

Recycling

1. Recycling

Recycling is the reprocessing of materials into new products and is the key concept of modern waste management. Recyclable material, also called recyclables are many products out of home and industry. They include glass, paper, aluminium, asphalt, iron, textiles and plastics. Even food waste and garden waste is recyclable with the assistance of micro-organisms through composting. Before a recycling process could be started, the recyclables need to be sorted and separated into the material types for easier reprocessing. This sorting could be performed either by the producer of waste or with semi- or fully-automated material recovery facilities.



Garbage became an issue as people first began to establish permanent settlements. The first municipal dump was created in ancient Athens. Paper recycling began in Britain in 1921, when the British Waste Paper Association was established.

One of the main benefits of recycling is the reduction of the amount of new raw material needed. In theory, recycling allows a material to be continually reused for the same purpose, but this is only possible by some of the recyclables, such as metals and glass. For example, paper could only be recycled for a finite number of times, due to the shortening of paper fibres. Often recycled paper is mixed up with virgin material to meet the quality standards and this is called downcycling. Downcycling names the fact of quality loss of the material through every time of recycling. In theory, recycling should also save energy, but sometimes the recycling processes take even more energy than to make a new product out of raw materials. This is often the case in recycling environmentally harmful products like batteries. In case of aluminium the recycling process takes 20 times less energy and saves 95% of carbon dioxide emission, compared to refining new material out of bauxite.

2. Recycling Techniques

There are many different types of material which can be recycled, but all these material need own techniques.

2.1. Concrete

Concrete rubble collected from demolition sites is put through a crushing machine and is used as gravel for new construction projects.

2.2. Batteries

The large variation in size and type of batteries makes their recycling extremely difficult and so they must be sorted into similar kinds and each kind requires an individual recycling process.

2.3. Biodegradable waste

Biodegradable waste could be composted or converted into biogas and this biogas is used for heating or for production of electricity.

2.4. Electronic

Electric equipment such as old computers and mobile phones require difficult recycling processes because certain components have toxic contents like heavy metals. The recycling process begins with the mechanically separating of metals and plastics, then these materials could be processed separately.

2.5. Metals

In the recycling of metals there have to be separated between ferrous and non-ferrous metals. Iron and steel are the world's most recycled materials. They are also the easiest to recycle because they could be separated magnetically from the waste stream. Any grade of steel can be recycled to top quality of new material and about 42% of the new crude steel is recycled material. Aluminium is shredded into small pieces and melted. For example, an aluminium can is 100% recyclable every time it is recycled.

2.6. Glass

Glass is beneath metal the only material which could be 100% recycled for undetermined times. The only thing which has to be heeded in the recycling of glass is to separate between white and colorful glass.

2.7. Paper

Recycled paper is made from waste paper and a defined amount of fresh wood pulp. Before paper could be recycled it must be deinked and cleaned. Almost every paper can be recycled today, only paper that is coated with aluminium or plastic is usually not recycled because the process is too expensive.

2.8. Plastic

There are different types of plastic and not every type can be recycled. So before recycling the amount of plastic waste has to be separated into the different types. Each type has its own recycling process, if it is not unrecyclable. One of the best known recyclable plastic materials is PET (Polyethylene terephthalate) as it is used for plastic bottles.

2.9. Textiles

Textiles are separated into good quality clothing and shoes which are often reused by charitable organization and provided to the poor people or the third world. Out of damaged textiles are industrial wiping clothes or filling products made.

3. The Green Dot

The recycling of material and products will become more important in the 21st century and in future. Economic experts see closed material circles as the most efficient way of limiting the use of primary raw materials and the avoidance of garbage. The model of the closed-cycle economy which makes companies responsible for their products from cradle to grave has proved to be a realistic and efficient solution in the past few years in Germany and Europe. In fact the prototype of a functioning closed-cycle economy was created by Duales System Deutschland AG which organised the nationwide collection, sorting and recovery of used sales packaging. The company introduced the Green Dot as packaging mark for a completely transparent recycling process. The Green Dot is meanwhile the most widely used trademark in the



world and found on more than 460 billion pieces of packing. In the year 2000 in Germany 589.000 tonnes of plastic packaging was recycled and saved about 20 billion mega joules of energy. With this amount of energy all private households of Berlin could be supplied with electricity for about 130 days.

4. References

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