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Nota di contenuto	Organic Materials in Civil Engineering; Table of Contents; Introduction; Chapter 1. Organic Polymers; 1.1. Definitions; 1.2. Macromolecular structure; 1.3. Synthesis of polymers; 1.3.1. Step polymerization or polycondensation; 1.3.1.1. Mechanism of polycondensation: polycondensation and polyaddition; 1.3.1.2. Practical applications; 1.3.2. Chain polymerization or polymerization strictly speaking; 1.4. Processing: thermoplastics and thermosets; 1.4.1. Thermoplastics and thermosets, thermorigid or thermohard; 1.4.2. Monocomponent and bicomponent; 1.5. Elastomers; 1.6. Preliminary conclusions 1.7. Crystalline polymers and amorphous polymers: glass transition 1.7.1. Notion of crystalline polymer; 1.7.2. Amorphous polymers: glass transition; 1.8. Mechanical behaviors of polymers: time-temperature equivalence; 1.8.1. Elastic behavior; 1.8.2. Elasto-plastic behavior; 1.8.3. Rubber-like behavior; 1.8.4. Case of cross-linked polymers; 1.8.5. Pure products and formulated products: plasticization; 1.8.6.

Time-temperature equivalence; 1.9. Miscibility of polymers: concept of alloy; 1.9.1. Notion of solubility parameter; 1.9.2. Estimation of the solubility  
1.9.3. Polymer-polymer mixtures: notion of alloy  
1.10. Durability and aging of polymers: life cycles; 1.10.1. Notion of aging; 1.10.2. Principles of the methods for appreciating the life of materials; 1.10.3. Fire behavior of polymers; 1.10.4. General information on the life cycle of polymers; 1.11. Organic materials, the environment and health: evolution of the market; 1.12. Main organic and organo-metallic polymers used in civil engineering; 1.13. General conclusion; Chapter 2. Organic Binders I. Bitumen and Road Construction; 2.1. General terminology; 2.2. Manufacture of bitumen  
2.3. Physico-chemical composition of bitumens  
2.4. Various forms of bitumen; 2.4.1. Paving bitumens: characterization and classification; 2.4.2. Fluid binders; 2.4.3. Bitumen emulsions; 2.4.3.1. Formation of an emulsion; 2.4.3.2. Failure of emulsions; 2.4.3.3. Characterization of emulsions: applications; 2.5. Usage properties of paving bitumen; 2.6. Adhesiveness; 2.7. Rheological properties; 2.7.1. Viscosity; 2.7.2. Viscoelasticity; 2.7.3. Complex modulus; 2.7.4. Towards a rheological classification; 2.7.5. The SHRP program - Test methods and specifications of road binders  
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3.1.1. Products and systems for the protection and repair of concrete structures: normative definitions

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### Sommario/riassunto

This book provides an inventory of organic materials and products, the major components of all civil engineering projects, in terms of their scientific and technical background, including the regulations that cover their use and their predicted useful life. Such materials include: bitumen on the roads; geotextiles for retaining walls; membranes for bridges; tunnel and reservoir waterproofing; paint binders to protect metallic and concrete structures or to create road markings; injection resins; gluing products; concrete admixtures; and composite materials. The presentation is based on a ph

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