

# ALTO PARANA S.A.

ECF BLEACHED SOFTWOOD KRAFT PULP

## Export Quality – Paper Grade Typical Test Results

### Wood Species

100 % planted taeda and elliottii Pine

### Bleaching Sequence

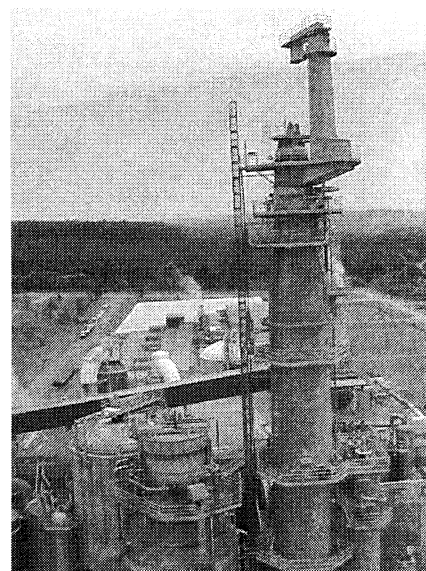
O D<sub>0</sub> Eop D<sub>1</sub> Ep D<sub>2</sub>

### Pulp Sheet Data

|                | Method       | Unit                | Target | Min  | Max |
|----------------|--------------|---------------------|--------|------|-----|
| ISO Brightness | SCAN - C 11  | %                   | 90.0   | 88.5 |     |
| Dirt Count     | ISO 5350 - 2 | mm <sup>2</sup> /Kg | 3.0    |      | 7.0 |

### Chemical Properties

|                     | Method      | Unit               | Target | Min | Max  |
|---------------------|-------------|--------------------|--------|-----|------|
| Intrinsic Viscosity | SCAN - C 15 | cm <sup>3</sup> /g |        | 710 |      |
| Ash                 | SCAN - C 6  | %                  | 0.09   |     | 0.18 |
| pH                  | SCAN - P 14 |                    | 6.0    |     |      |



### PFI Handsheet Data

|                | Method      | Unit                  | PFI Refined |      |      |      |      |
|----------------|-------------|-----------------------|-------------|------|------|------|------|
|                |             |                       | Unbeaten    | 500  | 2000 | 4000 | 7000 |
| Drainability   | SCAN - C 21 | ml CF                 | 729         | 724  | 663  | 546  | 373  |
| Tensile Index  | SCAN - P 38 | Nm/g                  | 23.1        | 39.5 | 63.7 | 77.9 | 84.5 |
| Burst Index    | SCAN - P 24 | Kpa m <sup>2</sup> /g | 1.3         | 2.1  | 4.2  | 5.3  | 5.6  |
| Tear Index     | SCAN - P 11 | mN m <sup>2</sup> /g  | 17.3        | 24.0 | 17.2 | 12.9 | 11.6 |
| Air Resistance | SCAN - P 19 | s/100 ml              | 0.4         | 0.5  | 1.0  | 2.9  | 14.2 |
| Bulk           | SCAN - P 7  | cm <sup>3</sup> /g    | 1.90        | 1.67 | 1.49 | 1.42 | 1.37 |
| Opacity        | SCAN - P 8  | %                     | 70.3        | 67.4 | 63.2 | 60.8 | 59.5 |

### Bale and Unit Dimensions

|        | Unit | Bale    | Unit (8 bales) |
|--------|------|---------|----------------|
| Lenght | cm   | 87 - 88 | 174 - 176      |
| Widht  | cm   | 74 - 76 | 74 - 76        |
| Height | cm   | 40 - 41 | 162 - 164      |
| Weight | Kg   | 240     | 1920           |

### Head Office

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### Pulp Mill

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