Title: LIGHT-TRANSITTING AND/OR COATED ARTICLE WITH REMOVABLE PROTECTIVE COATING AND METHODS OF MAKING THE SAME

Abstract: A method and coating are provided for temporarily protecting a substrate or article during shipping, handling or storage by applying a removable protective coating over at least a portion of the substrate. The substrate may be flat or curved and may have zero, one or more functional coatings. A plurality of substrates with the protective coating of the invention may be arranged in a shipping container so that the protective coating reduces the possibility of damage to the substrate or optional functional coating. In one embodiment, the protective coating is the evaporation or reaction product of an aqueous coating composition containing a polyvinyl alcohol polymer which may be subsequently removed by aqueous washing, thermal decomposition or combustion. In another embodiment, the protective coating is formed by sputtering a substantially carbon coating onto the substrate. The carbon coating is subsequently removed by combustion. The protective coating may have identification materials, such as colorants or fragrance materials, such that different types of substrates and/or functional coatings can be distinguished from each other. Additionally, the temporary protective coating can improve the heating of a functionally coated glass substrate.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C09D5/00 C09C7/32 C03C7/38 C03C7/42 B65G49/06

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 7 C09D C03C B65G B05D

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>GB 2 209 292 A (GENERAL ELECTRIC COMPANY) 10 May 1989 (1989-05-10)</td>
<td>1, 4, 7, 9, 11, 12, 20, 21, 27, 29, 32</td>
</tr>
<tr>
<td></td>
<td>abstract page 10, line 21 - page 11, line 5; claims 1-7</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>GB 2 145 640 A (U C B S A) 3 April 1985 (1985-04-03)</td>
<td>1, 3, 6-8, 13, 19-21, 27, 29</td>
</tr>
<tr>
<td></td>
<td>abstract page 1, line 48-50 page 3, line 24</td>
<td></td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of box C.

Patent family members are listed in 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

Date of the actual completion of the international search

6 October 2000

Date of mailing of the international search report

02.02.2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk

Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3019

Authorized officer

Girard, Y
<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>FR 2 543 514 A (PPG INDUSTRIES INC.) 5 October 1984 (1984-10-05)</td>
<td>1,3-8, 14-18, 29-31</td>
</tr>
</tbody>
</table>
**INTERNATIONAL SEARCH REPORT**

### Box I  Observations where certain claims were found unsearchable (Continuation of item 1 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 II  Observations where unity of invention is lacking (Continuation of item 2 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 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.:

```
1-25, 27-32
```

**Remark on Protest**

□ The additional search fees were accompanied by the applicant's protest.

□ No protest accompanied the payment of additional search fees.

---

Form PCT/SA/210 (continuation of first sheet (1)) (July 1998)
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:


   Coated article comprising a substrate, a functional coating deposited thereon and a removable protective coating on top thereof; method for making said article and coating composition for use in the removable coating.

2. Claims: 26, 62, 63

   Coated article comprising a flat glass substrate and a removable protective coating deposited thereon having a thickness of less than 50 microns; method of making.

3. Claims: 35-51

   Coated article comprising a substrate and a removable carbon protective coating deposited thereon; method of making.

4. Claims: 33-34

   Method of identifying selected substrates by forming removable protective coatings of different appearance or smell on different substrates.

5. Claims: 52-61

   Method of preparing a shipping container having a plurality of adjacent sheet substrates and manufacture of articles therefrom.

6. Claims: 64-68

   Method of promoting uniform heating of a substrate having a functional coating by using a removable high emissivity coating.
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB 2209292 A</td>
<td>10-05-1989</td>
<td>CA 1305374 A</td>
<td>21-07-1992</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 3828799 A</td>
<td>09-03-1989</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FR 2619805 A</td>
<td>03-03-1989</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IT 1226415 B</td>
<td>15-01-1991</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 1157435 A</td>
<td>20-06-1989</td>
</tr>
<tr>
<td>GB 2145640 A</td>
<td>03-04-1985</td>
<td>BE 897931 A</td>
<td>06-04-1984</td>
</tr>
<tr>
<td>FR 2543514 A</td>
<td>05-10-1984</td>
<td>CA 1243568 A</td>
<td>25-10-1988</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IT 1173538 B</td>
<td>24-06-1987</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CA 1258998 A</td>
<td>05-09-1989</td>
</tr>
</tbody>
</table>
Title: LIGHT-TRANSMITTING AND/OR COATED ARTICLE WITH REMOVABLE PROTECTIVE COATING AND METHODS OF MAKING THE SAME

Abstract: A method and coating are provided for temporarily protecting a substrate or article during shipping, handling or storage by applying a removable protective coating over at least a portion of the substrate. The substrate may be flat or curved and may have zero, one or more functional coatings. A plurality of substrates with the protective coating of the invention may be arranged in a shipping container so that the protective coating reduces the possibility of damage to the substrate or optional functional coating. In one embodiment, the protective coating is the evaporation or reaction product of an aqueous coating composition containing a polyvinyl alcohol polymer which may be subsequently removed by aqueous washing, thermal decomposition or combustion. In another embodiment, the protective coating is formed by sputtering a substantially carbon coating onto the substrate. The carbon coating is subsequently removed by combustion. The protective coating may have identification materials, such as colorants or fragrance materials, such that different types of substrates and/or functional coatings can be distinguished from each other. Additionaly, the temporary protective coating can improve the heating of a functionally coated glass substrate.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published: With international search report.

Date of publication of the international search report: 12 July 2001
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 C09D5/00 C03C17/32 C03C17/38 C03C17/42 B65G49/06

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 7 C09D C03C B65G B05D

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, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>GB 2 209 292 A (GENERAL ELECTRIC COMPANY) 10 May 1989 (1989-05-10)</td>
<td>1-4, 7, 9, 11, 12, 29, 21, 27, 29, 32</td>
</tr>
<tr>
<td></td>
<td>abstract page 10, line 21 - page 11, line 5; claims 1-7</td>
<td>---</td>
</tr>
<tr>
<td>X</td>
<td>GB 2 145 640 A (U C B S A) 3 April 1985 (1985-04-03)</td>
<td>1, 3, 6-8, 13, 19-21, 27, 29</td>
</tr>
<tr>
<td></td>
<td>abstract page 1, line 48-50 page 3, line 24</td>
<td>---</td>
</tr>
</tbody>
</table>

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

[ X] Patent family members are listed in annex.

**Date of the actual completion of the international search**

6 October 2000

**Date of mailing of the international search report**

02. 02. 2001

**Name and mailing address of the ISA**

European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 051 epo nl, Fax: (+31-70) 340-3016

**Authorized officer**

Girard, Y
<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>
INTERNATIONAL SEARCH REPORT

Box I  Observations where certain claims were found unsearchable (Continuation of item 1 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 II  Observations where unity of invention is lacking (Continuation of item 2 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 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.:

    1-25, 27-32

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (1)) (July 1998)
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

   Coated article comprising a substrate, a functional coating deposited thereon and a removable protective coating on top thereof; method for making said article and coating composition for use in the removable coating.

2. Claims: 26, 62, 63
   Coated article comprising a flat glass substrate and a removable protective coating deposited thereon having a thickness of less than 50 microns; method of making.

3. Claims: 35-51
   Coated article comprising a substrate and a removable carbon protective coating deposited thereon; method of making.

4. Claims: 33-34
   Method of identifying selected substrates by forming removable protective coatings of different appearance or smell on different substrates.

5. Claims: 52-61
   Method of preparing a shipping container having a plurality of adjacent sheet substrates and manufacture of articles therefrom.

6. Claims: 64-68
   Method of promoting uniform heating of a substrate having a functional coating by using a removable high emissivity coating.
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB 2209292 A</td>
<td>10-05-1989</td>
<td>CA 1305374 A</td>
<td>21-07-1992</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 3828799 A</td>
<td>09-03-1989</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FR 2619805 A</td>
<td>03-03-1989</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IT 1226415 B</td>
<td>15-01-1991</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 1157435 A</td>
<td>20-06-1989</td>
</tr>
<tr>
<td>GB 2145640 A</td>
<td>03-04-1985</td>
<td>BE 897931 A</td>
<td>06-04-1984</td>
</tr>
<tr>
<td>FR 2543514 A</td>
<td>05-10-1984</td>
<td>CA 1243568 A</td>
<td>25-10-1988</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IT 1173538 B</td>
<td>24-06-1987</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CA 1258998 A</td>
<td>05-09-1989</td>
</tr>
</tbody>
</table>