ELECTROCHROMIC WINDOW FABRICATION METHODS

Fig. 4C
<table>
<thead>
<tr>
<th>Published: Date of publication of the amended claims:</th>
<th>28 June 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>— with international search report (Art. 21(3))</td>
<td></td>
</tr>
<tr>
<td>— with amended claims (Art. 19(1))</td>
<td></td>
</tr>
</tbody>
</table>
What is Claimed is:

1. A method of manufacturing an electrochromic window unit, the method comprising:
   
   (a) fabricating an electrochromic device on a non-tempered glass sheet;
   
   (b) defining a cutting pattern for cutting the non-tempered glass sheet in order to create one or more electrochromic window panes, said cutting pattern defined, at least in part, by characterizing one or more physical features of the non-tempered glass sheet and/or electrochromic device after fabrication of the electrochromic device;
   
   (c) cutting the non-tempered glass sheet according to the cutting pattern to create said one or more electrochromic window panes, including a first electrochromic window pane;
   
   (d) fabricating an insulated glass unit (IGU) comprising the first electrochromic window pane; and then
   
   (e) strengthening the first electrochromic window pane by laminating a second pane to the first electrochromic window pane of the IGU previously fabricated in (d).

2. The method of claim 1, wherein said one or more physical features are selected from the group consisting of:

   1) identifying one or more low-defectivity areas on the electrochromic device,

   2) identifying one or more areas of non-uniformity in the electrochromic device,

   3) identifying one or more areas where materials used to make the electrochromic device were deposited on the back side of the non-tempered glass sheet;
4) identifying one or more performance characteristics of the electrochromic device; and

5) identifying one or more defects in the non-tempered glass sheet.

3. The method of claim 1, wherein characterizing the one or more physical features of the non-tempered glass sheet and/or electrochromic device comprises identifying one or more low-defectivity areas in the electrochromic device by scribing one or more isolation trenches near one or more edges of the non-tempered glass sheet, applying a temporary bus bar to the electrochromic device, and activating the electrochromic device in order to evaluate the electrochromic device on the non-tempered glass sheet for defectivity.

4. The method of claim 1, wherein characterizing the one or more physical features of the non-tempered glass sheet and/or electrochromic device comprises testing the electrochromic device to determine its leakage current and/or the resistivity of a transparent conducting oxide.

5. The method of claim 1, further comprising, after (a):

(i) creating a first mapping data set based on said one or more low-defectivity areas on the electrochromic device;

(ii) creating a second mapping data set based on another one or more low-defectivity areas on a second electrochromic device on a second non-tempered glass sheet; and

(iii) comparing the first and second mapping data sets;

wherein defining the cutting pattern employs a comparison of the first and second mapping data sets generated in (iii).

6. The method of claim 5, wherein the comparison is used to match at least two electrochromic window panes for use in a single IGU configured for minimal alignment of defects of said at least two electrochromic window panes.
7. The method of claim 1, further comprising scribing isolation trenches for said one or more electrochromic window panes after (b) and prior to (c).

8. The method of claim 7, further comprising applying bus bars to the one or more electrochromic window panes.

9. The method of claim 8, wherein the bus bars are non-penetrating bus bars.

10. The method of claim 1, wherein said one or more electrochromic window panes are architectural scale non-tempered glass panes.

11. The method of claim 1, wherein the electrochromic device is all solid state and all inorganic.

12. The method of claim 1, wherein (c) comprises laser induced scoring by tension.

13. The method of claim 1, further comprising forming a transparent conducting oxide layer on the non-tempered glass sheet before forming the electrochromic device.

14. The method of claim 13, further comprising forming a diffusion barrier on the non-tempered glass sheet prior to forming the transparent conducting oxide layer.

15. A method of manufacturing an insulated glass unit (IGU), the method comprising:

(a) fabricating an electrochromic device on a non-tempered glass sheet;

(b) cutting the non-tempered glass sheet in order to create an electrochromic window pane;

(c) fabricating an insulated glass unit (IGU) comprising the electrochromic window pane; and

(d) laminating a second pane to the electrochromic window pane while in the IGU that was previously fabricated in (c).
16. The method of claim 15, wherein laminating the second pane to the electrochromic window pane comprises a liquid resin lamination procedure.

17. The method of claim 16, wherein the liquid resin lamination procedure comprises applying a resin selected to have a compensating optical property.

18. The method of claim 17, wherein the resin imparts a blue color.

19. The method of claim 15, further comprising defining a cutting pattern for cutting the non-tempered glass sheet, wherein said cutting pattern is defined, at least in part, by identifying one or more low-defectivity areas on the electrochromic device.

20. The method of claim 19, further comprising cutting the non-tempered glass sheet according to the cutting pattern to create the electrochromic window pane.