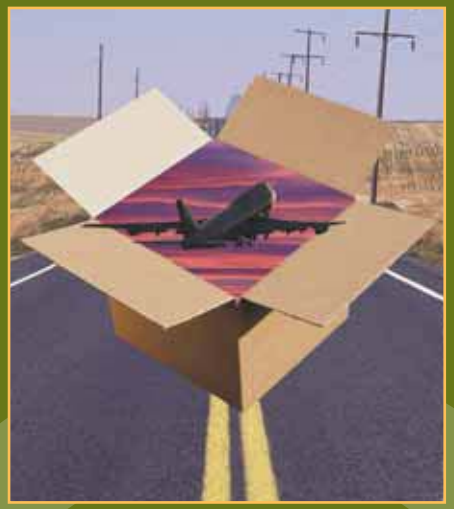
Corrugated Recycling Process

Corrugated is a highly useful, cost-efficient, versatile packaging material that is used to ship just about every product under the sun, all around the world. But is doesn't stop there: corrugated is also the most-recycled packaging material on earth, with a recovery rate of about 73 percent.

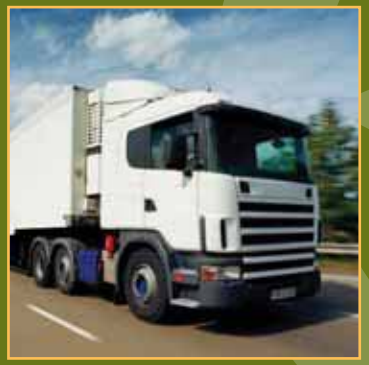
Businesses, retailers and consumers at home collect and return their used corrugated containers to be recycled into new ones, doing their part in a continuous loop of renewal for this natural, sustainable packaging.

While almost everyone contributes to corrugated's recycling success by returning their old corrugated containers (also known as OCC), fewer people may know where those boxes go from the collection point, or how they are processed to create new corrugated material. This diagram shows corrugated's return journey behind the scenes and how it is recycled for re-use.

Recycling Process



1. Corrugated boxes are used for their intended purpose of product protection and transportation.
2. Clean, old corrugated containers (OCC) are collected, in many instances as part of a mixed recyclables stream. To optimize recyclability, containers should be free of contaminants such as food, metal foil, wax, etc.
3. The collected OCC is sorted, compacted and baled for space-efficient storage and handling, either at the point of end-use (store or business) or at the recycling center.



4. Bales are transported to the paper mill.
5. Bales are broken open, and the OCC is put into a repulper (a huge tub that looks something like a blender) with water. It is agitated to form a slushy pulp (slurry) of fiber and water.

Contaminants are removed:

6a. A big "ragger" chain or rope hangs down into the swirling tub of material. Some contaminants such as long pieces of rope, string or tape, plastic and metal bands will wrap around the ragger and can then be pulled out of the repulper.

6b. The remaining pulp slurry goes through different types of equipment such as towers where the metal falls to the bottom for removal, screens, cyclones, and even big tanks where the contaminants float to the top and can be scraped off. The cleaned pulp is then sent to the paper machine.

7. The highly diluted fiber solution is poured out onto a moving screen which allows water to drain away, forming a continuous fiber mat, which is pressed between rollers to remove more water.

8. The wet, continuous fiber web is then wound through the dryer section where the top and bottom of the alternately contact the heated surfaces of the drying cylinders, removing the remaining moisture from the paper.

9. At the end of the paper machine, paper is rolled up on a large reel spool which can weigh 10–60 tons.

10. The reel is then slit and rewound into individual rolls that weigh approximately 3 tons each. The recycling process is complete; the new paper rolls are shipped to box manufacturers to begin the next stage in life to become new corrugated boxes.

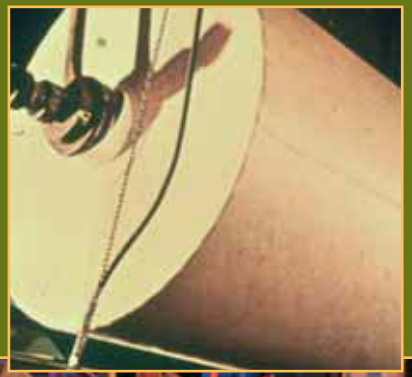
11. A sheet of paper which will become the corrugated "medium" is softened with steam, then fed through a machine called a "single-facer." The medium passes between two huge metal rolls with teeth which give it wavy ridges, or "flutes."

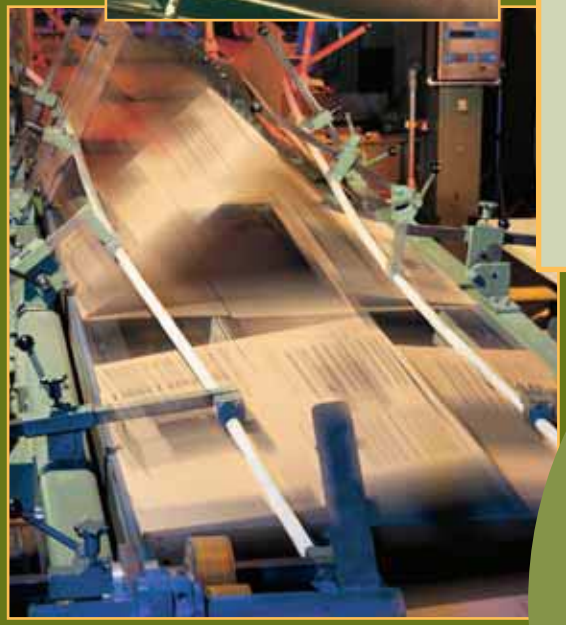
12. Starch adhesive is applied to the fluted medium, which is then sandwiched between two flat sheets of paper (linerboard).

13. The combined, 3+-layer board passes through curing sections in a continuous web, and then is scored, cut into proper size blanks (sheets), and stacked.

14. To manufacture a new box, the corrugated sheets are passed through machines that print, score, die cut and fold them. The side seam of the box (manufacturer's joint) is fastened by gluing, taping or stitching.

The finished, flat boxes are gathered into bundles and stacked, then shipped to the box customer's plant.





New Life

Corrugated boxes are formed using three or more pieces of paper (containerboard). The outer surfaces are linerboard and the inner, fluted paper is called medium.