Textile Fibres - Web course

COURSE OUTLINE

The course would discuss the molecular architecture, configuration, conformation, amorphous and crystalline phases, glass transition, plasticization, crystallization, melting, factors affecting Tg and Tm of fiber forming polymers.


General properties of a fibre such as moisture absorption, tenacity, elongation, initial modulus, yield point, toughness, elastic recovery would be discussed.

Production of natural fibres, detailed chemical and physical structure of natural fibres-cotton, wool and silk, their basic properties would be discussed.

Production and structure of important bast and protein fibres would be detailed. Properties of Synthetic fibers and how they differ from their natural counterparts would be explained.

COURSE DETAIL

<table>
<thead>
<tr>
<th>S.No</th>
<th>Topics</th>
<th>No. of Lectures</th>
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<tbody>
<tr>
<td>1</td>
<td>Classification of fibres-natural and manmade. General properties of a fibre such as moisture absorption. Mechanical properties like Tenacity, elongation, initial modulus, yield point, toughness, elastic recovery.</td>
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<td>2</td>
<td>Essential requirements and examples of fibre forming polymers. Basic structure of a fibre. Molecular architecture, configuration, conformation.</td>
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<td>3</td>
<td>Amorphous and crystalline phases. Glass transition, plasticization, crystallization, melting. Factors affecting T_g and T_m.</td>
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<td>4</td>
<td>Production of cotton, - methods of harvesting and effects. Detailed chemical and physical structure of cotton. Properties of cotton.</td>
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| 5 | Introduction to important bast fibres.  
  1. Discussion on Jute.  
  2. Sisal.  
  3. Ramie.  
  4. Hemp.  
  5. Banana.  
  6. Leaf fibers: Pineapple. | 8 |
|---|---|
| 6 | Protein fibres - basics.  
  1. Detailed chemical, physical structure of wool.  
  2. Detailed chemical, physical structure of silk.  
  3. Properties and uses. | 8 |
| 7 | Regenerated fibers – basics.  
  1. Discussion on Cupramonium rayon.  
  2. Viscose.  
  3. Lyocell, etc.  
  4. Properties. | 4 |
| 8 | Synthetic fibers – basics and difference with natural fibers.  
  1. Nylon.  
  2. Polyester.  
  3. Polyolefins.  
  4. Acrylic. | 5 |
| 9 | Basics of High performance fibers and their properties when compared to normal apparel fibers. | 2 |
| 10 | Different fiber forms and their characteristics - Staple and Continuous. | 1 |

**References:**