



Georgia-Pacific

Containerboard

Linerboard and Corrugating Medium Specifications

August 22, 2008



Georgia-Pacific
Containerboard

Containerboard Specifications

Date: August 22, 2008

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East Coast Linerboard Specifications (English Units)

Date: August 22, 2008

Natural Kraft Linerboard

| Grade (lbs/msf) | Conditioned Weight (lbs/msf) | | | Moisture (percent) | | Mullen (psi) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|--------------------|---------------------------------|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|
| | Nominal | Target | Min. | Max. | Min. | | | | Max. | Min. |
| 26.0 | 26.0 | 24.7 | 27.3 | 4.5 | 8.0 | 59 | 15 | 8 | 20 | 40 |
| 31.0 | 31.0 | 29.5 | 32.6 | 4.5 | 8.0 | 67 | 15 | 8 | 20 | 40 |
| 33.0 | 33.0 | 31.4 | 34.7 | 4.5 | 8.0 | 71 | 15 | 8 | 20 | 40 |
| 36.0 | 36.0 | 34.2 | 37.8 | 4.5 | 8.0 | 78 | 30 | 8 | 20 | 40 |
| 38.0 | 38.0 | 36.1 | 39.9 | 4.5 | 8.0 | 82 | 30 | 8 | 20 | 40 |
| 41.0 | 41.0 | 39.0 | 43.1 | 4.5 | 8.0 | 87 | 30 | 8 | 20 | 40 |
| 42.0 | 42.0 | 39.9 | 44.1 | 5.0 | 8.5 | 90 | 30 | 8 | 20 | 40 |
| 47.0 | 47.0 | 44.7 | 49.4 | 5.0 | 8.5 | 97 | 45 | 8 | 20 | 40 |
| 51.0 | 51.0 | 48.5 | 53.6 | 5.0 | 8.5 | 100 | 45 | 8 | 20 | 40 |
| 57.0 | 57.0 | 54.2 | 59.9 | 5.0 | 8.5 | 110 | 45 | 8 | 20 | 40 |
| 61.5 | 61.5 | 58.4 | 64.6 | 5.0 | 9.0 | 114 | 45 | 8 | 20 | 40 |
| 69.0 | 69.0 | 65.6 | 72.5 | 5.0 | 9.0 | 124 | 45 | 8 | 20 | 40 |
| 74.0 | 74.0 | 70.3 | 77.7 | 5.0 | 9.0 | 130 | 45 | 8 | 20 | 40 |
| 82.0 | 82.0 | 77.9 | 86.1 | 5.0 | 9.0 | 141 | 45 | 8 | 20 | 40 |
| 90.0 | 90.0 | 85.5 | 94.5 | 5.0 | 9.0 | 152 | 45 | 8 | 20 | 40 |

Recycled Linerboard

| Grade (lbs/msf) | Conditioned Weight (lbs/msf) | | | Moisture (percent) | | Mullen (psi) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | | Top Cobb (GSM) | Base Cobb (GSM) | | |
|--------------------|---------------------------------|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|-------------------|--------------------|------|------|
| | Nominal | Target | Min. | Max. | Min. | | | | Max. | Min. | | Max. | Min. | Max. |
| 26.0 | 26.0 | 24.7 | 31.0 | 6.0 | 9.5 | 59 | 15 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |
| 31.0 | 31.0 | 29.5 | 33.0 | 6.0 | 9.5 | 67 | 15 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |
| 33.0 | 33.0 | 31.4 | 36.0 | 6.0 | 9.5 | 71 | 30 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |
| 42.0 | 42.0 | 39.9 | 47.0 | 6.0 | 9.5 | 90 | 30 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |

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

¹ Hercules Size Test is performed using 20% formic acid.



East Coast Linerboard Specifications (English Units)

Date: August 22, 2008

UltraStak Plus® Linerboard

| USP Grade | Conditioned Weight (lbs/msf) | Moisture (percent) | | CD Ring Crush (lbf/6 inch) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|-----------|------------------------------|--------------------|------|----------------------------|----------------------------|-----------------------|-----------------------|------|
| | | Min. | Max. | | | | Min. | Max. |
| USP 60 | 31.0 | 5.5 | 8.5 | 60 | 30 | 8 | 20 | 40 |
| USP 70 | 33.0 | 5.5 | 8.5 | 70 | 30 | 8 | 20 | 40 |
| USP 80 | 36.0 | 5.5 | 8.5 | 80 | 30 | 8 | 20 | 40 |
| USP 90 | 40.0 | 5.5 | 8.5 | 90 | 30 | 8 | 20 | 40 |
| USP 105 | 46.0 | 5.5 | 8.5 | 105 | 45 | 8 | 20 | 40 |
| USP 120 | 52.0 | 5.5 | 8.5 | 120 | 45 | 8 | 20 | 40 |
| USP 135 | 60.0 | 5.5 | 8.5 | 135 | 45 | 8 | 20 | 40 |
| USP 150 | 70.0 | 5.5 | 8.5 | 150 | 45 | 8 | 20 | 40 |
| USP 170 | 82.0 | 5.5 | 8.5 | 170 | 45 | 8 | 20 | 40 |

UltraCycle Plus® Linerboard

| UCP Grade | Conditioned Weight (lbs/msf) | Moisture (percent) | | CD Ring Crush (lbf/6 inch) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | | Top Cobb (GSM) | | Base Cobb (GSM) | |
|-----------|------------------------------|--------------------|------|----------------------------|----------------------------|-----------------------|-----------------------|------|----------------|------|-----------------|------|
| | | Min. | Max. | | | | Min. | Max. | Min. | Max. | Min. | Max. |
| UCP 60 | 31.0 | 5.5 | 8.5 | 60 | 30 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |
| UCP 70 | 33.0 | 6.0 | 9.5 | 70 | 30 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |
| UCP 104 | 49.4 | 6.0 | 9.5 | 104 | 30 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |

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

¹ Hercules Size Test is performed using 20% formic acid.



East Coast Linerboard Specifications (Metric Units)

Date: August 22, 2008

Natural Kraft Linerboard

| Grade (g/m ²) | Conditioned Weight (g/m ²) | | | Moisture (percent) | | Mullen (kPa) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|------------------------------|---|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|
| | Nominal | Target | Min. | Max. | Min. | Max. | Min. | Min. | Min. | Min. |
| 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 |
| 176 | 176 | 167 | 185 | 4.5 | 8.0 | 537 | 30 | 8 | 20 | 40 |
| 186 | 186 | 176 | 195 | 4.5 | 8.0 | 565 | 30 | 8 | 20 | 40 |
| 200 | 200 | 190 | 210 | 4.5 | 8.0 | 599 | 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 |
| 249 | 249 | 237 | 261 | 5.0 | 8.5 | 689 | 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 |
| 361 | 361 | 343 | 379 | 5.0 | 9.0 | 896 | 45 | 8 | 20 | 40 |
| 400 | 400 | 380 | 420 | 5.0 | 9.0 | 971 | 45 | 8 | 20 | 40 |
| 439 | 439 | 417 | 461 | 5.0 | 9.0 | 1047 | 45 | 8 | 20 | 40 |

Recycled Linerboard

| Grade (g/m ²) | Conditioned Weight (g/m ²) | | | Moisture (percent) | | Mullen (kPa) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | | Top Cobb (GSM) | | Base Cobb (GSM) | |
|------------------------------|---|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|-------------------|------|--------------------|------|
| | Nominal | Target | Min. | Max. | Min. | Max. | Min. | Min. | Min. | Min. | Max. | Min. | Max. | Min. |
| 127 | 127 | 121 | 151 | 6.0 | 9.5 | 407 | 15 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |
| 151 | 151 | 144 | 161 | 6.0 | 9.5 | 462 | 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

¹ Hercules Size Test is performed using 20% formic acid.



East Coast Linerboard Specifications (Metric Units)

Date: August 22, 2008

UltraStak Plus® Linerboard

| USP Grade | Conditioned Weight (g/m ²) | Moisture (percent) | | CD Ring Crush (kN/m) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|-----------|--|--------------------|------|----------------------|----------------------------|-----------------------|-----------------------|------|
| | | Min. | Max. | | | | Min. | Max. |
| USP 60 | 151 | 5.5 | 8.5 | 1.752 | 30 | 8 | 20 | 40 |
| USP 70 | 161 | 5.5 | 8.5 | 2.044 | 30 | 8 | 20 | 40 |
| USP 80 | 176 | 5.5 | 8.5 | 2.336 | 30 | 8 | 20 | 40 |
| USP 90 | 195 | 5.5 | 8.5 | 2.628 | 30 | 8 | 20 | 40 |
| USP 105 | 225 | 5.5 | 8.5 | 3.066 | 45 | 8 | 20 | 40 |
| USP 120 | 254 | 5.5 | 8.5 | 3.504 | 45 | 8 | 20 | 40 |
| USP 135 | 293 | 5.5 | 8.5 | 3.942 | 45 | 8 | 20 | 40 |
| USP 150 | 342 | 5.5 | 8.5 | 4.380 | 45 | 8 | 20 | 40 |
| USP 170 | 400 | 5.5 | 8.5 | 4.964 | 45 | 8 | 20 | 40 |

UltraCycle Plus® Linerboard

| UCP Grade | Conditioned Weight (g/m ²) | Moisture (percent) | | CD Ring Crush (kN/m) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | | Top Cobb (GSM) | | Base Cobb (GSM) | |
|-----------|--|--------------------|------|----------------------|----------------------------|-----------------------|-----------------------|------|----------------|------|-----------------|------|
| | | Min. | Max. | | | | Min. | Max. | Min. | Max. | Min. | Max. |
| UCP 60 | 151 | 6.0 | 9.5 | 1.752 | 30 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |
| UCP 70 | 161 | 6.0 | 9.5 | 2.044 | 30 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |
| UCP 104 | 241 | 6.0 | 9.5 | 3.037 | 30 | 8 | 20 | 40 | 30 | 90 | 40 | 90 |

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

¹ Hercules Size Test is performed using 20% formic acid.



East Coast Corrugating Medium Specifications (English Units)

Date: August 22, 2008

Corrugating Medium

| Grade (lbs/msf) | Conditioned Weight (lbs/msf) | | | Moisture (percent) | | **Concora (lbf/10 flutes) | *Water Drop (seconds) |
|--------------------|---------------------------------|--------|------|-----------------------|------|------------------------------|--------------------------|
| | Nominal | Target | Min. | Max. | Min. | Max. | Min. |
| 23 | 23 | 21.9 | 24.2 | 7.0 | 12.0 | 45 | 200 |
| 26 | 26 | 24.7 | 27.3 | 7.0 | 12.0 | 50 | 200 |
| 30 | 30 | 28.5 | 31.5 | 7.0 | 12.0 | 55 | 200 |
| 33 | 33 | 31.4 | 34.7 | 7.0 | 12.0 | 55 | 200 |
| 36 | 36 | 34.2 | 37.8 | 7.0 | 12.0 | 60 | 200 |
| 40 | 40 | 38.0 | 42.0 | 7.0 | 12.0 | 60 | 200 |
| 45 | 45 | 42.8 | 47.3 | 8.0 | 12.0 | 85 | 200 |

Recycled Corrugating Medium

| Grade (lbs/msf) | Conditioned Weight (lbs/msf) | | | Moisture (percent) | | **Concora (lbf/10 flutes) | *Water Drop (seconds) |
|--------------------|---------------------------------|--------|------|-----------------------|------|------------------------------|--------------------------|
| | Nominal | Target | Min. | Max. | Min. | Max. | Min. |
| 30 | 30 | 28.5 | 31.5 | 7.0 | 12.0 | 55 | 200 |
| 33 | 33 | 31.4 | 34.7 | 7.0 | 12.0 | 55 | 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 (English Units)

Date: August 22, 2008

UltraStak Plus® Corrugating Medium

| Grade | Conditioned Weight (lbs/msf) | Moisture (percent) | | CD Ring CD Ring Crush (lbf/6 inch) | **Concora (lbf/10 flutes) | *Water Drop (seconds) |
|--------|---------------------------------|-----------------------|------|--|------------------------------|--------------------------|
| | | Min. | Max. | | | |
| USP 66 | 31.0 | 6.0 | 11.0 | 66 | 55 | 200 |
| USP 85 | 41.0 | 5.0 | 9.0 | 85 | 60 | 200 |

UltraCycle Plus® Corrugating Medium

| Grade | Conditioned Weight (lbs/msf) | Moisture (percent) | | CD Ring CD Ring Crush (lbf/6 inch) | **Concora (lbf/10 flutes) | *Water Drop (seconds) |
|--------|---------------------------------|-----------------------|------|--|------------------------------|--------------------------|
| | | Min. | Max. | | | |
| UCP 66 | 31.0 | 7.0 | 12.0 | 66 | 55 | 200 |
| UCP 85 | 41.0 | 5.0 | 9.0 | 85 | 60 | 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: August 22, 2008

Corrugating Medium

| Grade (g/m ²) | Conditioned Weight (g/m ²) | | | Moisture (percent) | | **Concora (N/10 flutes) | *Water Drop (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 (g/m ²) | Conditioned Weight (g/m ²) | | | Moisture (percent) | | **Concora (N/10 flutes) | *Water Drop (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: August 22, 2008

UltraStak Plus® Corrugating Medium

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

UltraCycle Plus® Corrugating Medium

| Grade | Conditioned Weight (g/m ²) | Moisture (percent) | | CD Ring Crush (kN/m) | **Concora (N/10 flutes) | *Water Drop (seconds) |
|--------|---|-----------------------|------|----------------------------|----------------------------|--------------------------|
| | | Min. | Max. | | | |
| UCP 66 | 151 | 7.0 | 12.0 | 1.927 | 244.8 | 200 |
| UCP 85 | 186 | 5.0 | 9.0 | 2.482 | 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 (English Units)

Date: August 22, 2008

Natural Kraft Linerboard

| Grade (lbs/msf) | Conditioned Weight (lbs/msf) | | | Moisture (percent) | | Mullen (psi) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|--------------------|---------------------------------|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|
| | Nominal | Target | Min. | Max. | Min. | Max. | Min. | Min. | Min. | Max. |
| 26.0 | 26.0 | 24.7 | 30.0 | 6.0 | 9.5 | 59 | 15 | 8 | 18 | 40 |
| 33.0 | 33.0 | 31.4 | 37.0 | 6.0 | 9.5 | 71 | 20 | 8 | 18 | 40 |
| 36.0 | 36.0 | 34.2 | 40.0 | 6.0 | 9.5 | 78 | 20 | 8 | 18 | 40 |
| 38.0 | 38.0 | 36.1 | 42.0 | 6.0 | 9.5 | 82 | 20 | 8 | 18 | 40 |
| 41.0 | 41.0 | 39.0 | 45.0 | 6.0 | 9.5 | 90 | 20 | 8 | 18 | 40 |
| 42.0 | 42.0 | 39.9 | 46.0 | 6.0 | 9.5 | 90 | 20 | 8 | 18 | 40 |
| 47.0 | 47.0 | 44.7 | 51.0 | 6.0 | 9.5 | 97 | 20 | 8 | 18 | 40 |
| 51.0 | 51.0 | 48.5 | 55.0 | 6.0 | 9.5 | 98 | 20 | 8 | 18 | 40 |
| 57.0 | 57.0 | 54.2 | 61.0 | 6.0 | 9.5 | 110 | 20 | 8 | 18 | 40 |
| 61.5 | 61.5 | 58.4 | 65.5 | 6.0 | 9.5 | 114 | 20 | 8 | 18 | 40 |
| 69.0 | 69.0 | 65.6 | 73.0 | 6.0 | 9.5 | 124 | 20 | 10 | 18 | 40 |
| 74.0 | 74.0 | 70.3 | 78.0 | 6.0 | 9.5 | 130 | 20 | 10 | 18 | 40 |
| 76.0 | 76.0 | 72.2 | 79.8 | 6.0 | 9.5 | 133 | 20 | 10 | 18 | 40 |
| 82.0 | 82.0 | 77.9 | 86.0 | 6.0 | 9.5 | 141 | 20 | 10 | 18 | 40 |
| 90.0 | 90.0 | 85.5 | 94.0 | 6.0 | 9.5 | 152 | 20 | 10 | 18 | 40 |

Wet Strength Linerboard

| Grade (lbs/msf) | Conditioned Weight (lbs/msf) | | | Moisture (percent) | | Mullen (psi) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|--------------------|---------------------------------|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|
| | Nominal | Target | Min. | Max. | Min. | Max. | Min. | Min. | Min. | Max. |
| 42 | 42 | 39.9 | 46.0 | 6.0 | 9.5 | 90 | 100 | 8 | 18 | 40 |
| 55 | 55 | 52.3 | 59.0 | 6.0 | 9.5 | 105 | 350 | 10 | 18 | 40 |
| 69 | 69 | 65.6 | 73.0 | 6.0 | 9.5 | 124 | 450 | 10 | 18 | 40 |
| 76 | 76 | 72.2 | 80.0 | 6.0 | 9.5 | 133 | 500 | 10 | 18 | 40 |

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

¹ Hercules Size Test is performed using 20% formic acid.



West Coast Linerboard Specifications (English Units)

Date: August 22, 2008

UltraStak Plus® Linerboard

| USP Grade | Conditioned Weight (lbs/msf) | Moisture (percent) | | CD Ring Crush (lbf/6 inch) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|-----------|------------------------------|--------------------|------|----------------------------|----------------------------|-----------------------|-----------------------|------|
| | | Min. | Max. | | | | Min. | Max. |
| USP 70 | 33.0 | 5.5 | 9.0 | 70 | 20 | 8 | 18 | 40 |
| USP 80 | 36.0 | 5.5 | 9.0 | 80 | 20 | 8 | 18 | 40 |
| USP 90 | 40.0 | 5.5 | 9.0 | 90 | 20 | 8 | 18 | 40 |
| USP 105 | 46.0 | 5.5 | 9.0 | 105 | 20 | 8 | 18 | 40 |
| USP 120 | 52.0 | 5.5 | 9.0 | 120 | 20 | 8 | 18 | 40 |
| USP 135 | 60.0 | 5.5 | 9.0 | 135 | 20 | 8 | 18 | 40 |
| USP 150 | 70.0 | 5.5 | 9.0 | 150 | 20 | 8 | 18 | 40 |
| USP 170 | 81.0 | 5.5 | 9.0 | 170 | 20 | 8 | 18 | 40 |

Wet Strength UltraStak Plus® Linerboard

| USP Grade | Conditioned Weight (lbs/msf) | Moisture (percent) | | CD Ring Crush (lbf/6 inch) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|-------------|------------------------------|--------------------|------|----------------------------|----------------------------|-----------------------|-----------------------|------|
| | | Min. | Max. | | | | Min. | Max. |
| W/S USP 120 | 52.0 | 5.5 | 9.0 | 120 | 375 | 8 | 18 | 40 |
| W/S USP 150 | 70.0 | 5.5 | 9.0 | 150 | 500 | 10 | 18 | 40 |
| W/S USP 170 | 81.0 | 5.5 | 9.0 | 170 | 550 | 12 | 18 | 40 |

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

¹ Hercules Size Test is performed using 20% formic acid.



West Coast Linerboard Specifications (Metric Units)

Date: August 22, 2008

Natural Kraft Linerboard

| Grade (g/m ²) | Conditioned Weight (g/m ²) | | | Moisture (percent) | | Mullen (kPa) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|------------------------------|---|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|
| | Nominal | Target | Min. | Max. | Min. | | | | Max. | Min. |
| 127 | 127 | 121 | 146 | 6.0 | 9.5 | 407 | 15 | 8 | 18 | 40 |
| 161 | 161 | 153 | 181 | 6.0 | 9.5 | 462 | 20 | 8 | 18 | 40 |
| 161 | 161 | 153 | 181 | 6.0 | 9.5 | 489 | 20 | 8 | 18 | 40 |
| 176 | 176 | 167 | 195 | 6.0 | 9.5 | 537 | 20 | 8 | 18 | 40 |
| 186 | 186 | 176 | 205 | 6.0 | 9.5 | 565 | 20 | 8 | 18 | 40 |
| 200 | 200 | 190 | 220 | 6.0 | 9.5 | 599 | 20 | 8 | 18 | 40 |
| 205 | 205 | 195 | 225 | 6.0 | 9.5 | 620 | 20 | 8 | 18 | 40 |
| 229 | 229 | 218 | 249 | 6.0 | 9.5 | 668 | 20 | 8 | 18 | 40 |
| 249 | 249 | 237 | 269 | 6.0 | 9.5 | 689 | 20 | 8 | 18 | 40 |
| 278 | 278 | 265 | 298 | 6.0 | 9.5 | 758 | 20 | 8 | 18 | 40 |
| 300 | 300 | 285 | 320 | 6.0 | 9.5 | 785 | 20 | 10 | 18 | 40 |
| 337 | 337 | 320 | 356 | 6.0 | 9.5 | 854 | 20 | 10 | 18 | 40 |
| 361 | 361 | 343 | 381 | 6.0 | 9.5 | 896 | 20 | 10 | 18 | 40 |
| 400 | 400 | 380 | 420 | 6.0 | 9.5 | 971 | 20 | 10 | 18 | 40 |
| 439 | 439 | 417 | 459 | 6.0 | 9.5 | 1047 | 20 | 10 | 18 | 40 |

Wet Strength Natural Linerboard

| Grade (g/m ²) | Conditioned Weight (g/m ²) | | | Moisture (percent) | | Mullen (kPa) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|------------------------------|---|--------|------|-----------------------|------|-----------------|-------------------------------|--------------------------|--------------------------|------|
| | Nominal | Target | Min. | Max. | Min. | | | | Max. | Min. |
| 205 | 205 | 195 | 225 | 6.0 | 9.5 | 620 | 100 | 8 | 18 | 40 |
| 269 | 269 | 255 | 288 | 6.0 | 9.5 | 723 | 350 | 10 | 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

¹ Hercules Size Test is performed using 20% formic acid.



West Coast Linerboard Specifications (Metric Units)

Date: August 22, 2008

UltraStak Plus® Linerboard

| USP Grade | Conditioned Weight (g/m ²) | Moisture (percent) | | CD Ring Crush (Kn/m) | HST ¹ (seconds) | Porosity (sec/100 ml) | Slide Angle (degrees) | |
|-----------|--|--------------------|------|----------------------|----------------------------|-----------------------|-----------------------|------|
| | | Min. | Max. | | | | Min. | Max. |
| USP 70 | 161 | 5.5 | 8.5 | 2.044 | 20 | 8 | 18 | 40 |
| USP 80 | 176 | 5.5 | 8.5 | 2.336 | 20 | 8 | 18 | 40 |
| USP 90 | 195 | 5.5 | 8.5 | 2.628 | 20 | 8 | 18 | 40 |
| USP 105 | 225 | 5.5 | 8.5 | 3.066 | 20 | 8 | 18 | 40 |
| USP 120 | 254 | 5.5 | 8.5 | 3.504 | 20 | 8 | 18 | 40 |
| USP 135 | 293 | 5.5 | 8.5 | 3.942 | 20 | 8 | 18 | 40 |
| USP 150 | 342 | 5.5 | 8.5 | 4.380 | 20 | 8 | 18 | 40 |
| USP 170 | 395 | 5.5 | 8.5 | 4.964 | 20 | 8 | 18 | 40 |

Wet Strength UltraStak Plus® Linerboard

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

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

¹ Hercules Size Test is performed using 20% formic acid.



West Coast Corrugating Medium Specifications (English Units)

Date: August 22, 2008

Corrugating Medium

| Grade (lbs/msf) | Conditioned Weight (lbs/msf) | | | Moisture (percent) | | **Concora (lbf/10 flutes) | *Water Drop (seconds) |
|--------------------|---------------------------------|--------|------|-----------------------|------|------------------------------|--------------------------|
| | Nominal | Target | Min. | Max. | Min. | Max. | Min. |
| 23 | 23 | 21.9 | 23.9 | 6.5 | 11.0 | 45 | 200 |
| 26 | 26 | 24.7 | 27.0 | 6.5 | 11.0 | 50 | 200 |
| 30 | 30 | 28.5 | 31.2 | 6.5 | 11.0 | 60 | 200 |
| 33 | 33 | 31.4 | 34.3 | 6.5 | 11.0 | 65 | 200 |
| 36 | 36 | 34.2 | 37.4 | 6.5 | 11.0 | 70 | 200 |
| 40 | 40 | 38.0 | 41.6 | 6.5 | 11.0 | 75 | 200 |

UltraStak Plus® Corrugating Medium

| Grade | Conditioned Weight (lbs/msf) | | Moisture (percent) | | CD Ring Crush (lbf/6 inch) | **Concora (lbf/10 flutes) | *Water Drop (seconds) |
|--------|---------------------------------|------|-----------------------|------|----------------------------------|------------------------------|--------------------------|
| | Target | Min. | Min. | Max. | Min. | Min. | Max. 90 Days |
| USP 66 | 33.0 | 31.4 | 5.0 | 9.0 | 66 | 60 | 200 |
| USP 85 | 41.0 | 38.0 | 5.0 | 9.0 | 85 | 60 | 200 |

Wet Strength UltraStak Plus® Corrugating Medium

| Grade | Conditioned Weight (lbs/msf) | | Moisture (percent) | | CD Ring Crush (lbf/6 inch) | **Concora (lbf/10 flutes) | *Water Drop (seconds) |
|------------|---------------------------------|------|-----------------------|------|----------------------------------|------------------------------|--------------------------|
| | Target | Min. | Min. | Max. | Min. | Min. | Max. 90 Days |
| W/S USP 35 | 26.0 | 24.7 | 5.0 | 9.0 | 35 | 50 | -- |
| W/S USP 85 | 41.0 | 38.0 | 5.0 | 9.0 | 85 | 85 | -- |

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 Corrugating Medium Specifications (Metric Units)

Date: August 22, 2008

Corrugating Medium

| Grade (g/m ²) | Conditioned Weight (g/m ²) | | | Moisture (percent) | | **Concora (n/10 flutes) | *Water Drop (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 |
| 176 | 176 | 167 | 185.0 | 6.5 | 11.0 | 267.0 | 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

| Grade | Conditioned Weight (g/m ²) | | Moisture (percent) | | CD Ring Crush (Kn/m) | **Concora (n/10 flutes) | *Water Drop (seconds) |
|--------|---|------|-----------------------|------|----------------------------|----------------------------|--------------------------|
| | Target | 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

| Grade | Conditioned Weight (g/m ²) | | Moisture (percent) | | CD Ring Crush (Kn/m) | **Concora (n/10 flutes) | *Water Drop (seconds) |
|------------|---|------|-----------------------|------|----------------------------|----------------------------|--------------------------|
| | Target | 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: August 22, 2008

| 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, Toledo 0.175 inch |
| Core Length | As specified by order: -1/8 or + 1/16 inch |
| Labels | One (1) large label or stencil on roll side (belly) with all pertinent information. 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 Schmidt hardness 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, and Palatka
West Coast is based on the following mill: Toledo