

GCE LEVEL

FACT FILE

Environmental Technology

For first teaching from September 2013

For first award in Summer 2014

Sustainable Manufacture  
and Use of Plastics



environmental  
technology

## Sustainable Manufacture and Use of Plastics

### Specification Content

#### Students should be able to:

- assess the need for a global move towards the more sustainable manufacture and use of plastics.

### Course Content

There are literally thousands of products which are made from plastic.



This is mainly because plastic:

- Can be used to make complex shapes using relatively straightforward manufacturing processes.



- Is available in a wide variety of colours so making it an attractive material for products.



- Is lightweight and can be transported easily, so reducing the amount of fuel used to move it from production to use.



Plastic also has as a good range of physical and mechanical properties which make it suitable for use in products. It is:

- Durable.
- Resistant to chemicals and water.
- A safe and hygienic product for use as food packaging.
- A material with excellent thermal and electrical properties.



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However, it also has disadvantages such as:

- In its conventional form it uses a non-sustainable raw material e.g. oil.
- It does not degrade quickly.
- It contributes to the world's pollution problem in terms of litter and release of harmful gases and emissions.



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## Sustainable Manufacturing

The aim of sustainable manufacturing is to make products using economical processes that minimise the environmental impact while conserving energy and natural resources.

Manufacturing with plastics has, until relatively recently, had no regard to sustainability. This has led to a number of problems: the impact on ocean life, the impact on human health (due to pollution during manufacture and disposal), and the fact that recycling of plastics is still limited.

Since it has proven, and is continuing to prove, very difficult to dispose of the massive volume of plastics that have been used for both products and packaging it seems logical that a worldwide move towards sustainable manufacture and the use of plastics must be considered to prevent this already serious environmental issue worsening further.



### Activity 1

Using the links identified below, or any others of your choice, research the concept of sustainability and the manufacture and use of plastic. Summarise your research by producing a presentation which highlights the following points;

- What does sustainable manufacture and use of plastic actually mean?
- Why is it deemed necessary?
- What are the key elements of a sustainable system for the manufacture and use of plastics?
- What are the advantages and disadvantages of a system of sustainable manufacture and use of plastic?

Try in your presentation to provide a balanced view of the issues and potential solutions to the problem of the sustainable manufacture and use of plastic.



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## References

1. [https://circulareconomy.europa.eu/platform/sites/default/files/euric - plastic recycling fact sheet.pdf](https://circulareconomy.europa.eu/platform/sites/default/files/euric_-_plastic_recycling_fact_sheet.pdf)
2. <https://biomebioplastics.com/bioplastics/> and <https://biomebioplastics.com/>
3. <http://ec.europa.eu/environment/integration/research/newsalert/pdf/280na5.pdf>
4. [https://www.bizngo.org/images/ee\\_images/uploads/resources/cpa-plastic-principles-bizngo.pdf](https://www.bizngo.org/images/ee_images/uploads/resources/cpa-plastic-principles-bizngo.pdf)
5. [https://www.bpf.co.uk/sustainable\\_manufacturing/introduction\\_to\\_sustainability/UK\\_Advancements.aspx](https://www.bpf.co.uk/sustainable_manufacturing/introduction_to_sustainability/UK_Advancements.aspx)