

polyamide

polyamide, any polymer (substance composed of long, multiple-unit molecules) in which the repeating units in the molecular chain are linked together by amide groups. Amide groups have the general chemical formula CO-NH . They may be produced by the interaction of an amine (NH_2) group and a carboxyl (CO_2H) group, or they may be formed by the polymerization of amino acids or amino-acid derivatives (whose molecules contain both amino and carboxyl groups).

Broadly defined, the polyamides include proteins and peptides, which are naturally produced polymers consisting of amino-acid repeating units. (In molecular biology the amide linkage is usually referred to as the peptide bond.) More narrowly defined, the polyamides are an important group of industrially produced synthetic polymers. The most important is nylon, actually an extremely versatile class of polymers that are made into indispensable fibres and plastics. Another class of polyamides made into fibres is the so-called aramids, or aromatic polyamides—amide polymers that contain phenyl rings in their repeating units. Some nylons also contain phenyl rings, so the two classes are actually distinguished by the number and frequency of the rings. When 85 percent or more of the amide groups are linked directly to phenyl rings, the polyamide is classified as an aramid. When the rate is lower than 85 percent, the polymer is classified as a nylon.

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