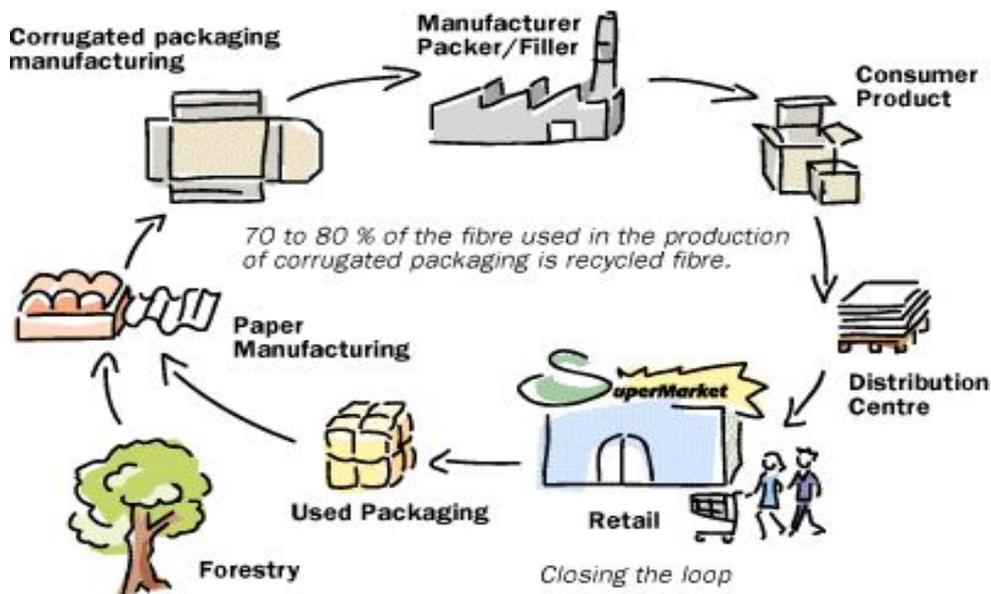


# PREVENT & SAVE

## Quick Guide to Corrugated Boxes

Perhaps the most commonly used item of packaging is the corrugate box. Most consumers tend to think of this as a basic product with little diversity apart from size dimensions. The truth however is much more complex with features such as single / twin / triple wall structures, various amount of fluting sizes, Regular slotted cases (RSC) versus Die-Cut shapes, options of Test (recycled paper) or Kraft paper and minimum physical properties requirements such as burst strength, tensile strength and surface finishes all to be considered.



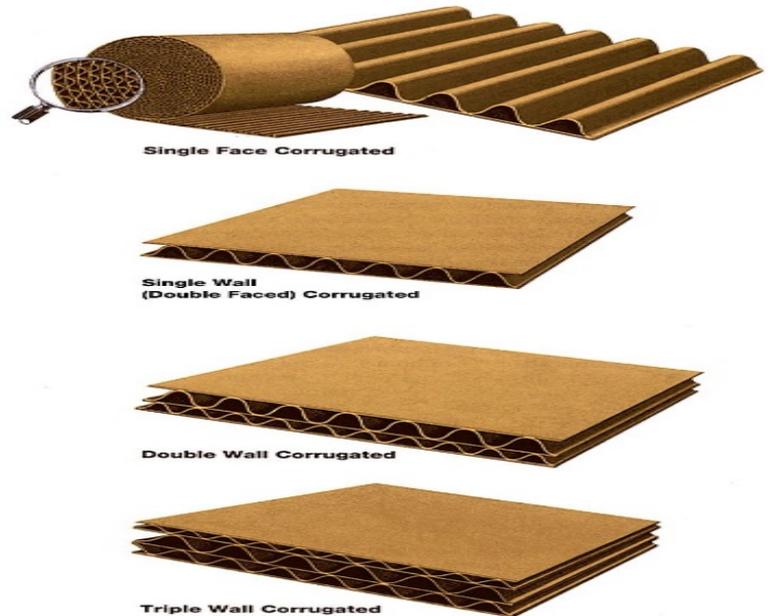
As Corrugated board is from a renewable source it is one of the most sustainable materials available. More than 70% of used paper/board is also recycled to form new products.

## Wall Construction

The type of wall construction varies depending on requirements such as burst resistance, tensile strength and weight of product. Usually a single-walled construction will suffice for most fast moving consumer goods (FMCGs).

However, if the item is fragile then it may be necessary to increase to a double-walled construction. This offers extra protection from impact and also increases the tensile strength in the box to help prevent it from crushing or buckling.

In extreme circumstances a triple-walled box is required. This is quite rare and the increased relative cost of the box means that they are usually reserved for high value products.



## Box Styles

### Regular Slotted Cartons (RSCs)

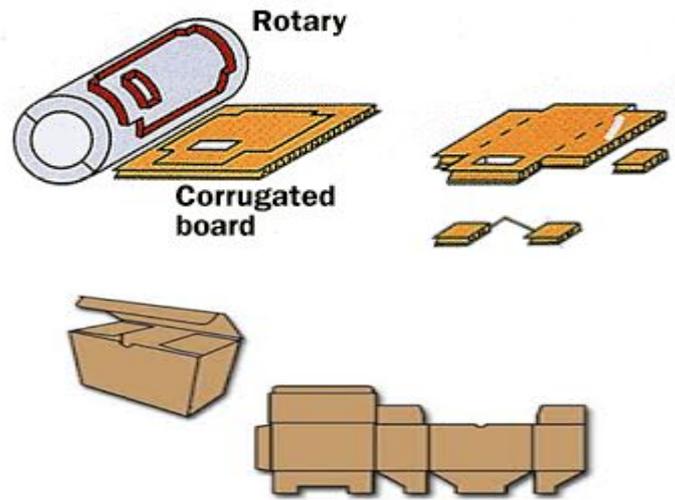
The most popular type of box is a Regular Slotted Carton or '0201' to which it is also commonly referred (FEFCO international coding system). These are the simplest designs and usually represent the cheapest costs. The converter can also apply any print design required.

### Die-cut cartons

Die-cut cartons are very popular for more intricate designs where a standout presence is important. A form is created to crease and cut the design as required. This form is then either attached to the outside of a cylinder as per the rotary die-cut process (see image), or laid out on a solid flat surface as per a flatbed die-cut process. Die-cut boxes are more expensive than RSC's and have more associated process waste. Therefore, when designing new packaging it is important to keep the blank development in mind in order to minimise waste.



Regular Slotted Carton (RSC) also known as “0201”



Rotary Die Cut Process and Die Cut Carton

Shelf-Ready Packaging (SRP)



A trend in evidence over the past 10 years has been shelf-ready packaging. Retailers aim to reduce manual handling, and thus labour requirements for stocking shelves. Rather than have a shelf-stacker use precious time to slit open a regular corrugate box and then decant the items onto the shelf they now simply place the SRP box on shelf and remove the easily detached top layer. This cuts down the time required dramatically.

However, the flip side to all this is the extra material usually associated with Shelf Ready Packaging. Also, because perforations are often used there can be higher risks of packaging failure if the item is not designed correctly. Therefore, good design and proper trialling of Shelf Ready Packaging is essential.

## Fluting

The fluting style is an essential element to ensuring the box has sufficient strength for the load it is protecting. For light products, destined for premium positioning on supermarket shelves an E-flute design is more suitable than a B- or C-flute equivalent. However, for a heavier product where instant appeal is only of secondary concern to the protection offered by the box then the C-flute option might be most appropriate.

Flute Designation	Flutes per linear foot	Flute thickness (in)	Flutes per linear meter	Flute thickness (mm)
A flute	33 +/- 3	3/16	108 +/- 10	4.8
B flute	47 +/- 3	1/8	154 +/- 10	3.2
C flute	39 +/- 3	5/32	128 +/- 10	4.0
E flute	90 +/- 4	1/16	295 +/- 13	1.6
F flute	128 +/- 4	1/32	420 +/- 13	0.8

## Removing Corrugated Outers

Some products are packed into cases as a matter of historical precedence rather than design. In many cases where the packaging systems have not been properly analysed for years there are instances of cases being used where shrinkwrap could easily do an equivalent job, e.g. soft drinks for example.

For many years these were often packed into corrugate boxes but this has since been replaced by shrinkwrap. The filled bottles provide all the impact and tensile strength required and the shrinkwrap is used merely to contain the bottles in handy 8-pack and 9-pack versions for the supermarket shelf. The amount of plastic used as a result is many times less than the equivalent corrugate box that would have been required.



Alternatively, small corrugate trays or pads can be used for slabs of 24pk cans to help give them support.

This is much less packaging than if the cans were packed in a full corrugate box.

## Reuse of Outers

Wherever possible outers stripped off incoming deliveries should be sent back to the supplier for reuse. This is easily done if there is space to store the outers on-site and the delivery company is making the return journey regardless. If the delivery company is a 3rd party contractor and not returning to the supplier then it makes things more difficult as the return journey would need to be paid for and this usually outstrips the value in returning the outers.

When making use of a returnable box system it is useful to keep the printwork generic and to a minimum. A document pouch is often used to hold all the batch-specific information that's required meaning there is no need for stickers or other identifying data.



Ideally the outers will be suitable for flat packing which will allow maximum efficiency for storage and return journeys. In general this also leads to less damage than alternative storage means.



Fresh produce is often delivered to stores using sturdy reusable corrugate trays. Although there is a growing trend to move towards plastic trays for this purpose. In these instances every effort should be made to ensure the trays are accumulated and sent back to the supplier to close the loop. These deliveries are often via the supplier's private fleet so there should be no issues with regards to logistics.

If there are no returnable options available then another alternative might be to sell the boxes to a third party such as Klee Paper whose mission statement dictates: "sourcing good quality, long lasting products made from, whenever possible, waste." Visit [www.ecoland.com](http://www.ecoland.com) for more information.

## Corrugated Board Recycling

Most larger companies, and many smaller ones including retailers and hotels, have corrugate compactors or baling equipment available for minimising the volume to be recycled. This is an essential part in maximising potential revenue for recyclable material as well as reducing the amount of required space to store the material.

Best value is often achieved through one tonne bales where possible, although smaller enterprises might only have smaller quantities available to bale. The material should be kept dry and presented for collection free from contaminants.



Businesses should shop around every time their waste management contract comes up for renewal in order to ensure they get the best value deal available. The value depends on the quality, quantity and type of material on offer.

For further information on corrugated cardboard boxes please contact our Packaging Technologists Brian Walsh or Colm Munnelly.

Email: - [prevention@repak.ie](mailto:prevention@repak.ie).

Phone: - +353 1 467 0190

Repak Limited  
Red Cow Interchange Estate  
1 Ballymount Road  
Clondalkin Dublin 22  
D22 HW67

**REPAK**   
Business funding recycling