

MINISTRY OF EDUCATION
SECONDARY ENGAGEMENT PROGRAMME

GRADE 11

CHEMISTRY

WEEK 11

LESSON 2

Topic: Macromolecules

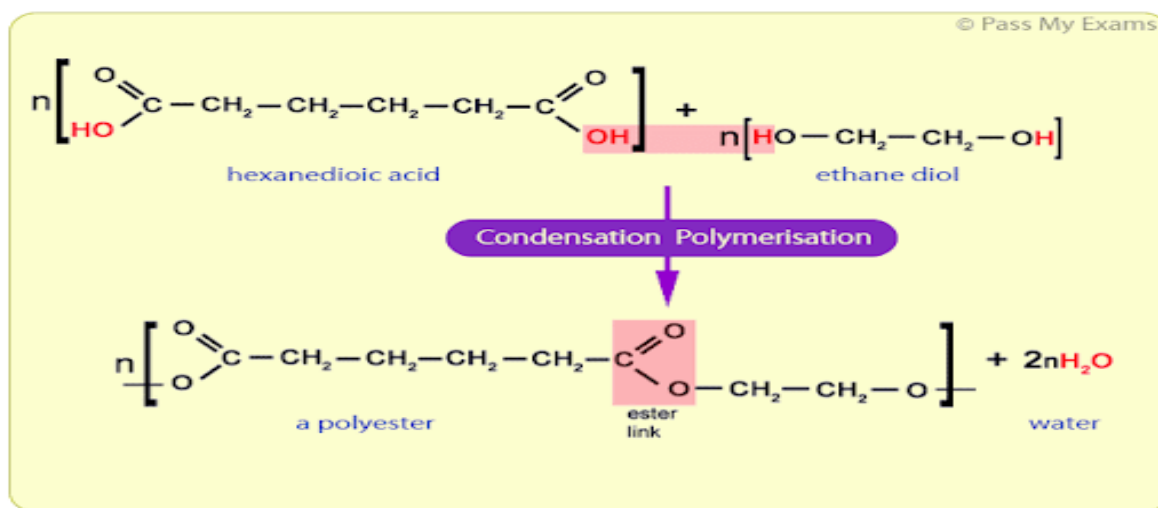
Sub-topic: Condensation Polymerization

Objective: Given the information, students will list describe condensation polymerization reactions siting examples.

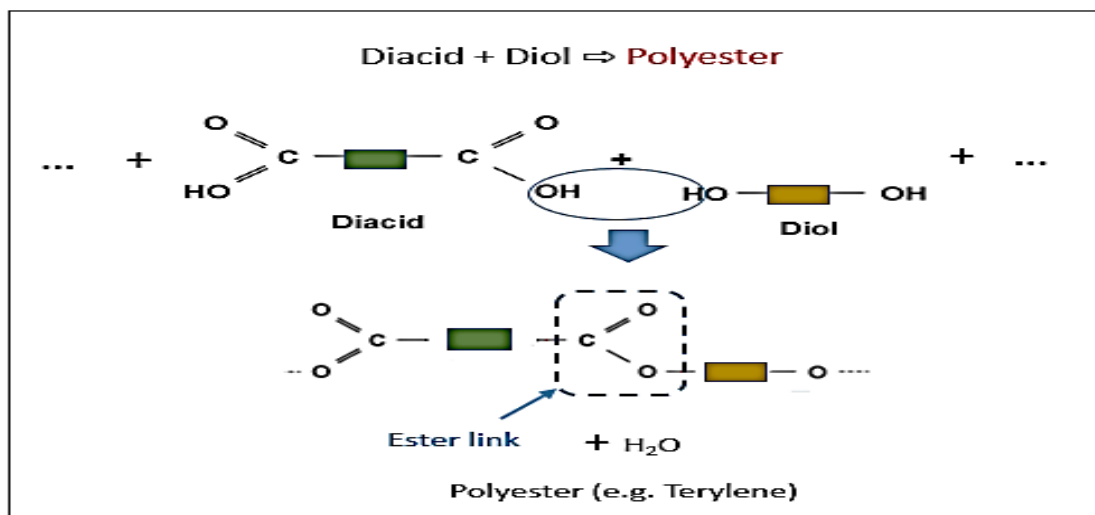
Content

Condensation polymerization is a method of joining monomers by the elimination of small molecules such as water. This is in contrast to addition polymerization as this only produces a polymer. Condensation polymers do not have the same composition as the monomers from which they are made. Here are some examples of this type of polymerization, observe carefully where water is removed.

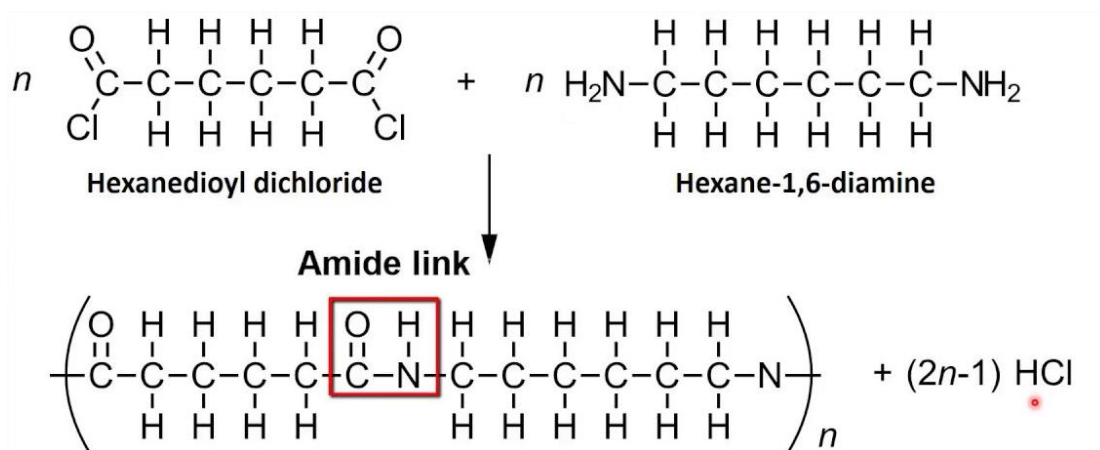
(i) Formation of Polyesters



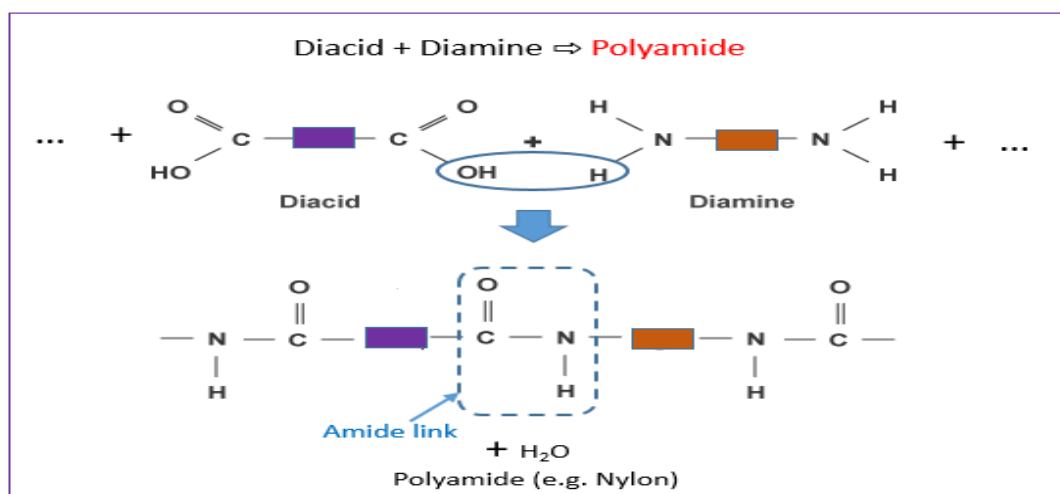
Simplified



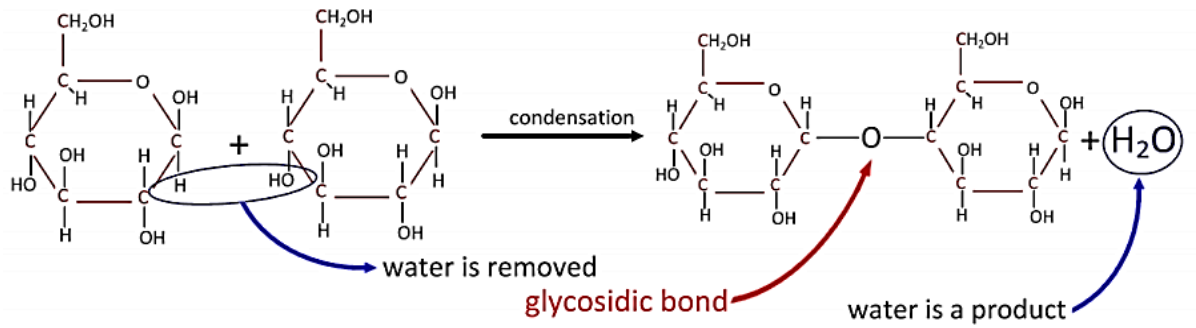
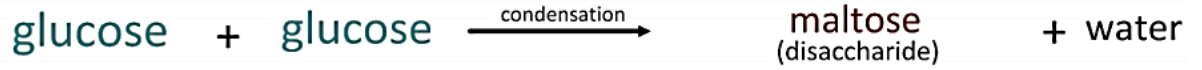
(ii) Formation of Polyamide



Simplified



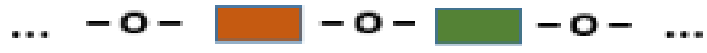
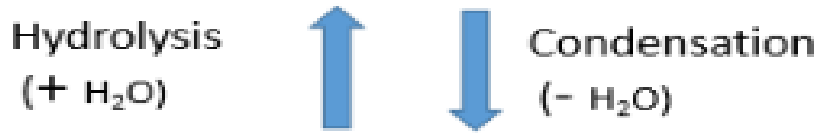
- (iii) Formation of Polysaccharides
 Monosaccharides are monomers of polysaccharides.



Simplified



sugar monomer (e.g. glucose)



Polysaccharide (e.g. starch)

Difference between Addition and Condensation Polymerizations

Addition Polymerization	Condensation Polymerization
monomers must have either a double bond or triple bond	Monomer must have two similar or different functional groups
Produces no by-products	By-products such as ammonia, water and HCl are produced
Addition of monomers results in polymers	Condensation of monomers result in polymers
The molecular weight of the resultant polymers is a multiple of monomer's molecular weight	The molecular weight of the resultant polymers is not a multiple of monomer's molecular weight

References

References

7. <https://www.toppr.com/guides/chemistry/polymers/classification-of-polymers/>
8. <https://slideplayer.com/slide/6019693/>
9. <https://www.bbc.co.uk/bitesize/guides/z3v4xfr/revision/6>