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(54) Title: BRANCHED POLYESTER CONTAINING POWDER COATING COMPOSITION

(57) Abstract: The invention relates to binder comprising a crosslinker that is reactive with acid-functional polyester and a branched, partially defunctionalized acid-functional polyester, wherein the polyester is based on: a. At least one multi-functional component that is either carboxyl- functional, hydroxyl- functional or carboxyl- and hydroxyl- functional; b. At least one di-functional component that is reactive towards a functional group on the multi-functional component; and c. At least one mono-functional component; wherein the multi-functional component does not contain a tertiary carboxylic functionality and at least 50% of the acid-derived groups originate from an aromatic acid.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

INV. C08G63/48 C08G63/20 C09D167/08 C09D5/03 C08J7/04

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)
C09D C08G C08J

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 029 617 A (DHEIN ROLF ET AL) 14 June 1977 (1977-06-14) examples 1,2	1-14
X	GB 1 456 107 A (BAYER AG) 17 November 1976 (1976-11-17) column 4; example 1	1-14
X	US 4 474 940 A (WILK HANS-CHRISTOPH [DE] ET AL) 2 October 1984 (1984-10-02) column 11; example 1	1-14
X	US 4 451 596 A (WILK HANS-CHRISTOPH [DE] ET AL) 29 May 1984 (1984-05-29) column 9; example 1	1-14
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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.
- *Z* document member of the same patent family

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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 2004/067430 A1 (TERAUCHI TOMOYA [JP] ET AL) 8 April 2004 (2004-04-08) paragraph [0002]; tables 1-3 -----	1-14
X	US 2 876 135 A (MORRIS LEVINE) 3 March 1959 (1959-03-03) examples 1,2 -----	1-14
X	US 6 284 845 B1 (PANANDIKER KAMLESH PAI [US] ET AL) 4 September 2001 (2001-09-04) column 1, line 4 - line 11 column 10, line 6 - column 11, line 5 table 1 examples 6,7 -----	2
X	GB 1 299 343 A (ALBERT AG CHEM WERKE [DE]) 13 December 1972 (1972-12-13) examples 1,2,5,6 -----	1-14
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X	US 5 744 248 A (MEIXNER JUERGEN [DE] ET AL) 28 April 1998 (1998-04-28) table 1 column 4 claims 1,2 -----	1-14

INTERNATIONAL SEARCH REPORT

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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

Binder composition comprising a crosslinker and a branched, acid - functional polyester based on a) a multi-functional component, b) a di-functional component and c) a mono-functional component, wherein at least 50 % of the acid - derived groups are aromatic and wherein the multi-functional does not contain a tertiary carboxylic functionality.

2. claims: 3, 4-6, 7 (in part), 11-14 (in part)

Branched, acid - functional polyester based on a) a multi-functional component, b) 8 mol % ethylene glycole and c) a mono-functional component, wherein at least 50 % of the acid - derived groups are aromatic.

3. claims: 7 (in part), 8 (in part), 11-14 (in part)

Branched, acid - functional polyester based on a) a multi-functional, b) a di-functional component and c) benzoic acid as a mono-functional component, whereby at least 50 % of the acid - derived groups are aromatic.

4. claims: 7 (in part), 8 (in part), 11-14 (in part)

Branched, acid - functional polyester based on a) a multi-functional, b) a di-functional component and c) cinnamic acid as a mono-functional component, whereby at least 50 % of the acid - derived groups are aromatic.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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