

Unit 2 Performance of polymers PLC

Topic Area	RAG Before Taught	RAG After Taught	RAG after Assessment	RAG after revising	RAG after Mocks
Can you name specific materials for a wide range of applications					
Are you able to provide detailed and justified explanations of why polymers are suitable for given applications, with reference to: • physical and mechanical properties (working characteristics) • product function • aesthetics • cost • manufacture and disposal.					
Do you know and understand the classifications of polymers and are able to name examples					
Are you able to describe how workshop and industrial tests are set up and what will be tested, measured and compared, including: • tensile strength • toughness • hardness • malleability • corrosion • conductivity.					
Are you able to name different types of polymer based sheet and film.					
Are you able to describe the performance characteristics of polymer based sheet and film, including: • the ability to be scored • cutting • folding • moulding • transparency • translucency • flexibility • recyclability and/or biodegradability.					
Are you able to explain why different polymer based sheet and film are suitable for different applications, including: • foam board: model making • fluted polypropylene: signs and box construction • translucent polypropylene sheets: packaging • styrofoam: modelling and formers • low density polyethylene sheet: wrapping, packaging and bags • plastazote foam: protective packaging • cellulose acetate: packaging • polyactide sheet and film: biodegradable packaging.					
Are you aware of the different stock forms of polymers, including: • sheet • film • granules • rod and other extruded forms • foam • powder.					
Are you able to describe the performance characteristics of polymers, including: • toughness • elasticity • insulation (thermal and electrical) • UV resistance • ability to be moulded • resistance to chemicals and liquids • melting points • suitability for food packaging applications • biodegradability • recyclability • self finishing • ability to be combined with other polymers and/or additives.					
Are you able to describe and give examples of used for the following polymers: • thermoplastic: • low density polyethylene (LDPE) • high density polyethylene (HDPE) • polypropylene (PP) • high impact polystyrene (HIPS) • acrylonitrile butadiene styrene (ABS) • polymethylmethacrylate (PMMA) • nylon • rigid and flexible polyvinyl chloride (PVC) • Polyethylene terephthalate (PET) • thermosets, with specific reference to their: • urea formaldehyde (UF) • melamine formaldehyde (MF) • polyester resin • epoxy resin.					
Could you explain the suitability of elastomers for given applications making reference to relevant physical and/or mechanical properties, including: • ability to be stretched and then return to original shape • texture • self finishing • non-toxic.					
Do you understand how elastomers are used to enhance products, for example in producing grips for improved ergonomics.					
Are you familiar with the following elastomers: • natural rubber • polybutadiene • neoprene • silicone • Thermoplastic Elastomer (TPE).					

Do you feel confident in explaining the suitability of biodegradable polymers for given application making reference to relevant physical and/or mechanical properties, including: • ability to be moulded into 3D products or film • ability to degrade with the action of UV rays (sunlight), water or enzymes present in soil.					
Do you understand how biodegradable polymers degrade.					
Are you familiar with the following biodegradable polymers: • corn starch polymers • potatopak • biopol (bio-batch additive) • polyactide (PLA) • polyhydroxyalkanoate (PHA) • water soluble: lactide, glycolide (Lactel and ecofilm).					
The use of additives to enhance properties, including: • UV stabilisers to prolong the life of polymers • bio-batch materials to encourage biodegradability.					
Are you familiar with how additives are used in specific polymer products, eg patio furniture, food packaging and carrier bags.					