

Artificial resins, rebasing of dentures and their repairs. Plastic materials.

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Synthetic polymers

- polymers are high molecular weight chain like molecules
- polymerisation is a process of converting monomers to polymers
- conversion occurs by either addition reaction or condensation reaction
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Addition polymerisation involves the addition of reactive species with monomer. This reactive species may be ionic or a free radical. Free radicals are produced by Initiators. The most popular initiator used in dentistry is Benzoyl peroxide.

Activation of benzoyl peroxide. This involves decomposition of the peroxide initiator using either thermal, chemical or radiation. The use of chemical activation allows polymerisation at low temperatures.

Initiation is when polymerisation starts once the free radical forms. It reacts with the monomer molecule.

Propagation. Now the free radical is capable of reacting with further monomer molecules.

Termination. Until supply of monomer is exhausted 3 options can continue. Termination or chain branching and cross linking. chain branching and cross linking. Addition polymerisation produces linear polymers. Chain branching may result if a growing chain undergoes chain transfer with a polymer molecule. This involves termination of the growing chain but a new reactive radical is formed along the side of a polymer molecule.