009	Notification Concerning Submission or Transmittal of Priority Document (IB/304)	view	download
05.11.2009	International Search Report	view	download
05.11.2009	Notification Concerning Availability of Publication of the International Application (IB/311)	view	download

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 AIN 3317 P1WO	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/EP2009/054931	International filing date (day/month/year) 24.04.2009	Priority date (day/month/year) 29.04.2008	
International Patent Classification (IPC) or national classification and IPC INV. C07D307/60			
Applicant AKZO NOBEL N.V.			
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 <u>3</u> 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, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3bis of Annex C 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 2010-02-19		Date of completion of this report 02.11.2010	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465		Authorized officer Rudolf, Manfred Telephone No. +49 89 2399-8604	



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2009/054931

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 , 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*):

Description, Pages

1-18 as originally filed

Claims, Numbers

1-13 filed with the letter of

18-02-2010

- ☐ a sequence listing - 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 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 either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):

5. ☐ This opinion 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)).

6. ☐ Supplementary international search report(s) from Authority(ies) have been received and taken into account in drawing up this report (Rule 45bis.8(b) and (c)).

84

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2009/054931

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-13</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-13</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-13</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V.

1. The following documents are cited in the search report:

D1: EP-A-1 424 322 (CHEVRON ORONITE CO [US]) 2 June 2004 (2004-06-02)

D2: WO 00/79050 A (ALBEMARLE CORP [US]) 28 December 2000 (2000-12-28)

D3: S. H. NAHM, H. N. CHENG: "Transition-state geometry and stereochemistry of the ene reaction between olefins and maleic anhydride" J. ORG. CHEM, vol. 51, 1986, pages 5093-5100, XP002502657

D4: EP-A-0 190 352 (MITSUI PETROCHEMICAL IND [JP]) 13 August 1986 (1986-08-13)

D5: US-A-3 405 196 (WOLFF WILLIAM F) 8 October 1968 (1968-10-08)

D6: US-A-3 928 485 (NAGASE TSUNEYUKI ET AL) 23 December 1975 (1975-12-23)

D7: US-A-5 021 169 (SHIN KJU H [US] ET AL) 4 June 1991 (1991-06-04)

2. The present application relates to process for the preparation of alkenyl substituted cyclic anhydride compounds (such as ASA compounds) comprising the step (i) for isomerizing alpha-olefins in the presence of a catalyst comprising an alkali metal, and step (ii), the reaction of the isomerized olefins with a cyclic anhydride to form the alkenyl substituted compound. Such compounds are useful in paper sizing.

The present process is said to be particularly suitable when olefins having a high percentage of vinylidene isomers are used as starting materials.

3. The use of ASA compounds for paper sizing is well known in the state of the art (D2), including ASA compounds obtained from olefin mixtures with high proportions of vinylidene isomers (D1). Also the reaction of cyclic anhydrides such as maleic anhydride with the olefins ("ene reaction") is known and well documented (cf. D1, D2, and references cited in the present description p. 9 line 9-10).

Document D1 does not give any particular indication to the isomerization step (i). Document D2 describes the isomerization of 1-olefins to internal olefins in the presence of iron pentacarbonyl as a catalyst, and may be considered as the closest

prior art. Document D2 mentions that mixtures of linear and vinylidene olefins may be employed, and that such mixtures may contain in the range of 10% to 50% vinylidene olefins (page 8 lines 4-14).

The isomerization of 1-olefins to internal olefins in the presence of catalysts comprising alkali metals (step 1 of the process as claimed) is known and well documented (cf. D4-D7). It appears from these documents that no particular restrictions as to the nature of the starting olefins have to be observed, and that the isomerization process using alkali metal catalysts is also applicable to olefins with vinylidene structure (D4, col. 3, lines 49-74, example 4; D5 page 9 lines 11-24; D7 col. 3 line 49 - col. 4 line 52, examples 12-14, 17-27).

4. The processes as defined in claims 1-11 and 15-16 are new. None of the prior art documents cited above describes the ene reaction (step ii) in combination with an olefin isomerization step in the presence of an alkali metal catalyst (step i).

5. Document D2 states that the olefins preferably contain no more than 15% of vinylidene or other branched olefins. It can be seen from example 2 and comparative example B that the process of claims 1 and 15 is suitable and advantageous over the process of the closest prior art D2 in case that the starting material contains an amount of vinylidene olefins exceeding that suggested in D2. Such feature is not derivable from the prior art. Therefore the claimed subject matter may be considered non-obvious and inventive over the cited prior art.

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(77)

CLAIMS

1. Process for the preparation of an alkenyl-substituted cyclic anhydride compound comprising the steps of
 - (i) subjecting one or more olefinically unsaturated $C_6 - C_{28}$ hydrocarbons of which at least 30% by weight is alpha-olefin and with at least 15%, preferably at least 25% by weight of said alpha-olefin being vinylidene isomer to a double bond isomerization step by contacting them with a catalyst comprising an alkali metal on a carrier, and
 - (ii) reacting the resulting isomerized olefinic $C_6 - C_{28}$ hydrocarbons with a cyclic anhydride of an unsaturated dicarboxylic acid to form the alkenyl-substituted cyclic anhydride compound.
2. Process according to claim 1 wherein the cyclic anhydride of an unsaturated dicarboxylic acid is selected from the group consisting of maleic anhydride, itaconic anhydride, and citraconic anhydride.
3. Process according to any one of the preceding claims wherein a radical scavenger is present during step (ii), said radical scavenger being selected from hydroxyl aromatic compounds and amino aromatic compounds.
4. Process according to any one of the preceding claims wherein the olefinically unsaturated hydrocarbon is an olefinically unsaturated $C_{14} - C_{24}$ hydrocarbon, preferably an olefinically unsaturated $C_{16} - C_{22}$ hydrocarbon, most preferably an olefinically unsaturated C_{16} or C_{18} hydrocarbon or a mixture of olefinically unsaturated C_{16} and C_{18} hydrocarbons.
5. Process according to any one of the preceding claims wherein the catalyst comprises as the alkali metal sodium or potassium, either alone or in combination with a compound of the other metal.
6. Process according to any one of the preceding claims wherein the carrier is selected from the group consisting of aluminium oxide, silicon oxide,

88

magnesium oxide, silicon oxide-aluminium oxide, silicon oxide-aluminium oxide, silicon oxide-aluminium oxide-magnesium oxide, titanium oxide, zirconium oxide, bauxite, clays, pumice, activated carbon, and molecular sieves.

7. Process according to any one of the preceding claims wherein the alkali metal is present in the catalyst in an amount of 1 - 30% by weight, based on the weight of the carrier.
8. Process according to any one of the preceding claims wherein the alumina carrier is gamma-alumina, preferably with a specific surface of at least 100 m²/g.
9. Process according to any one of the preceding claims wherein the isomerization step is carried out under an inert atmosphere at a temperature of between 10 and 200°C, preferably between 20 and 60°C.
10. Process according to any one of the preceding claims wherein step (ii) is performed at a temperature of between 150°C and 300°C, and wherein the ratio between the olefin and the cyclic anhydride of an unsaturated dicarboxylic acid is between 0.8 – 2.0 to 1.
11. Use of an alkenyl-substituted cyclic anhydride obtainable by the process of any one of claims 1-10 as a paper sizing additive in conjunction with paper and paperboard production.
12. Process for the preparation of a paper sizing additive wherein a cyclic anhydride of an unsaturated dicarboxylic acid, preferably maleic anhydride, is reacted with one or more internal olefinically unsaturated C₆ – C₂₈ hydrocarbons, wherein said internal olefinically unsaturated C₆ – C₂₈ hydrocarbons have been prepared by subjecting one or more olefinically unsaturated C₆ – C₂₈ hydrocarbons of which at least 30% by weight is alpha-olefin and with at least 15%, preferably at least 25% by weight of said alpha-olefin being vinylidene isomer to an isomerization step in the presence of a catalyst comprising an alkali metal on a carrier.

10

89

13. Process according to claim 12 wherein the catalyst comprises as the alkali metal sodium or potassium, either alone or in combination with a compound of the other metal, and the carrier is selected from the group consisting of aluminium oxide (gamma-, eta-, or theta-), silicon oxide, magnesium oxide, silicon oxide-aluminium oxide, silicon oxide-aluminium oxide-magnesium oxide, titanium oxide, zirconium oxide, bauxite, clays, pumice, activated carbon, and molecular sieves.

2020

Bogotá D.C.,

Doctor(a)

RUBIO CAMACHO HUMBERTO

Apoderado(a) y/o Representante de

AKZO NOBEL N.V

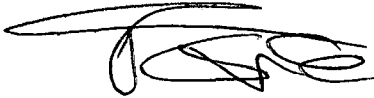
REFERENCIA	Radicación No.	10 123067
	Solicitud internacional	PCT/EP2009/054931
	Fecha inicio fase nacional	29/11/2010
	Trámite	11
	Evento	379
	Actuación	416
	Oficio No.	13174
	Folios	1

Teniendo en cuenta que la solicitud de privilegio de patente que se tramita bajo el expediente indicado en la referencia, reúne los requisitos de forma establecidos en la Decisión 486 de la Comisión de la Comunidad Andina, el Tratado de Cooperación en Materia de Patentes (PCT), el Reglamento y la Circular Única de la Superintendencia de Industria y Comercio, se envía el extracto de la solicitud a la Oficina de Comunicaciones para efecto de su publicación en la Gaceta de Propiedad Industrial.

Cúmplase

Dado en Bogotá DC,

10 9 MAYO 2011



JOSE LUIS SALAZAR LOPEZ

Director de Nuevas Creaciones (C)

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Al contestar favor indique el número de radicación consignado en el rótulo

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