



BILLERUD BOX LAB



TRUE PERFORMANCE

How optimised is your packaging? Is it designed to withstand long periods of high or varying humidity? Can it stand the stress and strain of bumps and jolts and pressure throughout the transport chain? Is it designed for flexible and rational handling? Billerud Box Lab will give you the answer.



BILLERUD BOX LAB – THREE STEPS FOR A BETTER PACKAGING

» **UNDERSTAND NEEDS.** Analysis and mapping of the whole value chain and an understanding of the customer's and the product's packaging requirements.

» **TEST AND VERIFICATION.** Tests in simulated environments that resemble the packaging's transport chain and are as realistic as possible.

» **OPTIMISE PACKAGING.** With the right choice of material and improved structural design, an optimum packaging solution is developed that minimises spillage, reduces environmental impact and saves money.

At Billerud Box Lab, we simulate reality in order to test and verify the ability of packagings to withstand all the different types of stress and strain they are exposed to. A packaging's task is often very demanding.

We begin with reality

Our philosophy is that everything can be done better. This, however, requires know-how and the ability to clearly identify and understand the customer's needs, which is why we begin with a journey. Placing a small sensor, Tiny Tag, in some of the boxes enables us to obtain basic facts and valuable information about the stress and strain they are exposed to during transportation. Among other things, the sensor measures humidity, temperature and vibrations.

Unique climate chamber

In the industry, it is normal to check the maximum strength of a box by subjecting it to pressure for about a minute until it breaks. But actually, that information is fairly uninteresting. Instead, the test at Billerud Box Lab is performed under realistic conditions representing the time and load during the different stages in the distribution chain. It is far more important to investigate the impact of the pressure and varying humidity the box is exposed to while it is being transported. The tests are carried out in our climate chamber in the laboratory. What

makes the climate chamber unique is that compression tests are performed over long periods of time at the same time as humidity and temperature can be varied.

The results show the way to go

Billerud Box Lab was set up with the aim of developing new packagings as well as improving existing packagings. Because one thing is certain – a strong packaging that can withstand the toughest conditions has several advantages; it contributes to reducing spillage, it is more resource-efficient and has a lower environmental impact, it reduces the amount of goods spoiled and it has a lower total cost.

The next phase begins based on the test results from the climate chamber. We consider choice of material, design, environmental demands, manufacturing alternatives and market demands, which enables us to form an overall picture that helps us to find the optimum solution. Even small details in the structural design can change the ability of a packaging to withstand stress and strain. The right choice of material makes the packaging stronger, more attractive and more cost-effective.

Customised solutions

By combining new technology with Billerud's extensive knowledge of the potential and limitations of different

papers, we can develop new packaging solutions. Using a CAD program, we create packaging prototypes, which are then cut out on the laboratory's cutting table. With the equipment and competence we have, we can develop packaging solutions for specific transport chains.

Packagings communicate

When we go shopping, we want to find what we are looking for quickly and without any hassle. In the decision-making process about what product or article to choose, the packaging often plays a decisive role. One part of Billerud Box Lab has been set aside to study the impact of different printed surfaces and packaging designs. Here, we can carry out so-called perception studies, which we know create added value.

Will the packaging remain intact the whole way?

Needs vary and so do solutions. At Billerud Box Lab, there are unique opportunities for simulating reality. Here, we can fine tune different designs and test various materials in order to arrive at the best possible packaging that satisfies the requirements of your products – a packaging that can withstand the stress and strain to which it is exposed and satisfies the demands made on it.

Welcome to Billerud Box Lab



DID YOU KNOW THAT ...

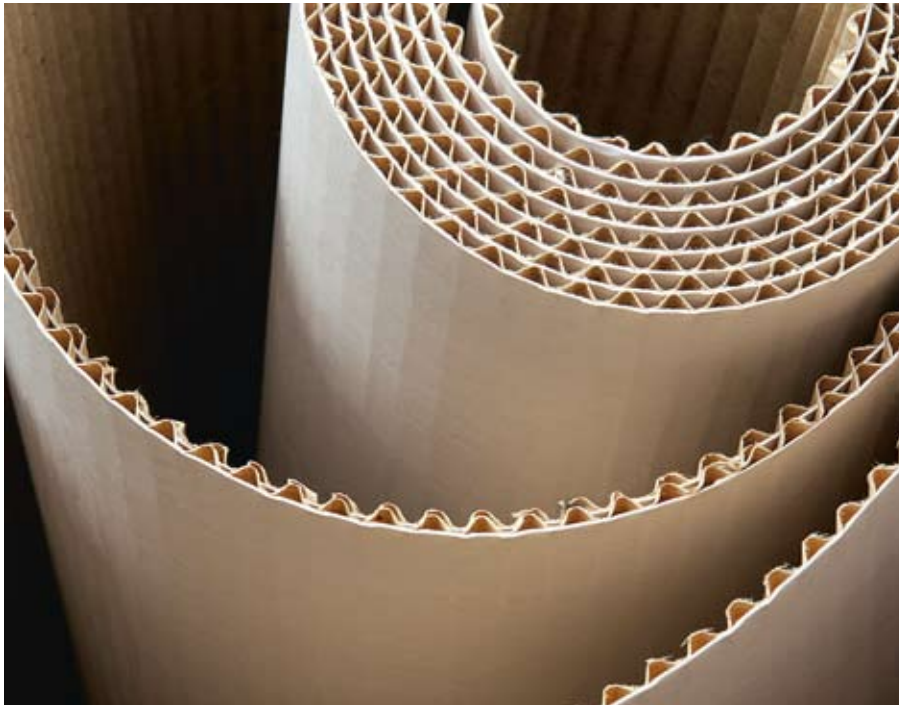
... in varying humidity, a box loses a lot of its strength. In fact, a change from normal to high humidity halves the strength of a corrugated box. This is important to take into account when designing boxes.





BILLERUD'S FLUTING AND LINER

THE BASIS OF A GOOD PACKAGING



Corrugated board combines strength and stiffness with flexibility and protection from bumps and jolts. In addition, corrugated board is material efficient. There is hardly any other packaging material with such high strength in relation to the amount of material used.

Quality products

Billerud has a broad range of fluting and liner of the very highest quality. The high strength, purity, brightness and long-term

performance of our products enable our customers to produce the best corrugated boxes in the world.

Billerud Flute®

Made of 100% primary fibre from Scandinavian birch. Perfect for packing fruit, vegetables and heavy goods. It can withstand large variations in moisture and temperature levels and enables high stacks of packaging to retain their shape during transportation. Our fluting also has

OPTIMISE

Reducing weight and thus saving money and minimising the environmental impact is something most of us want to achieve. Billerud's corrugated board products make this possible, at the same time as the packaging retains its strength.

exceptional runability, which makes it cost-effective when producing corrugated boxes.

Billerud White Liner Collection

Billerud Pure White® is a white liner. We also produce Billerud Pure Bright® for applications where exceptional printing results and appearance are required. All our white liners offer high strength and because they are made of primary fibre, they are very suitable for direct contact with food.



BILLERUD AB, Box 703, SE-169 27 Solna, Sweden. Tel: +46 8 553 335 00 www.billerud.com/boxlab

MILLS

BILLERUD BEETHAM

Milnthorpe
Cumbria LA77AR
England
Tel: +44 15395 650 00

BILLERUD GRUVÖN

Storjohanns väg 4
SE-664 28 Grums
Tel: +46 555 410 00

BILLERUD KARLSBORG

SE-952 83 Karlsborgsverken
Tel: +46 923 660 00

BILLERUD SKÄRBLACKA

SE-617 10 Skärblacka
Tel: +46 11 24 53 00

SALES OFFICES, EUROPE

England

BILLERUD SALES LTD.
Tel: +44 115 975 87 60
salesoffice.nottingham@billerud.com

France

BILLERUD FRANCE S.A.S.
Tel: +33 1 44 69 94 40
salesoffice.paris@billerud.com

Germany

BILLERUD GMBH
Tel: +49 40 320 160
salesoffice.hamburg@billerud.com

Italy

BILLERUD S.R.L.
Tel: +39 02 248 390 85
salesoffice.milano@billerud.com

Netherlands

BILLERUD BENELUX B.V.
Tel: +31 251 788 130
salesoffice.benelux@billerud.com

Spain

BILLERUD IBÉRICA S.L.
Tel: +34 93 470 05 56
salesoffice.barcelona@billerud.com

Scandinavian markets

BILLERUD SCANDINAVIA
Tel: +46 8 553 337 00
salesoffice.scandinavia@billerud.com

SALES OFFICES, OUTSIDE EUROPE

China

BILLERUD TRADING (SHANGHAI) CO. LTD
Tel: +86 21 535 106 22
salesoffice.shanghai@billerud.com

Indonesia

BILLERUD ASIA PACIFIC
Tel: +62 21 5299 4439
salesoffice.jakarta@billerud.com

United Arab Emirates

BILLERUD GULF
Tel: +971 4 88 14 663
salesoffice.gulf@billerud.com

Other markets

BILLERUD INTERNATIONAL
Tel: +46 8 553 336 00
salesoffice.international@billerud.com