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DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,  
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,  
KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,  
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,  
NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD,  
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18 August 2011

(54) Title: LOW APPLICATION TEMPERATURE HOT MELT ADHESIVE

(57) Abstract: The invention relates to a low application temperature hot melt adhesive. More specifically, the low application temperature hot melt adhesive comprises olefin copolymers with an average Melt Index greater than 5 but less than about 35 g/10 minutes at 190°C. The adhesive is particularly useful in the construction of nonwoven articles.



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**A. CLASSIFICATION OF SUBJECT MATTER***C09J 123/00(2006.01)i, C09J 9/00(2006.01)i, C09J 11/00(2006.01)i, C09J 5/00(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)

C09J; B32B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: hot melt, melt index, olefin

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009-074450 A1 (HENKEL AG & CO. KGAA et al.) 18 June 2009 See abstract; pages 7-9; example 2.	5-8
A	See the whole document.	1-4, 9-19
X	US 2007-0187032 A1 (BAOYU WANG) 16 August 2007 See abstract; paragraphs [0023]-[0144]; examples 1-3.	5-8
A	See the whole document.	1-4, 9-19
A	US 6582829 B1 (QUINN; THOMAS H. et al.) 24 June 2003 See the whole document.	1-19
A	US 2002-0019507 A1 (ANTHONY G. KARANDINOS et al.) 14 February 2002 See the whole document.	1-19

 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 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

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

Date of the actual completion of the international search

27 JUNE 2011 (27.06.2011)

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Name and mailing address of the ISA/KR

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/045954**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009-074450 A1	18.06.2009	EP 2220186 A1 US 2010-0256274 A1	25.08.2010 07.10.2010
US 2007-0187032 A1	16.08.2007	None	
US 6582829 B1	24.06.2003	AU 1999-47283 B2 CA 2248934 C CA 2336343 A1 CN 1132847 C CN 1132847 C0 CN 1216552 A CN 1216552 A0 CN 1312844 A CN 1312844 A0 EP 0886656 A1 EP 0886656 B1 EP 1100854 A1 JP 2000-507283 A JP 2002-519474 A JP 4440996 B2 KR 10-0491938 B1 KR 10-2001-0077954 A TW 420714 A TW 420714 B US 2007-0135563 A1 US 6008262 A US 7199180 B1 WO 1997-033921 A1 WO 1998-041574 A1 WO 2000-000565 A1	20.02.2003 02.06.2009 06.01.2000 31.12.2003 31.12.2003 12.05.1999 12.05.1999 12.09.2001 12.09.2001 01.09.1999 19.09.2001 23.05.2001 13.06.2000 02.07.2002 15.01.2010 21.12.2005 20.08.2001 01.02.2001 01.02.2001 14.06.2007 28.12.1999 03.04.2007 18.09.1997 24.09.1998 06.01.2000
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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/045954**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		EP 2045304 A2	08.04.2009
		EP 2045304 A3	18.08.2010
		JP 2003-518171 A	03.06.2003
		KR 10-0718424 B1	14.05.2007
		US 2002-0007033 A1	17.01.2002
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		US 2004-0110886 A1	10.06.2004
		US 2009-156729 A1	18.06.2009
		US 6582762 B2	24.06.2003
		US 6627723 B2	30.09.2003
		US 6747114 B2	08.06.2004
		US 7067603 B1	27.06.2006
		US 7521507 B2	21.04.2009
		WO 01-46277 A2	28.06.2001
		WO 01-46277 A3	28.06.2001
		WO 01-46278 A2	28.06.2001
		WO 01-46278 A3	28.06.2001
		WO 01-81493 A1	01.11.2001

**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:

Group I: Independent claim 1 and its dependent claims are directed to a low application temperature hot melt adhesive comprising an olefin copolymer, wherein the olefin copolymer has an average Melt Index range of greater than 5 and less than about 35 g/10 minutes and said adhesive has specific viscosity, yield stress, cube flow, and cross-over temperature.

Group II: Independent claim 5 and its dependent claims are directed to a low application temperature hot melt adhesive comprising a specific amounts of olefin copolymer, tackifier, wax, diluent and optional component, wherein the olefin copolymer has an average Melt Index range of greater than 5 and less than about 35 g/10 minutes.

(See Extra 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 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.

Continuation of Box No. III

Group II: Independent claim 9 and its dependent claims are directed to a low application temperature hot melt adhesive comprising an olefin copolymer, additional polymer, wherein the olefin copolymer has an average Melt Index range of greater than 5 and less than about 35 g/10 minutes, the additional polymer is specified and said adhesive has specific viscosity, yield stress, cube flow, and cross-over temperature.

The only common technical feature between the said two groups of inventions is:

A low application temperature hot melt adhesive comprising an olefin copolymer, wherein the olefin copolymer has an average Melt Index range of greater than 5 and less than about 35 g/10 minutes.

However, this feature lacks novelty and/or inventive step with respect to the following documents cited in this Annex:

(a) US 6,582,829 B1, (b) US 2007/0187032 A1, (c) WO 2009/074450 A1

Thus there is no technical relationship left over the prior art among the claimed inventions, leaving the claims without a single general inventive concept.

Hence there is lack of unity "a posteriori" (PCT Rule 13.1 and 13.2).