



**Georgia-Pacific**

Containerboard

**Linerboard and Corrugating Medium Specifications**

**Metric Units**

**June 1, 2011**



# Containerboard Specifications

Date: June 1, 2011

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**East Coast Linerboard Specifications (Metric Units)**  
Date: June 1, 2011

**Natural Kraft Linerboard**

| Grade (g/m <sup>2</sup> ) | Conditioned Weight (g/m <sup>2</sup> ) |        |      | Moisture (percent) |      | Mullen (kPa) | HST <sup>1</sup> (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) |      |
|---------------------------|--|--------|------|--------------------|------|--------------|----------------------------|-----------------------|-----------------------|------|
|                           | Nominal                                | Target | Min. | Max.               | Min. | Max.         | Min.                       | Min.                  | Min.                  | Max. |
| 127                       | 127                                    | 121    | 133  | 4.5                | 8.0  | 407          | 15                         | 8                     | 20                    | 40   |
| 151                       | 151                                    | 144    | 159  | 4.5                | 8.0  | 462          | 15                         | 8                     | 20                    | 40   |
| 161                       | 161                                    | 153    | 169  | 4.5                | 8.0  | 489          | 15                         | 8                     | 20                    | 40   |
| 186                       | 186                                    | 176    | 195  | 4.5                | 8.0  | 565          | 30                         | 8                     | 20                    | 40   |
| 205                       | 205                                    | 195    | 215  | 5.0                | 8.5  | 620          | 30                         | 8                     | 20                    | 40   |
| 229                       | 229                                    | 218    | 241  | 5.0                | 8.5  | 668          | 45                         | 8                     | 20                    | 40   |
| 278                       | 278                                    | 264    | 292  | 5.0                | 8.5  | 758          | 45                         | 8                     | 20                    | 40   |
| 300                       | 300                                    | 285    | 315  | 5.0                | 9.0  | 785          | 45                         | 8                     | 20                    | 40   |
| 337                       | 337                                    | 320    | 354  | 5.0                | 9.0  | 854          | 45                         | 8                     | 20                    | 40   |
| 439                       | 439                                    | 417    | 461  | 5.0                | 9.0  | 1047         | 45                         | 8                     | 20                    | 40   |

**Recycled Linerboard**

| Grade (g/m <sup>2</sup> ) | Conditioned Weight (g/m <sup>2</sup> ) |        |      | Moisture (percent) |      | Mullen (kPa) | HST <sup>1</sup> (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) |      | Top Cobb (GSM) |      | Base Cobb (GSM) |      |
|---------------------------|--|--------|------|--------------------|------|--------------|----------------------------|-----------------------|-----------------------|------|----------------|------|-----------------|------|
|                           | Nominal                                | Target | Min. | Max.               | Min. | Max.         | Min.                       | Min.                  | Min.                  | Max. | Min.           | Max. | Min.            | Max. |
| 127                       | 127                                    | 121    | 151  | 6.0                | 9.5  | 407          | 15                         | 8                     | 20                    | 40   | 30             | 90   | 40              | 90   |
| 161                       | 161                                    | 153    | 176  | 6.0                | 9.5  | 489          | 30                         | 8                     | 20                    | 40   | 30             | 90   | 40              | 90   |
| 205                       | 205                                    | 195    | 229  | 6.0                | 9.5  | 620          | 30                         | 8                     | 20                    | 40   | 30             | 90   | 40              | 90   |

All Tests are Based on TAPPI Test Methods Performed Under TAPPI Standard Conditions  
<sup>1</sup> Hercules Size Test is performed using 20% formic acid.



**East Coast Linerboard Specifications (Metric Units)**  
Date: June 1, 2011

**UltraStak Plus<sup>®</sup> Linerboard**

| USP Grade | Conditioned Weight (g/m <sup>2</sup> ) |      | Moisture (percent) |      | CD Ring Crush (kN/m) | HST <sup>1</sup> (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) |      |
|-----------|--|------|--------------------|------|----------------------|----------------------------|-----------------------|-----------------------|------|
|           | Nominal                                | Min. | Min.               | Max. | Min.                 | Min.                       | Min.                  | Min.                  | Max. |
| USP 60    | 151                                    | 151  | 5.5                | 8.5  | 1.752                | 30                         | 8                     | 20                    | 40   |
| USP 70    | 171                                    | 161  | 5.5                | 8.5  | 2.044                | 30                         | 8                     | 20                    | 40   |
| USP 90    | 205                                    | 195  | 5.5                | 8.5  | 2.628                | 30                         | 8                     | 20                    | 40   |
| USP 120   | 268                                    | 254  | 5.5                | 8.5  | 3.504                | 45                         | 8                     | 20                    | 40   |
| USP 150   | 361                                    | 342  | 5.5                | 8.5  | 4.380                | 45                         | 8                     | 20                    | 40   |
| USP 170   | 415                                    | 400  | 5.5                | 8.5  | 4.964                | 45                         | 8                     | 20                    | 40   |

**UltraCvle Plus<sup>®</sup> Linerboard**

| UCP Grade | Conditioned Weight (g/m <sup>2</sup> ) |      | Moisture (percent) |      | CD Ring Crush (kN/m) | HST <sup>1</sup> (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) |      | Top Cobb (GSM) |      | Base Cobb (GSM) |      |
|-----------|--|------|--------------------|------|----------------------|----------------------------|-----------------------|-----------------------|------|----------------|------|-----------------|------|
|           | Nominal                                | Min. | Min.               | Max. | Min.                 | Min.                       | Min.                  | Min.                  | Max. | Min.           | Max. | Min.            | Max. |
| UCP 60    | 151                                    | 144  | 6.0                | 9.5  | 1.752                | 30                         | 8                     | 20                    | 40   | 30             | 90   | 40              | 90   |
| UCP 70    | 171                                    | 161  | 6.0                | 9.5  | 2.044                | 30                         | 8                     | 20                    | 40   | 30             | 90   | 40              | 90   |
| UCP 90    | 205                                    | 193  | 6.0                | 9.5  | 2.628                | 30                         | 8                     | 20                    | 40   | 30             | 90   | 40              | 90   |
| UCP 104   | 254                                    | 241  | 6.0                | 9.5  | 3.037                | 30                         | 8                     | 20                    | 40   | 30             | 90   | 40              | 90   |
| UCP 120   | 268                                    | 254  | 6.0                | 9.5  | 3.504                | 30                         | 8                     | 20                    | 40   | 30             | 90   | 40              | 90   |

All Tests are Based on TAPPI Test Methods Performed Under TAPPI Standard Conditions  
<sup>1</sup> Hercules Size Test is performed using 20% formic acid.



## East Coast Corrugating Medium Specifications (Metric Units)

Date: June 1, 2011

### Corrugating Medium

| Grade<br>(g/m <sup>2</sup> ) | Conditioned Weight<br>(g/m <sup>2</sup> ) |        |      | Moisture<br>(percent) |      | **Concora<br>(N/10 flutes) | *Water Drop<br>(seconds) |
|------------------------------|---|--------|------|-----------------------|------|----------------------------|--------------------------|
|                              | Nominal                                   | Target | Min. | Max.                  | Min. | Max.                       | Min.                     |
| 112                          | 112                                       | 107    | 118  | 7.0                   | 12.0 | 200.3                      | 200                      |
| 127                          | 127                                       | 121    | 133  | 7.0                   | 12.0 | 222.5                      | 200                      |
| 146                          | 146                                       | 139    | 154  | 7.0                   | 12.0 | 244.8                      | 200                      |
| 161                          | 161                                       | 153    | 169  | 7.0                   | 12.0 | 244.8                      | 200                      |
| 176                          | 176                                       | 167    | 185  | 7.0                   | 12.0 | 267.0                      | 200                      |
| 195                          | 195                                       | 186    | 205  | 7.0                   | 12.0 | 267.0                      | 200                      |
| 220                          | 220                                       | 209    | 231  | 7.0                   | 12.0 | 378.3                      | 200                      |

### Recycled Corrugating Medium

| Grade<br>(g/m <sup>2</sup> ) | Conditioned Weight<br>(g/m <sup>2</sup> ) |        |      | Moisture<br>(percent) |      | **Concora<br>(N/10 flutes) | *Water Drop<br>(seconds) |
|------------------------------|---|--------|------|-----------------------|------|----------------------------|--------------------------|
|                              | Nominal                                   | Target | Min. | Max.                  | Min. | Max.                       | Min.                     |
| 146                          | 146                                       | 139    | 154  | 7.0                   | 12.0 | 244.8                      | 200                      |
| 161                          | 161                                       | 153    | 169  | 7.0                   | 12.0 | 244.8                      | 200                      |

All Tests are Based on TAPPI Test Methods Performed Under TAPPI Standard Conditions.

\* Off machine specification. Due to aging effects (increase of sizing), medium rollstock should be converted as soon as possible.

\*\* Concora value is predicted.



## East Coast Corrugating Medium Specifications (Metric Units)

Date: June 1, 2011

### UltraStak Plus<sup>®</sup> Corrugating Medium

| USP<br>Grade | Conditioned Weight<br>(g/m <sup>2</sup> ) |      | Moisture<br>(percent) |      | CD Ring<br>CD Ring Crush<br>(kN/m) | **Concora<br>(N/10 flutes) | *Water Drop<br>(seconds) |
|--------------|---|------|-----------------------|------|------------------------------------|----------------------------|--------------------------|
|              | Nominal                                   | Min. | Min.                  | Max. | Min.                               | Min.                       | Max. 90 Days             |
| USP 66       | 161                                       | 151  | 6.0                   | 11.0 | 1.927                              | 244.8                      | 200                      |
| USP 85       | 200                                       | 200  | 5.0                   | 9.0  | 2.482                              | 244.8                      | 200                      |

### UltraCycle Plus<sup>®</sup> Corrugating Medium

| UCP<br>Grade | Conditioned Weight<br>(g/m <sup>2</sup> ) |      | Moisture<br>(percent) |      | CD Ring<br>CD Ring Crush<br>(kN/m) | **Concora<br>(N/10 flutes) | *Water Drop<br>(seconds) |
|--------------|---|------|-----------------------|------|------------------------------------|----------------------------|--------------------------|
|              | Nominal                                   | Min. | Min.                  | Max. | Min.                               | Min.                       | Max. 90 Days             |
| UCP 66       | 161                                       | 151  | 7.0                   | 12.0 | 1.927                              | 244.8                      | 200                      |

All Tests are Based on TAPPI Test Methods Performed Under TAPPI Standard Conditions.

\* Off machine specification. Due to aging effects (increase of sizing), medium rollstock should be converted as soon as possible.

\*\* Concora value is predicted.



## West Coast Linerboard Specifications (Metric Units)

Date: June 1, 2011

### Natural Kraft Linerboard

| Grade<br>(g/m <sup>2</sup> ) | Conditioned Weight<br>(g/m <sup>2</sup> ) |        |      | Moisture<br>(percent) |      | Mullen<br>(kPa) | HST <sup>1</sup><br>(seconds) | Porosity<br>(sec/100 ml) | Slide Angle<br>(degrees) |      |
|------------------------------|---|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|
|                              | Nominal                                   | Target | Min. | Max.                  | Min. |                 |                               |                          | Max.                     | Min. |
| 127                          | 127                                       | 121    | 146  | 6.0                   | 9.5  | 407             | 15                            | 8                        | 18                       | 40   |
| 200                          | 200                                       | 190    | 220  | 6.0                   | 9.5  | 599             | 20                            | 8                        | 18                       | 40   |
| 300                          | 300                                       | 285    | 320  | 6.0                   | 9.5  | 785             | 20                            | 10                       | 18                       | 40   |

### Wet Strength Natural Linerboard

| Grade<br>(g/m <sup>2</sup> ) | Conditioned Weight<br>(g/m <sup>2</sup> ) |        |      | Moisture<br>(percent) |      | Mullen<br>(kPa) | HST <sup>1</sup><br>(seconds) | Porosity<br>(sec/100 ml) | Slide Angle<br>(degrees) |      |
|------------------------------|---|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|
|                              | Nominal                                   | Target | Min. | Max.                  | Min. |                 |                               |                          | Max.                     | Min. |
| 205                          | 205                                       | 195    | 225  | 6.0                   | 9.5  | 620             | 100                           | 8                        | 18                       | 40   |
| 337                          | 337                                       | 320    | 356  | 6.0                   | 9.5  | 854             | 450                           | 10                       | 18                       | 40   |
| 371                          | 371                                       | 352    | 391  | 6.0                   | 9.5  | 916             | 500                           | 10                       | 18                       | 40   |

All Tests are Based on TAPPI Test Methods Performed Under TAPPI Standard Conditions

<sup>1</sup> Hercules Size Test is performed using 20% formic acid.



## West Coast Linerboard Specifications (Metric Units)

Date: June 1, 2011

### UltraStak Plus<sup>®</sup> Linerboard

| USP<br>Grade | Conditioned Weight<br>(g/m <sup>2</sup> ) |      | Moisture<br>(percent) |      | CD Ring Crush<br>(Kn/m) | HST <sup>1</sup><br>(seconds) | Porosity<br>(sec/100 ml) | Slide Angle<br>(degrees) |      |
|--------------|---|------|-----------------------|------|-------------------------|-------------------------------|--------------------------|--------------------------|------|
|              | Nominal                                   | Min. | Min.                  | Max. |                         |                               |                          | Min.                     | Max. |
| USP 70       | 171                                       | 161  | 5.5                   | 8.5  | 2.044                   | 20                            | 8                        | 18                       | 40   |
| USP 90       | 205                                       | 195  | 5.5                   | 8.5  | 2.628                   | 20                            | 8                        | 18                       | 40   |
| USP 120      | 268                                       | 254  | 5.5                   | 8.5  | 3.504                   | 20                            | 8                        | 18                       | 40   |
| USP 150      | 361                                       | 342  | 5.5                   | 8.5  | 4.380                   | 20                            | 8                        | 18                       | 40   |
| USP 170      | 415                                       | 395  | 5.5                   | 8.5  | 4.964                   | 20                            | 8                        | 18                       | 40   |

### Wet Strength UltraStak Plus<sup>®</sup> Linerboard

| USP<br>Grade | Conditioned Weight<br>(g/m <sup>2</sup> ) |      | Moisture<br>(percent) |      | CD Ring Crush<br>(Kn/m) | HST <sup>1</sup><br>(seconds) | Porosity<br>(sec/100 ml) | Slide Angle<br>(degrees) |      |
|--------------|---|------|-----------------------|------|-------------------------|-------------------------------|--------------------------|--------------------------|------|
|              | Nominal                                   | Min. | Min.                  | Max. |                         |                               |                          | Min.                     | Max. |
| W/S USP 120  | 268                                       | 254  | 5.5                   | 9.0  | 3.504                   | 375                           | 8                        | 18                       | 40   |
| W/S USP 150  | 361                                       | 342  | 5.5                   | 9.0  | 4.380                   | 500                           | 10                       | 18                       | 40   |
| W/S USP 170  | 415                                       | 395  | 5.5                   | 9.0  | 4.964                   | 550                           | 12                       | 18                       | 40   |

All Tests are Based on TAPPI Test Methods Performed Under TAPPI Standard Conditions.

<sup>1</sup> Hercules Size Test is performed using 20% formic acid.



## West Coast Corrugating Medium Specifications (Metric Units)

Date: June 1, 2011

### Corrugating Medium

| Grade<br>(g/m <sup>2</sup> ) | Conditioned Weight<br>(g/m <sup>2</sup> ) |        |       | Moisture<br>(percent) |      | **Concora<br>(n/10 flutes) | *Water Drop<br>(seconds) |
|------------------------------|---|--------|-------|-----------------------|------|----------------------------|--------------------------|
|                              | Nominal                                   | Target | Min.  | Max.                  | Min. | Max.                       | Min.                     |
| 112                          | 112                                       | 107    | 118.0 | 6.5                   | 11.0 | 200.3                      | 200                      |
| 127                          | 127                                       | 121    | 183.0 | 6.5                   | 11.0 | 222.5                      | 200                      |
| 146                          | 146                                       | 139    | 154.0 | 6.5                   | 11.0 | 244.8                      | 200                      |
| 161                          | 161                                       | 153    | 169.0 | 6.5                   | 11.0 | 244.8                      | 200                      |
| 195                          | 195                                       | 186    | 205.0 | 6.5                   | 11.0 | 267.0                      | 200                      |
| 220                          | 220                                       | 209    | 231.0 | 6.5                   | 11.0 | 278.3                      | 200                      |

### UltraStak Plus® Corrugating Medium

| USP<br>Grade | Conditioned Weight<br>(g/m <sup>2</sup> ) |      | Moisture<br>(percent) |      | CD Ring<br>Crush<br>(Kn/m) | **Concora<br>(n/10 flutes) | *Water Drop<br>(seconds) |
|--------------|---|------|-----------------------|------|----------------------------|----------------------------|--------------------------|
|              | Nominal                                   | Min. | Min.                  | Max. | Min.                       | Min.                       | Max. 90 Days             |
| USP 66       | 161                                       | 153  | 5.0                   | 9.0  | 1.927                      | 244.8                      | 200                      |
| USP 85       | 200                                       | 186  | 5.0                   | 9.0  | 2.482                      | 244.8                      | 200                      |

### Wet Strength UltraStak Plus® Corrugating Medium

| USP<br>Grade | Conditioned Weight<br>(g/m <sup>2</sup> ) |      | Moisture<br>(percent) |      | CD Ring<br>Crush<br>(Kn/m) | **Concora<br>(n/10 flutes) | *Water Drop<br>(seconds) |
|--------------|---|------|-----------------------|------|----------------------------|----------------------------|--------------------------|
|              | Nominal                                   | Min. | Min.                  | Max. | Min.                       | Min.                       | Max. 90 Days             |
| W/S USP 35   | 127                                       | 121  | 5.0                   | 9.0  | 1.022                      | 222.5                      | --                       |
| W/S USP 85   | 200                                       | 186  | 5.0                   | 9.0  | 2.482                      | 278.3                      | --                       |

All Tests are Based on TAPPI Test Methods Performed Under TAPPI Standard Conditions.

\* Off machine specification. Due to aging effects (increase of sizing), medium rollstock should be converted as soon as possible.

\*\* Concora value is predicted.

**Roll Stock Guidelines for Linerboard and  
Corrugating Medium**

Date: June 1, 2011

| Specification   | Description  |
|-----------------|--|
| Roll Diameter   | 58 1/4 inches +/- 1/4 inch   |
| Roll Width      | As specified by order: -0.0 inch to + 1/8 inch   |
| Cores           | 4 inch (102 mm) inside diameter, plugged tightly   |
| Core Thickness  | Liner 0.125 inch, Medium: Cedar Springs 0.215 inch, Big Island 0.200 inch  |
| Core Length     | -1/8 or + 1/16 inch  |
| Labels          | One (1) large label or stencil on roll side (belly) with all pertinent information.<br>One (1) small label on roll end near the core or inside the core with roll number, grade, width, order number, and customer name. |
| Strapping       | Two (2) straps to be 0.375 inch metal bands located 1 1/4 inch +/- 1/4 inch from roll edge   |
| Joins (Splices) | Double-backed tape at splice. Splices clearly indicated on both roll ends by red flagging or black marks. Maximum two (2) splices per roll.  |
| Outside Tail    | Glued or taped   |
| Inside Tail     | Taped to core  |
| Winding         | Rolls to be tightly and evenly wound.  |
| Roll Hardness   | Target: Liner - 38 minimum and a range no greater than 15 across the roll.   |

East Coast is based on the following mills: Big Island, Brewton, Cedar Springs, & Monticello  
West Coast is based on the following mill: Toledo