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(88) Date of publication of the international search report:
16 July 2015

(54) Title: FILTER MEDIA

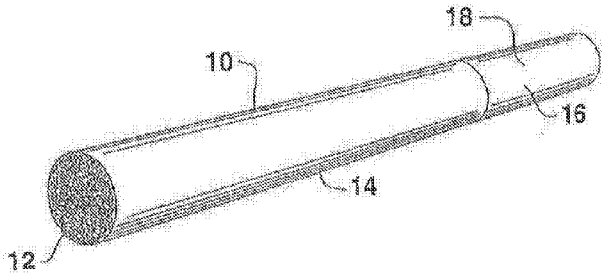


FIG. 1

(57) Abstract: A filter element is disclosed made from a gathered paper web that may be crimped, embossed, and/or corrugated. In accordance with the present disclosure, the paper web is treated with at least two different additives. The first additive comprises amphiphilic molecules, having hydrophilic and hydrophobic ends such as a ketene dimer that has one or more branching groups. The second additive, on the other hand, may comprise a polymer component such as a polyalkylene glycol. The filter element may also be treated with a polyamine or an amino acid or salt thereof. In one embodiment, the filter element may be incorporated into the filter of a smoking article. The two additives together may improve smoke taste, reduce some smoke phenols, and reduce some smoke carbonyls.

WO 2014/207704 A3

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. B01D39/18
ADD.

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)
A24D B01D

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)
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.
X	EP 0 706 766 A2 (DAICEL CHEM [JP]) 17 April 1996 (1996-04-17) page 9, line 39 - line 46 page 4, lines 11-38 page 10, line 7 - line 34; example 1 -----	1,7-28, 33-38
A	WO 2011/141735 A1 (BRITISH AMERICAN TOBACCO CO [GB]; SAMPSON JOHN [GB]; RUSHFORTH DAVID [) 17 November 2011 (2011-11-17) the whole document -----	1,7-28, 33-38

☐ 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 application or patent 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

Date of the actual completion of the international search	Date of mailing of the international search report
28 October 2014	31/03/2015

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Plaka, Theophano

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2014/062640

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 all searchable 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.:

1, 7-28, 33-38(all partially)

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, 7-28, 33-38(all partially)

Filter element comprising a base web, with at least a first additive and a second additive comprising a polyether, monopropylene glycol,sorbitol, glycerin, triacetin or mixtures thereof; ;
first additive comprising a polyvinyl alcohol size, a rosin, an acrylic polymer, a modified starch or a hydrocolloid/ smoking article making use of said filter element/method of making the filter element.

1.1. claims: 1, 7-28(all partially)

Smoking article, plug wrap paper for said smoking article making use of the filter element of the first invention.

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2. claims: 1, 7-19, 29, 30(all partially)

Filter for an engine exhaust/air filter making use of the filter element of the first invention

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3. claims: 1, 7-19, 31, 32(all partially)

Tea pouch/coffe filter making use of the filter element of the first invention.

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4. claims: 2-6(completely); 1, 7-38(partially)

Filter element comprising a base web, with at least a first additive and a second addictive comprising a polyether, monopropylene glycol,sorbitol, glycerin, triacetin or mixtures thereof;
first additive comprising an alkyl succinic anydrite or any compound having the structures given in claim 1 wherein R1 and R2 comprise organic groups/ smoking article and filters making use of said filter element/ method of making the filter element.
Smoking article and various products incorporating the filter element of the second invention

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2014/062640

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