



**PACKAGING
SOURCE**
Quality Packaging. Specialized Service



CORRUGATED 101



WHAT MAKES CORRUGATED, CORRUGATED?

Corrugated boxes are designed to be very strong. They are made of corrugated paperboard. Look at the edge of corrugated paperboard, and you will see a row of air columns.

The air acts as cushion, while the paper columns make the material strong.



Single Face



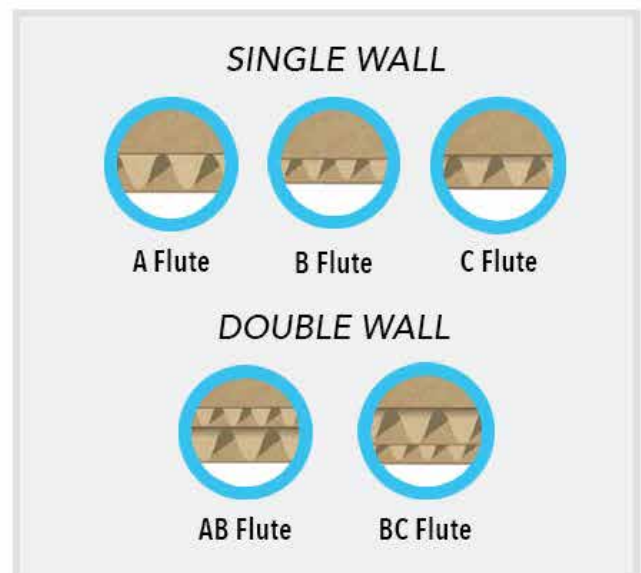
Single Wall



Exposed Flute

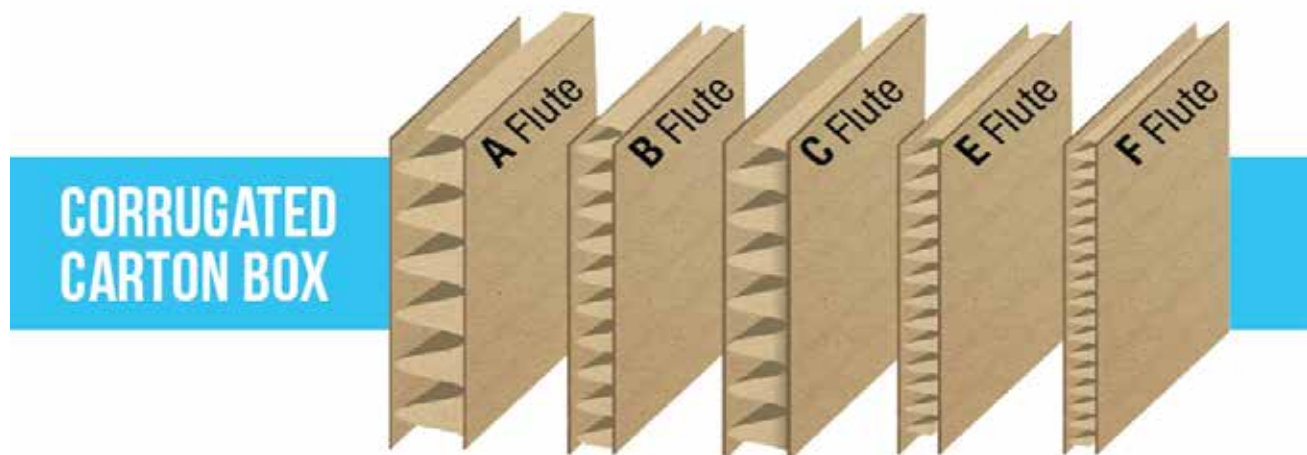


Double Wall



DIFFERENT TYPES OF FLUTES

- A Flutes** - is the original flute size with approximately 33 flutes (waves) per foot.
- B Flutes** - has smaller flutes than "A Flute" and has more of them, around 47 flutes per foot. It was created to box canned goods that were self-supporting and thus didn't require as much load support.
- C Flutes** - was invented next to serve as an all-purpose size and has about 38 flutes per foot.
- E Flutes** - is thinner with 90 flutes per foot.
- F Flutes** - was created to be used as a folding carton would be - to hold light to medium-weight retail goods and be printed on either directly or using a litho laminated label.



LINERBOARD PERFORMANCE STANDARDS

SINGLE WALL CORRUGATED BOXES

MAX WEIGHT BOX / CONTENTS (LBS)	MIN. BURST TEST (LBS / SQ. IN.)	MIN EDGE CRUSH TEST (LBS / SQ. IN.)
20	125	23
35	150	26
50	175	29
65	200	32
80	250	40
95	275	44
120	350	55

BOARD TESTS MULLEN AND ECT

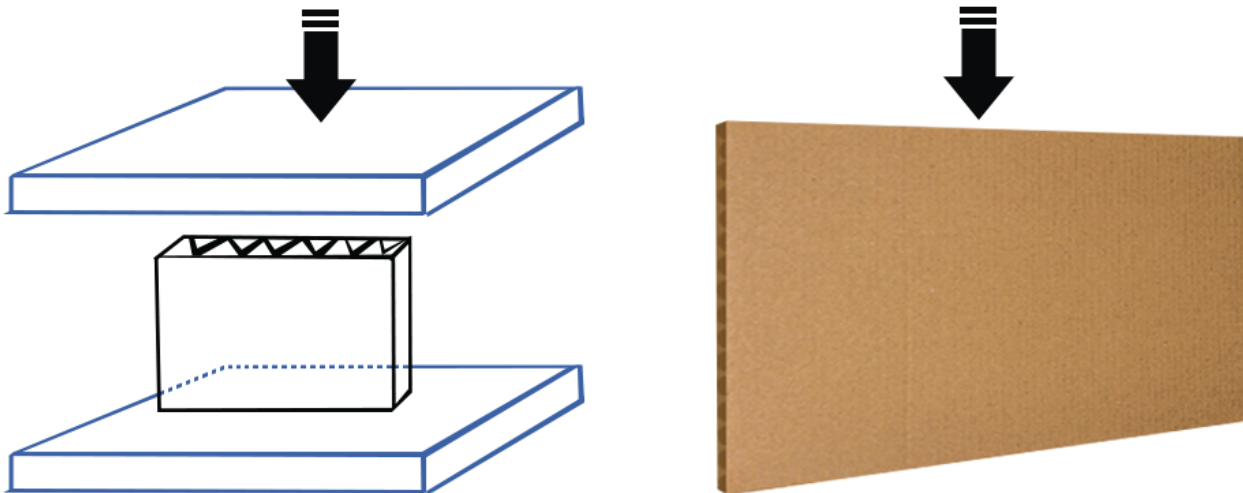
DOUBLE WALL CORRUGATED BOXES

MAX WEIGHT BOX / CONTENTS (LBS)	MIN. BURST TEST (LBS / SQ. IN.)	MIN EDGE CRUSH TEST (LBS / SQ. IN.)
80	200	42
100	275	48
120	350	51
140	400	61
160	500	71
180	600	82

ECT

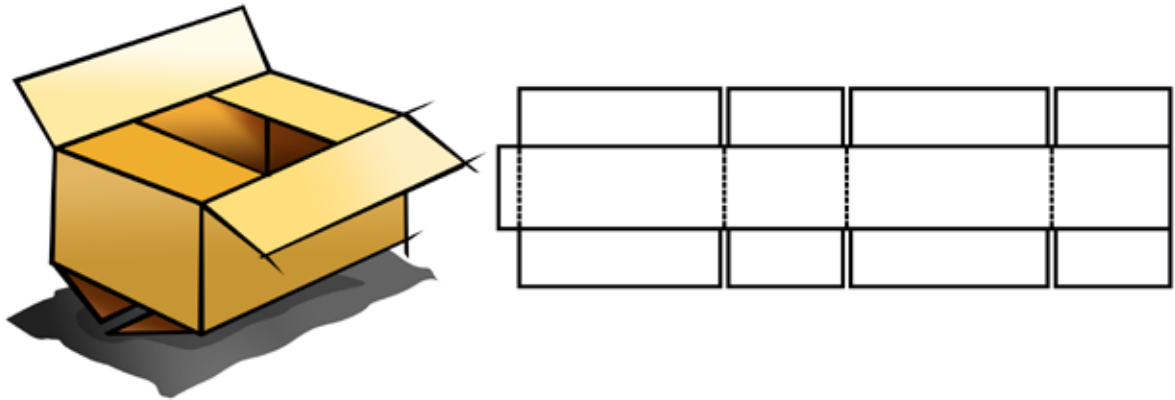
EDGE CRUSH TEST

- Which was developed in the 1990's measures the stacking strength of corrugated board - how much top to bottom pressure a box can withstand before crushing.
- Made up of 100% recycled fiber.
- 32 ECT boxes have become extremely popular since the **Edge Crush Test** was introduced, partly due to cost and partly because stacking strength is a more meaningful measure of how a box will perform in the field.
- Most common 32 ECT and 44 ECT.
- 48 ECT double wall - 51 ECT double wall.



EDGE CRUSH TEST - Vertical Force along the sides of the container.

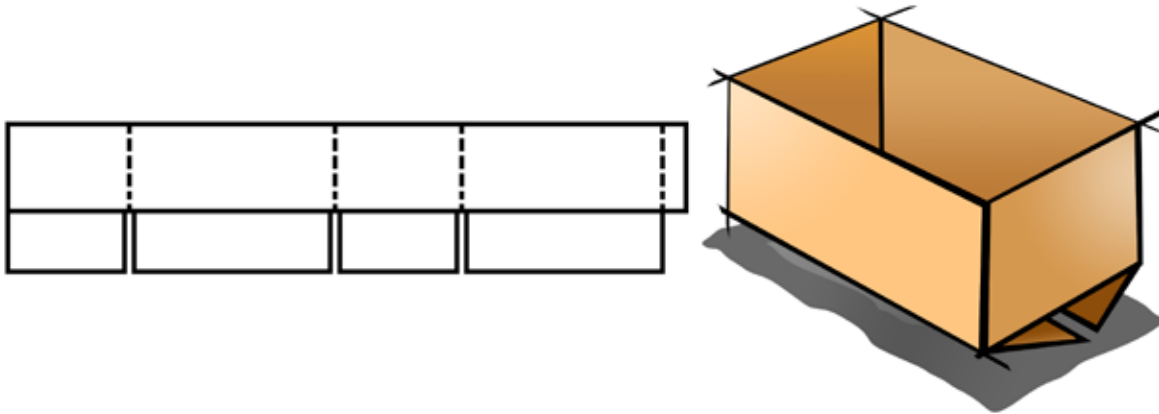
REGULAR SLOTTED CARTON (RSC)



Also called shipping boxes, RSC's are the most commonly used boxes. They are usually kraft brown in color, have four flaps on the top and bottom and the side walls are sealed at one corner known as the "Manufacturer's Joint."

This design is highly functional for most packing applications.

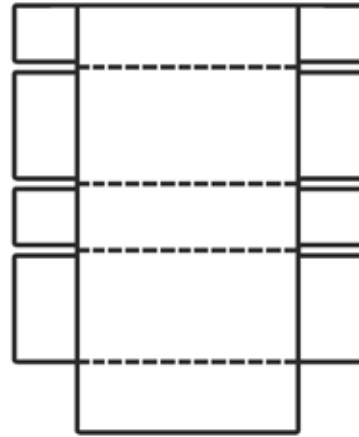
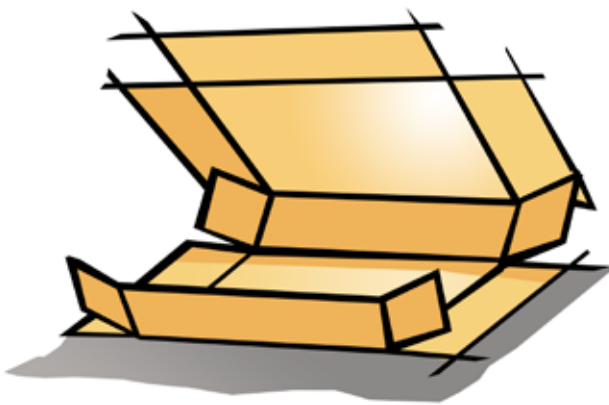
HALF SLOTTED CARTON (HSC)



A variation of the RSC, the Half Slotted Carton has only one set of flaps. The opposite side of the box is completely open, allowing it to slide over an item. Envision the use of the box turned over that the flaps are on the top.

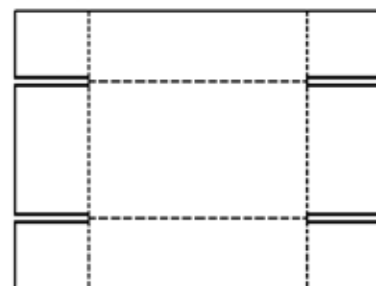
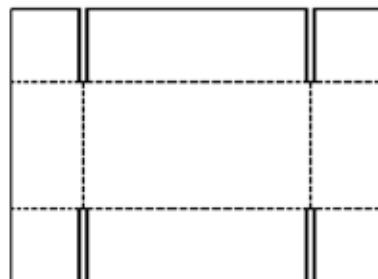
The covered item is usually attached to a pallet or the other type of surface that serves as a separate bottom.

FIVE PANEL FOLDER (FPF)



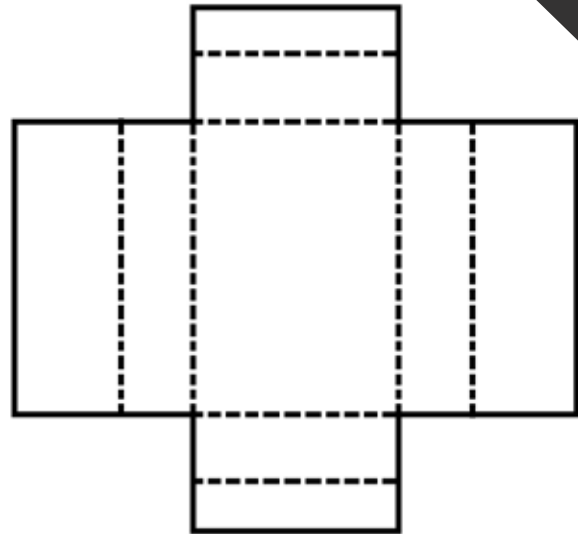
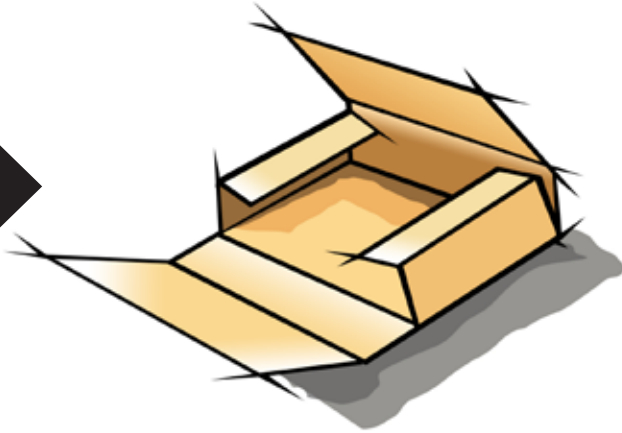
A Five-Panel Folder actually resembles a shallow-depth box when assembled. It is a one-piece box with an overlapping top and overlapping end panels. The functional design is also economical.

FULL TELESCOPE DESIGN (FTD)



A two-piece box with a separate lid that fits over a bottom tray.

ONE PIECE FOLDER (OPF)



The One Piece Folder has a flat bottom with two short flaps forming the sides at each end and two longer, wider flaps that form the front, back and top of the box. The wider flaps either meet or overlap on the top, depending on the depth of the contents. The four panels of a Bookfold are usually scored (creased) at multiple depths.

One-Piece Folders are used to package shallow depth items such as books and pictures. Usually manufactured with white board.

HOW DOES A BOARD BECOME A BOX?

Converting machines “convert” flat corrugated boards into boxes. The most common kinds of converting machines are flexo-folder gluers and die cutters.

Flexo-folder gluers print, crease, slot, trim, fold and glue the box so that it can be shipped flat and then be easily formed by the customer and packed. (rsc and hsc)

Die-cut machines cut the corrugated board into a pattern the customer will fold and glue into the box shape.

A rotary die cutter uses cutting edges called dies, and creasing rules, on a big roller to cut and score the corrugated board as it moves beneath it. (large quantities and large die cuts parts easels and backings)

A flat die cutter presses knives and creasing rules against a stationary board, the same way you press a cookie cutter into cookie dough. (roll end tuck tops and Litho displays)

Litho-laminator is used to paste the color-printing surface paper together with the corrugated sheet.



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