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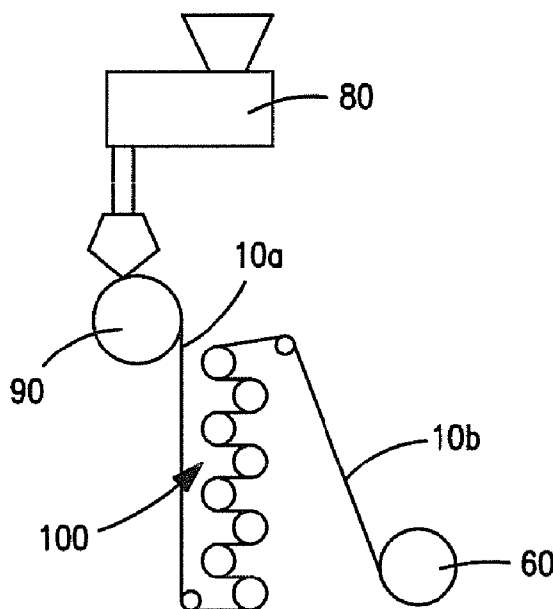
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[Continued on next page]

(54) **Title:** WATER-SENSITIVE FILM CONTAINING THERMOPLASTIC POLYURETHANE**FIG. 1**

(57) **Abstract:** A film that contains a thermoplastic polyurethane and water-soluble polymer is provided. The film is both elastic and water-sensitive (e.g., water-soluble, water-dispersible, etc.) in that it loses its integrity over time in the presence of water. The dual attributes of elasticity and water-sensitivity may be achieved by reducing the tendency of the thermoplastic polyurethane and water-soluble polymer to form separate phases. Namely, phase separation may cause the elastomer to act as a barrier and limit the ability of the water-soluble polymer to contact water and thereby disperse. To minimize such phase separation, a variety of aspects of the film construction may be selectively controlled, such as the nature of the thermoplastic polyurethane and water-soluble polymer, the relative amount of each component, and so forth. For example, thermoplastic polyurethanes are polar in nature and thus may be generally compatible with water-soluble polymers (e.g., polyvinyl alcohol), which are also polar in nature. Further, water-soluble polymers having a relatively low molecular weight and viscosity typically possess better melt compatibility with polar thermoplastic polyurethanes. By carefully controlling the nature of the polymers used to form the film, the present inventors have discovered that a film may be formed that is generally free of distinct phases.



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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/IB2009/051204****A. CLASSIFICATION OF SUBJECT MATTER***C08J 5/18(2006.01)i, C08L 29/04(2006.01)i, C08L 75/04(2006.01)i, C08K 5/053(2006.01)i, B29C 55/06(2006.01)i, B29C 55/08(2006.01)i*

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 8: C08J, C08L, 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 practicable, search terms used)

eKOMPASS

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7012116 B1(DAVID MICHAEL SCHERTZ et al.) 14 March 2006 See Abstract, Column 5, Examples and Claims	1-4, 19, 20
A	US 5367003 A(ROBERT J. PETCAVICH) 22 November 1994 See Abstract and Claims	1-4, 19, 20
A	US 2003/0121101 A1(ITALO CORZANI et al.) 03 July 2003 See Abstract and Claims	1-4, 19, 20
A	US 6586354 B1(VASILY A. TOPOLKARAEV et al.) 01 July 2003 See Abstract and Claims	1-4, 19, 20
A	KR 10-2001-0032400 A(KIMBERLY-CLARK WORLDWIDE, INC.) 16 April 2001 See Abstract and Claims	1-4, 19, 20

☐ 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

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"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

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"&amp;" document member of the same patent family

Date of the actual completion of the international search

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**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/IB2009/051204****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.: 8  
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:  
  
Claim 8 is indicated as dependent claim of claim 7. However, the claim 7 does not comply with PCT Rule 6.4(a), and thus it is not searchable, nor is its dependent claim 8.
3. ☒ Claims Nos.: 5-7, 9-18  
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. ☐ 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.:
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**

Information on patent family members

International application No.

**PCT/IB2009/051204**

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

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