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(54) Title: GOLF BALLS WITH CORES OR INTERMEDIATE LAYERS PREPARED FROM HIGHLY-NEUTRALIZED ETHYLENE COPOLYMERS AND ORGANIC ACIDS

(57) Abstract: Disclosed are golf balls comprising cores or intermediate layers prepared from thermoplastic compositions having coefficients of restitution equal to or greater than 0.83 and PGA compressions greater than 100. Also disclosed is a composition comprising or prepared from (a) at least one aliphatic, mono-functional organic acid having from 16 to 20 carbon atoms, wherein the organic acid is unsaturated and linear; (b) an ethylene acid copolymer consisting essentially of copolymerized comonomers of ethylene and from 18 to 24 weight % of copolymerized comonomers of at least one C₃ to C₈ α,β ethylenically unsaturated carboxylic acid, based on the total weight of the ethylene acid copolymer, having a melt index from about 200 to about 600 g/10 minutes; wherein the combined acid moieties of (a) and (b) are nominally neutralized to a level from about 120 % to about 200 %; and optionally (c) filler.



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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2008/081969

A. CLASSIFICATION OF SUBJECT MATTER
INV. C08K5/09

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
C08K

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	US 2007/173348 A1 (RAJAGOPALAN MURALI [US] ET AL) 26 July 2007 (2007-07-26)	1,2
A	paragraphs [0326], [0327], [0287] - [0293], [0256]	3-11,13
Y	US 2006/189413 A1 (BOEHM HERBERT C [US] ET AL) 24 August 2006 (2006-08-24)	1,2
A	paragraph [0194]; claim 7	3-11
A	US 6 777 472 B1 (STATZ ROBERT JOSEPH [US] ET AL) 17 August 2004 (2004-08-17) cited in the application claim 1	3-12
X	US 2001/019971 A1 (HAYASHI JUNJI [JP] ET AL) 6 September 2001 (2001-09-06) cited in the application example c; table 2	3-12

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☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

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)

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

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

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

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.

& document member of the same patent family

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

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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.
X	US 2002/013421 A1 (TAKESUE RINYA [JP] ET AL) 31 January 2002 (2002-01-31) tables 1-4 -----	12

INTERNATIONAL SEARCH REPORT

International application No.
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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:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an 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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,2 partially 3-11, 13

as far as golf balls containing a thermoplastic composition and a filler are concerned, whereby the thermoplastic composition is characterised by a PGA compression and a coefficient of restitution

2. claims: 12, partially, 3-11, 13

as far as a neutralised composition of a monofunctional organic acid, a filler and and ethylene carboxylic acid copolymer is concerned

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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