



(51) International Patent Classification:

B29C 73/02 (2006.01)

(21) International Application Number:

PCT/US20 12/046668

(22) International Filing Date:

13 July 2012 (13.07.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/507,662 14 July 2011 (14.07.2011) US

(71) Applicant (for all designated States except US): DIC

IMAGING PRODUCTS USA LLC [US/US]; 7300 S. 10th Street Oak Creek, Wisconsin, WI 53154-1905 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): ANDERSON, Russell

[US/US]; 3265 S. Indiana Avenue, Milwaukee, WI 53207 (US).

(74) Agent: BAILEY, Matthew, T.; McKenna Long & Ald-

ridge LLP, 1900 K Street NW, Washington, DC 20006-1108 (US).

(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,

CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, 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, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every

kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

— 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))

(88) Date of publication of the international search report:

11 July 2013

(54) Title: METHOD AND COMPOSITION FOR RESTORING DAMAGED OPTICAL SUBSTRATES UTILIZING HIGH REFRACTIVE INDEX ULTRAVIOLET CURABLE COATING

(57) Abstract: The present invention describes a method for repairing defects on a surface of an optical substrate. The method includes a step of providing a radiation curable coating and then applying the coating onto a surface of the optical substrate. The coating is then cured with a UV light source causing the refractive index of the coating to be less than $\pm 10\%$ of the refractive index of the substrate. The cured coating exhibits a viscosity less than about 315 CP at 25 °C. The present invention also describes a novel coating composition for repairing optical substrates.



WO 2013/010079 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/046668

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.: $\frac{17}{\pm} - \frac{19}{\pm}$
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 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

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

International application No
PCT/US2012/046668A. CLASSIFICATION OF SUBJECT MATTER
INV. B29C73/02
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)
B29C G02B

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 597 727 A (BI RKHAUSER III ROBERT R [US]) 1 July 1986 (1986-07-01) claim 12 -----	1
A	GB 2 461 587 A (LG DISPLAY CO LTD [KR]) 6 January 2010 (2010-01-06) the whole document -----	1
A	GB 2 387 381 A (RITEC INTERNAT LTD [GB]; CROXSON DAVID [GB]) 15 October 2003 (2003-10-15) claims -----	1



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

30 November 2012

Date of mailing of the international search report

29/04/2013

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Brothier, J

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/046668

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4597727	A	01-07-1986	AU 570945 B2 31-03-1988 AU 2470384 A 06-09-1984 CA 1235559 AI 26-04-1988 DE 3479881 DI 02-11-1989 EP 0117697 A2 05-09-1984 US 4597727 A 01-07-1986
GB 2461587	A	06-01-2010	CN 101620324 A 06-01-2010 DE 102008061161 AI 07-01-2010 GB 2461587 A 06-01-2010 JP 4963699 B2 27-06-2012 JP 2010015123 A 21-01-2010 KR 20100003848 A 12-01-2010 US 2010003424 AI 07-01-2010
GB 2387381	A	15-10-2003	NONE

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

Method for repairing defects according to claim 1

2. claims: 8-20

Composition according to claim 8.

Repaired optical substrate according to claim 16.

Optical medium repair system according to claim 20

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box 11.2

Claims Nos.: 17-19

Present claims 17-18 encompasses products defined by a quality factor desired to be achieved, contrary to the requirements of clarity of Article 6 PCT, because the result-to-be-achieved type of definition does not allow the scope of the claim to be ascertained. The fact that any compound could be screened does not overcome this objection, as the skilled person would not have knowledge beforehand as to whether it would fall within the scope claimed. Undue experimentation would be required to screen compounds randomly. The scope of present claim 19 is about the use of an optical medium such as CDs or DVDs in their normal intended use. The purpose of a repair operation is to be able to reuse an object in its intended use, so even if repair has occurred this kind of use appears normal and the scope therefore appears unclear and does not meet the requirements of Article 6 PCT. The non-compliance with the substantive provisions is to such an extent that no meaningful search of claim 17-19 can be carried out at all (Article 17(2) PCT), not taking into account that they are a part of a non-searched subject due to non-unity.

The applicant's attention is drawn to the fact that 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. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.