



When packaging  
performance is essential





# The right time to stop compromising

With the increasing number of global transports driving the need for better packaging, it is high time to look beyond conventional solutions. Combine our high-performing fluting with the exceptional quality of our liners to get sustainable and attractive packaging solutions. Packaging that doesn't compromise performance even in the most demanding supply chains.

When we developed our fluting back in 1968 it was the world's strongest, and it has undergone continual refinement ever since. Together with our liners, also based on 100% primary fibers and well-known for their bright printable surface, you can create new solutions that are sure to fulfill brand owners' desire to make an impact on consumers and not on the planet.

- Fruit & Vegetables
- Food & Beverages
- Heavy Duty
- Air freight
- Premium consumer products



With our containerboard materials, testing and design tools, we can evaluate how structural design features such as handles, perforations, dimension and other effect the performance and functionality of your packaging. – And make necessary structural adaptations and choice of material to optimize the packaging solution. Although the overall benefit is cost-effectiveness, we support user-friendliness and the attractive look of your customer's brand.



## Solving challenges for conventional packaging



### True Performance

Strong transport packaging materials that last despite demanding conditions in the supply chain.



### Packaging optimisation

Stronger materials and optimal structural design mean lighter boxes and reduced freight costs.



### Shelf attraction

Attractive liners with excellent printability, beautiful colour reproduction and low washboarding.



### Product safety

Pure materials made of 100% primary fibres meet FDA and BfR standards for food contact.



# Tough supply chains demand True Performance

Calling on years of experience, we can improve the performance of each packaging to best suit its purpose. We focus on the entire supply chain including both converters and end-users when developing the solution to meet your challenges.

To understand the true conditions that transport packaging is exposed to in the entire supply chain, we have developed a concept called True Performance. We have done this to make sure that your packaging solution is optimised for its purpose and still looks good upon arrival.



## Time

Packaging performance over time during long journeys



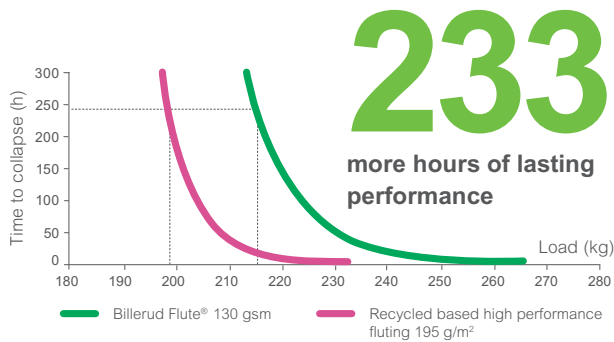
## Climate

Packaging performance in varying conditions, humidity and temperatures



## Load

Packaging performance under constant loads



# 233

more hours of lasting performance



### Measuring of static load for 10 days in 90% relative humidity.

A box with 130 g/m<sup>2</sup> Billerud Flute® in three layers is 22% lighter than a box with recycled based high performance fluting 195 g/m<sup>2</sup>. The load that the box with 130 g/m<sup>2</sup> Billerud Flute® can carry for 10 days will collapse after 7 hours with recycled base high performance flute 195 g/m<sup>2</sup>.

# Maybe the strongest fluting in the world

The continually developed strength of Billerud Flute® offers multiple new opportunities for corrugated packaging. With smarter constructions and a corrugated board that meets increasing market demands for sustainability, the only limit is your imagination.

With Billerud Flute you can lightweight your transports and show nature respect. In comparison with semi-chemical flutings from other brands, you can choose a lighter board in Billerud Flute for equivalent strength and get numerous improved properties into the bargain. Our fluting offers you the opportunity to replace wood and plywood as well as reduce transport weight and CO<sub>2</sub> emissions in the entire supply chain.



## Lightweighting potential

Stronger qualities perform better and allow you to use a lighter fluting for the purpose.



## Strong protection



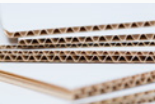
Our extremely strong fluting offers better protection with less material.



## Innovation opportunities

A sustainable substitute for conventional plastic containers and wooden boxes.

## The right fluting for the right application

| Product   | g/m <sup>2</sup>                              | Description   | Characteristics  | Application  |
|---|---|---|--|--|
| <b>Billerud Flute®</b><br> | 120<br>130<br>140<br>150<br>160<br>175<br>220 | Superior semi-chemical fluting based on 100% primary fibres | <ul style="list-style-type: none"> <li>– Extremely high strength for boxes exposed to long demanding transport chains and humidity</li> <li>– High creep resistance which means high strength and durability over time with constant load in tough climates</li> <li>– Produced in compliance with FDA and BfR food packaging norms</li> </ul> | Mainly used for food applications including fruit and vegetables and for premium heavy-duty goods. Also used as centre liner in double wall constructions. |
| <b>Flute Light</b><br>     | 105   | Semi-chemical fluting produced from 100% primary fibres     | <ul style="list-style-type: none"> <li>– Low grammage particularly suitable for thin micro-corrugated constructions</li> <li>– Also used as centre liner in double wall constructions</li> </ul>   | Used for food contact applications   |
| <b>Flute S</b><br>         | 112<br>127<br>140<br>150<br>165<br>190        | Semi-chemical fluting with recycled fibre content           | <ul style="list-style-type: none"> <li>– Consistent quality and excellent runability</li> <li>– Produced in Skärblacka which is certified in accordance with ISO 9001, ISO 14 001</li> </ul>   | Suitable for demanding applications within household and gardening, consumer electronics, fruit and vegetables and industrial products                     |



# A combination of strength and beauty

Liners from Billerud aren't just attractive on the outside. They are high quality to the very core. Developed after years of research from renewable, recyclable and biodegradable packaging material, they have a long history of providing the benefits of smooth production processes, little waste and high yield.

We can now offer an updated product range of our Pure liners. With the addition of new strong, White Top Kraftliner Pure Performance, we are positive you can find the perfect liner, whatever your intended application.



## Excellent print reproduction

Outstanding shelf impact thanks to liners that are white and bright with a glossy, attractive surface with minimised washboarding.



## Strong enough to lightweight

The high quality and strength of our material mean we can reduce the weight of your packaging – bringing sustainability benefits and saving costs.



## Pure product safety

Uncompromised quality, taste and odour with 100% primary fibres that comply with EC, FDA and BfR recommendations for food contact.




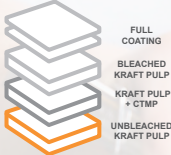


## Liners with an attractive outside ...

Our liners are smooth, white and bright for best possible printability and colour reproduction – whether you print in flexo pre-print, post-print, offset or digital. The gloss and smoothness of our coated liners offer greatest printability with maximum visual impact.

## ... and a smarter inside

The strength, tensile stiffness and bulk properties of our liners offer great lightweighting opportunities. High dimensional stability minimises the risk of warped board and delamination, as well as the risk of washboarding.

## Pure liners for every application

| Product   | g/m <sup>2</sup>         | Description   | Characteristics   | Application   |
|---|--------------------------|---|---|---|
| <b>Pure Decor™</b><br>        | 120<br>145<br>160<br>175 | Light coated white top kraftliner. Based on 100% primary fibres.                              | <ul style="list-style-type: none"> <li>– For high quality pre- and post-print flexo</li> <li>– Superior print quality and image reproduction</li> <li>– High strength offering considerable yield-saving potential</li> <li>– Washboard reduction in post-print thanks to multiply construction creating bulk and stiffness</li> </ul>  | Used for shelf-ready packaging, food & beverage packaging and high value consumer goods.            |
| <b>Pure Supreme™</b><br>     | 175<br>200               | Fully coated white top kraftliner. Based on 100% primary fibres.                              | <ul style="list-style-type: none"> <li>– Designed for high quality offset printing and litho-laminated packaging</li> <li>– Superior print quality and reproduction of images</li> <li>– High strength and bulk give considerable yield-saving potential</li> <li>– Can be supplied in sheets</li> </ul>  | Used for premium consumer products and food & beverage packaging.                                   |
| <b>Pure White™</b><br>       | 80<br>110<br>120         | Fully white kraftliner. Based on 100% primary fibres.   | <ul style="list-style-type: none"> <li>– High and consistent whiteness with superior runability</li> <li>– Multi-ply construction combines excellent printability with high strength</li> <li>– Primary fibres for ultimate strength and food safety</li> <li>– Produced in compliance with FDA and BfR food packaging norms</li> </ul>   | Mainly used for food applications including fruit and vegetables and shelf-ready packaging.         |
| <b>Pure Performance™</b><br> | 135<br>160<br>175<br>200 | White top kraftliner with a combination of superior strength, purity and printing properties. | <ul style="list-style-type: none"> <li>– Three-ply construction for maximum strength</li> <li>– 100% primary fibres for strength and food safety</li> <li>– High smoothness for excellent print result</li> <li>– High strength and durability over time with constant load in tough climates</li> <li>– Offers opportunities to lightweight and minimise washboarding</li> <li>– Complies with EC, FDA and BfR recommendations for food contact</li> </ul> | Mainly used for processed food, fresh food, fruit & vegetables, beverages and consumer electronics. |

# At your service, adding value

We work hard to secure a supply of our corrugated packaging material to you and give you support. If you want to optimise the packaging you produce or need technical consulting, our services will help you on-site, no matter where you are located.



## Knowledge Center

Conventional packaging is based on specifications and standards dating back 40 to 50 years. Today, there are new ways of engineering materials. Visit our Knowledge Center, where our BoxLab packaging engineers share their insights.



## BoxLab and Technical Services

### Packaging Innovation

#### Structural design

- Box construction
- Functional features
- Material choices
- Supply chain evaluation

#### Innovation sessions

### Packaging Optimisation

#### Material optimisation

- Paper analysis
- Long-term performance – creep

#### Box and board engineering

- Board and box analysis
- Theoretical calculations and recommendations
- True Performance in demanding supply chains – load, climate and time
- Bulging measurements
- Washboarding measurements

#### Educational seminars

### Process Efficiency

#### Process support corrugator

- Guidelines
- On-site support
- Warp simulations

#### Printing recommendations

#### Educational seminars



# Make the best packaging in the world

Using the design and engineering knowledge in our BoxLab, you can be sure of the best corrugated solutions for your customers' needs – giving you sustainable and profitable business relationships.

- Education & Workshops
- Packaging optimisation
- Packaging innovation

## Expect fast response

Our knowledge and service are not restricted by geographical boundaries. Our local service specialists will answer in your local language and without delay.

- Order confirmation
- Deviation reporting
- Timely deliveries



Customer Service

- Proactive consultation
- Workshops and training
- Expert on-site support

Technical Services



## Optimise converting efficiency

Our technical expertise is close at hand to ensure that the material we deliver to you run as smoothly and efficiently as possible.



# Save resources with smarter materials and solutions

Billerud is a global provider of renewable packaging materials and solutions. Our offer is based on these first-class materials, value-adding services and a network of like-minded partners. Together we can challenge conventional packaging for a sustainable future.

We strive to constantly improve packaging. From protecting and preserving goods to creating fun, interactive consumer experiences, enhancing recycling and reducing environmental impact.

Our agenda includes tackling food waste, food safety, littering and reducing unnecessary plastics. Put in a greater context, it is about saving resources and developing ever smarter materials for high-performance solutions.

## Genuine commitments for sustainability

### RESPONSIBLE VALUE CHAIN

- 1 Promote responsibility from raw material supply and production to recycling
- 2 Provide engaging workplaces where safety, diversity and human rights are a priority

### INCREASED CUSTOMER VALUE

- 3 Improve our customers' business using our knowledge of sustainable packaging solutions
- 4 Through innovation, expand the market of renewable packaging materials

### SUSTAINABLE AND BIO-BASED SOCIETY

- 5 Combat climate change throughout the value chain
- 6 Generate value for society through global and local collaboration

# Primary fibres secure recycled fibre availability and fight climate challenge

## 1. Harvesting

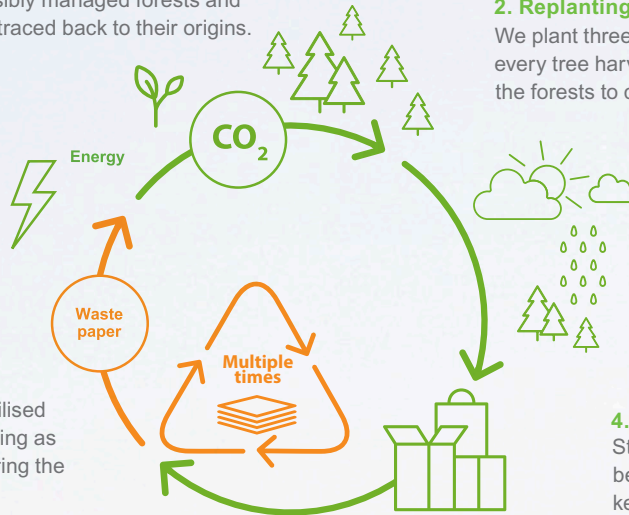
All our primary fibres come from responsibly managed forests and can be traced back to their origins.

## 2. Replanting

We plant three new trees for every tree harvested helping the forests to constantly grow.

## 7. Regeneration

When fibres no longer can be recycled, they can become energy or biodegrade – and the cycle begins again.



## 3. Absorbing CO<sub>2</sub>

Young growing forests absorb more CO<sub>2</sub> from the air than older trees. In Sweden, forests absorb over 55 million tons of CO<sub>2</sub> annually.

## 6. Recycled fibres

Recycled fibres are best utilised for less demanding packaging as the fibres are damaged during the recycling process.

## 4. Product safety

Strong primary fibres provide the best packaging protection possible, keeping product damage and food waste to a minimum in demanding supply chains.

## 5. Feeding the loop

Primary fibres feed the recycling loop but for the loop to be truly sustainable the primary fibres must origin from responsibly managed forestry.





## We challenge conventional packaging for a sustainable future

Billerud provides paper and packaging materials that challenge conventional packaging for a sustainable future. We are a world leading company in superior paper and packaging materials made from virgin fibres; passionately committed to sustainability, quality and customer value. The company has nine production units in Sweden, USA, and Finland with around 5 800 employees in over 13 countries and customers in over 100 countries. Billerud is listed on Nasdaq Stockholm.



[www.billerud.com](http://www.billerud.com)