

Case Study

Lightweight wine bottles: less is more

Lightweighting wine bottles can deliver environmental benefits and cost savings.



Today, the wine industry can choose from a range of packaging solutions, be it glass, liquid cartons, aluminium, PET, bag-in-box or pouches. However, glass bottles currently dominate, making up 97% of the market.

In 2007, the UK consumed 1,360 million 75cl bottles of wine. This generated almost 40% of all household beverage packaging, contributing around half a million tonnes of packaging to the household waste stream.

Packaging choices

Each packaging material has its merits and is best suited to a particular combination of environmental, brand and consumer needs. Within each material, such as glass or plastic, questions should be asked such as:

- Does it offer protection and minimise product damage?
- Is the packaging really required?
- Is the optimum amount of material being used?
- Can the packaging be re-used or returned?
- Can the packaging be recycled?
- How much recycled content does it contain and could it contain more?

Why lighter bottles?

The waste hierarchy suggests that the minimisation of packaging, while ensuring

GlassRite Wine lightweighting facts

- Glass packaging has been reduced by 11,400 tonnes per year.
- CO₂ emissions have been reduced by a total of 7,800 tonnes per year - equivalent to taking over 2,400 cars off the road.
- Participants have seen a reduction in material and process costs, and better filling line productivity.
- Lightweight bottles can be designed to essentially mirror the appearance of their heavier counterparts in terms of height, and still be sufficiently strong and fit for purpose.

the integrity of the contents, is first and foremost the ultimate goal to achieve resource efficiency. In this case study, two pieces of work funded by WRAP (Waste & Resources Action Programme) illustrate the benefits, and provide insight, into the minimisation of glass and plastic wine bottles, leading to both commercial and environmental benefits. The examples highlighted demonstrate how the wine supply chain has responded to and answered the question 'is the optimum amount of material being used?' in wine bottles.

As indicated earlier, wine bottles contribute almost 500,000 tonnes of packaging to the household waste stream. Based on studies carried out on the different weights of wine bottles sold through UK supermarkets, an estimated saving of about 150,000 tonnes of packaging could be made if the sector moved to lighter packaging. Given these statistics, even modest reductions in bottle weight can deliver major material savings.

Lighter weight wine bottles are becoming commonplace on supermarket shelves, and through work carried out in the wine sector with WRAP, these efforts are resulting in a major step change in the industry.

“Glass is by far the heaviest component of our packaging waste and we believe we can make a substantial contribution to our target by reducing the weight of these containers.”

Andy Gale,
Tesco category
technical manager
for Beers, Wines
and Spirits

Rightweighting glass bottles

WRAP's GlassRite Wine project, managed by British Glass, brought together retailers, brands, wine agents and producers, fillers and bottle manufacturers to not only bulk import wine into the UK, but to also encourage a move to using lighter weight bottles. Between the summer of 2006 and spring 2008, more than 300 different wine labels converted to lighter glass bottles.

Rightweighting – a process of packaging design and production to optimise packaging weight, whilst taking into account the requirements of all stakeholders in the supply chain, including manufacturers, brand owners, fillers, retailers, consumers and the environment.

Tesco introduced lighter bottles for some of its own-label wines. The project, carried out in partnership with Kingsland Wines & Spirits and Quinn Glass, developed two wine bottles that met their design requirements, being suitable for high speed filling whilst retaining brand image in terms of height and bottle shape. This has saved over 3,500 tonnes of glass every year and over 2,500 tonnes of CO₂.

The Co-operative were keen to ensure that lightweighting some of its own-label bottles would not adversely affect consumer perceptions. By mocking-up various bottle options the retailer was reassured that lighter bottles would not negatively impact on buying decisions.

Working with Kingsland Wines & Spirits, a total of 26 wine products were rationalised into three different weight bottles, saving 445 tonnes of glass each year and 305 tonnes of CO₂.

Constellation Europe has a large wine portfolio, including brands such as Hardy's, Stowells, Banrock Station and Kumala. During this project, Constellation lightweighted both their Stowells and Echo Falls ranges, which are now yielding savings. The original 495g bottles have been re-engineered and are now 12% lighter at 435g. With sales of 55 million units, this translates into an annual glass reduction of over 3,000 tonnes and over 2,000 tonnes of CO₂. Bottle diameter was retained, while height was reduced by 7mm.

Viña Ventisquero Ltd a winery in Chile, has reduced the packaging weight of its 6 strong Clásico range of wines by 10%. At 412g, the new bottles weigh 45g less than their predecessors and are the winery's latest step towards improving its carbon footprint. This move is particularly significant since it is the first time an overseas producer has lightweighted at source for the UK market, despite the long distances involved.

Ventisquero's Américo Hernández explains:

“Clásico is the first range to be packaged in lightweight bottles, but we're ultimately looking to do this for our entire portfolio. We're committed to becoming as environmentally friendly as possible.”

Kingsland Wines & Spirits is one of the UK's leading independent wine suppliers, providing wines from Europe and the New World under a wide range of well-known brand names. The company worked with Quinn Glass to rationalise its bottle range, by introducing lighter versions of two of its wine bottles. A 650g bottle was reduced to 484g, while a 460g bottle was reduced to 400g. The move has saved more than 1,600 tonnes of glass and 1,140 tonnes of CO₂ each year.



Light, yet strong

It is sometimes assumed that lighter weight bottles will suffer higher rates of failure, as it is assumed they have thinner walls. However, GlassRite Wine demonstrated that modern manufacturing processes can produce bottles that have even glass distribution, which more than compensates for the weight reduction.

Lightweight bottles are often formed using the 'Narrow Neck Press and Blow' process, which results in a more even glass distribution than heavier bottles made using 'Blow and Blow' technology. As a result, lightweight bottles are often stronger than their heavier counterparts.

Consumer perceptions

The wine industry trades on a premium image. But do lighter weight bottles tarnish consumer perceptions of product quality?

GlassRite Wine commissioned the University of Bangor to carry out a detailed study to examine this issue. The study compared consumer responses to lighter weight and traditional bottles. The research found that the height, rather than the weight of the bottle played a big part in consumers' attitudes to wine value. The results suggest that lightweight wine bottles should match a similar height to a standard weight in order to minimise the affect on consumer preference.

Light protection

Wine bottled in glass can be susceptible to damage by light. UV light is particularly harmful, but some regions of the visible spectrum also have a detrimental effect.

GlassRite Wine found that the relationship between glass thickness and the protection it affords to light protection is not linear – a relatively large reduction in thickness will be accompanied by a much smaller fall in protection.

The small reductions in protection that arise from the use of thinner glass could be alleviated through a number of different approaches, such as in-store measures relating to the intensity and direction of lighting; use of coatings or additives to the glass or more widespread use of amber glass – which has excellent light-blocking properties.

Lightweight PET bottles

The wine sector is reconsidering whether glass is the only appropriate packaging material for wine bottles. Brands are exploring opportunities with liquid cartons, aluminium, PET, bag-in-box or pouches. As a lighter packaging option, PET has obvious benefits – at 54g a PET bottle weighs around 440g less than the average weight of a glass wine bottle.

With Artenius PET Packaging (formerly Amcor), WRAP explored the broader environmental impact of a prototype PET wine bottle and trialled it in the UK with major retailers, such as Tesco, Sainsbury's and Asda, and leading brand Foster's EMEA's Wolf Blass. A detailed carbon audit of the new product was conducted by Best Foot Forward to assess the comparative carbon performance of the new packaging system.

The research highlights that there are clear environmental wins by considering carefully the impact of the chosen material - in particular, through the lightweighting of existing bottles (whatever the material) and the level of recycled content.

Sainsbury's trialled a PET wine bottle weighing just 54g. The bottle was used for two own-label wines – New Zealand Sauvignon Blanc and Australian Rose – with a view to rolling it out across other wine offerings. It also sold the premium Australian brand Wolf Blass in PET bottles, stocking its Green Label Chardonnay and Cabernet Shiraz. These innovations were designed to help Sainsbury's meet its target of reducing CO₂ emissions by 25% by 2012.



What's next?

Lightweighting of packaging, in particular glass wine bottles, has been happening for many years in line with progress in production and process control technology. However, over the last few years there has been a major step change in challenging the status quo as new materials come onto the market and advances in manufacturing technology allow boundaries to be explored. The commitment by retailers and brands, through the Courtauld Commitment, to reduce the environmental impact of their packaging, and the increasing number of new lighter wine packaging formats on supermarket shelves are testament to this.

However, there is still much more room for development. As a response to this demand and opportunity, WRAP will be launching a second phase of GlassRite Wine, which will focus on initiating an international network of champions, aimed at encouraging businesses to adopt lighter weight glass wine bottles and to consider the economic and environmental benefits of bulk shipment.

Further information

To find out more about wine packaging, associated environmental choices, and how these could benefit your business, please contact retail@wrap.org.uk. Further information and support tools are also available at www.wrap.org.uk/retail.

Here you will find:

- a copy of the GlassRite Wine report;
- a copy of the 'Carbon impact of bottling Australian wine in the UK in PET and glass bottles' report;
- research reports on UV penetration, bottle strength, consumer perception and bulk importation;
- our interactive 'wine ready reckoner' – providing quick calculations on the cost and environmental savings associated with bulk importing, and lighter weight glass bottles; and
- details of how to sign up to the WRAP newsletter, containing the latest packaging innovation news.

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Waste & Resources Action Programme

The Old Academy,
21 Horse Fair,
Banbury, Oxon
OX16 0AH

Tel: 01295 819900
Fax: 01295 819911
E-mail: retail@wrap.org.uk

Helpline freephone
0800 100 2040

www.wrap.org.uk/retail