

Deyes High School Remote Learning



DEYES
HIGH
SCHOOL
LYDIATE
LEARNING TRUST

Year 9 D&T Polymers

Engage, Enable and Empower

Work for individual students not attending school

Half Term 3: January to February

Pupils who are absent should select the activity that they are up to. Click on the link in the activity box below. This will take you to Office 365 where the work is stored. In the lesson it will tell the pupil if they need to submit the work to their teacher.

Lessons

Date (week commencing)	Lessons	Focus/Topic/Theme	Hyper link to Activity
4/1/2021	1	Specification	Year 9 Polymers booklet Y9 Polymers Power Point Update 2020
11/01/2021	2	Mechanisms	
18/1/2021	3	Ideas	
25/01/2021	4	Final Design	
1/2/2021	5	Tolerance	
8/2/2021	6	Types of Finish	
15/2/2021	7	Knowledge Organiser	

Year 9 - Advanced Manufacturing (LC)

Lesson 1
Plastic categories

Plastics are categorised into two types:

Thermoplastic	Thermosetting plastic
Acrylic (PMMA)	X
Polypropylene (PP)	X
Polyethylene terephthalate (PET)	X
Low density polyethylene (LDPE)	X
Urea formaldehyde (UF)	X
Polypropylene (PP)	X

Lesson 2
Category of Common Plastics

Thermoplastic pros and cons

- Thermoplastics can be repeatedly heated and moulded.
- Thermoplastics are not good for use in areas of heat or UV sensitivity.
- Thermoplastics have a high melting point and are difficult to separate particles.
- They can be recycled.

Thermosets pros and cons

- Thermosets are hard and durable with good structural rigidity.
- They are:
 - Difficult to reshape/higher temperature plastic used for heat for use in adhesives.
 - Good electrical insulator.
 - Cannot be recycled.

High Impact Polystyrene

- HIPS is shatterproof and a good insulator.
- It's flexible and lightweight so ideal for vacuum forming.
- Impact resistant, it is suitable for food containers particularly yoghurt pots and fast food containers.
- HIPS is easily mouldable and has a good gloss finish.

Urea formaldehyde is a good electrical insulator. With good heat resistance it is used for manufacturing electrical fittings.

Uses of polyethylene

Polyethylene terephthalate	High density polyethylene	Low density polyethylene
Lightweight, chemically resistant, stable, easily blow moulded.	Lightweight, tough, high strength to weight ratio, easily extruded into sheets.	Flexible, tough, high strength to weight ratio, easily extruded into sheets.

Lesson 3
Types of Motion

Linear motion
Movement in one direction along a straight line.

Reciprocating motion
A repetitive back-and-forth or up-and-down motion.

Oscillating motion
A repetitive back-and-forth motion along a curved path.

Rotary motion
A repetitive motion that occurs around a fixed axis.

Types of cams
Types of followers

Who to contact
You can email **your class teacher** if you have any questions regarding the activities set.

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Local Context – Possible Career Pathways!

Advanced Manufacturing- 50,000 people employed

As part of the UK's largest manufacturing region the City Region has a diverse mix of companies including Jaguar Land Rover, Unilever, Pilkington, Ineos and Astra Zeneca alongside Getrag, Johnson Controls, ABB as well as innovative SME's, engineering and fabrication companies and manufacturing start-ups.

e.g.
Jaguar land Rover
Getrag
Polymer Engineer
Mechanical Engineer

Further Reading:

- MrDT.com Plastics
- What's the problem with plastic? BBC
- Newsround

Cultural Capital – Human Creativity

Innovative Design,
Previous designs and design possibilities



Key Words:

Polymer – The technical term for Plastic
Thermosetting – Plastic that once heated and shaped cannot be reshaped
Thermoplastic – Can be reheated and reshaped many times
Linear - Movement in a straight line
Reciprocating - Movement back and forth
Oscillating – Movement back and forth along a curved path
Rotary – Movement round and round
Manufacturing Tolerance – The amount of acceptable error when making something

