

Department of Jute and Fibre Technology, Institute of Jute Technology, University of Calcutta

Syllabus for Vocational Workers' Training for Jute Sector to be Conducted by Department of Jute and Fibre Technology, Institute of Jute Technology, University of Calcutta, Under Integrated Skill Development Scheme Project (ISDS) Sponsored by Ministry of Textiles, Government of India

Module XV: Fine Yarn and Blended Jute Yarn Manufacture

Total Contact Hours 150 (One month Training)

THEORETICAL Contact Hours: 50

Raw Jute Grading and Selection Batching :

Specific and varieties of commercial jute fibre. Factors in grading according to B.I.S. Standards. Types of Bangladeshi and imported Jute. Baling and marketing. Moisture in Jute. Selection of raw jute. Claims put up on raw jute on arrival in mills – quality, short weight and moisture claims. Faults in raw jute. Batch preparation: Factors. Batch cost outlines. Description, purpose and study of operational details of Softener and Spreader. Emulsion preparation, properties and application methods. Emulsion additives. Piling Faults, causes and remedies. Root cutting, standard batches and batch costs. Generation and control of different wastes. Duties and responsibilities of selection – batching supervisor. Production Calculations.

Carding & Drawing:

Carding – Principles and objects, operational details of different cards – breaker, inter and finisher. Pins and pinning. Dollop Principle, drafts, draft constant, speeds, speed ratios, sliver weights, production, efficiency. Card drawing heads. Roll former – function and mechanism. Faults in rolls – causes and remedies. Use of Grist Monitor in Cards. Card wastes and control. Duties and responsibilities of Carding Supervisor.

Drawing - Terminology, theoretical considerations – Principles and objects – desirable features – constructional and operational details of different drawing frames. General ideas about working principle of Rotary Gill and Intersecting gill drawing Calculation of sliver weights, drafts, leads, production, Blending of Jute with other fibre, efficiency, Sliver faults – causes and remedies. Concept of Auto leveler. Generation and control of wastes. Duties and responsibilities of Drawing Supervisor.

Spinning and Twisting:

Spinning – Objects – Types of spinning frames – Principal parts and operational details of jute spinning machine; draft, twists and twist factors; yarn quality change; doffing time and control. Production and spinning efficiency calculations. Faults in Yarn, causes and remedies. Wastes, causes and control measures. Generation and control of wastes. Duties and responsibilities of Spinning Supervisor. Balancing of machinery in production – weight and length basis.

Study of ring spinning system. Study of modern conventional spinning machines.

Twisting of yarn and ply yarn. Study of flyer twisting and Ring – twisting machines. Working principle, bobbin adjustment.

Winding:

Winding - Factors in winding, advantages and disadvantages of different types of packages. Methods of unwinding and their effect on twist. Roll (Spool) and cone winding machines operation in details.

Construction of packages Operational details of packages and action of typical winding machines, main working parts and their adjustments for length and diameter. Defects in packages – causes and remedies.

Precession winding machines operation in details. Construction of packages Operational details of packages and action of typical Precessionwinding machines, main working parts and their adjustments for length and diameter. Defects in packages – causes and remedies.

Product Manufacture, Process Control and Mill Practice

Importance of Jute blended yarn, Export yarn, Technical Textile, Geo Textile etc.

Process control: Different process parameters at each stage. Control of moisture at different stages of processing of jute. Testing carried out for raw jute and slivers of at different stages of processing of jute. Problem arises during processing and its remedies in spinning preparatory and usual mill practice. Labour complement in different departments. Source of Wastage, control of wastage and proper utilization of wastage generated in Selection and Batching department and standard wastage percentage of other departments in jute mills, Input output ratio, batch costing. Machine balancing, production planning and improvement of productivity. Method of stock taking and process stock control. Export inspection. Duties and responsibility of supervisors. Palletizing, packing and export marking.

PRACTICAL Contact Hours: 100

Softener / Spreader Carding & Drawing Practical

- a. Softener / Spreader – Practical study of softener / spreader machine in details. Production calculation. Emulsion Preparation and application of emulsion on jute. Moisture in jute.
- b. Practical study of Breaker Card and Finisher Card; Sectional view, gearing details. Calculations involving clock length, speeds of rollers, draft, leads, speed ratios etc. Production calculation. Determination of sliver weight. Moisture in sliver. Safety device.
- c. Practical **study** of Drawing frames –Screw gill. Calculation of various machine parameters. Faller tracks. Carriage opening, bar removal and refitting of bars. Productions and efficiency. Stop motions and safety devices. Practical **study** of Rotary Gill and Intersecting Gill Drawing frames. Calculation of various machine parameters. Faller tracks. Bar removal and refitting of bars. Productions and efficiency. Stop motions and safety devices.

Spinning, Twisting & Winding Practical

- a. Practical study of slip draft and Apron draft jute spinning frames and actual spinning of yarn. Calculations involving draft and twist, operation of doffing. Count and quality change procedures. Production and efficiency calculations. Correction of bobbin building defects. Draft and twist gear changes – changes in machine speeds. Sliver feeding and drawing - in procedure.
- b. Practical study of Ring spinning frames and actual spinning of yarn. Calculations involving draft and twist, operation of doffing. Count and quality change procedures. Production and efficiency calculations. Correction of bobbin building defects. Draft and twist gear changes – changes in machine speeds. Sliver feeding and drawing - in procedure.
- c. Study of twisting machine and relevant practical.
- d. Practical studies of jute spool winding and precession winding machines. Running and settings of spool and precession winding machines to produce spools and packages of different sizes.