

**Questions 2005-2016:**

**KEY POINTS / QUESTIONS:**

**DETAILS / ANSWERS:**

**HOW HAS THE VARIETY OF POLYMERS AVAILABLE INFLUENCED MODERN DESIGN:**

- Polymers can be easily moulded into shape
- Polymers can be mass produced – faster and cheaper
- Extensive variety of manufacturing processes
- Properties can be enhanced and made to suit different applications
- Rapid prototyping techniques allow models to be made easily

**WHY USE A SPLIT MOULD:**

It allows the piece to be removed from the mould easily. It can be pushed out by the ejector pins making it an efficient automated process.

**WHY IS PLASTIC (EVA) SUITABLE FOR THE MANUFACTURE OF A MOUTHGUARD:**

- Biocompatible
- Inert
- Soft + Flexible
- Waterproof
- Resistant to UV Radiation
- Low temperature toughness
- Stress crack resistant
- Good clarity and gloss

**THERMOPLASTICS:**

**Linear or Branch chain structure;**

- **Properties Include:**
  - Flexible
  - Can be heated and reshaped
  - Low melting point
  - Low tensile strength
  - Ideal for recycling

**THERMOSETTING PLASTICS:**

**Cross Linked structure;**

- **Properties Include:**
  - Non-reversible structure
  - Rigid
  - High melting point
  - Good Insulator
  - High tensile strength
  - Cannot be recycled

**ELASTOMERS:**

**Linear chains that are coiled and entangled and that are subject to minimal cross linking;**

- **Properties Include:**
  - Elastic at room temperature
  - Soft and deformable
  - Returns to original shape when force is removed
  - Good thermal and electrical insulator
  - Low permeability to gasses and water

**Summary:**