



# Design for Recycling

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**SERIOPLAST**

# Our Current Status

- In the current Environmental and Economic Space, terms such as Recycling, Demanufacture, Segregate, Circular Economy, etc are leading the race for Airtime.
- Landfill space and natural resources are diminishing.
- Most plastics ultimately is returned to landfill as they are either non-recyclable, or not taken to be recycled or authorities generally do not separate recyclables that end up at the landfill sites.
- Governmental authorities, Economies, Entrepreneurs, Private Sector Leaders, Conservationists, Companies, students and children alike, are aware of this future Global Pandemic.
- The problem is that the Airtime is not relating to progressive steps that accelerate the demise of the Pandemic.

# Legislation OR Doing the Responsible Thing

- Are Governmental Authorities through the relevant legislation driving and enforcing this change...what is the motive?
- Brand owners want to comply though they are moving unhurriedly.
- People “talk the talk” though the general behaviour is contradictory of “the talk”.

# The Organic Debate

- The Organic debate started in a similar vane.
- In the Agricultural space, Pesticides are now being made utilising plant material thus making fruit and vegetables more resistant to “pests”.
- Undertaking the responsible due care at times is more costly, though creative solutions drive costs down and even attracts higher end prices.

# Sustainable Change

- When impacts of our Products on the Environment are considered first in all life cycle stages of Business and Product processes, then and then only are we on a pathway to sustainable actions.
- This mindset will not only help grow Economic priorities with the preservation of the environment, but also create new strategies on creating a sustainable society.
- Recycling is an Eco-friendly concept, resulting in designing products that consider their impact and life cycle stages in the environment.

# Resin Coding

- Recycling codes are used to identify the material from which an item is made, to facilitate easier recycling or other reprocessing. Having a recycling code, the chasing arrows logo or a resin code on an item is not an automatic indicator that a material is recyclable but rather an explanation of what the item is.
- Although there are only seven resin codes, there are actually thousands of different types of plastic. Different combinations of dyes and additives can be added to the basic resin to produce a desired color, shape and texture in the final product. These variations in the manufacturing process lead to different melting points and other properties within the same resin code.

Code	Plastic Used	Common Uses	Recycled In
	Polyethylene Terephthalate (PET)	Soft drink/water/juice bottles and detergent/cleaner/butter containers <b>Currently not used in Tupperware</b>	Pillow and sleeping bag filling, clothing, soft drink bottles, carpets
	High Density Polyethylene (HDPE)	Opaque milk and water jugs, bleach/detergent/shampoo bottles, and some plastic bags <b>In Malaysia, High Density Polyethylene (HDPE) is only used for the grid of the Modular Cropper with Grid and the Tray of the Legacy Bread Server</b>	Recycling bins, compost bins, buckets, detergent containers, posts, fencing, pipes
	Polyvinyl chloride (PVC)	Cling wrap, some plastic squeeze bottles, cooking oil and peanut butter jars, and detergent/window cleaner bottles <b>Currently not used in Tupperware</b>	Flooring, film and sheets, cables, speed bumps, packaging, binders, mud flaps and mats
	Low Density Polyethylene (LDPE)	Grocery store bags, most plastic wraps and some bottles Square Round Canisters <b>Seals for Square Rounds, Modular Mates and FreezerMates</b>	Rubbish bin liners, pallet sheets
	Polypropylene (PP)	Yogurt containers, straws and other clouded plastic containers <b>Baby Bottle, Crystalwave, One Touch Canister, Modular Mates</b>	Pegs, bins, pipes, pallet sheets, oil funnels, car battery cases, trays
	Polystyrene (PS) or Expandable Polystyrene (EPS)	Styrofoam food trays, egg cartons, disposable cups and bowls, carryout containers and plastic cutlery <b>Currently not used in Tupperware</b>	Coat hangers, coasters, stationary trays and accessories
	Other: Materials not classified in the 6 categories above, like polycarbonate and polyamide, or that use combination of materials from different categories. New bio-based plastics are also categorised here	Car parts, appliance parts, computers, electronics, packaging <b>Kitchen tools, Rock 'N Serve, Elegancia Rice Dispenser (ABS)</b>	Car parts, concrete aggregate, plastic timber

# Current Design Practices

- ✓ Consider a Product
- ✓ Design a container that is the most suitable to contain the product
- ✓ Consider the packaging out of plastic, as its cheaper
- ✓ Consider or design the packaging to outlast the life cycle of the product it is protecting
- ✓ Design the packaging using current Technology, as cost is the key driver.

# New Age Design Priorities

When designing a product, considering what happens after its demise, will soon become as important as its performance.

How to design for the end of a product's life will be guided by the nature of the product, how long it is expected to be used and its recyclability properties.

Integrate sustainability efforts into your product design after a preliminary concept has been developed, beforehand to finalizing details for production.

This will ultimately save time along with costs.

# New Age Design Priorities

## Ease of Disassembly and Compatible Resins for Material Selection

- One of the first factors to consider is the ease of disassembly. If deconstructing a product is a major challenge, users will be discouraged from recycling components and will simply dispose of the product instead.
- Make it easy for all users! Humans are simple creatures – they lean towards simplicity and convenience.
- Use common materials in plastics with limited or no use of additives.

# New Age Design Priorities

## Ease of Recycling

- Humans are creatures of habit and convenience. If recycling your product is not convenient or the obvious route, the likelihood is the products will end up in a landfill.
- Remember: Recycling is not intuitive for some consumers. They need to be reminded! And for those consumers who highly value sustainable products, reconfirm that your company clearly shares those (green) values, along with your products are designed with the planet's best interests in mind.

# New Age Design Priorities

## New Process Technologies

- New process technologies make possible the use of recycled resins in plastic parts. For an example, in two component or sandwich molding, two shot molding, and coextrusion for profile and blow molding, two materials are combined in a component part. The second layer can be used as an outlet for recycled materials, while the other layer (skin, second shot, outer layer) uses virgin materials for cosmetic or property requirements of the application.
- New applications can even exceed two or more layers

# New Age Design Priorities

## Life Cycle Analysis

- Life cycle analyses, in which all operations — beginning with raw material extraction, through processing and product use, and ending with disposal — provide a way to view the environmental efficiency of consumer products.
- Stages of life cycle analysis consist of: Inventory, which provides a detailed description of raw material input and waste output; Interpretation, which links inventory results to identifiable environmental problems; and Improvement, in which the system is modified to reduce the environmental impact.

# Practical Solutions Implimented by Brand Owners

1. New Technology (Coex Machinery)
2. 100% Recycled Product Design using Recycled PET
3. Multi Layered Products, sandwich Recycled material at various %
4. Reduction of Additives (Masterbatch)
5. Material Selection based on Environment Impact
6. Light weighting of Products to reduce Usage
7. Label Simplification

# Thank you

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On behalf of

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The logo for SARIOPLAST is rendered in a vibrant green color. The letters are stylized with a multi-line, parallel effect, giving them a three-dimensional, embossed appearance. The letter 'I' in 'SARIO' is uniquely designed as a solid green silhouette of a wine bottle. The overall font is bold and modern.