Sustainability Issues

With Plastic Clamshell Packaging

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OVERVIEW

Many products such as memory cards, USB drives, , are packaged between two thick and hard layers of plastics. Such packaging is clamshell packaging, one of the most common and useful packaging methods for food and many other daily use products.

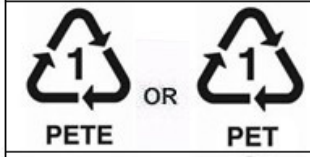
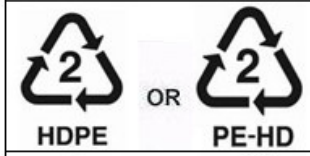
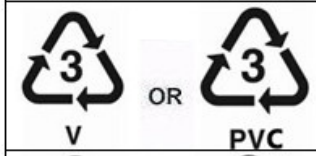
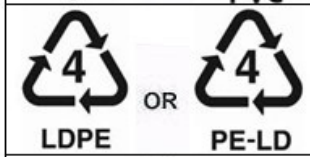
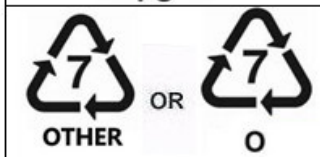
BACKGROUND

Clamshell packaging was first invented in the 1980s to protect the products from theft and transportations while making them visible to the customers. Clamshell packaging becomes a better option because it allows visibility, it can be stored easily, and it can prevent shoplift by having the package bigger than the actual products. Plastic clamshells are much lighter, cheaper, and long-lasting[1]. It is a great alternative at that time.

ISSUES

RECYCLING

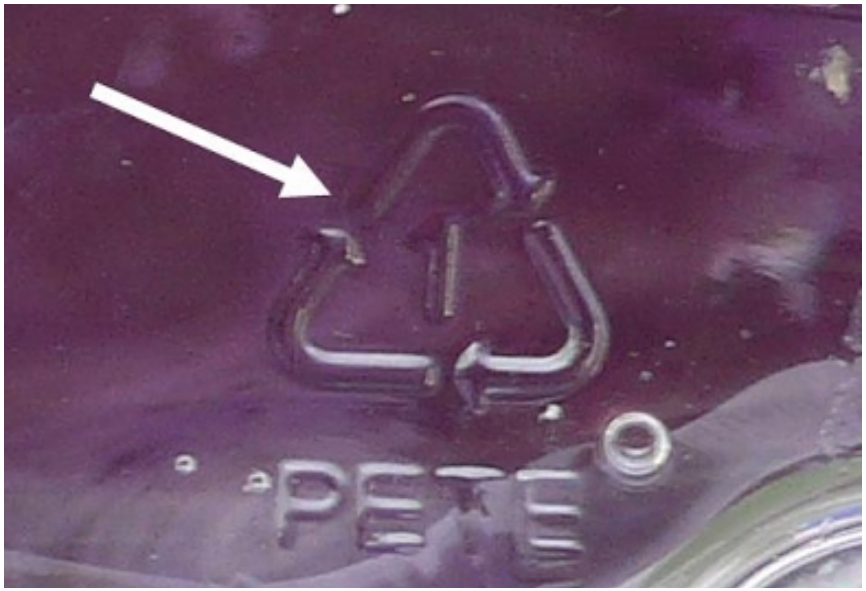
Plastic clamshell packaging is made of the number one recycled polyethylene terephthalate (PET) content, but these packages are not recycled. No.1 PET is recycled differently than other plastics. Recycling centers are less likely to sort the plastic clamshells out just by looking. And most clamshells packagings have some sort of label on them. Those sticky labels are hard to remove, which causes the packages cannot be recycled[1].

Code	Material	Applications
	Polyethylene Terephthalate	Clear soft drink and beverage bottles, food packaging
	High Density Polyethylene	Bottles(especially for food products, detergent and cosmetics), industrial wrapping and film, sheets, plastic bags
	Polyvinyl Chloride	Bottles packaging film, credit cards, water containers, water pipes.
	Low Density Polyethylene	Cling film, plastic bags, flexible containers and food wrap
	Polypropylene	Packaging such as yoghurt and margarine pots, sweet and snack wrappers, medical packaging, milk and beer crates, shampoo bottles
	Polystyrene	Disposable hot or cold drink cups and plates, fast food clamshells, dairy product containers
	All other resins and multi-materials not otherwise defined	Other resins, complex composites and laminates

ISSUES

ENVIRONMENTAL POLLUTION

Research has found many wildlife have suffered or died from plastics over the past years[2]. Plastics can be harmful to organs and tissues. No one can guarantee that all of these plastic packagings will be recycled even with a sufficient recycling process. Moreover, recently, scientists have found tiny plastic molecules in humans' bodies. It is essential to address this problem not only to protect the earth's ecosystem but also humans as well.



Clamshell Packaging Sustainbiltiy Issues

ISSUES

CONSUMER BEHAVIORS

Clamshells packaging is made of tough plastics and is nearly impossible to open with bare hands, people often use sharp tools such as knives and scissors. Sometimes the sharps might harm people when they are trying very hard to cut them open. Doctors say that thousands of people end up in the emergency room every year because they've inadvertently harmed themselves trying to open clamshell packages [4]. It levels up to a health issue.

RECOMMENDATION

RECYCLING PROCESS

Switching the original label bar codes would better help the recycling center separate the massive amount of plastics into different categories to recycle them efficiently. Furthermore, to make sure the companies do not have any sticky labels on the packages to make sure they can be recycled appropriately.

PACKAGING REDESIGN

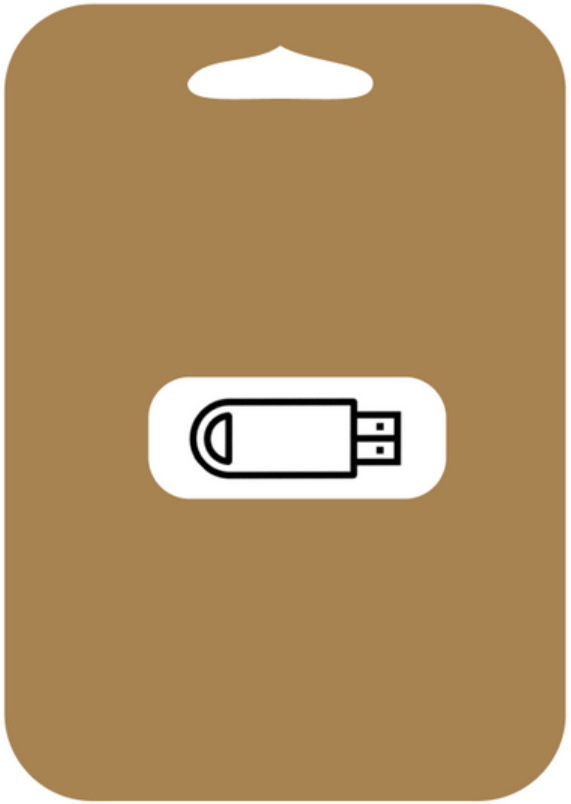
Changing the current plastic packaging materials into the combination of hard paperboards and small pieces of soft plastic would make sure the products have the same effects but with recyclable materials. The paperboards would let the users put much less effort to open the package to reduce the injuries caused by the original tough plastic packaging injuries.

SOLUTIONS

RECYCLING PROCESS

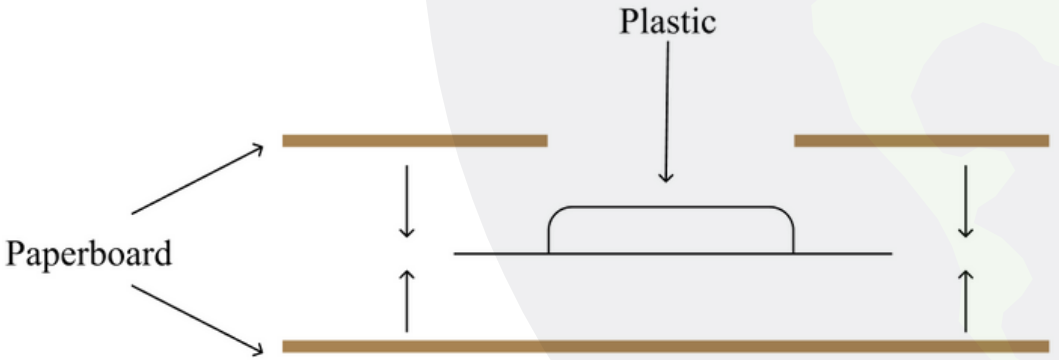
Having a small bar code labeled on the recycling symbol instead of letters helps the recycling centers to scan through the plastics and separate them into different groups quickly by letting the machine do the work.

SOLUTIONS



PACKAGING REDESIGN

The softer materials can prevent users from hurting themselves while opening the packages. In case of security, the package is still a lot bigger than the product inside, and even though the paperboard is made of paperboard, it will be hard to rip off the package by hand because the layers are sealed together. This will prevent the shoplifters like the original clamshells.



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[2] K. H. Anthony, “Clamshell packaging is an often dangerous lesson in bad design,” thestar.com, 04-Mar-2017. [Online]. Available: https://www.thestar.com/news/insight/2017/03/04/clamshell-packaging-is-an-often-dangerous-lesson-in-bad-design.html. [Accessed: 16-Feb-2021].

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Thanks!