

TECHNICAL TUESDAYS

TOPIC: Polyester Oligomers

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What are oligomers?

An oligomer is defined as a small chain length of polyester made up of two or more molecules of basic ethylene terephthalate (i.e. dimer or trimer). It is produced as a side reaction during the manufacture of polyester.

Due to the small chain length of the oligomer molecule, it exists in the form of a fine powder which is entrapped in the basic polymer. During high temperature polyester dyeing, the molecule is found to migrate to the surface.

The displacement of oligomer is directly proportional to the depth of the fibre surface. Approximately 0.1 % to 1.0 % of oligomer is produced as a side reaction during the manufacture of a basic polyester.

Challenges caused due to the presence of oligomers:

- Oligomer deposits on the fabric can lead to unlevel dyeing.
- The buildup of oligomers in a package can cause the filtration effect (inside – out variation) on the fabric.
- Induces variations for a non-ideal pump pressure due to the deposits in the pump.
- Can cause choking of the spindle holes.
- Induces variation in the rate of rise of temperature due to the deposits on heating elements.
- Can result to produce dull finishes.
- High cost of energy.
- The spinning characteristics are impaired.
- Results in a reduction of liquor flow through package of yarn as the spindle perforations are blocked by the deposits.
- Deposits on machine guides during winding or twisting, can cause high tensions and increased friction on the yarn, leading to poor package build and end breaks.



- White powdery deposits causes dulling of yarn/fabric, especially in dark shades, black, navy etc
- Increases the frequency of maintenance required for dyeing and winding machines, hence it results in an increased down time and lower efficiency of machinery.

Wishing you a great week ahead!

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