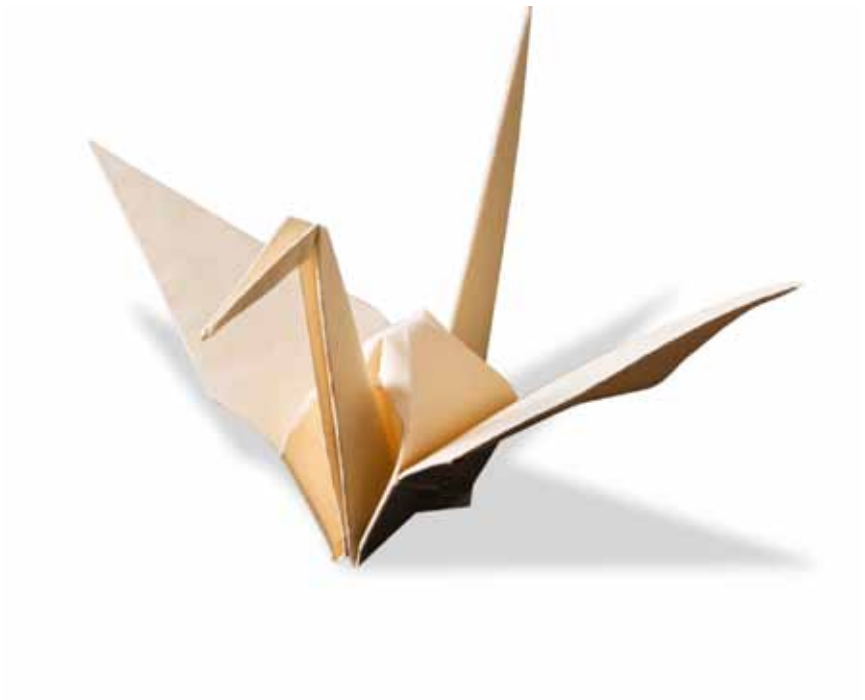
Woodpulp

Woodpulp

Woodpulp



To be a global leader in the development of sustainable forest products is growing the future

ARAUCO.
Growing the Future

# ARAUCO
# **around the World**


For more than 40 years, ARAUCO has been driven forward by its vision of being a global leader in sustainable forest products. During this time, we have evolved into one of the most respected forestry companies in the world, not only for the size and health of our plantation forests, the quality of our products, and superior customer service, but for our technical innovation, environmental responsibility and social commitment as well.

Our natural resources are the cornerstone of our sustainability. Through Bioforest, ARAUCO's scientific and technological research center, we apply leading-edge biotechnology to the development of new ways to increase the quality, productivity and performance of our forest plantations, as well as conservation and protection strategies to more than 800,000 acres of native forest within our forest holdings.

The products and services provided by ARAUCO's forestry, wood pulp, sawn timber, panels, and energy business areas embody the company's commitment to sustainable resource management. ARAUCO employs certified production processes that have minimal environmental impact to deliver a broad range of high quality products, meeting the needs of customers in more than 75 countries.


- Sales Offices
- Operational Centers
- Sales Agents

**Chile**
736,000 hectares
of Plantation Forests
5 Pulp mills
8 Saw mills
3 Panel mills
6 Remanufacturing facilities

**Argentina**
129,000 hectares of
Plantation Forests
1 Pulp mill
2 Saw mills
2 Panel mills
1 Remanufacturing facility

**Brazil**
67.000 hectares of
Plantation Forests
3 Panels mills

**Uruguay**
63.000 hectares of
Plantation Forests

**Annual Capacity**

Wood Pulp
3.2 million ADt

Panels
3.2 million $m^3$

Sawn Timber
2.8 million $m^3$

Moulding
750 thousand $m^3$

By carefully analyzing market trends, ARAUCO is able to anticipate market needs and have the right mix of products available for its customers. Through its sales offices in Argentina, Brazil, Chile, China, Colombia, Holland, Japan, Mexico, Peru and the United States, and sales agents in many other countries, ARAUCO delivers a superior level of customer service. This sales network, together with the company's state-of-the-art global logistics system covering transportation, loading/unloading, storage and distribution, has earned ARAUCO a reputation for consistent availability and timely delivery the world over.

ARAUCO's success is based on satisfying our customers with quality products and services while balancing the company's needs with those of our employees, the environment, and the people who live near our facilities and plantations. This is the starting point for the responsible and efficient management of our natural resources, the occupational health and safety of our workers and our active contribution to social development and welfare in the communities in which we operate.

# Woodpulp Business Area

ARAUCO'S PULP BUSINESS IS ONE OF THE COMPANY'S FIVE STRATEGIC UNITS, AND CURRENTLY THE WORLD'S SECOND LARGEST MARKET PULP PRODUCER. WITH AN ANNUAL PRODUCTION CAPACITY OF 3.2 MILLION TONS, WE PROVIDE OUR CUSTOMERS WITH A CONSTANT SUPPLY OF HIGH QUALITY PRODUCTS.

We manufacture bleached, unbleached and fluff pulp using certified processes that have a minimal impact on our environment. Our products have excellent technical properties, fulfilling the requirements of more than 400 customers distributed throughout 45 countries around the world.

ARAUCO sources the raw material for all its products, including pulp, from 1.6 million hectares (3.9 million acres) of proprietary forest plantations located throughout Chile, Argentina, Brazil and Uruguay. Our forest holdings, sustainably managed under strict international standards and the application of research and innovation, provide the foundation for ARAUCO's current and future competitive strength in the marketplace, and ensure a steady supply of fiber for our production facilities.

Our Pulp business has reached a leading position through a comprehensive business model and an accurate sales strategy providing broad market coverage, full understanding of the market, a wide network of sales representatives and various sales offices located throughout the world.

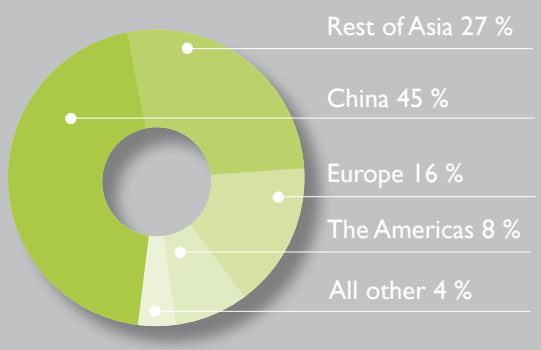
In addition, ARAUCO operates a state-of-the-art logistics system that includes loading, transport, storage and distribution. Every day, a significant volume of pulp is loaded onto trucks and trains and transported from our facilities to high technology ports located in Coronel, San Vicente and Lirquén, in the bay of Concepción, Chile. For the past two years ARAUCO has shipped a monthly average of 3,100 containers and four Breakbulk ships of pulp to European and Asian markets, where we operate 14 warehouses and a far-reaching distribution network.

The company's pulp business operates a highly professional sales structure that deeply understands the different markets and customers' requirements, which results in a significant comparative advantage. Through our sales strategy and our advanced logistics system we provide excellent service, guaranteeing reliable and timely deliveries the world over, backed by ARAUCO's firm commitment to quality for more than 40 years.

## Woodpulp Sales and Production

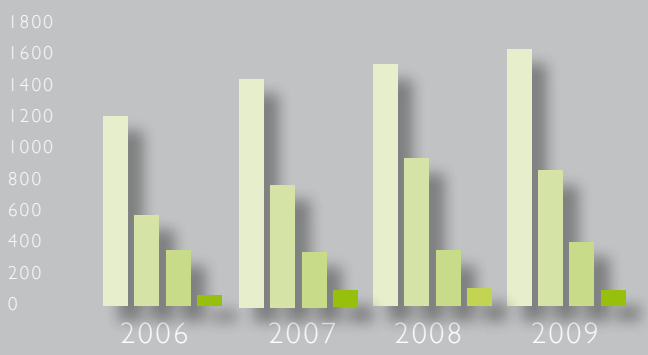
## 2009 Pulp Sales by Market

(US$ 1,683 million)




## Woodpulp Production by Product

Thousands of ADMt´s




# Pulp Process

THE DIFFERENT TYPES OF PULP ARE WIDELY USED TO MANUFACTURE DIVERSE PAPER AND PACKAGING PRODUCTS AS WELL AS OTHER INDUSTRIAL PRODUCTS. ONE OF ARAUCO´S COMPETITIVE ADVANTAGES IS THAT OUR PULP IS MADE FROM PULPABLE WOOD SUPPLIED BY OUR OWN RAPID-GROWTH FORESTS AND WOODCHIPS PROVIDED BY OUR OWN SAWMILLS, WITH ONLY A SMALL AMOUNT FROM THIRD-PARTY OWNED SAWMILLS.

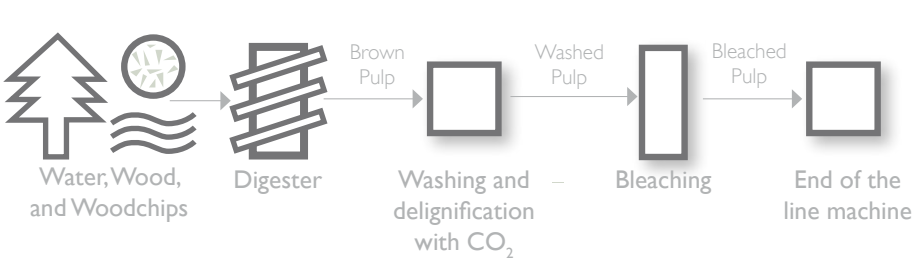
Pulp
Process

To produce its pulp ARAUCO uses the kraft process, also known as sulfate process, in which wood chips are chemically treated to separate the fiber from the lignin that holds it together.

Kraft technology results in highly resistant pulp, since the chemical treatment does not damage the wood fiber. In addition, the chemical products used are recovered through complementary processes and can be reapplied in a new pulp production cycle.

All of ARAUCO's mills producing bleached pulp use ECF (Elemental Chlorine Free) technology, which is universally recognized as having a minimal impact on the environment, guaranteeing a high quality product.

Wastewater effluents discharged from pulp mills using ECF technology in their bleaching process have no negative effects on aquatic ecosystems, making it the best available technology in the industry and the best option for ARAUCO, a company that maintains a permanent commitment to minimizing the environmental impact of its industrial activities.



# Our Mills

## **Licancel Pulp Mill**/Chile
Licantén, Maule Region

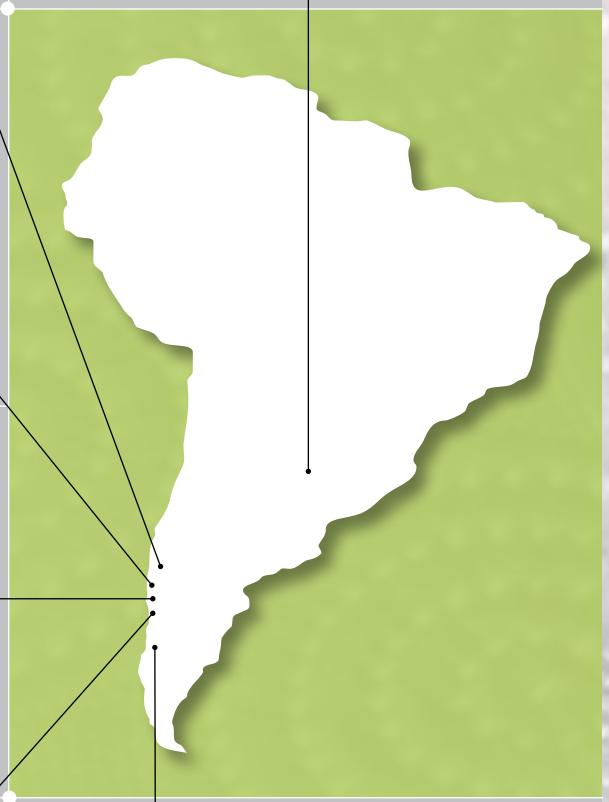
| | |
|---|---|
| Annual production capacity: | 140,000 metric tons of bleached pine kraft pulp and unbleached pine kraft pulp. |
| Brand: | Arauco BKP, Arauco UKP |
| Line 1: | Batch process |
| Certification: | ISO 9001 and CERTFOR/ PEFC Chain of Custody |

## **Alto Paraná Pulp Mill**/Argentina
Misiones Province, Argentina

| | |
|---|---|
| Annual production capacity: | 350,000 metric tons of bleached taeda pine kraft pulp and fluff pulp |
| Brand: | Alto Paraná BKP. Alto Paraná FLUFF Continuous Process |
| Certification: | ISO 9001 2008, ISO 14001 2004, OSHAS 18001 2007, FSC Chain of Custody. |

## **Constitución Pulp Mill**/Chile
Constitución, Maule Region

| | |
|---|---|
| Annual production capacity: | 355,000 metric tons of unbleached pine kraft pulp. |
| Brand: | Arauco UKP |
| Line 1: | Batch process |
| Certification: | ISO 9001, ISO 14001 and CERTFOR/ PEFC Chain of Custody |



## **Nueva Aldea Pulp Mill**/Chile
Ránquil, Bío Bío Region

| | |
|---|---|
| Annual production capacity: | 1,027,000 metric tons of bleached pine and eucalyptus kraft pulp, in equal shares. |
| Brand: | Arauco BKP, Arauco EKP |
| Line 1: | Pine; Continuous process |
| Line 2: | Eucalipto; Continuous process |
| Certification: | ISO 9001, ISO 14001, FSC and CERTFOR/PEFC Chain of Custody |

## **Arauco Pulp Mill**/Chile
Arauco, Bío Bío Region

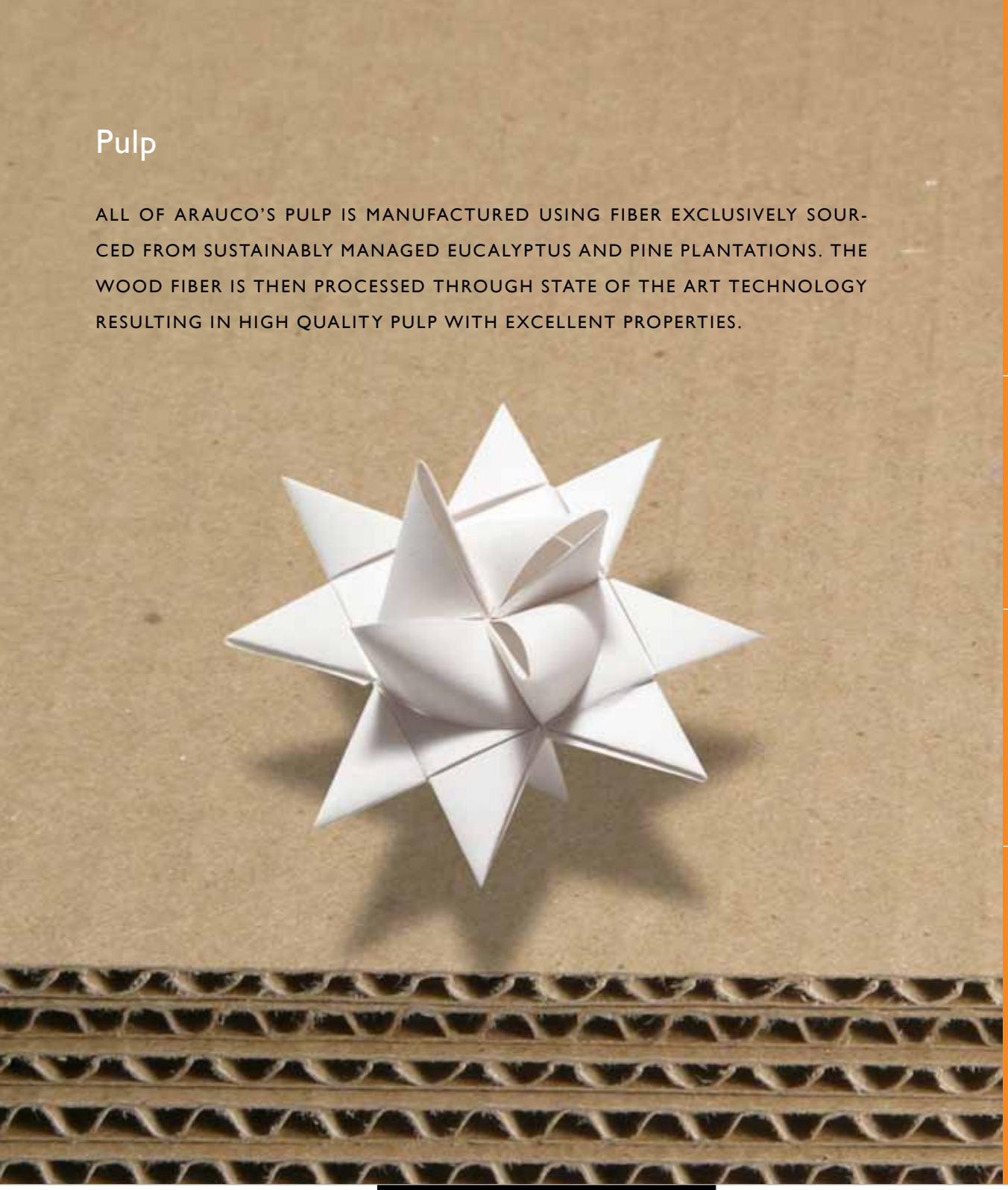
| | |
|---|---|
| Annual production capacity: | 790,000 metric tons of bleached kraft pulp (500,000 pine and 290,000 eucalyptus) |
| Brand: | Arauco BKP, Arauco EKP |
| Line 1: | Eucalyptus; Batch Process |
| Line 2: | Pine; Continuous Process |
| Certification: | ISO 9001, ISO 14001, FSC Chain of Custody for EKP and CERTFOR/PEFC Chain of Custody |

## **Valdivia Pulp Mill**/Chile
San José de la Mariquina, Los Ríos Region

| | |
|---|---|
| Annual production capacity: | 550,000 metric tons of bleached pine and/or eucalyptus kraft pulp |
| Brand: | Arauco BKP, Arauco EKP |
| Line 1: | Super Batch Process (10 digesters) |
| Certification: | ISO 9001, ISO 14001, FSC and CERTFOR/PEFC Chain of Custody |

# Pulp

ALL OF ARAUCO'S PULP IS MANUFACTURED USING FIBER EXCLUSIVELY SOURCED FROM SUSTAINABLY MANAGED EUCALYPTUS AND PINE PLANTATIONS. THE WOOD FIBER IS THEN PROCESSED THROUGH STATE OF THE ART TECHNOLOGY RESULTING IN HIGH QUALITY PULP WITH EXCELLENT PROPERTIES.



## Chain of Custody Certifications according to facility and product

**Arauco Pulp Mill**

ARAUCO BKP: CERTFOR COC 2004
ARAUCO EKP: CERTFOR COC 2004, FSC–STD-40-004 V2-0, FSC–STD-40-005 V2-1

**Constitución Pulp Mill**

ARAUCO UKP: CERTFOR COC 2004

ARAUCO

## BKP

(Radiata Pine)

ALTO PARANÁ BKP

(Taeda Pine)

Bleached Radiata and Taeda pine pulp, mainly used for the manufacture of writing and printing papers, as well as tissue and specialty papers such as labels and food packaging.

ARAUCO

## EKP

(Eucalyptus Globulus and Nitens)

Bleached eucalyptus pulp. Like BKP pulp, it is used for the manufacture of a variety of papers, in addition to the production of decorative paper and wallpaper.

ARAUCO

## UKP

(Radiata Pine)

Unbleached Radiata pine pulp, used for the production of a wide variety of specialty products, such as packaging, dielectric paper, and fiber cement, among others.

ALTO PARANÁ

## Fluff Pulp

(Taeda Pine)

Fluff pulp is especially used for the manufacture of highly absorbent products, such as disposable diapers and feminine hygiene products.

**Licancel Pulp Mill**

ARAUCO BKP: CERTFOR COC 2007

**Nueva Aldea Pulp Mill**

ARAUCO BKP: CERTFOR COC 2004, FSC–STD-40-004 V2-0, FSC–STD-40-005 V2-1
ARAUCO EKP: CERTFOR COC 2004, FSC–STD-40-004 V2-0, FSC–STD-40-005 V2-1

**Valdivia Pulp Mill**

ARAUCO BKP: CERTFOR COC 2004, FSC–STD-40-004 V2-0, FSC–STD-40-005 V2-1
ARAUCO EKP: CERTFOR COC 2004, FSC–STD-40-004 V2-0, FSC–STD-40-005 V2-1

**Alto Paraná Pulp Mill**

ALTO PARANÁ BKP: FSC–STD-40-004 V2-0, FSC–STD-40-005 V2-1

# Technical Data Sheet

Product : Unbleached Softwood Kraft Pulp
Brandname : **UKP Arauco Standard**
Wood species : Pinus Radiata D. Don
Mills : Constitución / Licancel

## Typical Test Results

### a. Optical Properties

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| DirtCount | ($mm^2$/ $m^2$) | 85 | 9 | T 213 cm-85 |

### b. Response to PFI laboratory refining(1)

| | Unit | Typical Values | | | | Based on |
|---|---|---|---|---|---|---|
| PFI Revolutions | ( ) | 0 | 5500 | 7500 | 10000 | |
| Freeness | (°SR) | 12 | 20 | 30 | 45 | |
| Breaking Length | (Km) | 3,6 | 10,5 | 11,1 | 11,4 | T414 om-88 |
| Burst Factor | (f) | 19 | 80 | 85 | 88 | T403 om-85 |
| Tear Factor | (f) | 200 | 128 | 115 | 110 | T494 om-88 |

### c. Typical range of properties at 30°SR

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Breaking Length | (km) | 11,1 | 0,2 | T414 om-88 |
| Burst Factor | (f) | 85 | 2 | T403 om-85 |
| Tear Factor | (f) | 115 | 4 | T494 om-88 |
| Dry Zero Span | (km) | 19,0 | 0,7 | T231 cm-96 |
| Wet Zero Span | (km) | 17,0 | 0,7 | T273 pm-95 |

(1) Typical values obtained at constitution mill's laboratory with normal production samples. Handsheet froming based on T 205 om-88

### d. Fibre length

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| L.Weighted | (mm) | 2,46 | 0,03 | Lorentzen & Wetre fibertester 912 |

### e. Lignin content

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Kappa Number | (N°) | 37 | 2,5 | T 236 cm-85 |

### f. Chemical properties

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Ash | (%) | 0,45 | 0,05 | T 211 om-85 |
| Copper | (ppm) | 3 | 1 | T 266 OM-88 |
| Iron | (ppm) | 30 | 6 | T 266 OM-88 |
| Sodium | (ppm) | 650 | 100 | T 266 OM-88 |
| Calcium | (ppm) | 650 | 100 | T 266 OM-88 |
| Alcohol- Benzeno | (%) | 0,13 | 0,04 | T 204 OS-76 |
| Dichlorinemethane | (%) | 0,06 | 0,02 | T 204 OS-76 |
| Conductivity | (mS/m) | 6 | 1 | IEC 1979 |
| pH ° | () | 6,1 | 0,2 | IEC 1979 |

### g. Bale Dimensions

| | Unit | Range |
|---|---|---|
| Height | (cm) | 44-47 |
| Width | (cm) | 70-73 |
| Length | (cm) | 80-83 |
| Weight | (Kg) | 250 |

# Technical Data Sheet

Product : Unbleached Softwood Kraft Pulp
Brandname : **UKP Arauco low Kappa**
Wood species : Pinus Radiata D. Don
Mill : Constitución

## Typical Test Results

### a. Optical Properties

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| DirtCount | ($mm^2$/ $m^2$) | 85 | 9 | T 213 cm-85 |

### b. Response to PFI laboratory refining (1)

| | Unit | Typical Values | | | | Based on |
|---|---|---|---|---|---|---|
| PFI Revolutions | ( ) | 0 | 5500 | 7500 | 10000 | |
| Freeness | (°SR) | 12 | 20 | 30 | 45 | |
| Breaking Length | (Km) | 3,6 | 10,5 | 11,1 | 11,4 | T414 om-88 |
| Burst Factor | (f) | 19 | 80 | 85 | 88 | T403 om-85 |
| Tear Factor | (f) | 200 | 128 | 115 | 110 | T494 om-88 |

### c. Typical range of properties at 30°SR

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Breaking Length | (km) | 11,1 | 0,2 | T414 om-88 |
| Burst Factor | (f) | 85 | 2 | T403 om-85 |
| Tear Factor | (f) | 115 | 4 | T494 om-88 |
| Dry Zero Span | (km) | 19,0 | 0,7 | T231 cm-96 |
| Wet Zero Span | (km) | 17,0 | 0,7 | T273 pm-95 |

(1) Typical values obtained at constitution mill's laboratory with normal production samples. Handsheet froming based on T 205 om-88

### d. Fibre length

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| L.Weighted | (mm) | 2,46 | 0,03 | Lorentzen & Wetre fibertester 912 |

### e. Lignin content

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Kappa Number | (N°) | 29 | 2,5 | T 236 cm-85 |

### f. Chemical properties

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Ash | (%) | 0,40 | 0,05 | T 211 om-85 |
| Copper | (ppm) | 2,0 | 0,6 | T 266 OM-88 |
| Iron | (ppm) | 30 | 6 | T 266 OM-88 |
| Sodium | (ppm) | 470 | 60 | T 266 OM-88 |
| Calcium | (ppm) | 600 | 100 | T 266 OM-88 |
| Alcohol- Benzeno | (%) | 0,10 | 0,03 | T 204 OS-76 |
| Dichlorinemethane | (%) | 0,06 | 0,02 | T 204 OS-76 |
| Conductivity | (mS/m) | 5,5 | 1,0 | IEC 1979 |
| pH ° | () | 6,2 | 0,2 | IEC 1979 |

### g. Bale Dimensions

| | Unit | Range |
|---|---|---|
| Height | (cm) | 44-47 |
| Width | (cm) | 70-73 |
| Length | (cm) | 80-83 |
| Weight | (Kg) | 250 |

# Technical Data Sheet

Product : Unbleached Softwood Kraft Pulp
Brandname : **UKP Arauco Light Colour - High Luminosity**
Wood species : Pinus Radiata D. Don
Mill : Constitución

## Typical Test Results

### a. Optical Properties

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Luminosity ("L"Hunter) | (%) | >63,5 | | ISO 2469 |
| DirtCount | ($mm^2$/ $m^2$) | 85 | 9 | T 213 cm-85 |

### b. Response to PFI laboratory refining (1)

| | Unit | | Typical Values | | | Based on |
|---|---|---|---|---|---|---|
| PFI Revolutions | ( ) | 0 | 5500 | 7500 | 10000 | |
| Freeness | (°SR) | 12 | 20 | 30 | 45 | |
| Breaking Length | (Km) | 3,6 | 10,5 | 11,1 | 11,4 | T414 om-88 |
| Burst Factor | (f) | 19 | 80 | 85 | 88 | T403 om-85 |
| Tear Factor | (f) | 200 | 128 | 115 | 110 | T494 om-88 |

### c. Typical range of properties at 30°SR

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Breaking Length | (km) | 11,1 | 0,2 | T414 om-88 |
| Burst Factor | (f) | 85 | 2 | T403 om-85 |
| Tear Factor | (f) | 115 | 4 | T494 om-88 |
| Dry Zero Span | (km) | 19,0 | 0,7 | T231 cm-96 |
| Wet Zero Span | (km) | 17,0 | 0,7 | T273 pm-95 |

(1) Typical values obtained at constitution mill's laboratory with normal production samples. Handsheet froming based on T 205 om-88

### d. Fibre length

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| L.Weighted | (mm) | 2,46 | 0,03 | Lorentzen & Wetre fibertester 912 |

### e. Lignin content

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Kappa Number | (N°) | 37 | 2,5 | T 236 cm-85 |

### f. Chemical properties

| | Unit | Average | Std. Dev | Based on |
|---|---|---|---|---|
| Ash | (%) | 0,45 | 0,05 | T 211 OM-85 |
| Copper | (ppm) | 3 | 1 | T 266 OM-88 |
| Iron | (ppm) | 30 | 7 | T 266 OM-88 |
| Sodium | (ppm) | 650 | 100 | T 266 OM-88 |
| Calcium | (ppm) | 650 | 100 | T 266 OM-88 |
| Alcohol- Benzeno | (%) | 0,13 | 0,04 | T 204 OS-76 |
| Dichlorinemethane | (%) | 0,06 | 0,02 | T 204 OS-76 |
| Conductivity | (mS/m) | 6 | 1 | IEC 1979 |
| pH | () | 6,1 | 0,2 | IEC 1979 |

### g. Bale Dimensions

| | Unit | Range |
|---|---|---|
| Height | (cm) | 44-47 |
| Width | (cm) | 70-73 |
| Length | (cm) | 80-83 |
| Weight | (Kg) | 250 |

# Technical Data Sheet

Product : ECF Bleached Eucalyptus Kraft Pulp
Brandname : **Arauco EKP**
Wood species : Eucalyptus
Mill : Valdivia

## Typical Test Results

### a. Optical Properties

| | Unit | Lower limit | Maximum | Based on |
|---|---|---|---|---|
| Brightness | (% ISO) | 89 | | ISO 2470 |
| Dirt Count | ($mm^2/kg$) | | 1.5 | ISO 5350-2 |

### b. Response to PFI laboratory refining (1)

**Refining curve:**

| | Unit | Typical Values | | | | Based on |
|---|---|---|---|---|---|---|
| PFI Revolutions | () | 0 | 500 | 1500 | 3000 | ISO 5263-2 |
| Freeness | (°SR) | 23.0 | 30.0 | 40.0 | 58.0 | ISO 5267/1 |
| Tensile Index | (Nm/g) | 29.8 | 53.9 | 81.7 | 94.6 | ISO 1924-2 |
| Burst Index | ($kPam^2/g$) | 1.4 | 3.1 | 5.6 | 7.1 | ISO 2758 |
| Tear Index | ($mNm^2/g$) | 4.5 | 7.5 | 8.5 | 8.0 | ISO 1974 |
| Gurley Porosity | (s/100 ml) | 2.4 | 8.0 | 32.7 | 252 | ISO 5636-5 |
| Bulk | ($cm^3/g$) | 1.72 | 1.53 | 1.36 | 1.23 | ISO 534 |
| Opacity | (%) | 79.6 | 76.4 | 72.1 | 67.0 | ISO 2471 |

### Typical range of properties at 30°SR

| | Unit | Min | Average | Max | Based on |
|---|---|---|---|---|---|
| Tensile Index | (Nm/g) | 53.0 | 55.0 | 57.0 | ISO 1924-2 |
| Burst Index | ($kPam^2/g$) | 2.7 | 3.1 | 3.5 | ISO 2758 |
| Tear Index | ($mNm^2/g$) | 7.1 | 7.6 | 8.1 | ISO 1974 |
| Gurley Porosity | (s/100 ml) | 6.8 | 8.4 | 10.0 | ISO 5636-5 |
| Bulk | ($cm^3/g$) | 1.49 | 1.53 | 1.57 | ISO 534 |
| Opacity | (%) | 75.6 | 76.3 | 77.2 | ISO 2471 |

### c. Fiber morphology and others characteristics

| | Unit | Typical value | Based on |
|---|---|---|---|
| Fiber length | (mm) | 0.70 | Kajaani FS200 |
| Coarseness | (mg/m) | 0.070 | Kajaani FS200 |
| Fiber population | (fiber/mg) | 26900 | Kajaani FS200 |

(1) Typical values obtained at constitution mill's laboratory with normal production samples.
Handsheet froming based on T 205 om-88

# Technical Data Sheet

Product : ECF Bleached Eucalyptus Kraft Pulp
Brandname : **Arauco EKP**
Wood species : Eucalyptus
Mills : Arauco, Nueva Aldea

## Typical Test Results

### a. Optical Properties

| | Unit | Lower limit | Maximum | Based on |
|---|---|---|---|---|
| Brightness | (% ISO) | 89 | | ISO 2470 |
| Dirt Count | ($mm^2/kg$) | | 1.5 | ISO 5350-2 |

### b. Response to PFI laboratory refining (1)

**Refining curve:**

| | Unit | | Typical Values | | | Based on |
|---|---|---|---|---|---|---|
| PFI Revolutions | () | 0 | 500 | 1500 | 3000 | ISO 5263-2 |
| Freeness | (°SR) | 24.0 | 28.0 | 35.0 | 50.0 | ISO 5267/1 |
| Tensile Index | (Nm/g) | 32.2 | 53.8 | 77.8 | 90.9 | ISO 1924-2 |
| Burst Index | ($kPam^2/g$) | 1.4 | 2.8 | 4.6 | 6.2 | ISO 2758 |
| Tear Index | ($mNm^2/g$) | 4.3 | 6.8 | 8.4 | 8.0 | ISO 1974 |
| Gurley Porosity | (s/100 ml) | 1.5 | 3.6 | 12.2 | 64.9 | ISO 5636-5 |
| Bulk | ($cm^3/g$) | 1.87 | 1.65 | 1.48 | 1.34 | ISO 534 |
| Opacity | (%) | 78.4 | 75.6 | 71.9 | 68.5 | ISO 2471 |

### Typical range of properties at 30°SR

| | Unit | Min | Average | Max | Based on |
|---|---|---|---|---|---|
| Tensile Index | (Nm/g) | 57.5 | 61.2 | 65.7 | ISO 1924-2 |
| Burst Index | ($kPam^2/g$) | 3.1 | 3.6 | 3.9 | ISO 2758 |
| Tear Index | ($mNm^2/g$) | 7.5 | 8.0 | 8.5 | ISO 1974 |
| Gurley Porosity | (s/100 ml) | 3.5 | 4.5 | 6.0 | ISO 5636-5 |
| Bulk | ($cm^3/g$) | 1.55 | 1.57 | 1.62 | ISO 534 |
| Opacity | (%) | 73 | 74.0 | 75.0 | ISO 2471 |

### c. Fiber morphology and others characteristics

| | Unit | Typical value | Based on |
|---|---|---|---|
| Fiber length | (mm) | 0.76 | Kajaani FS200 |
| Coarseness | (mg/m) | 0.078 | Kajaani FS200 |
| Fiber population | (fiber/mg) | 22400 | Kajaani FS200 |

(1) Typical values obtained at constitution mill's laboratory with normal production samples. Handsheet froming based on T 205 om-88

# Technical Data Sheet

Product : ECF Bleached Softwood Kraft Pulp
Brandname : **Arauco BKP**
Wood species : Pinus radiata D. Don
Mills : Arauco, Valdivia, Nueva Aldea and Licancel

## Typical Test Results

### a. Optical Properties

| | Unit | Lower limit | Maximum | Based on |
|---|---|---|---|---|
| Brightness | (% ISO) | 89 | | ISO 3688 |
| Dirt Count | ($mm^2/kg$) | | 1.5 | ISO 5350-2 |

### b. Response to PFI laboratory refining (1)

**Refining curve:**

| | Unit | Typical Values | | | | | | Based on |
|---|---|---|---|---|---|---|---|---|
| PFI Revolutions | () | 0 | 500 | 1500 | 3000 | 6000 | 9600 | ISO 5263-2 |
| Freeness | (°SR) | 12 | 13.0 | 14 | 16 | 25 | 48.0 | ISO 5267/1 |
| Tensile Index | (Nm/g) | 22.4 | 41.8 | 64.6 | 80.5 | 91.0 | 96.7 | ISO 1924-2 |
| Burst Index | ($kPam^2/g$) | 1.2 | 2.9 | 5.0 | 6.6 | 7.5 | 7.9 | ISO 2758 |
| Tear Index | ($mNm^2/g$) | 14.2 | 20.9 | 13.9 | 10.5 | 9.0 | 8.4 | ISO 1974 |
| Gurley Porosity | (s/100 ml) | 0.6 | 1.1 | 2.0 | 4.0 | 15.4 | 157.6 | ISO 5636-5 |
| Bulk | ($cm^3/g$) | 1.99 | 1.71 | 1.51 | 1.41 | 1.34 | 1.28 | ISO 534 |
| Opacity | (%) | 72.7 | 69.2 | 64.5 | 61.1 | 57.2 | 54.5 | ISO 2471 |

### Typical range of properties at 30°SR

| | Unit | Min | Average | Max | Based on |
|---|---|---|---|---|---|
| Tensile Index | (Nm/g) | 88.0 | 91.0 | 94.0 | ISO 1924-2 |
| Burst Index | ($kPam^2/g$) | 7.2 | 7.5 | 7.8 | ISO 2758 |
| Tear Index | ($mNm^2/g$) | 8.6 | 9.0 | 9.4 | ISO 1974 |

### c. Fiber morphology and others characteristics

| | Unit | Typical value | Based on |
|---|---|---|---|
| Fiber length | (mm) | 2.15 | Kajaani FS200 |
| Coarseness | (mg/m) | 0.246 | Kajaani FS200 |
| Fiber population | (fiber/mg) | 3900 | Kajaani FS200 |

(1) Typical values obtained at constitution mill's laboratory with normal production samples.
Handsheet froming based on T 205 om-88

## Environmental Responsibility

At ARAUCO we use leading edge, environmentally friendly technology, such as ECF, which is used to bleach our pulp products. This, together with the application of an efficient strategy that includes values, commitments and standards, in addition to the best available technology in the industry, constitutes our continuous efforts to improve our environmental performance.

## What is ECF Technology?

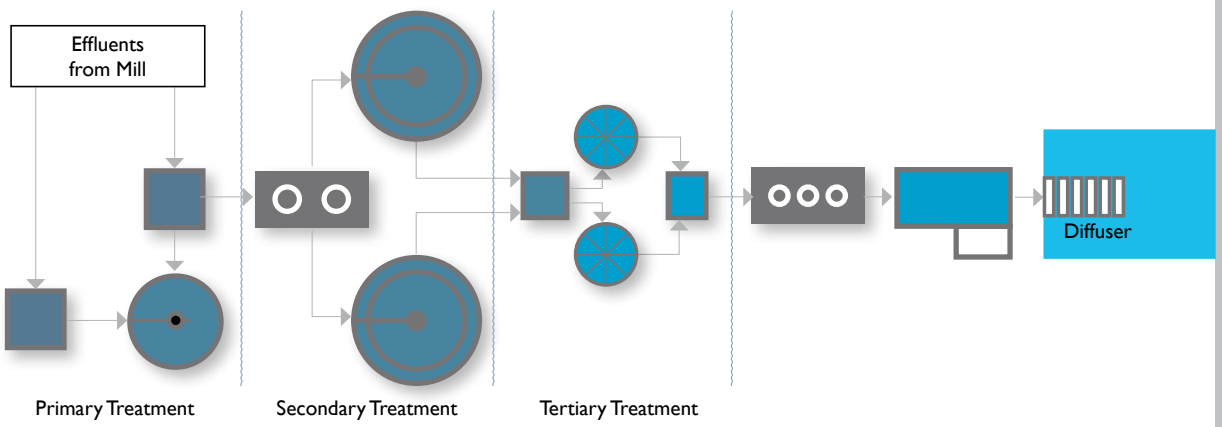
ECF means Elemental Chlorine Free. By using ECF during the bleaching process, chemical reactions occur that are similar to those produced by organic substances found in nature.

The chemical reactions that result from ECF technology naturally degrade; they do not remain in the environment and are not hazardous to aquatic ecosystems.

By replacing chlorine with chlorine dioxide, the production of dioxins and furans that are hazardous to the environment is eliminated.

Elemental chlorine free bleaching is considered to be the best available technology for the pulp industry in Europe and the U.S.

More than 80% of pulp mills around the world currently use ECF technology, and of course, ARAUCO is one of them.




## Treatment of Effluents

| Mill | Primary | Secundary | Tertiary |
|---|---|---|---|
| Licancel | x | x | |
| Constitución | x | x | |
| Arauco | x | x | |
| Valdivia | x | x | x |
| Nueva Aldea | x | x | x |
| Alto Paraná | x | x | |

## Environmental Performance

### Indicators

In addition to the ECF bleaching process, ARAUCO uses the best available technology in other environmental control areas, such as advanced odor and air emission control systems, which enable the company to comply with strict international standards and current regulations in all the countries in which we operate. Also, all our pulp production units have certified environmental management systems and Chain of Custody, ensuring the traceability of our wood fiber.

### Pulp

| Raw Material | Units | 2008 | 2009 (*) |
|---|---|---|---|
| Wood (pulpable woodchips) | t secas/año | | |
| Water | $m^3$/ ADMt | 52.47 | 59.32 |
| Energy | GWh | 1.701 | 1.812 |
| Sulfuric Acid | kg/ ADMt | 26.43 | 22.90 |
| Limestone | kg/ ADMt | 15.09 | 11.94 |
| Oxygen | kg/ ADMt | 16.98 | 19.67 |
| Liquid Oxygen (2) | kg/ ADMt | 4.28 | 2.66 |
| Soda | kg/ ADMt | 23.10 | 23.87 |
| Sodium Chloride (1) | kg/ ADMt | 25.16 | 24.87 |
| Hydrogen Peroxide | kg/ ADMt | 2.87 | 2.79 |
| **Production** | | | |
| Pulp | millones de ADt | 2.9 | 3.0 |
| **Emissions** | | | |
| Wastewater | $m^3$/ADt | 46.57 | 44,94 |
| **Water Effluents** | | | |
| Total Suspended Solids | kg/ ADMt | 1.82 | 1.62 |
| DQO | kg/ ADMt | 13.38 | 12.10 |
| DBO5 | kg/ ADMt | 1.05 | 0.76 |
| P | kg/ ADMt | 0.05 | 0.04 |
| N | kg/ ADMt | 0.09 | 0.09 |
| AOX | kg/ ADMt | 0.12 | 0.10 |
| **Air Emissions** | | | |
| SO2 | kg/ ADMt | 1.70 | 0.75 |
| NO2 | kg/ADMt | 1.48 | 1.62 |
| Particulate Matter | kg/ADMt | 1.83 | 1.17 |
| **Total Solid Waste** | kg/ ADMt | 107.72 | 91.50 |

*(1) Includes information for pulp mills in Chile (Arauco, Licancel, Valdivia and Nueva Aldea).*

*(2) Does not include consumption in Alto Paraná mill.*

| Discharge Location |
|---|
| Mataquito River |
| Ocean |
| Gulf of Arauco |
| Cruces River |
| Itata River/Ocean |
| Paraná River |

During 2009, ARAUCO invested US$69 million in various environmental improvements for its production units; 83% of this amount was assigned to projects improving the environmental performance of the pulp business area.


DINING ROOM
LIVING ROOM
EXISTING BRICK GARAGE
NEW 2ND FL ABOVE
HALL
STOR.
CL
+355.70
+355.20
+353.20
2-2x10
3-2x10
PROVIDE 4 FEET LONG
1.5" THIC
TYP.
PL. 8"X8"X1/2"+
2-3/8"X8"
ANCHORS
TIES @ 24" OC
16R
UP 3'-0"
4R
DN
SA
CO
CONT.
1100X9
230X9 @16"o/c
FIRST F
SCALE: 1/4"=1'
42'-8"
B=108.88m
8260

## Energy

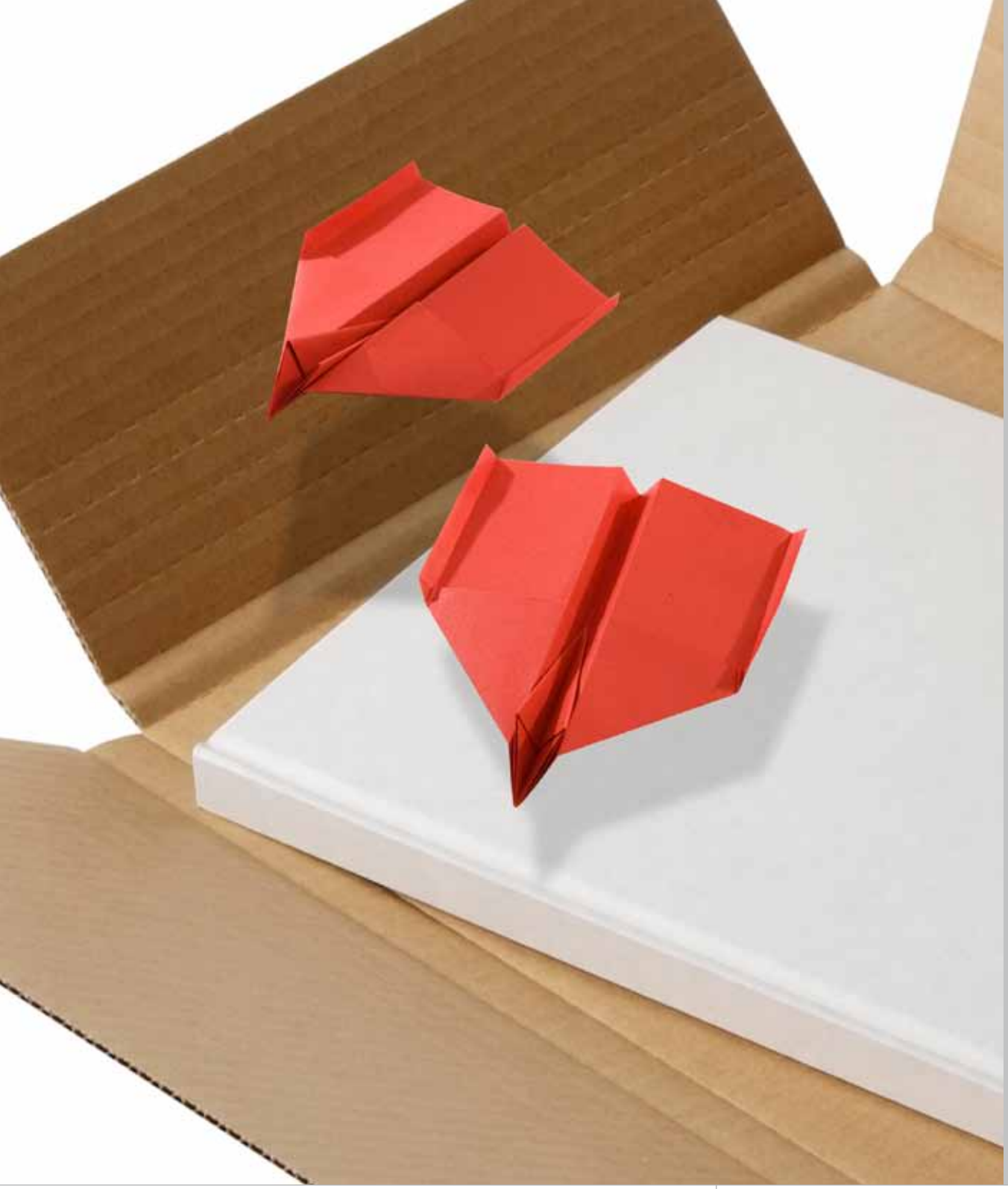
ARAUCO generates its own clean, renewable electricity from forest biomass and production process byproducts rather than from fossil fuels, reducing the company's greenhouse gas (GHG) emissions, and contributing to the fight against global warming.
We have an installed capacity of 538 MW of electric energy, enough to meet the needs of our own industrial processes and deliver 162 MW of surplus energy to Chile's Central Interconnected System.

Our ability to generate clean energy using forest biomass and black liquor as cogeneration fuel enabled ARAUCO to become, in 2007, the first Chilean forestry company to issue Carbon Credits. Since then the company has issued a total of 1,070,851 credits through its four electric cogeneration power plants registered as Clean Development Mechanisms under the Kyoto Protocol: Valdivia, Trupán, Nueva Aldea Phase 1 and Nueva Aldea Phase 2, which operating at their maximum capacity have a combined generation potential of 600,000 to 700,000 annual carbon credits.

## Occupational Health and Safety

Occupational Health and Safety (OHS) at ARAUCO includes our workers as well as our contract workers. In the Pulp business we apply effective OHS management systems, in addition to reinforcing preventive tools and hierarchical leadership aspects as well as providing intensive training to strengthen risk prevention management. All this is done towards achieving our goal: Zero Accidents.

Thanks to OHS initiatives, the Arauco mill reached a world-class performance ranking in 2009 on its frequency rate, with an indicator of less than one. Meanwhile, contractor companies achieved an 84% accident reduction since the system of preventive tools and hierarchical leadership was implemented.
In addition to safeguarding the safety of all of our workers, ARAUCO is committed to creating the conditions necessary to foster career advancement and human development by promoting a positive workplace based on respect, honesty, professionalism, training and teamwork.

## Community

ARAUCO is certain the development of a country is strengthened when private-sector companies, together with civil society actors, become involved and embrace the responsibility of improving the quality of life in the communities where they maintain operations. Generating employment, stimulating productive development, providing opportunities for local suppliers, and enhancing trade skills and education are all parts of a chain that is anchored by economic and social development, generating projects for quality-of-life improvements.

### Economic and Social Development and Quality of Life Improvement

As a world leader in the development of sustainable forest products, ARAUCO's commercial success is inseparably intertwined with the personal welfare of the people living in communities near its operations. During 2009, the company continued to expand its Corporate Social Responsibility programs, which are focused on three main areas:

- Economic Development

ARAUCO contributes to the development of local economies in areas adjacent to its operations. In addition to providing employment and skills-training, the company transfers experience, management skills and technologies to local communities and provides business opportunities for local enterprises.

- Social Development

ARAUCO's social-development efforts are focused largely on providing access to quality public education, promoting cultural opportunity, and supporting sports activities.

- Quality of Life

ARAUCO enhances the quality of life in local communities through investments in infrastructure, equipment, and public housing, and through programs that seek to preserve or restore cultural tradition..

To these ends, ARAUCO invested US$ 10.7 million during 2009 in Corporate Social Responsibility programs in Chile, Argentina and Brazil.


8:
9:
10:
12:
3:

## Education

ARAUCO is certain that education is a key factor in a country's development, and that better-educated people are able to realize their inherent potential, allowing them to become valued members of society. ARAUCO's firm commitment is reflected in its sustained contribution over time to improve access to quality educational opportunities in the areas near its operations, benefiting students, teachers and families, as well as the countries in which it operates.

Managed and financed by the company, schools Arauco, Constitución and Cholguán, located in Chile, provide preschool, elementary and high-school educational opportunities to children and teenagers living in these communities. Each of these schools has earned a reputation for providing quality education, as demonstrated by the high performance levels of their students on Chile's standardized SIMCE and PSU tests. The scores of students attending ARAUCO's schools consistently rank high at the regional and national level. In 2009, Colegio Constitución was cited as having the nation's highest scores in fourth-grade math and language, and the nation's second-highest scores in fourth-grade social studies. We also contribute through Arauco Educational Foundation, a company-sponsored non-profit organization that seeks to support municipal education and access to culture, in order to provide children with better opportunities.

In the past 20 years the Foundation has increased teaching capacity through 66 programs benefiting 4,500 teachers at 530 schools in Chile's Maule, Bío Bío and Los Ríos regions. More than 81,800 students have benefited from two decades of service by the company's Educational Foundation.

ARAUCO also supports educational programs provided by Belén Educa Foundation in Chile, and Alto Paraná Foundation in the Misiones Province, Argentina.

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