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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 07-092258- -00004-0000

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Act. 329 CTOINFORMACION Folios: 21

Señor

**SUPERINTENDENTE DE INDUSTRIA Y CO
DIVISIÓN DE NUEVAS CREACIONES**

E. S. D.

Expediente No.:
Patente de Invención:

07-092.258
**"COMPOSICIONES DEPURADORAS
DE OXIGENO Y ENVASE QUE
COMPRENDE DICHAS
COMPOSICIONES"**
CONSTAR INTERNATIONAL, INC.

Titular:

DESTINO: 09

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 **CONSTAR INTERNATIONAL, INC.** domiciliada en One Crown Way, Philadelphia, Pennsylvania 19154, Estados Unidos de América; con el propósito de complementar los documentos obrantes en el estudio de la solicitud de patente citada en la referencia, me permito anexar:

1. Copia del informe de Búsqueda Internacional junto con la Opinión escrita de la Autoridad encargada.
2. Reporte Preliminar Internacional de patentabilidad (Cap. I – Form. PCT/IB/373)

Teniendo en cuenta lo anterior solicito se continúe 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

07/2380/P000676
BAP

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

DALE M. HEIST
WOODCOCK WASHBURN LLP
One Liberty Place - 46th Floor
Philadelphia, Pennsylvania 19103

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing
(day/month/year) **15 NOV 2007**

Applicant's or agent's file reference
CNST-0041

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.
PCT/US2006/05216

International filing date
(day/month/year) **15 February 2006**

Applicant

CONSTAR INTERNATIONAL INC.

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:**

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US

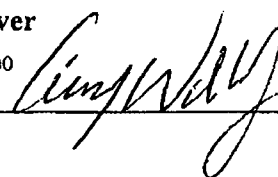
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774



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PATENT COOPERATION TREATY
PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference CNST-0041	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2006/05216	International filing date (<i>day/month/year</i>) 15 February 2006	(Earliest) Priority Date (<i>day/month/year</i>) 15 February 2005
Applicant CONSTAR INTERNATIONAL INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 7 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

I. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

☒ 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 (Rules 12.3(a) and 23.1(b)).

b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box No. II).

3. ☒ Unity of invention is lacking (See Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. **1**

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2006/05216

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.:
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. Claims 1-20 relate a composition comprising at least one base polymer, at least one non-polymeric oxidisable organic component of formula I or II and at least one transition metal in positive oxidation state. Claim 24 relates to a wall of a package comprising at least one layer comprising the composition as defined in claim 1. Claim 25 relates to a process for making an article comprising forming a melt by combining at least one base polymer and at least one non-polymeric oxidisable organic component of formula I or II. Claim 26 relates to a method for packaging an oxygen sensitive material comprising preparing a packaging having a wall comprising the composition as defined in claim 1. Claim 27 relates to a method for producing a packaging material having a wall with oxygen barrier properties comprising providing a polymer mixture comprising at least one base polymer, at least one non-polymeric oxidisable organic component of formula I or II and at least one transition metal, forming the said mixture into a wall and forming a container which comprises the wall.
2. Claims 21-23 relate to an oxygen scavenging material suitable for use in a barrier wall whose oxidative decomposition products comprise one or more aldehydes that are toxicologically innocuous.

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 additional fees, this Authority did not invite payment of additional fees.
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

International application No.

PCT/US2006/05216

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

C08L 67/02 (2006.01) *B65D 81/26* (2006.01) *C09K 15/02* (2006.01)
B32B 27/18 (2006.01) *C08K 3/08* (2006.01) *C09K 15/22* (2006.01)
B32B 27/36 (2006.01) *C08K 5/20* (2006.01)

U.S. Cl.

252/188.280; 524/210.000; 524/431.000

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)

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)
(CA; WPIDS): oxidat?/transparen?, polym?, transition/cobalt/zinc, polyester/polypropylene/pet, oxygen (w)scaveng?
combined with structure search
(CAPLUS; WPIDS): oxygen(s)scaveng?, ?benzaldehyde?

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 5021515 A (COCHRAN et al.) 4 June 1991 (see col. 5, lines 59-63; col. 9, lines 14-30, 36-63)	1, 8-11, 13-20, 24-27 2-7
X Y	US 5639815 A (COCHRAN et al.) 17 June 1997 (see col. 5, lines 39-42; col. 8, lines 38-53)	1, 8-11, 13-20, 24-27 2-7

☒ 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
21 June 2007

Date of mailing of the international search report

15 NOV 2007

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

Helpdesk: 571-272-4300

PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2006/05216

C (Continuation).

DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	EP 301719 A1 (MB GROUP PLC. (GB)) 1 February 1989 (see pg. 4, line 57 to pg. 5, line 1; pg. 6, line 56 to pg. 7, line 5)	1, 8-11, 13-20, 24-27 2-7
X Y	Chem. Abs. No. 86:30529 JP 51100143 A (CHISSO CORP., JP) 3 September 1976 (see chem. abstract)	25 2-7
X	US 6057013 A (CHING et al.) 2 May 2000 (see col. 6, lines 16-22)	21-23

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2006/05216

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. These particulars are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
US	5021515	AR	246535	AU	19878/88	AU	29459/89
		AU	33448/89	BR	8807141	BR	8906385
		BR	8907337	CA	2008479	DK	143689
		DK	231990	DK	565389	EP	0301719
		EP	0335520	EP	0380319	EP	0380830
		FI	891396	GB	2207439	GB	2216462
		GB	2230530	HK	34895	JP	3000762
		NO	891238	NO	894489	NO	903741
		NZ	225347	TR	23400	US	5049624
		US	5239016	US	5639815	US	5955527
		US	7049359	US	2002063238	US	2004219320
		US	2005179002	WO	8901012	WO	8908557
		WO	9008636	ZA	8804895	ZA	8901864
		ZA	9000517				
JP	51100143	JP	1293897	JP	60020410		
US	6057013	AT	225253	AU	721502	AU	20644/97
		BR	9707824	CA	2247985	CA	2247985
		CN	1077497	CN	1215368	DE	69716047
		DE	69716047	EP	889781	EP	889781
		ES	2184996	HK	1017637	JP	3306071
		JP	2000506087	NZ	331990	RU	2173265
		WO	9732722				
END OF ANNEX							

PATENT COOPERATION TREATY

From the:
INTERNATIONAL SEARCHING AUTHORITY

To:

DALE M. HEIST
WOODCOCK WASHBURN LLP
One Liberty Place - 46th Floor
Philadelphia, Pennsylvania 19103

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) **15 NOV 2007**

Applicant's or agent's file reference
CNST-0041

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2006/05216

International filing date (day/month/year)
15 February 2006

Priority date (day/month/year)
15 February 2005

International Patent Classification (IPC) or both national classification and IPC
INT. CL.

C08L 67/02 (2006.01) **B65D 81/26** (2006.01) **C09K 15/02** (2006.01)
B32B 27/18 (2006.01) **C08K 3/08** (2006.01) **C09K 15/22** (2006.01)
B32B 27/36 (2006.01) **C08K 5/20** (2006.01)

US CL. 252/188.280; 524/210.000; 524/431.000

Applicant

CONSTAR INTERNATIONAL INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ 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 Rule 43bis.1(a)(i) 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

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
FACSIMILE NO. 571-273-3201

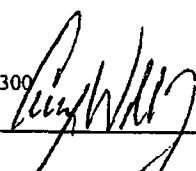
Date of completion of this opinion
21 June 2007

Authorized Officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2006/05216

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ 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)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in electronic form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

11/6

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2006/05216

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:
- ☒ paid additional fees
- ☐ paid additional fees under protest and, where applicable, the protest fee
- ☐ paid additional fees under protest but the applicable protest fee was not paid
- ☐ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
- ☒ not complied with for the following reasons:

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In assessing whether there is more than one invention claimed, I have given consideration to those features which can be considered to potentially distinguish the claimed combination of features from the prior art. Where different claims have different distinguishing features they define different inventions. This International Searching Authority has found that there are different inventions as follows:

1. Claims 1-20 relate a composition comprising at least one base polymer, at least one non-polymeric oxidisable organic component of formula I or II and at least one transition metal in positive oxidation state. Claim 24 relates to a wall of a package comprising at least one layer comprising the composition as defined in claim 1. Claim 25 relates to a process for making an article comprising forming a melt by combining at least one base polymer and at least one non-polymeric oxidisable organic component of formula I or II. Claim 26 relates to a method for packaging an oxygen sensitive material comprising preparing a packaging having a wall comprising the composition as defined in claim 1. Claim 27 relates to a method for producing a packaging material having a wall with oxygen barrier properties comprising providing a polymer mixture comprising at least one base polymer, at least one non-polymeric oxidisable organic component of formula I or II and at least one transition metal, forming the said mixture into a wall and forming a container which comprises the wall.
2. Claims 21-23 relate to an oxygen scavenging material suitable for use in a barrier wall whose oxidative decomposition products comprise one or more aldehydes that are toxicologically innocuous.

These groups of claims are not linked as to form a single general inventive concept, that is, they do not share any special novel technical feature. Accordingly these groups of claims do not relate to one invention only and therefore lack unity.

4. Consequently, this opinion has been established in respect of the following parts of the international application:
- ☒ all parts
- ☐ the parts relating to claims Nos.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2006/05216

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 2-7, 12	YES
	Claims 1, 8-11, 13-27	NO
Inventive step (IS)	Claims 12	YES
	Claims 1-11, 13-27	NO
Industrial applicability (IA)	Claims 1- 27	YES
	Claims	NO

2. Citations and explanations:

The present invention relates to substantially transparent compositions that comprise a base polymer, an oxidisable non-polymeric diamide compound, and a transition metal. The invention also concerns use of such compositions in the construction of packaging for oxygen sensitive materials.

CITATIONS:

D1: US 5021515

D3: EP 301719

D5: US 6057013

D2: US 5639815

D4: JP 51-100143

NOVELTY (N) Claims 1-27:

Claims 1, 8-11, 13-20 and 24-27 are not novel in the light of citations D1-D3. Claim 25 is not novel in the light of citation D4. Claims 21-23 are not novel and do not involve an inventive step in the light of citation D5.

Citation D1 discloses an oxygen-scavenging composition for a wall of a package, wherein the said composition comprises, a polymer (i.e. PET; see col. 5, lines 59-63; col. 9, lines 36-63), a non-polymeric organic oxidisable component of formula II as defined in present claim 1 (see col. 9, lines 14-30) and a transition metal (i.e. cobalt). The subject matter disclosed in D1 therefore falls within the scope of the invention defined in claims 1, 8-11, 13-20 and 24-27.

Citation D2 discloses an oxygen-scavenging packaging composition, wherein the said composition comprises, a polymer (i.e. PET; see abstract, col. 5, lines 39-42; col. 9, lines 1-15), a non-polymeric organic oxidisable component of formula II as defined in present claim 1 (see col. 8, lines 38-53 and a transition metal (i.e. cobalt). The subject matter disclosed in D2 therefore falls within the scope of the invention defined in claims 1, 8-11, 13-20 and 24-27.

Citation D3 discloses packaging composition comprised of a polymer (i.e. PET; see abstract, pg. 4, line 57 to pg. 5, line 1), a non-polymeric organic oxidisable component of formula II as defined in present claim 1 (see pg. 6, line 56 to pg. 7, line 5)) and a transition metal (i.e. cobalt). The subject matter disclosed in D3 therefore falls within the scope of the invention defined in claims 1, 8-11, 13-20 and 24-27.

Citation D4 (chem. abstract) discloses a polybutene resin composition comprising 0.01-10 wt. % of a bisamide (i.e. non-polymeric oxidisable component of formula I). The said composition is then extruded to form films. D4 further discloses that the inclusion of the bisamide component in the resin composition improves the transparency and dimensional stability of the film produced. The subject matter disclosed in D4 therefore falls within the scope of the invention defined in claim 25.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2006/05216

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

INCONSISTENCY

The invention defined in claim 25 is not consistent with the invention disclosed in the specification as whole. The invention disclosed in the specification relates to a composition which is essentially comprised of at least one base polymer, at least one non-polymeric oxidisable organic component of formula I or II, and at least one transition metal. The process for making an article as defined in claim 25 does not define the presence of at least one transition metal.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International Application No.

PCT/US2006/05216

Supplemental Box I

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

Continuation of: **Box No. V**

Citation D5 discloses an oxygen scavenging system for use in a barrier wall wherein the said system comprises of an oxygen scavenging material which forms at least one by-product (i.e. benzaldehyde) upon reaction thereof with oxygen (see col. 6, line 16-20). The subject matter disclosed in D5 therefore falls within the scope of the invention defined in claims 21-23.

The invention defined in claims 1, 8-11, 13-27 is therefore anticipated by citations D1-D5.

Claims 2-7 and 12 are novel in the light of citations D1-D5. None of citations D1-D5 explicitly disclose the composition as defined in claims 2-7 and 12.

INVENTIVE STEP (IS) Claims 1-27:

Claims 1, 8-11, 13-27 are not novel as reasoned under the novelty statement and therefore do not involve an inventive step in the light of citations D1-D5.

Claims 2-7 do not involve an inventive step over citations D1-D3 in the view of citation D4. Documents D1-D3 disclose oxygen-scavenging packaging compositions comprised of a base polymer, a non-polymeric organic oxidisable amide component and a transition metal. D1-D3 explicitly disclose that non-polymeric amides are more desirable as oxidisable organic components. D1-D3 however, do not explicitly disclose the non-polymeric organic oxidisable component as defined in claims 2-7.

Document D4 discloses a polymeric composition comprised of a base polymer and a diamide of the formula as defined in claims 2-7 wherein the presence of the diamide in the composition improves the transparency of the final product. D4 however, does not explicitly disclose the presence of a transition metal in the composition.

The present invention is directed to improving the transparency of packaging compositions (see paragraph 0006). A person skilled in the art (PSA) in the light of the objective of the present invention would have obtained documents D1-D4 in a routine literature search and would have considered them as relevant prior art. Since D4 addresses the same problem as that faced by the present applicant, a PSA with teaching of documents D1-D3 in the view of D4 would have been led to the invention defined in claims 2-7 as a matter of routine.

Claim 12 involves an inventive step over citations D1-D5. The non-polymeric organic oxidisable component defined in claim 12 is neither disclosed nor suggested in any of documents D1-D5. D1-D5 represent the closest prior art to the invention defined in claim 12 however, a PSA with teaching of citations D1-D5 would not have been led to the invention defined in claim 12 as a matter of routine.

INDUSTRIAL APPLICATION (IA) Claims 1-27:

Claims 1-27 meet the criterion of being industrially applicable.

PATENT COOPERATION TREATY

PCT/US2006/005216

From the INTERNATIONAL BUREAU

PCTNOTIFICATION CONCERNING
TRANSMITTAL OF COPY OF INTERNATIONAL
PRELIMINARY REPORT ON PATENTABILITY
(CHAPTER I OF THE PATENT COOPERATION
TREATY)

(PCT Rule 44bis.1(c))

To:

HEIST, Dale, M.
Woodcock Washburn LLP
2929 Arch Street - Suite 1200
Philadelphia, PA 19104-2891
ETATS-UNIS D'AMERIQUEDate of mailing (day/month/year)
06 December 2007 (06.12.2007)Applicant's or agent's file reference
CNST-0041

IMPORTANT NOTICE

International application No.
PCT/US2006/005216International filing date (day/month/year)
15 February 2006 (15.02.2006)Priority date (day/month/year)
15 February 2005 (15.02.2005)

Applicant

CONSTAR INTERNATIONAL, INC. et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

RECEIVED

DEC 17 2007

DOCKET DEPT
WWKMNThe International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Athina Nickitas-Etienne

Facsimile No. +41 22 338 82 70

e-mail: pt04.pct@wipo.int

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference CNST-0041	FOR FURTHER ACTION		See item 4 below
International application No. PCT/US2006/005216	International filing date (day/month/year) 15 February 2006 (15.02.2006)	Priority date (day/month/year) 15 February 2005 (15.02.2005)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant CONSTAR INTERNATIONAL, INC.			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. 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 |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis.2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Date of issuance of this report 23 November 2007 (23.11.2007)
	Authorized officer Athina Nickitas-Etienne e-mail: pt04.pct@wipo.int

PATENT COOPERATION TREATY

From the:
INTERNATIONAL SEARCHING AUTHORITY

To:

DALE M. HEIST
WOODCOCK WASHBURN LLP
One Liberty Place - 46th Floor
Philadelphia, Pennsylvania 19103

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 15 NOV 2007	
Applicant's or agent's file reference CNST-0041	FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/US2006/05216	International filing date (day/month/year) 15 February 2006
Priority date (day/month/year) 15 February 2005	
International Patent Classification (IPC) or both national classification and IPC INT. CL. C08L 67/02 (2006.01) B65D 81/26 (2006.01) C09K 15/02 (2006.01) B32B 27/18 (2006.01) C08K 3/08 (2006.01) C09K 15/22 (2006.01) B32B 27/36 (2006.01) C08K 5/20 (2006.01) US CL. 252/188.280; 524/210.000; 524/431.000	
Applicant CONSTAR INTERNATIONAL INC.	

1. This opinion contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|--|
| ☒ | Box No. I | Basis of the opinion |
| ☐ | 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 Rule 43bis.1(a)(i) 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 |

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 FACSIMILE NO. 571-273-3201	Date of completion of this opinion 21 June 2007	Authorized Officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2006/05216

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ 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)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
- ☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
- ☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
- ☐ filed together with the international application in electronic form.
- ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2006/05216

Box No. IV **Lack of unity of invention**

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:
- ☒ paid additional fees
 - ☐ paid additional fees under protest and, where applicable, the protest fee
 - ☐ paid additional fees under protest but the applicable protest fee was not paid
 - ☐ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In assessing whether there is more than one invention claimed, I have given consideration to those features which can be considered to potentially distinguish the claimed combination of features from the prior art. Where different claims have different distinguishing features they define different inventions. This International Searching Authority has found that there are different inventions as follows:

1. Claims 1-20 relate a composition comprising at least one base polymer, at least one non-polymeric oxidisable organic component of formula I or II and at least one transition metal in positive oxidation state. Claim 24 relates to a wall of a package comprising at least one layer comprising the composition as defined in claim 1. Claim 25 relates to a process for making an article comprising forming a melt by combining at least one base polymer and at least one non-polymeric oxidisable organic component of formula I or II. Claim 26 relates to a method for packaging an oxygen sensitive material comprising preparing a packaging having a wall comprising the composition as defined in claim 1. Claim 27 relates to a method for producing a packaging material having a wall with oxygen barrier properties comprising providing a polymer mixture comprising at least one base polymer, at least one non-polymeric oxidisable organic component of formula I or II and at least one transition metal, forming the said mixture into a wall and forming a container which comprises the wall.
2. Claims 21-23 relate to an oxygen scavenging material suitable for use in a barrier wall whose oxidative decomposition products comprise one or more aldehydes that are toxicologically innocuous.

These groups of claims are not linked as to form a single general inventive concept, that is, they do not share any special novel technical feature. Accordingly these groups of claims do not relate to one invention only and therefore lack unity.

4. Consequently, this opinion has been established in respect of the following parts of the international application:
- ☒ all parts
 - ☐ the parts relating to claims Nos.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2006/05216

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 2-7, 12	YES
	Claims 1, 8-11, 13-27	NO
Inventive step (IS)	Claims 12	YES
	Claims 1-11, 13-27	NO
Industrial applicability (IA)	Claims 1-27	YES
	Claims	NO

2. Citations and explanations:

The present invention relates to substantially transparent compositions that comprise a base polymer, an oxidisable non-polymeric diamide compound, and a transition metal. The invention also concerns use of such compositions in the construction of packaging for oxygen sensitive materials.

CITATIONS:

D1: US 5021515

D3: EP 301719

D5: US 6057013

D2: US 5639815

D4: JP 51-100143

NOVELTY (N) Claims 1-27:

Claims 1, 8-11, 13-20 and 24-27 are not novel in the light of citations D1-D3. Claim 25 is not novel in the light of citation D4. Claims 21-23 are not novel and do not involve an inventive step in the light of citation D5.

Citation D1 discloses an oxygen-scavenging composition for a wall of a package, wherein the said composition comprises, a polymer (i.e. PET; see col. 5, lines 59-63; col. 9, lines 36-63), a non-polymeric organic oxidisable component of formula II as defined in present claim 1 (see col. 9, lines 14-30) and a transition metal (i.e. cobalt). The subject matter disclosed in D1 therefore falls within the scope of the invention defined in claims 1, 8-11, 13-20 and 24-27.

Citation D2 discloses an oxygen-scavenging packaging composition, wherein the said composition comprises, a polymer (i.e. PET; see abstract, col. 5, lines 39-42; col. 9, lines 1-15), a non-polymeric organic oxidisable component of formula II as defined in present claim 1 (see col. 8, lines 38-53 and a transition metal (i.e. cobalt). The subject matter disclosed in D2 therefore falls within the scope of the invention defined in claims 1, 8-11, 13-20 and 24-27.

Citation D3 discloses packaging composition comprised of a polymer (i.e. PET; see abstract, pg. 4, line 57 to pg. 5, line 1), a non-polymeric organic oxidisable component of formula II as defined in present claim 1 (see pg. 6, line 56 to pg. 7, line 5)) and a transition metal (i.e. cobalt). The subject matter disclosed in D3 therefore falls within the scope of the invention defined in claims 1, 8-11, 13-20 and 24-27.

Citation D4 (chem. abstract) discloses a polybutene resin composition comprising 0.01-10 wt. % of a bisamide (i.e. non-polymeric oxidisable component of formula I). The said composition is then extruded to form films. D4 further discloses that the inclusion of the bisamide component in the resin composition improves the transparency and dimensional stability of the film produced. The subject matter disclosed in D4 therefore falls within the scope of the invention defined in claim 25.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2006/05216

Box No: VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

INCONSISTENCY

The invention defined in claim 25 is not consistent with the invention disclosed in the specification as whole. The invention disclosed in the specification relates to a composition which is essentially comprised of at least one base polymer, at least one non-polymeric oxidisable organic component of formula I or II, and at least one transition metal. The process for making an article as defined in claim 25 does not define the presence of at least one transition metal.

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International Application No.

PCT/US2006/05216

Supplemental Box I

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

Continuation of Box No. V

Citation D5 discloses an oxygen scavenging system for use in a barrier wall wherein the said system comprises of an oxygen scavenging material which forms at least one by-product (i.e. benzaldehyde) upon reaction thereof with oxygen (see col. 6, line 16-20). The subject matter disclosed in D5 therefore falls within the scope of the invention defined in claims 21-23.

The invention defined in claims 1, 8-11, 13-27 is therefore anticipated by citations D1-D5.

Claims 2-7 and 12 are novel in the light of citations D1-D5. None of citations D1-D5 explicitly disclose the composition as defined in claims 2-7 and 12.

INVENTIVE STEP (IS) Claims 1-27:

Claims 1, 8-11, 13-27 are not novel as reasoned under the novelty statement and therefore do not involve an inventive step in the light of citations D1-D5.

Claims 2-7 do not involve an inventive step over citations D1-D3 in the view of citation D4. Documents D1-D3 disclose oxygen-scavenging packaging compositions comprised of a base polymer, a non-polymeric organic oxidisable amide component and a transition metal. D1-D3 explicitly disclose that non-polymeric amides are more desirable as oxidisable organic components. D1-D3 however, do not explicitly disclose the non-polymeric organic oxidisable component as defined in claims 2-7.

Document D4 discloses a polymeric composition comprised of a base polymer and a diamide of the formula as defined in claims 2-7 wherein the presence of the diamide in the composition improves the transparency of the final product. D4 however, does not explicitly disclose the presence of a transition metal in the composition.

The present invention is directed to improving the transparency of packaging compositions (see paragraph 0006). A person skilled in the art (PSA) in the light of the objective of the present invention would have obtained documents D1-D4 in a routine literature search and would have considered them as relevant prior art. Since D4 addresses the same problem as that faced by the present applicant, a PSA with teaching of documents D1-D3 in the view of D4 would have been led to the invention defined in claims 2-7 as a matter of routine.

Claim 12 involves an inventive step over citations D1-D5. The non-polymeric organic oxidisable component defined in claim 12 is neither disclosed nor suggested in any of documents D1-D5. D1-D5 represent the closest prior art to the invention defined in claim 12 however, a PSA with teaching of citations D1-D5 would not have been led to the invention defined in claim 12 as a matter of routine.

INDUSTRIAL APPLICATION (IA) Claims 1-27:

Claims 1-27 meet the criterion of being industrially applicable.

REPUBLICA DE COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

Folio 128

2020
Bogotá D.C.,

Doctor(a)
RUBIO CAMACHO HUMBERTO
Apoderado(a) y/o Representante de
CONSTAR INTERNATIONAL, INC

REFERENCIA	Radicación No.	07 92258
	Solicitud internacional	PCT/US2006/005216
	Fecha inicio fase nacional	15/09/2007
	Trámite	11
	Evento	378
	Actuación	416
	Oficio No.	5541
	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,

27 FEB. 2008

ALIX CARMENZA CESPEDES DE VERGEL
Jefe de la división de Nuevas Creaciones

adpa10