

Recycling of Plastics

Last year India consumed around 13 million tons of commodity plastics and generated around 9 million tons of plastic waste. Have you ever wondered what happens to your used toothpaste tubes, Tetra packs, carry bags, sachets, flexible food packaging – these go into municipal landfills or clog the sewerage system. However, certain waste plastic streams like PET bottles, PP woven sacks, HDPE containers, PVC & PE pipes, automotive bumpers, white goods (to name a few) are recycled and used to partially replace virgin plastics.

To provide a sense of scale, India consumed more than a million tons of PET resin last year to produce bottles for packaged water and soft drinks. Recycling of plastics has become an environmental necessity as well as an economic imperative to save natural resources (India imports more than 80% of its crude oil and petrochemical inputs). Regulatory pressure from government (like Maharashtra plastic ban) has added necessary urgency to the matter.

1) Recycling of Commodity Thermoplastics

- a) Recycled polypropylene pellets (granules) from waste PP raffia woven sacks (end-of-life), BOPP films (post industrial waste), Automotive bumpers etc.
- b) Recycled high density polyethylene pellets (granules) from waste HDPE industrial drums, pipes etc.
- c) Recycled low density polyethylene pellets (granules) from waste LDPE films (both post-consumer & post industrial waste)
- d) Recycled U-PVC pellets (granules) from waste U-PVC pipes & window profiles
- e) Recycled mixed plastic waste pellets (granules) e.g. mixed PP & HDPE / LDPE

We can select & source single set of plant and machinery that can process different types of plastic wastes (PP, HDPE, LDPE) from different waste streams to produce value added recycled plastic compound pellets used in various end applications.

2) Recycling of Engineering Plastics

- a) Recycled Nylon compound pellets from end of life carpet backing & fishing nets, post-industrial tyre cord fabric waste, post-industrial nylon filament yarn waste
- b) Recycled ABS compound pellets from end-of-life white consumer goods e.g. refrigerator, washing machine, TV casings etc.
- c) Compound pellets from mixed recycled ABS & PET
- d) Other recycled engineering plastics like Polycarbonate (PC) and Acrylic (PMMA)

3) Recycling of Mixed Plastic Waste (MPW) and waste plastic from Municipal Solid Waste (MSW)

We can provide technical know-how to recycle mixed plastic waste (e.g. mix of LDPE & PP or HDPE & PP) with the use of special additive and processing methods.

Waste plastics when segregated into different streams can be easily recycled and the recycled & compounded pellets can be used to partially replace virgin plastics in non-critical applications. Where segregated plastic waste from MSW is available e.g. polyethylene carry bags, PP non-woven carry bags, flexible plastic packaging material, BOPP films, sachets etc then it is certainly possible to recycle these into value added materials.

4) Recycling of post-consumer waste PET bottles into value added products

- a) Recycled Polyester Filament Yarn (Re-POY) that is processed into draw textured yarn (DTY) used for manufacturing of ready-made garments, inner wear, upholstery, furnishings etc.
- b) Recycled Polyester Staple Fiber (Re-PSF) used in production of polyester yarn, fiber fill, non-woven textiles - e.g. exhibition carpets, carpet backing, automotive insulation, technical / medical / Geo textiles etc.
- c) Extruded Clear Recycled PET Rigid Sheet for thermoformed packaging (consumer electronics, computer accessories)
- d) Co- extruded Clear Sandwich PET Sheet (Virgin + Recycled + Virgin) for food contact packaging (dairy & bakery)
- e) Recycled PET resin pellets for partially replacing virgin resin in different products
- f) Bottle grade PET Resin (US FDA approved) from waste PET Bottles by means of special process
- g) Extruded PET Strapping Tape

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Symbol	Polymer Name	Product Examples	
 PETE	Polyethylene Terephthalate (PETE or PET)	<ul style="list-style-type: none"> • Soft drink bottles • Water bottles • Sports drink bottles • Salad dressing bottles • Vegetable oil bottles 	<ul style="list-style-type: none"> • Peanut butter jars • Pickle jars • Jelly jars • Prepared food trays • Mouthwash bottles 
 HDPE	High-density Polyethylene (HDPE)	<ul style="list-style-type: none"> • Milk jugs • Juice bottles • Yogurt tubs • Butter tubs • Cereal box liners 	<ul style="list-style-type: none"> • Shampoo bottles • Motor oil bottles • Bleach/detergent bottles • Household cleaner bottles • Grocery bags 
 V	Polyvinyl Chloride (PVC or V)	<ul style="list-style-type: none"> • Clear food packaging • Wire/cable insulation • Pipes/fittings • Siding • Flooring 	<ul style="list-style-type: none"> • Fencing • Window frames • Shower curtains • Lawn chairs • Children's toys 
 LDPE	Low-density Polyethylene (LDPE)	<ul style="list-style-type: none"> • Dry cleaning bags • Bread bags • Frozen food bags • Squeezable bottles • Wash bottles 	<ul style="list-style-type: none"> • Dispensing bottles • 6 pack rings • Various molded laboratory equipment 
 PP	Polypropylene (PP)	<ul style="list-style-type: none"> • Ketchup bottles • Most yogurt tubs • Syrup bottles • Bottle caps • Straws 	<ul style="list-style-type: none"> • Dishware • Medicine bottles • Some auto parts • Pails • Packing tape 
 PS	Polystyrene (PS)	<ul style="list-style-type: none"> • Disposable plates • Disposable cutlery • Cafeteria trays • Meat trays • Egg cartons 	<ul style="list-style-type: none"> • Carry out containers • Aspirin bottles • CD/video cases • Packaging peanuts • Other Styrofoam products 
 OTHER	Other Plastics (OTHER or O)	<ul style="list-style-type: none"> • 3/5 gallon water jugs • Citrus juice bottles • Plastic lumber • Headlight lenses • Safety glasses 	<ul style="list-style-type: none"> • Gas containers • Bullet proof materials • Acrylic, nylon, polycarbonate • Polylactic acid (a bioplastic) • Combinations of different plastics 

KPS

We are a Project & Technical Consultancy organization active in the field of re-cycling of rubber & plastics, specialty thermoplastic & polymer products and natural fiber thermoplastic composites. We offer complete assistance in planning and implementation of such innovative projects. We have more than 25 years of expertise in these fields. Large companies like Reliance Industries Ltd., TetraPak India, DS Group, McKinsey & Co., IL&FS, Boston Consulting Group, Grant Thornton etc. are among our clients. As project and technical consultants we have set up the largest stand-alone plant for the recycling of end-of-life tyres into reclaimed rubber.

As project and technical consultants we are setting up the first plant in Bangladesh to recycle waste PET bottles into recycled polyester fiber (Re-PSF). Similarly, as project and technical consultants we are setting up the first plant in Africa to recycle waste PET bottles into recycled polyester filament yarn (Re-POY).

Best regards,

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