

Technical Tuesday

REF:TT/ March 2012/ WK 3

Heat Setting on Textiles

What is heat setting?

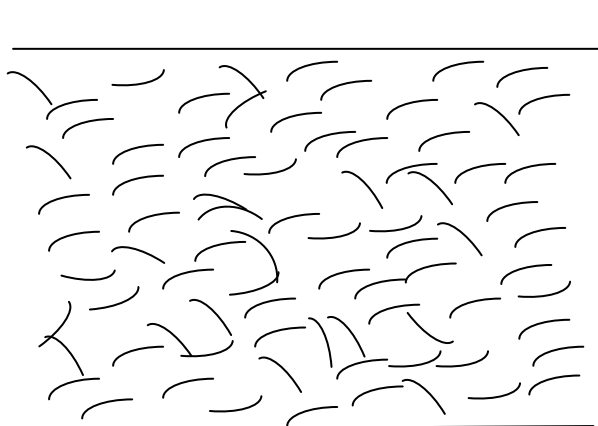
Heat setting is the process of applying heat to the textile fabrics or garments for the short time to make the textile more dimensionally stable. This process is applicable for synthetic fibres like polyester, nylon etc...

Temperature for Heat setting is 200-230°C (depend upon the fibres)

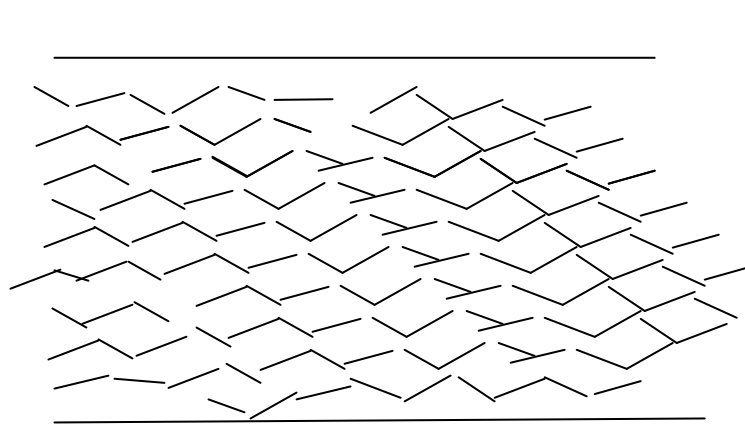
Need of Heat setting For Textiles:

1. To confer dimensional stability to fabrics or garments so that they do not shrink during processing and washing
2. To resist the fiber shrinkage at high temperature

Mechanism of Heat Setting:



Before Heat Setting



After Heat Setting

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1. All synthetic fibres whether they are produced by melt, dry or wet spinning process, are deficient in strength in their freshly formed condition, to give them strength; they are stretched several times to their original length. After stretching, the fibres appear to be stable condition but actually this is not so.

2. The single fibre chain which is held together by Vander walls force and Hydrogen bond are not completely stretched out.

3. These chain start vibrating if energy is supplied in the form of heat, as further energy is supplied, the intensity of vibration increases and when it reaches a certain level the vibration become so strong that some of the hydrogen bond are broken. Thus there is a break down of intermolecular hydrogen bond so that the molecules are free from resistant which maintain orientation.

4. When free, the molecules move by thermal agitation in to position of lesser strain or they relax, this relaxation causes contraction of fibre chain and therefore shrinkage occurs. As the temperature increases, shrinkage also increases till the melting point is reached when the fibre melts .if the supply of heat energy is stopped as soon as maximum potential energy is reached and the fibre is cooled rapidly, the hydrogen bond get stabilized while the inner chain are relaxed .thus the fibre become more dimensionally stable it will not shrink further.

Types machineries used for Heat setting process for textiles:

1. Drying cylinder (internally heated)
2. Thermo hot flue

“Have a Happy Week Ahead”

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