

Can't Hide Your Lying Eyes: Material Intensity in Packaging

Of course there is another way to reduce the impact of can openers - eliminate cans! No, we don't need to give up the convenience of modern packaging; rather there are improvements in packaging that make cans obsolete; we can also eliminate wasteful overuse.

Packaging fulfills three purposes, but is only needed for one. It helps preserve goods during storage, shipping, and in the consumer's home - fair enough. Packaging also provides security - often packages are designed larger than preservation requires to make stealing more awkward. But there are plenty of other means to prevent or reduce theft - including a less predatory social atmosphere. Finally packaging is a marketing tool - used to persuade people to buy goods and services. In a modern U.S. supermarket, the floors now compete with ceilings for what can hold the most advertising. Dividers used by customers to separate orders each carry a one line slogan. Conveniently placed at eye level above the urinals in the men's restrooms you find more paid advertising. Do we really need to make packaging two to four times the size protection against spoiling and shipping damage requires, to grab shelf space, and take one last chance to grab the customer's attention?

Even for preservation, there are huge opportunities to reduce packaging:

Reducing Packaging for Food and Sundries		
Packaging Change	Intensity Reduction %	Energy Reduction %
In modern aseptic packaging food can be cooked and sterilized in a single batch within an aseptic chamber, then poured into packages that are also sterile, which are sealed without ever allowing pathogen exposure. This can allow lower temperature preparation or very high temperature preparation for a very short period of time; food tastes better and processing uses less energy. The packages can be cartons or even flexible pouches rather than cans - using a great deal less material.		
Foil wrapped coffee bricks compared to coffee cans ⁸⁶ . (Note: steel cans are currently recycled; coffee bricks are not. But bricks can be ⁸⁷ .)	80%	60%
Aluminum pouches vs. aluminum cans (both equally recyclable)	75% ⁸⁸	50%
Milk pouches compared milk bottles (both recyclable) ⁸⁹	70%	40%
Cereal pouches vs. cereal boxes ⁹⁰	83%	60%
detergent pouches vs. detergent bottles ⁹⁰	84%	60%
Juice boxes vs. juice bottles ⁹⁰	90%	75%

We can reduce packing for furniture, appliances and other non-food items as well, while providing continued protection. A properly designed single layer of packaging may provide enough protection to avoid the need for multiple layers. Instead of multi-bubble back, single large bubbles may be used. In some cases a single inflated inner layer combined with a rigid outer layer can protect very delicate appliances.

We also need to consider pre-consumer packaging. Consumer goods, package and all are usually stored in other packages to protect them during various shipping stages. Like consumer packages these can often be lightened. But in addition there is a lot of potential in something difficult at the consumer end - reuse. Quite often a mutually beneficial agreement between retailer and wholesaler or manufacturer can result in return of packages, for use in future shipments. Unlike consumers, both parties know precisely what they stand to save in such arrangements, and the exact cost of additional labor in making them.

Business to business packaging examples		
	Packaging Reduction	Energy Saving
Waterstones, a UK book retailer, receives books in reusable tote boxes returned to its distributor when next shipment arrives ⁹¹ . Reduction in damaged stock reduces labor costs for both distributor and Waterstones.	95%	80%
Harman Pro Audio Manufacturing reuses delivery packages to regular customer by up to seven times. It uses larger multi-packs holding more transducers per package, and reduced package weight by a third ⁹² . Payback was 12 weeks.	93%	80%
Target required vendors to eliminated inner packaging; so multi-pack contents are no longer individually wrapped. Saved packaging and extra labor it spent unwrapping items to hang them.	75%	50%

Total packaging can be reduced by at least 75% to 80%, saving 50% to 60% of energy consumed in making it.

End Notes

⁸⁶ "Steel Producers Target Canned Foods," *Packaging World Magazine* July 1995 *Packaging World Magazine Online*, Summit Publishing, 9/Jun/2004 <<http://www.packworld.com/articles/Features/1064.html>>.

Note: this is an article favoring steel cans over foil packs for coffee. I analyzed information from this article so as to make to make sure I was not being over-optimistic. So again I repeat - this is information from steel can makers - people who favor steel cans over foil packs.

Modern steel cans for coffee weigh 17 pounds vs. 3 pounds for a steel brick. This is still an 80%+ reduction.

Here are the invalid arguments:

- 1) The most popular can quantity is 13 pounds not 17 pounds. Right, but a 13 pound can holds fewer servings than a 3 pound brick. A 17 pound can remains the correct comparison. If you insist on using 13 pound cans as a comparison then you have to take a fraction of the weight of a second 13 pound can and allocate it - which would result in a less favorable result for steel than a single 17 pound can.
- 2) The second argument is one from recycling. About 64% of steel cans are recycled, whereas foil pack currently are not. The problem with this is that recycling a steel can does not cut its impact in half. It would not even if the steel cans were simple rinsed out and had a new lid put on them. But in fact that is not how steel cans are recycled. They are melted down and used as sources to make new steel from. That new steel does have about 1/2 the material intensity of steel from raw ore, but then the energy and impacts of shaping the steel and making the cans are about the same. So long as the foil pack is not recycled we end up with about a 65% reduction - still significant. However we are not looking just at current practices, but at what practices we need to adapt. So we could theoretically recycle close to 100% of steel cans (those cans being used in households to hold nails and such making up for those not recycled). So that ends up as only a 60% reduction using foil wrap - still better than coffee cans. But if we are looking at this, it is not impossible to recycle this kind of wrap. If you reduce the variety of plastic, using only one metal and one plastic, as we shall see later on it is possible to separate out the metal and plastic. Or you can use the combination to make plastic lumber. So if you recycle both you end up with an 80% net reduction again.

⁸⁷ Association of Cities and Regions for Recycling, *Good Practices Guide on Waste Plastics Recycling: A Guide by and For Local and Regional Authorities - 2004*, ed. Jean-Pierre Hannequart. Feb 2004. Association of Cities and Regions for Recycling, 10/May/2005 <<http://www.ecvm.org/img/db/ACRRReport.pdf>>.p83.

⁸⁸ Azom.com Pty Ltd, *Aluminium Packaging (Focus on Europe)*. 2002, Azom.Com Pty Ltd, 9/Jun/2004 <http://www.azom.com/details.asp?ArticleID=1396#_Advantages_of_Aluminium>.

⁸⁹ Environment and Plastics Industry Council (EPIC), *Plastics and Source Reduction*. Sep 2001. Environment and Plastics Industry Council (EPIC), 9/Jun/2004 <<http://www.cpia.ca/epic/docs/factsheets/Source%20Reduction.PDF>>.

⁹⁰ Flexible Packaging Association, *Examples of Source Reduction*. Flexible Packaging Association, 9/Jun/2004 <<http://www.flexpack.org/enviro/09srexamples.htm>>.

⁹¹ Envirowise, *Retail Supply Chain Distributes Cost Savings from Improved Packaging - A Case Study from the Book Industry*. *Envirowise Case Studies*, CS332. Mar 2002. *Envirowise*, 14/May/2004 <[http://www.envirowise.gov.uk/envirowisev3.nsf/0/EAE528C70CD5852480256CE5004C7095/\\$File/CS332.pdf](http://www.envirowise.gov.uk/envirowisev3.nsf/0/EAE528C70CD5852480256CE5004C7095/$File/CS332.pdf)>.

⁹²Envirowise, *Packaging Rethink Boosts Profits: A Good Practice Case Study At Harman Pro Audio Manufacturing. Environmental Technology Best Practice Programme, GC275 Final Results*. Oct 2000. Envirowise, 14/May/2004 <
[http://www.envirowise.gov.uk/envirowisev3.nsf/0/17A681225D041DE080256CE5004C71EC/\\$File/GC275.pdf](http://www.envirowise.gov.uk/envirowisev3.nsf/0/17A681225D041DE080256CE5004C71EC/$File/GC275.pdf)>.