(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
19 December 2013 (19.12.2013)

WIPO | PCT

(10) International Publication Number
WO 2013/188032 A3

(51) International Patent Classification:
*C03C 17/00* (2006.01) *C03C 17/34* (2006.01)
*C03C 17/36* (2006.01) *B65D 23/08* (2006.01)

(21) International Application Number:
PCT/US2013/040856

(22) International Filing Date:
14 May 2013 (14.05.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
13/524,599 15 June 2012 (15.06.2012) US

(71) Applicant: **OWENS-BROCKWAY GLASS CONTAINER INC.** [US/US]; One Michael Owens Way, Perrysburg, OH 43551 (US).

(72) Inventor: **REMINGTON, Michael, P., Jr.**; 1936 Dority Road, Toledo, OH 43615 (US).

(74) Agent: **SMITH, Susan, L.**; Owens-illinois Inc., One Michael Owens Way, Three O-i Plaza, Legal Patents, Perrysburg, OH 43551 (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, BN, 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,

*[Continued on next page]*

(54) Title: GLASS CONTAINER INSULATIVE COATING

(57) Abstract: A process for applying a low-e coating (15, 15', 17) to a glass container (10) having an external surface. A low-e coating material is prepared and includes at least one of a metal or a transparent conductive oxide (TCO). The metal is selected from the group consisting of silver, gold and aluminum. The TCO is selected from the group consisting of $SnO_2$: Sb, $SnO_2$:F, $In_2O_3$:Sn, ZnO:F, ZnO:Al, and ZnO:Ga. The coating material is applied to the external surface of the glass container.

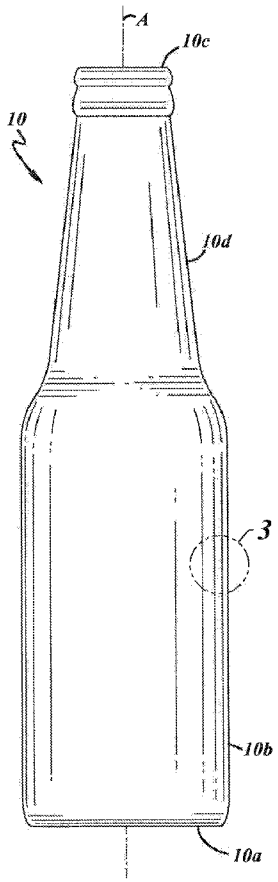


FIG. 1

WO 2013/188032 A3

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, PA, 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**:
24 December 2014

# INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/040856

A. CLASSIFICATION OF SUBJECT MATTER
INV. C03C17/00 C03C17/36 C03C17/34 B65D23/08
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)
C03C B65D

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 6 114 043 A (JORET LAURENT [FR])<br>5 September 2000 (2000-09-05)<br>column 1, line 8 - column 2, line 36<br>column 4, lines 5-21<br>column 5, lines 21-48<br>column 7, line 58 - column 8, line 39<br>column 9, lines 18-28<br>claims 1-17; example 3 | 1-7,15 |
| X | US 2011/226786 A1 (REMINGTON JR MICHAEL P [US] ET AL) 22 September 2011 (2011-09-22)<br>paragraphs [0001], [0005] - [0008], [0020], [0001] - [0033]; figures 1,2 | 1,5,6, 8-15 |

-/--

[X] Further documents are listed in the continuation of Box C.

[X] 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 | Date of mailing of the international search report |
|---|---|
| 29 September 2014 | 11/11/2014 |

| 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,<br>Fax: (+31-70) 340-3016 | Wrba, Jürgen |

1

Form PCT/ISA/210 (second sheet) (April 2005)

# INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/040856

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | JP H11 287013 A (NIPPON ELECTRIC GLASS CO) 19 October 1999 (1999-10-19) paragraphs [0001], [0006] - [0009], [0013], [0017] - [0019], [0029]; claims 1-3; figure 2; examples | 1-4,15 |
| X | US 5 916 401 A (GANNON RAYMOND P [AU]) 29 June 1999 (1999-06-29) column 8, lines 31-62; claims 1-23; figures 2,4; example 7 | 1,5-7,15 |
| X | FR 2 943 072 A1 (CENTRE NAT RECH SCIENT [FR]; UNIV ORLEANS [FR]; DB TECH [FR]) 17 September 2010 (2010-09-17) claims 1-15; example 5 | 1,5-7,15 |

1

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2013/040856

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| US 6114043 A | 05-09-2000 | AT 238244 T | 15-05-2003 |
| | | BR 9800576 A | 25-05-1999 |
| | | CN 1201023 A | 09-12-1998 |
| | | DE 69813648 D1 | 28-05-2003 |
| | | DE 69813648 T2 | 12-02-2004 |
| | | EP 0857700 A1 | 12-08-1998 |
| | | ES 2196507 T3 | 16-12-2003 |
| | | FR 2759362 A1 | 14-08-1998 |
| | | JP 4777490 B2 | 21-09-2011 |
| | | JP H10309777 A | 24-11-1998 |
| | | PL 324615 A1 | 17-08-1998 |
| | | PT 857700 E | 30-09-2003 |
| | | US 6114043 A | 05-09-2000 |
| | | US 6503557 B1 | 07-01-2003 |
| US 2011226786 A1 | 22-09-2011 | AR 081525 A1 | 03-10-2012 |
| | | AU 2011227099 A1 | 27-09-2012 |
| | | CN 102844280 A | 26-12-2012 |
| | | EP 2547631 A1 | 23-01-2013 |
| | | JP 2013522026 A | 13-06-2013 |
| | | RU 2012144402 A | 27-04-2014 |
| | | TW 201202162 A | 16-01-2012 |
| | | US 2011226786 A1 | 22-09-2011 |
| | | WO 2011116302 A1 | 22-09-2011 |
| JP H11287013 A | 19-10-1999 | NONE | |
| US 5916401 A | 29-06-1999 | CA 2187231 A1 | 12-10-1995 |
| | | CN 1147805 A | 16-04-1997 |
| | | EP 0759893 A1 | 05-03-1997 |
| | | JP H09510949 A | 04-11-1997 |
| | | KR 100363546 B1 | 24-01-2003 |
| | | NZ 283305 A | 25-03-1998 |
| | | RU 2152911 C2 | 20-07-2000 |
| | | US 5916401 A | 29-06-1999 |
| | | WO 9526935 A1 | 12-10-1995 |
| FR 2943072 A1 | 17-09-2010 | EP 2406409 A1 | 18-01-2012 |
| | | FR 2943072 A1 | 17-09-2010 |
| | | WO 2010103097 A1 | 16-09-2010 |