



Textile and Plastic Waste Treatment

Chapter 6: Yarn production from recycled fibers





Principle: Soft yarns with part of recycled fibers

Types of yarns:

- Carded yarn
- Semi –worsted yarn
- Special yarns for knitting
(silk, wool, merino wool,
banana...)



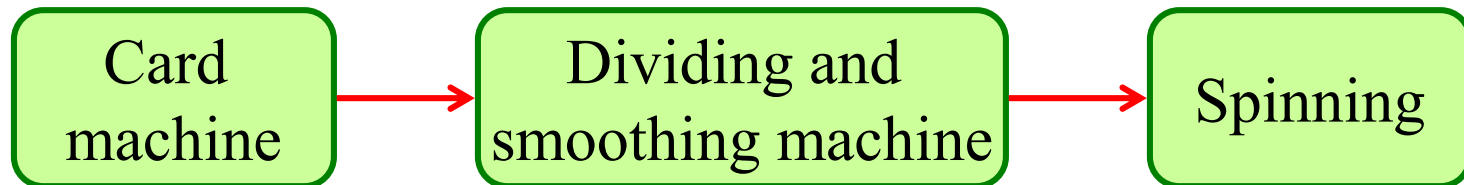


1) Carded cotton or blend yarn

Composition:

Fiber type	Rate %
Viscose, 40 mm or 60 mm (carrier)	10 - 30
Short cotton fibers	20 - 40
Tearred recycled fibers	20 - 70
Bast fibers	20 - 25

Schema of production





Properties:

- Yarns are produced in 100 – 1000 tex range.
- Soft hand,
- Pale and dirty look
- Low tensile strength (up to 7 cN/tex)
- Low mass homogeneity

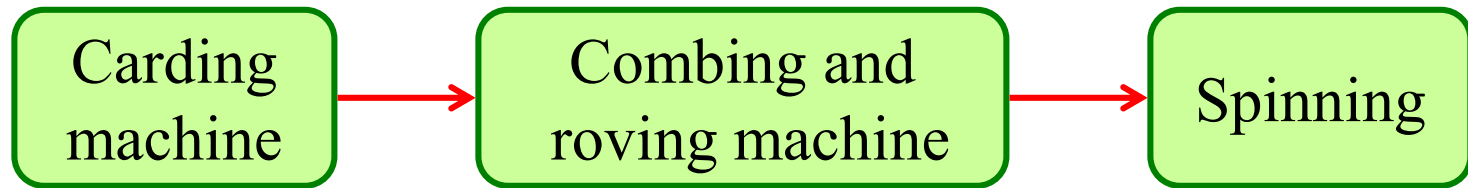
End use:

- Warm clothes and underwear
- Work clothes
- Lower quality covers and curtains
- Cleaning yarns and textiles





2) Semi-worsted yarn



It has the feature of the short process and low cost, but the yarn quality is less than worsted yarn.





3) Special worsted or semi-worsted yarns for knitting

Carding
machine



Combing and
roving machine



Spinning

- Special colour effects
- Special structure and texture
- Special materials (silk, banana, cashmere...)

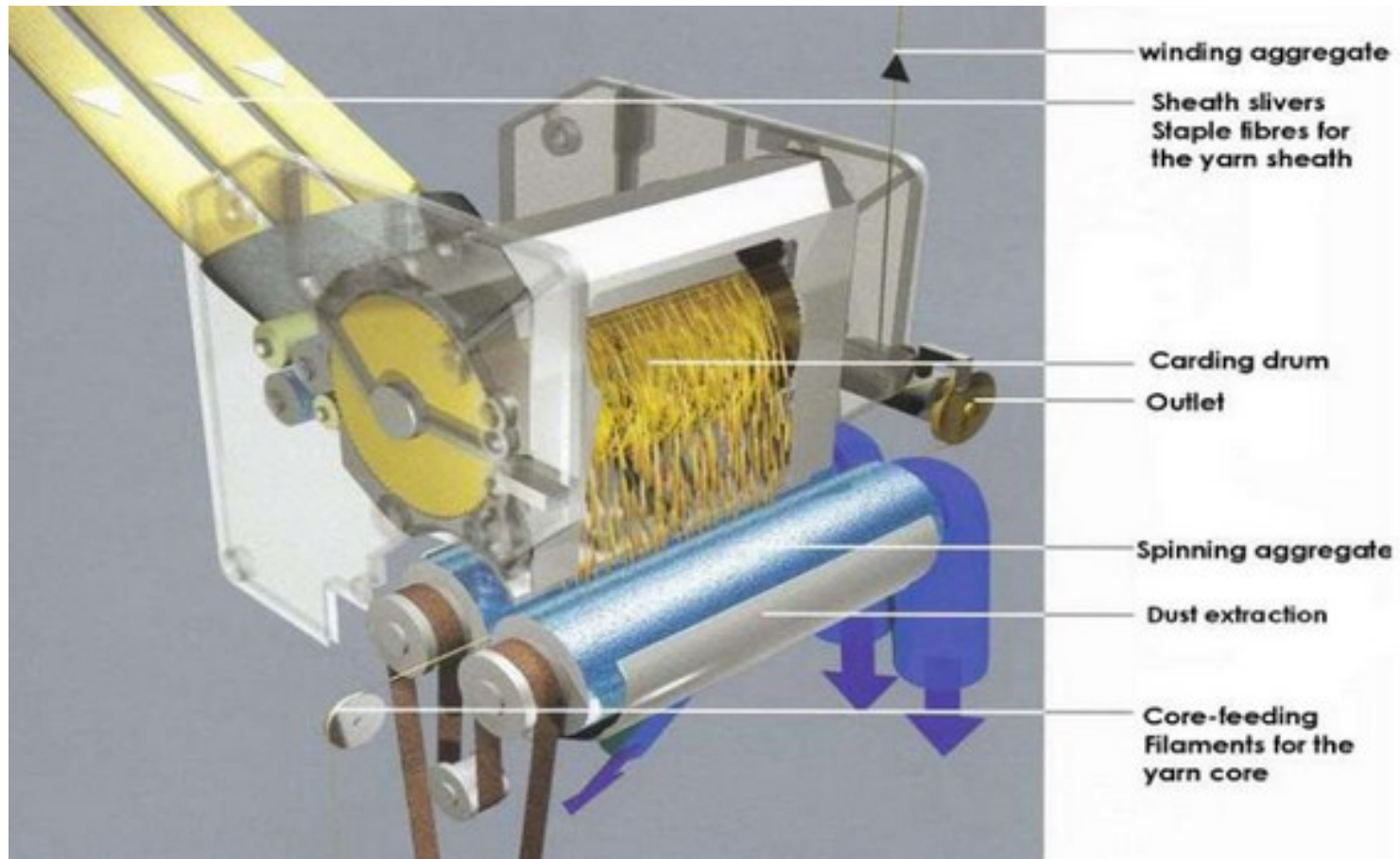




Spinning systems:

Friction spinning technologies DREF 2 and DREF 3 are used. It is possible to combine carrying core from primary fibers and sheet of recycled fibers. For special designed fibers it is possible to use classical spinning.

Principle of DREF system:





Properties and end use of core/sheet yarn

- It is possible to process all types of fibers include recycled fibers with the length 10-120 mm and fineness from 1,7 to 17 dtex.
- Friction yarns are more voluminous with smaller tensile strength when we compare it with carded yarn.
- Tensile strength depends on parameter of yarn core
- Application: filters, isolation, cleaning textiles, protecting clothes, composites....

