

Introduction

Synthetic high polymers, also known as synthetic polymers, are a class of materials made from long chains of monomers, which are small, repeating molecular units. These polymers have revolutionized numerous industries by providing a wide array of materials with versatile properties. Unlike natural polymers like rubber, cellulose, and proteins, synthetic polymers are created through chemical processes that allow for customization of their physical, chemical, and mechanical properties [1]. This article will explore the structure, types, properties, and applications of synthetic high polymers, highlighting their significance in modern technology and everyday life.

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The structure of synthetic high polymers can vary, with linear, branched, and cross-linked forms. Linear polymers consist of long, unbranched chains, while branched polymers have side chains extending from the main chain. Cross-linked polymers contain chemical bonds between chains, forming a three-dimensional network [8]. This structural diversity influences the physical and chemical properties of the polymers.

Common types of synthetic high polymers include polyethylene (PE), polypropylene (PP), polystyrene (PS), and polyvinyl chloride (PVC), each with distinct characteristics [9]. For instance, polyethylene