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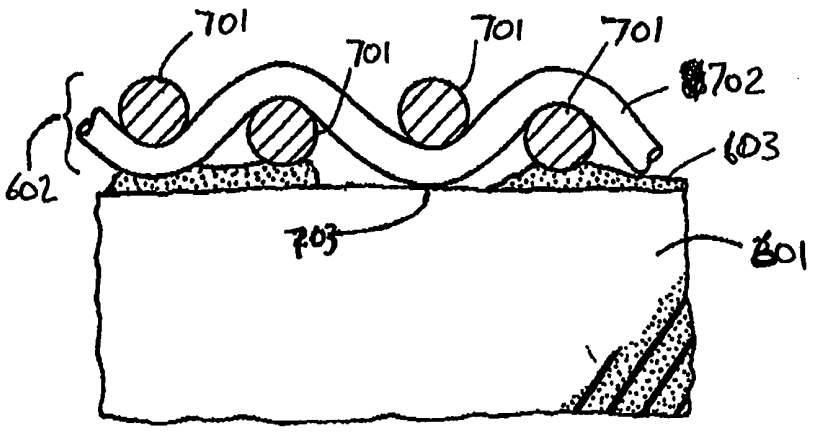
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(54) Title: TEXTILE INCLUDING SUPER ABSORBENT FIBERS




(57) Abstract

A composite fabric includes a moisture permeable top layer and a bottom layer including super absorbent fibers. The layers are bound together by a moisture permeable adhesive layer, by being needle punched together or by heat sensitive fibers to which heat and pressure are applied in one or both of the top and bottom layers.

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# INTERNATIONAL SEARCH REPORT

Im. ational Application No
PCT/US 99/16184

**A. CLASSIFICATION OF SUBJECT MATTER**
IPC 7 A61L15/60 A41D31/02

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)
IPC 7 A61F A61L A41D B32B

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)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | WO 91 01766 A (NAT FELT COMPANY) 21 February 1991 (1991-02-21)<br><br>page 5, last paragraph -page 6, line 11<br>page 10, line 17 - line 23<br>table 1<br>figure 1<br>claims 1,6,8-20 | 1,2,4, 12-14, 16,22, 24,25 |
| X | US 5 292 577 A (VAN KERREBROUCK JOSEF ET AL) 8 March 1994 (1994-03-08)<br><br>column 2, line 13 - line 52<br>column 3, line 1 - line 10<br>example 3 | 1,2, 12-14, 17,23 |

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[X] Further documents are listed in the continuation of box C. [X] Patent family members are listed in annex.

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| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 31 January 2000 | 03. 03. 2000 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL – 2280 HV Rijswijk<br>Tel. (+31–70) 340–2040, Tx. 31 651 epo nl,<br>Fax: (+31–70) 340–3016 | Thornton, S |

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# INTERNATIONAL SEARCH REPORT

Int. ational Application No
PCT/US 99/16184

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication,where appropriate, of the relevant passages | Relevant to claim No. |
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| X | EP 0 599 587 A (MALDEN MILLS IND INC)<br>1 June 1994 (1994-06-01)<br>column 5, line 44 - line 57<br>claims | 1,2,4,<br>24,25 |
| X | US 4 274 412 A (AUSTIN JARED A)<br>23 June 1981 (1981-06-23)<br>claims | 1,2 |
| A | US 4 676 784 A (ERDMAN EDWARD P ET AL)<br>30 June 1987 (1987-06-30)<br>claims | 1,2,24,<br>25 |
| A | EP 0 361 842 A (ARCO CHEM TECH)<br>4 April 1990 (1990-04-04)<br>page 4, line 50 - line 56<br>claims | 1,2,24,<br>25 |
| A | US 5 520 673 A (YARBROUGH SANDRA M ET AL)<br>28 May 1996 (1996-05-28)<br>claims 1,7,8,11,12,15,17,18 | 1,2,<br>12-14,<br>16,17,<br>20-23 |

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/ 16184

**Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 15
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:
See further information sheet PCT/ISA/210

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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

See further information sheet PCT/ISA/210

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 fee, this Authority did not invite payment of any additional fee.

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.:

1,2,4,12-25

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.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 15

Present claim 15 relates to a composite fabric defined (inter alia)

by reference to the following parameters:

P1: the top layer is permeable and hydrophobic, sustaining an air flow of 100-350 cubic feet per square foot per minute
P2: the top layer is permeable and hydrophobic, sustaining moisture vapor transmission of 50-150 grams per square meter per 24 hours

The use of these parameters in the present context is considered to lead to a lack of clarity within the meaning of Article 6 PCT. It is impossible to compare the parameters the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful complete search impossible. Consequently, the search has been restricted to parts of the description which excludes the above parameters.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

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(partly),2,4

A composite fabric comprising:
a fluid permeable hydrophobic top layer; and
an absorbent bottom layer including super absorbent polymer fibers,

wherein the super absorbent fibers are included in an amount of about 5-60% by dry weight

and wherein the superabsorbent fibers are needle-punched into the top layer from below to form the bottom layer.

2. Claims: 1 (partly),5-8

A composite fabric comprising:
a fluid permeable hydrophobic top layer; and
an absorbent bottom layer including super absorbent polymer fibers, further comprising a moisture-permeable adhesive binding the top layer to the bottom layer

3. Claims: 1 (partly),9-11

A composite fabric comprising:
a fluid permeable hydrophobic top layer; and
an absorbent bottom layer including super absorbent polymer fibers,

wherein the superabsorbent fibers are about 5-100 microns in diameter and about 0.25-0.50 inches long

and / or wherein the superabsorbent fibers absorb about 200-300 grams of water per gram of fiber

and / or wherein the superabsorbent fibers exhibit water retention rates at 0.5 PSI of 160-250 grams of water per gram of fiber

4. Claims: 1 (partly),12-23

A composite fabric comprising:
a fluid permeable hydrophobic top layer; and
an absorbent bottom layer including super absorbent polymer fibers, wherein the bottom layer further comprises low melt temperature fibers, whereby top and bottom layer are bonded together by heat and pressure applied to activate the low melt temperature fibers

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

5. Claims: 1 (partly),24,25

A composite fabric comprising:
a fluid permeable hydrophobic top layer; and
an absorbent bottom layer including super absorbent polymer fibers, further comprising an accessory layer.

6. Claims: 1 (partly),26,27

A composite fabric comprising:
a fluid permeable hydrophobic top layer; and
an absorbent bottom layer including super absorbent polymer fibers, further comprised of a dry solids addition

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. .tional Application No
PCT/US 99/16184

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