



Lightening the load

Increased regulation, environmental concerns and the opportunity to reduce costs are among the factors forcing manufacturers to address the issue of cartonboard lightweighting. How is the industry facing up to the challenge?

The concept of lightweighting is now receiving a great deal of attention. The main reason for this is the EU Directive on Packaging and Packaging Waste, which has placed pressure on retailers to reduce the waste by weight, resulting in increased demand for lightweight packaging.

In addition to the legislation compliance issue, there are strong economic reasons why lightweighting of cartonboard is essential. Jürgen Schondelmayer, technical manager – global supply chain, Unilever, says: ‘As we use a large quantity of cartonboard, anything we do to reduce tonnage can translate into big money for us.’

WHAT IS LIGHTWEIGHT BOARD?

Lightweighting increases the yield obtained from a specific weight of cartonboard. Compared with standard boards, less raw materials are required for manufacturing, and a reduced amount of waste is produced during converting and packaging. Fewer post-consumer waste is also produced. As the cartonboard is lightweight, greater amounts can be transported in one delivery, reducing costs and carbon footprint.

According to ProCarton, advances in lightweighting are due to developments in computer controlled processing and on-machine quality monitoring, resulting in productivity improvements

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and more consistent board quality. The new forming and press section techniques have resulted in improved strength, facilitating grammage reduction. Many boards now incorporate middle layers of bleached mechanical pulp, reducing weight and enhancing brightness. Developments in surface coating

methods, coating formulations and board machine techniques, including surface glazing and brushing, have also helped improve visual appearance and printability.

TALKING TO THE BOARD PRODUCERS

Given the environmental concerns, manufacturers are continuously investing in the development of lightweight cartonboard. M-real, for example, has recently invested in lightweight board production at its Finnish plants in Aankoski and Simpele, where the surface sizer and reeler on the board machine have been replaced, in addition to developments in the drying section of the finishing department.

M-real has also developed a new type of pulp, known as bleached chemi-thermo-mechanical pulp (CTMP), which permits greater stiffness to be derived from lower grammage board. Its Simcote 230g/m² board is said to provide stiffness equivalent to WLC 300g/m².

The boards have fewer variations – for example, a board with a thickness of 585 micron is said to have a tolerance of 3% (36 micron). M-real claims that this enables die-cutting machines to achieve outputs of 22% more sheets per hour than when using WLC.

The stiff and bulky board structure for Stora Enso's lightweight boards is achieved by the use of virgin fibres combined with multilayer techniques, where chemical pulps are enhanced with the strength of mechanically refined pulps. The company's Natura Board comprises two outer layers of solid bleached sulphate (SBS) pulp with a middle layer of CTMP. Stora Enso has been active in the development of liquid packaging board and barrier coatings, and claims that this now permits the production of one-and-a-half times more one litre cartons from the same amount of wood material than was the case 30 years ago.

This year, Korsnäs modified its process equipment to mix different pulps in each of its four board layers. Each layer can be optimised, combining chemical and mechanical pulp. During production, the virgin fibres can be treated in different

WASTE NOT, WANT NOT

The EU Packaging & Packaging Waste Directive is concerned with minimising the creation of packaging waste material and promoting energy recovery, re-use and recycling of packaging. The Directive has single market and environmental goals. It sets the 'Essential Requirements' of packaging (which should be considered in its design and manufacture) and heavy metal limits for packaging. It covers all packaging placed on the market

within the EU, and all packaging waste – whether disposed of at industrial or commercial sites, or from private homes.

The aims of the Directive are twofold:

- To harmonise national measures so as to prevent or reduce the impacts of packaging on the environment of all Member States and Third Countries and to remove obstacles to



- trade and distortion and restriction of competition; and
- To prevent the production of packaging waste, and reduce the amount of waste for final disposal through packaging reuse, recycling and other forms of recovery.

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ways, such as hard-sizing to produce a lightweight board that retains its stiffness in humid conditions. A typical example is Korsnäs White board, which comprises coating layers on both surfaces and two layers of bleached fibres that surround a layer of bleached strong fibres combined with CTMP.

FACING UP TO THE CHALLENGE

Manufacturers have recognised the need for innovation and the pressure on evolving new solutions is only going to increase. The opportunity to act sustainably and save money should be all the motivation needed to follow this path. **pci**
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