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## Processing > Overview

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Processing plastic is one of the four main cornerstones of the project. Processing of the collected plastics involves several distinct activities that are essential in re-cycling, up-cycling and re-using collected plastic waste.

The separate aspects of processing include:

- Identifying the type of plastic - Plastics identification uses the internationally recognised symbols for plastic identification to help identify which kind of plastic is used.
- Sorting the plastic - Plastic are segregated depending on their type and planned reuse
- Cleaning the plastic - Plastics are cleaned and dried ready for reuse
- Preparing the plastic for reuse - Various methods for preparation are used depending on the intended reuse EG shredding or bonding

As with collecting the waste plastics, the processing aspect is also very hands on which gives good opportunities to organise physical activities around each of the processing stages. These activities lend themselves well to all age groups.

### Plastics Identification

Identification uses the comparison of symbols to identify the type of plastic. Plastics without symbols may also be able to be identified using other methods. Some plastics are separated based on the intended use rather than the plastic itself, for example polythene bags can be laminated together using an iron, the resultant sheeting can then be used as an alternative for material.

Recording the number and types of different items is a good exercise as it helps identify what our general plastic waste is made of. For example a large portion of household waste comes from food packaging, whereas plastics drinks bottles form a high percentage of public municipal waste.

- What does the waste you collected consist of?
- How could this be reduced?
- How much of the waste collected is from single use plastics?
- Discuss other methods of packaging products, or how we can change our day to day habits to reduce the amount of plastic waste.
- Some of the plastic collected may be able to be easily re-used or recycled. Discuss what this means and how this could be changed.

### Cleaning



The cleaning aspect is a challenge for the recycling process. Removal of labels and cleaning of partially used contents is essential for producing good quality raw material. Any contaminants left at this stage will impact the quality of the end product. Some small scale cleaning of collected waste may be undertaken selectively in the classroom but generally collected waste should be cleaned as part of a larger process.

- Discuss the challenges with cleaning the collected plastic
- What happens to the waste and dirt collected?
- How is it disposed of?
- How much water does this use?
- What are the power or energy requirements

## Preparing the plastics

Plastic preparation methods depend on the ultimate use / reuse of the material. Some plastics are shredded or granulated to form new raw materials that can then be used in various manufacturing processes to make new products. Some items can be up-cycled eg used to create a new product that increases its value. And some can simply be re-used. If you have some of the recycling equipment available to your group, then you can shred the collected plastic into new raw material. If you don't have access to the equipment you can still use the collected plastics for other projects.

- Discuss the differences between re-cycling, up-cycling and re-using
- Try to design or even make something that falls into each of these categories
- Shred plastics in the shredder (if one is available)
- Laminate polythene bags to make sheets
- Make cord from plastic bottles
- Make string from polythene bags
- Try to come up with other methods to use the plastic

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## Foundation

- Plastic waste is identified and segregated.
- Segregated items are cleaned
- Analyse the different types of waste
- Prepare the plastic for reuse

## Elaborations

- Discuss symbols and icons
- Discuss identification methods
- Discuss standardisation / internationalisation



- Discuss each plastic type and its properties
- Discuss how plastics identification and segregation can be automated
- Discuss the difference between hard and soft plastics
- Discuss the cleaning process, how much energy and water does it use, what is the environmental impact of the process
- Discuss the different recycling methods used for different plastics
- Analyse the origins of the waste collected
  - Statistical analysis
  - Behavioural analysis
  - Single use plastics
- Compare analysis with other groups
- Discuss the convenience of single use plastics and what alternatives there are.

## Outcomes

- Understanding of different plastic types, their properties and uses
- Identify and segregate plastics by type
- Understanding the makeup of collected waste by analysis of waste types
- Understanding the cleaning and drying process
- Converting plastic into new raw material (part of the recycling process)
- Up-cycling items into new products
- Reusing items
- Raise awareness and engage others