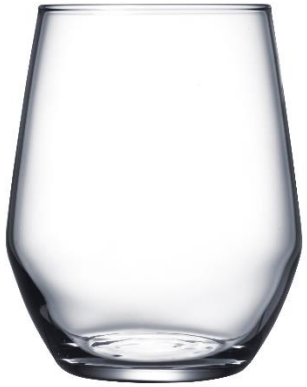
Existing Alternative

Alternative materials and products to replace plastic

ECO-FRIENDLY SUBSTITUTES FOR PLASTIC

GLASS

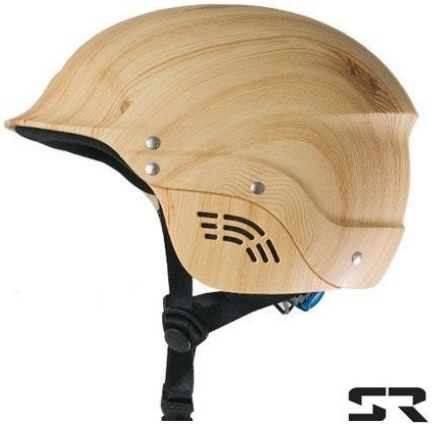


Glass has been noted as ancient material that human have use. Centuries ago, we knew that glass is very identical with milk bottle. Unlike plastic, glass is made by sand. This renewable material doesn’t contain chemical that can affect anything inside it. Glass also heatproof from microwave. This material is easy to recycle and reuse compare to plastic.

PDCs

Prodegradant concentrates are metal compounds such as cobalt stearate or manganese stearate. This material help to break down the plastic into brittle or low molecular weight fragments. PDCs usually use in thermoplastic to gobble up the fragments as they disintegrate into carbon dioxide or water and biomass.

LIQUID WOOD



Liquid wood is one of new biopolymer invention. Most of biopolymer materials is faking plastic, but liquid wood are feel and act like polymer. This material biodegradable because it isn’t petroleum based plastic. Liquid wood is made out pulp based lignin. Lingin is a renewable resource from paper mills with water then expose the mixture to serious heat and pressure to create a moldable composite material that's strong and nontoxic). In Germany they have incorporated this plastic substitute into a variety of items including toys, golf tees and even hi-fi speaker boxes.

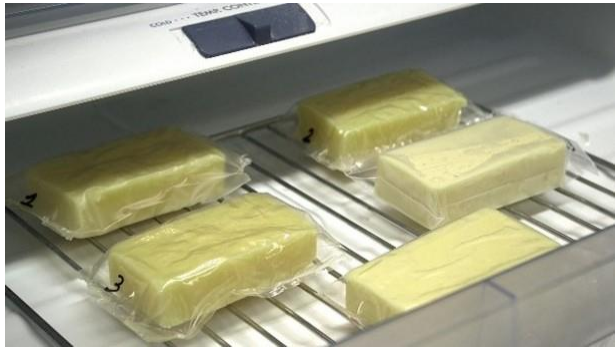
STARCH BASED POLYMERS

As a totally biodegradable, low-cost, renewable and natural polymer, starch has been receiving lots of attention for developing sustainable materials lately. Its poor mechanical properties mean it has limited use for the sturdy products that plastic generate. To make completely biodegradable starch-based plastics, the components usually blended with starch are aliphatic polyesters, such as PLA and PCL, and polyvinyl alcohol. Adding in starch also shaves plastic manufacturing costs. Starch needs to exceed 60 percent of the composite before it has a significant effect on degradation; as the starch content increases, the polymers become more biodegradable

CHICKEN FEATHERS

Chicken feathers are completely composed of keratin, a strong protein that give same strength and durability like plastics. It's usually found in hair and wool, hooves and horns. Researches decided to tap into keratin's super strong features by processing chicken feathers with methyl acrylate, a liquid found in nail polish. Ultimately, the keratin-based plastic proved to be substantially stronger and more resistant to tearing than other plastics made from agricultural sources, such as soy or starch, and scientists are clucking excitedly about chicken-feather plastic. After all, inexpensive, abundant chicken feathers are a renewable resource. Although not formally tested as of February 2012, chicken-feather plastic is expected to be fully biodegradable.

MILK PROTEIN



Casein-based plastic is actually an OLD idea, around since a French chemist treated casein with formaldehyde in the 1880s to make a substitute for ivory and tortoiseshell. However, this proved too brittle for applications beyond jewelry. Modern scientists have learned that adding silicate clay that has been frozen into a spongelike material creates a polystyrene-like material that degrades completely at the landfill and is made even less toxic by substituting a glycerine based chemical for formaldehyde.

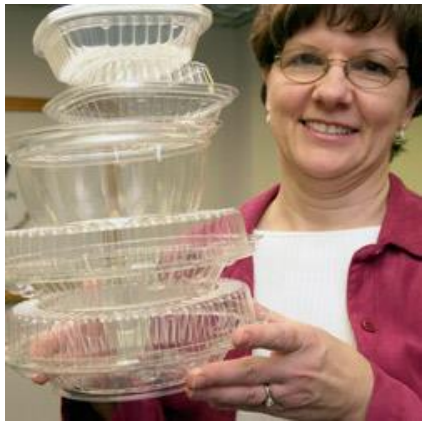
PCL POLYESTERS

Polycaprolactone (PCL) is a synthetic aliphatic polyester that isn't made from renewable resources but does completely degrade after six weeks of composting. It's easily processed but hasn't been used in significant quantities because of manufacturing costs. However, blending PCL with cornstarch reduces cost. Biomedical devices and sutures are already made of the slow-degrading polymer, and tissue-engineering researchers dig it, too. It also has applications for food-contact products, such as trays.

PHA POLYESTERS

It’s a biodegradable closely resemble man-made polypropylene. PHA is less flexible than petroleum-based plastics, that usually found in packaging, plastic films and injection-molded bottles. PHAs biodegrade via composting; a PHB/PHV composite (92 parts PHB/8 parts PHV, by weight) will almost completely break down within 20 days of cultivation by anaerobic digested sludge, the workhorse of biological treatment plants.

PLA POLYESTERS



Polylactic acid, or PLA, is another aliphatic polyester and one that can be made from lactic acid, which is produced via starch fermentation during corn (wheat or sugarcane) wet milling. PLA boasts the rigidity to replace polystyrene and PET, but it has an edge over the real thing: It decomposes within 47 days in an industrial composting site, won't emit toxic fumes when burned and manufacturing them uses 20 to 50 percent less fossil fuels than petroleum-based plastic. Often, companies blend PLA with starch to reduce cost and increase its biodegradability.

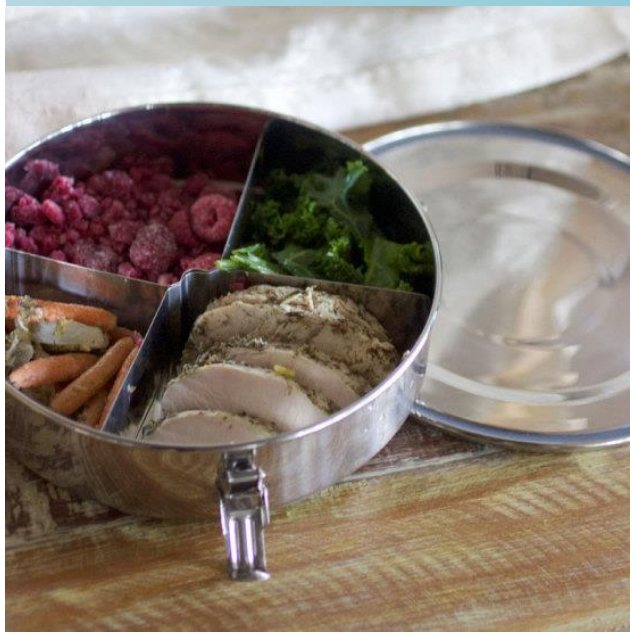
EXISTING PRODUCTS TO REPLACE PLASTIC USE

IN LUNCH

SANDWICH WRAP PLACEMATS

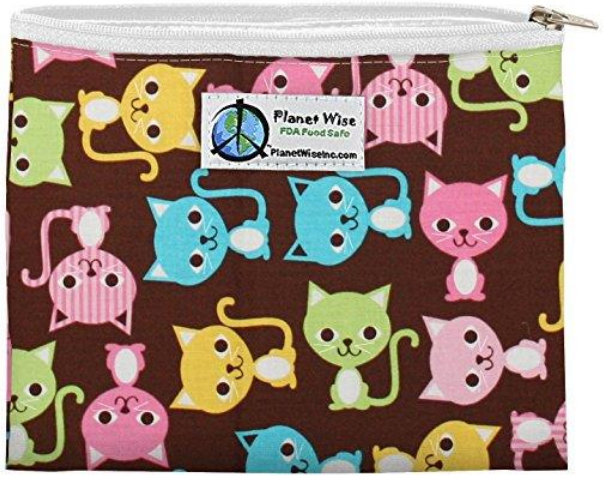
Owl Print Reusable Sandwich Wrap. BPA and Phthalate Free. Comes with Free E-book with 10 Lunch Box Ideas to Make Picnics an Lunches Fun, Easy and Sustainable. Converts to Easy-clean Placemat.

STAINLESS STEEL LUNCHBOX



Stainless Steel Lunch Box with Removable Dividers – Round. Light and durable food storage.

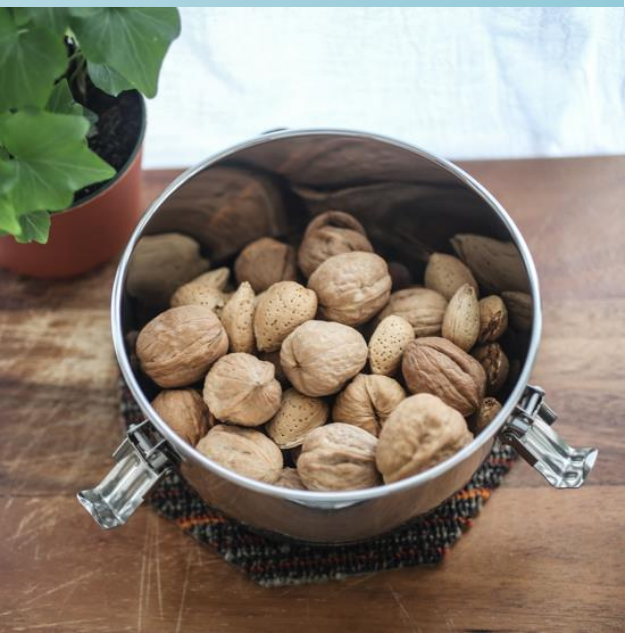
ZIPPER SANDWICH BAG



Planet Wise Zipper Sandwich Bag, Kitty Kat

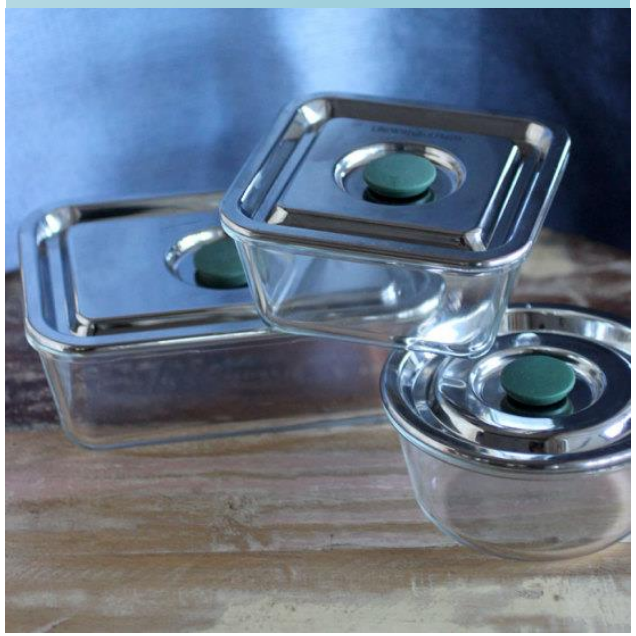
FOR STORAGE

STEEL LATCHING CONTAINER



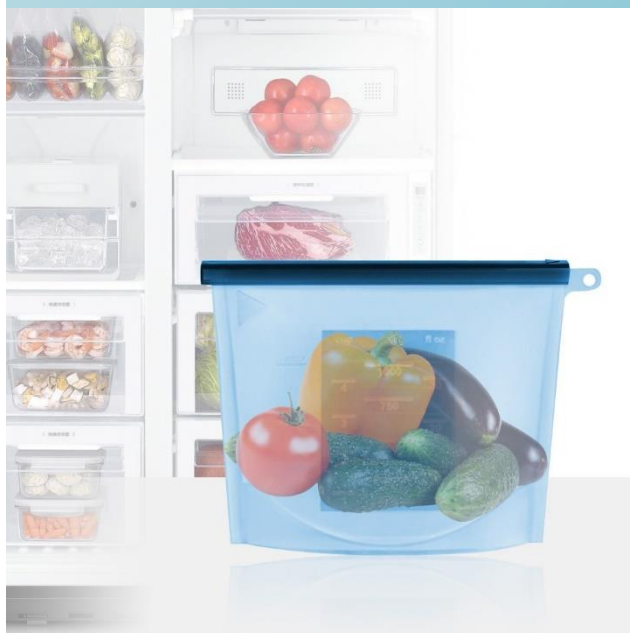
Stainless Steel Food Container – Round. Practical, airtight and watertight, these food storage containers are perfect for real food meals on-the-go.

GLASS STORAGE



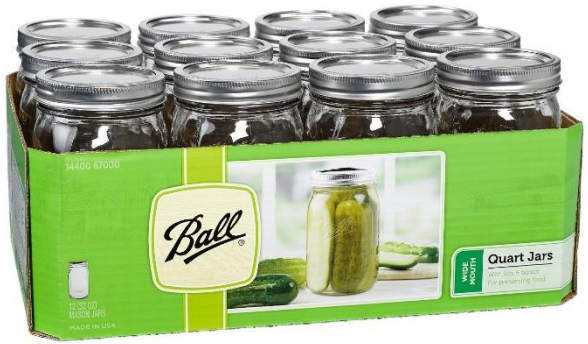
Glass Container W/Stainless Steel lid – Rectangular.

SILICONE STORAGE BAGS



Wumal Reusable Seal Silicone Fresh Bag Food Storage Bag Airtight Container 1-Liter Fresh Bag,Versatile Cooking Bag,No-BPA(Blue)

MASON JARS



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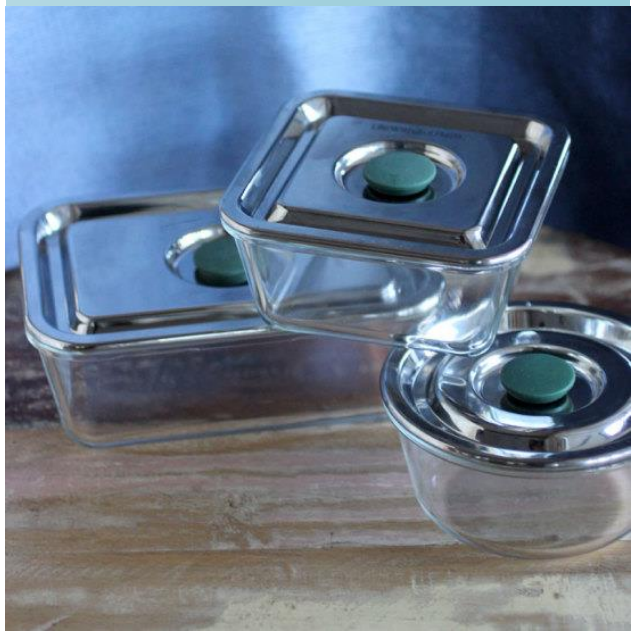
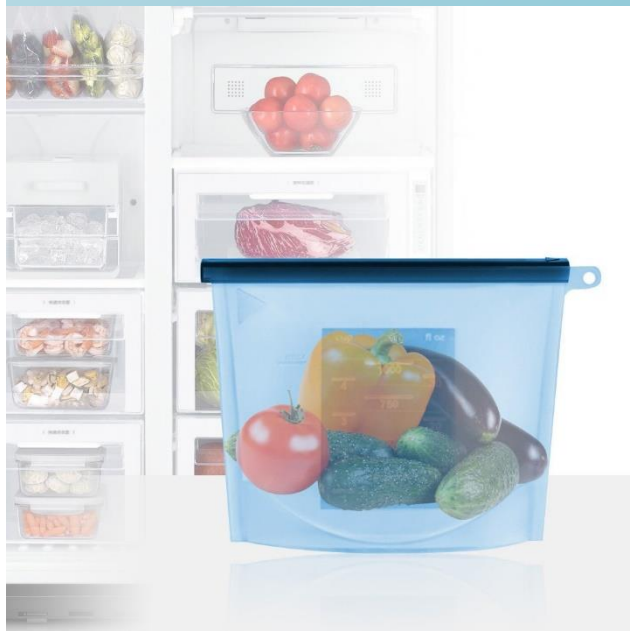
COLLAPSIBBLE SILISON STORAGE



Glass Container W/Stainless Steel lid – Rectangular.

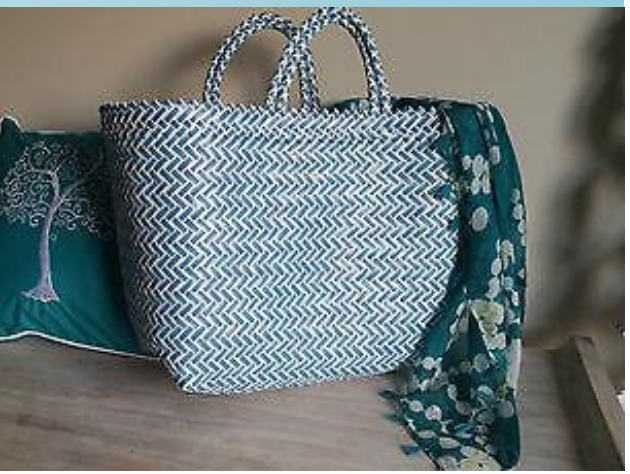
SILICONE STORAGE BAGS



Wumal Reusable Seal Silicone Fresh Bag Food Storage Bag Airtight Container 1-Liter Fresh Bag,Versatile Cooking Bag,No-BPA(Blue)

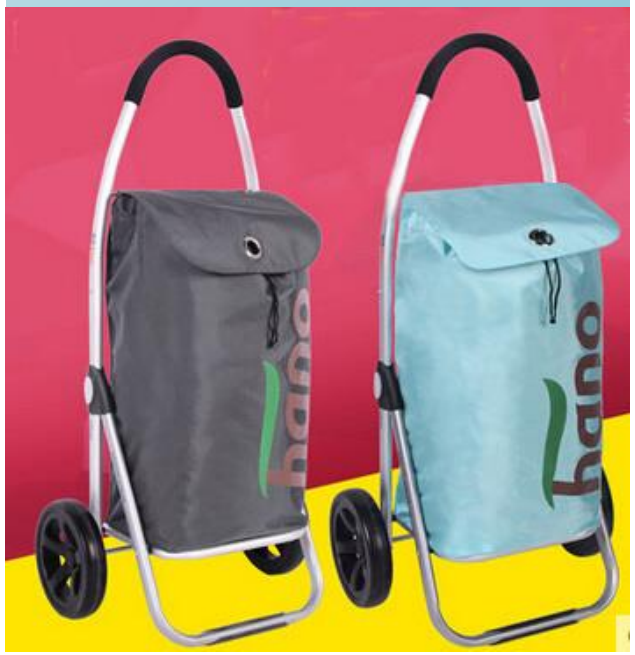
FOR PLASTIC GROCERY BAG

TRADITIONAL RECYCLED BAG



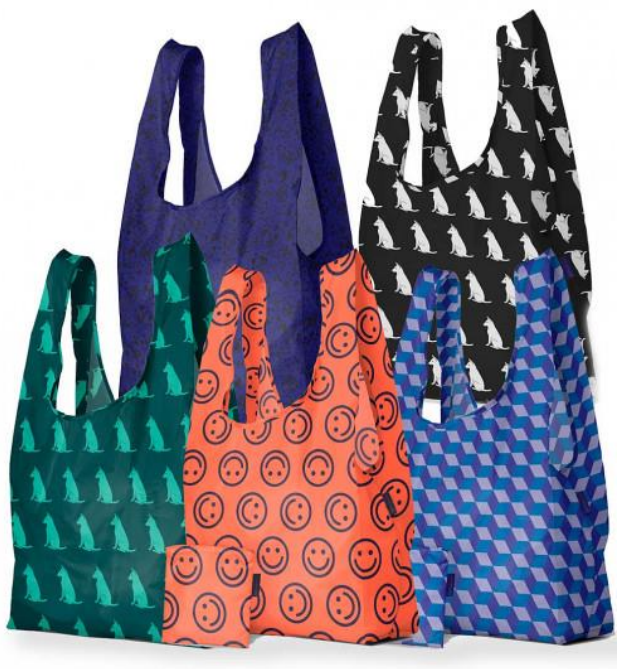
Traditional recycled bag from wasted plastic, woven in Bali.

CANVAS TROLLEY BAG



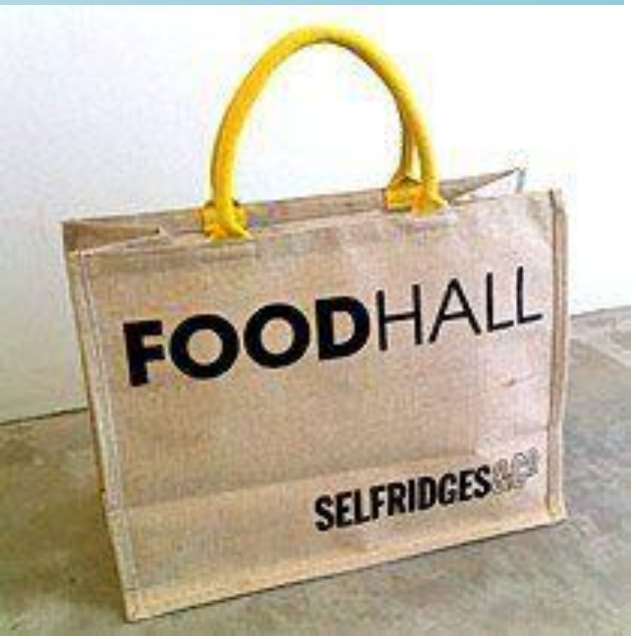
Canvas trolley bag for personal use. Ease the weight of your grocery shopping, especially when you need to use public transport or walking.

BAGGU LARGE BAG



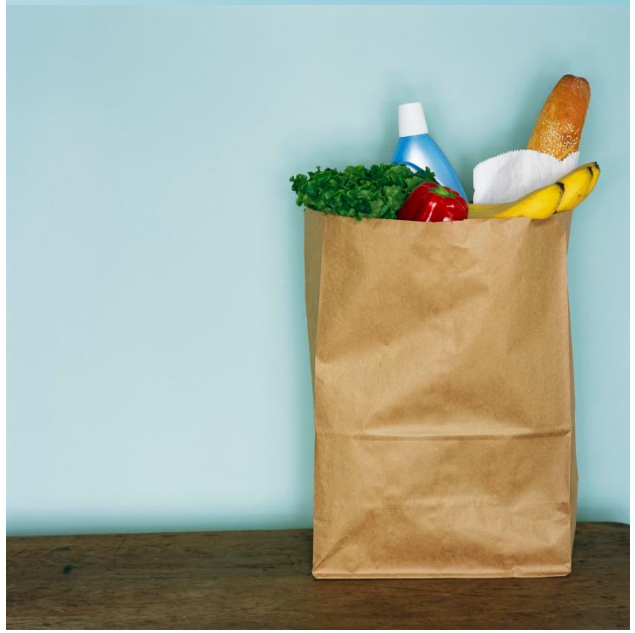
Lightweight shopping bag and easily compact.

SELF FRIDGES BAG



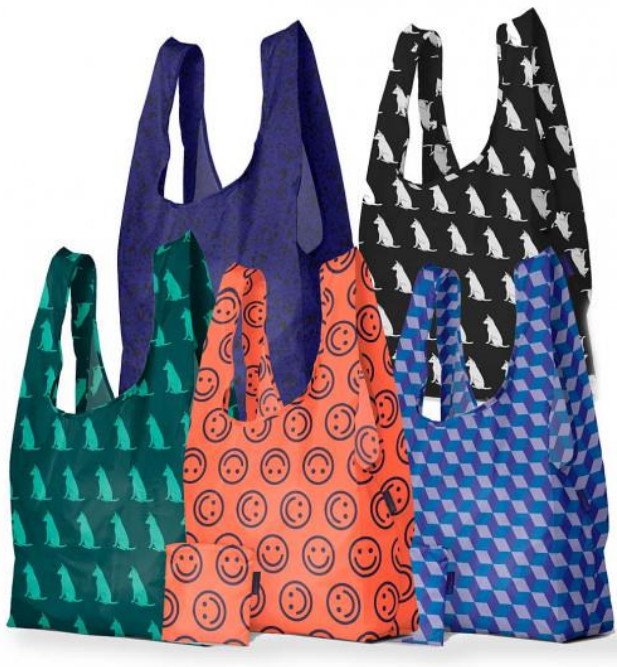
Reusable bag to keep your frozen food cold.

PAPERBACK



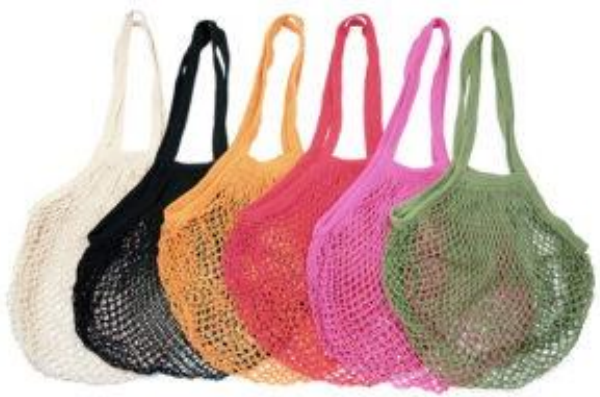
Paper bag for grocery shopping – easy to recycle compare to plastic

BAGGU LARGE BAG



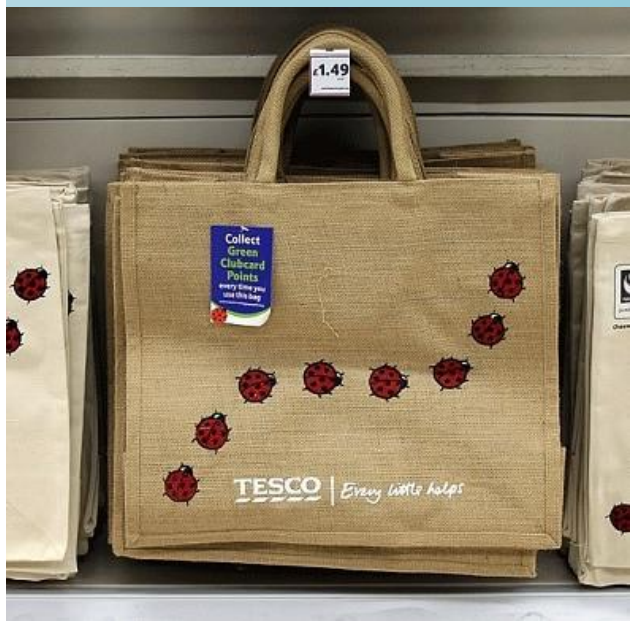
Lightweight shopping bag and easily compact.

NET BAG



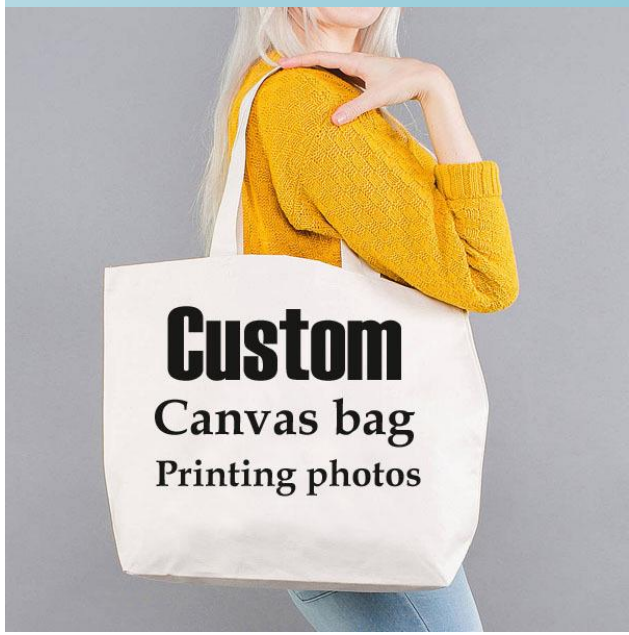
Net bag – to carry fruits and other grocery items. Lightweight and easy to store.

WOVEN POLYPROPYLENE



Woven polypropylene is very strong compare to other reusable grocery shopping bag. This material also usually found in rice bag.

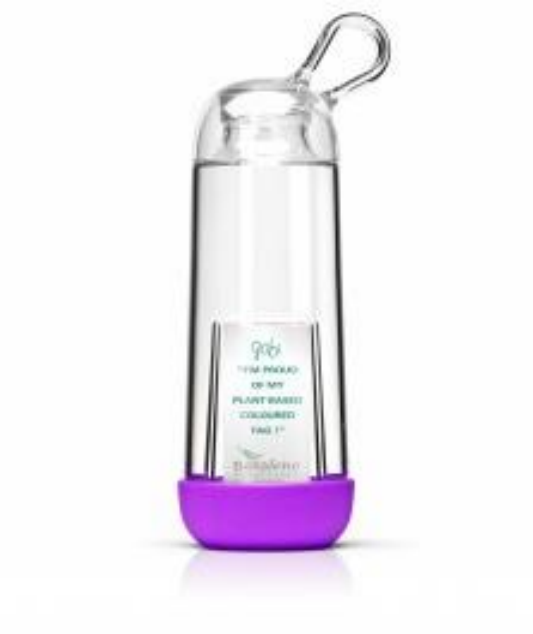
CANVAS BAG



Canvas bag made from canvas, usually came in different shapes and graphic design on the canvas bag. Most common one that available at the market and cheap.

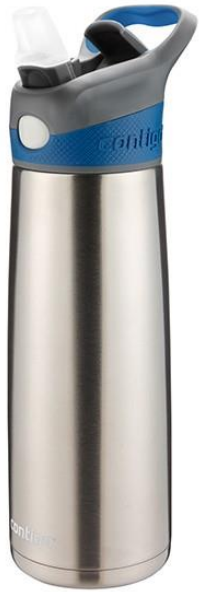
FOR SINGLE USE WATER BOTTLE

PLANT BASED RESINFOR



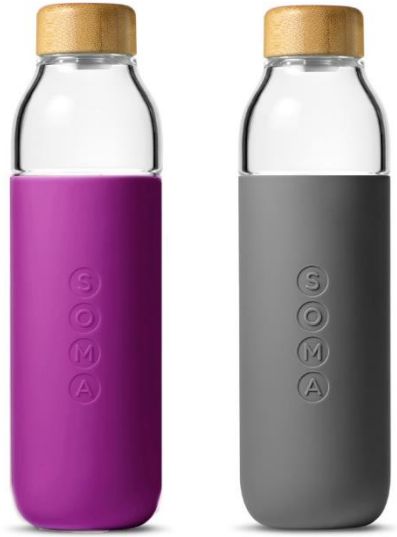
GOBILAB has chosen Roquette plant-based resin for their Gobi reusable water bottles

STAINLESS STEEL BOTTLE



Reusable drinking bottle from stainless steel with mouth piece.

SOMA GLASS WATER BOTTLE



Lightweight shopping bag and easily compact.

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