CHAPTER 2 POLYMERS—PLASTICS, NYLONS, AND FOOD

Reflect on Your Learning

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1. It must be able to join with two other molecules, i.e., it must have two functional groups that will react with other functional groups.
2. Plastics are flexible, strong, mouldable, lightweight, and a large variety exists.
3. Petroleum products are mixtures of hydrocarbons. You would expect to find covalent bonds between C atoms and H atoms, and between C atoms and C atoms within plastic molecules; and van der Waals attractions between long polymer molecules.
4. Strong covalent bonds account for the strength of plastics; weak van der Waals attractions account for their nonrigid structure, mouldability, and relatively low melting points. The large variety of hydrocarbons accounts for the variety of plastics.
5. Carbohydrates (sugars and starches), function: energy and structure; proteins, enzymes, and muscles, function: DNA and RNA, genetic information; fats and oils, function: energy and insulation.

Try This Activity: It's a Plastic World

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(Sample answers)

Product	Function	Properties	Recycling code	Nonplastic alternative	Advantages/ disadvantages
toothbrush	cleaning teeth	stiff handle; pliable bristles	none	wood handle; animal-hair bristles	plastic does not promote fungal growth in wet conditions
television or computer casing	hiding and protecting electronics	very rigid; dustproof; nonconducting	none	wood	plastic is lightweight and mouldable
yogurt container	keeping moisture in	lightweight; waterproof;	base:5 lid: 4	glass jar; metal lid	glass is more easily recycled, and reusable but heavier and more easily broken
binders	keeping papers together and protected	colourful; long-lasting	none	cloth, cardboard	plastic is water-resistant

General disadvantage of plastics: petroleum products come from nonrenewable sources, and generally are not biodegradable.

2.1 SYNTHETIC ADDITION POLYMERS

PRACTICE

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Understanding Concepts

1.