PRODUCE TEXTILE YARN (SPINNING)

UNIT CODE: ENG/OS/TEX/CR/02/6/A

Unit description

This unit describes the competencies required by a textile technician to produce textile yarns. It involves competencies required to produce blow room lap, carded sliver, draw frame sliver, sliver lap, combed sliver, textile roving, ring spun yarn, yarn winding operations, plied yarns, rotor spun yarn, continuous filament yarns and Control yarn production and quality parameters

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements ***(Bold and italicized terms are elaborated in the Range)***
1. Produce blow room lap	1.1 Safety precautions are observed according to occupational health and safety standards (OSHA) 1.2 Blending order instructions are obtained and interpreted 1.3 Fibre bales are obtained according to blending order instruction 1.4 Fibre bales are blended according to blending order instruction 1.5 Blow room line is prepared according to product specification 1.6 ***Blow room machines*** are operated according to work instruction 1.7 Blow room machines are monitored for smooth process flow according to SOP 1.8 Process defects are identified and corrected where possible according to SOP 1.9 Unsolved defects are reported according to workplace procedures 1.10 Blow room lap is doffed and stored according to product specification 1.11 Produced waste is collected according to workplace procedures 1.12 Blow room lap particulars are documented according to organisational standards
2. Produce carded sliver	2.1 Safety precautions are observed according to occupational health and safety standards (OSHA)

	2.2 Carding machine is set up for production according to operating instruction 2.3 ***Carding input*** is obtained and fed into the carding machine according to SOP 2.4 Carding machine is operated according to workplace procedures 2.5 Carding process is monitored for smooth operation according to SOP 2.6 ***Carding process defects*** are identified and corrected where possible according to organisational standards 2.7 Unsolved defects are reported according to workplace procedures 2.8 Carded sliver is delivered according to SOP 2.9 Produced waste is collected according to workplace procedures 2.10 Carded sliver particulars are documented according to organisational standards
3. Produce draw frame sliver	3.1 Safety precautions are observed according to occupational health and safety standards (OSHA) 3.2 Draw frame is set up for production according to operating instruction 3.3 Sliver is obtained and fed into the draw frame according to SOP 3.4 Draw frame is operated according to workplace procedures 3.5 Drawing process is monitored for smooth operation according to SOP 3.6 ***Drawing process defects*** are identified and corrected where possible according to organisational standards 3.7 Unsolved defects are reported according to workplace procedures 3.8 Drawn sliver is delivered according to SOP 3.9 Produced waste is collected according to workplace procedures 3.10 Drawn sliver particulars are documented according to organisational standards
4. Produce sliver lap	4.1 Safety precautions are observed according to occupational health and safety standards (OSHA)

	4.2 ***Lap forming machine*** is set up for production according to operating instruction 4.3 Drawn sliver is obtained and fed into lap forming machine according to SOP 4.4 Lap forming machine is operated according to workplace procedures 4.5 Sliver lap forming process is monitored for smooth operation according to SOP 4.6 ***Sliver lap forming process defects*** are identified and corrected where possible according to organisational standards 4.7 Unsolved defects are reported according to workplace procedures 4.8 Sliver lap produced is delivered according to SOP 4.9 Produced waste is collected according to workplace procedures 4.10 Sliver lap particulars are documented according to organisational standards
5. Produce textile roving	1.1 Safety precautions are observed according to occupational health and safety standards (OSHA) 1.2 Speed frame is set up for production according to operating instruction 1.3 Sliver is obtained and fed into speed frame according to SOP 1.4 Speed frames are operated according to workplace procedures 1.5 Roving process is monitored for smooth operation according to SOP 1.6 Roving process defects are identified and corrected where possible according to organisational standards 1.7 Unsolved defects are reported according to workplace procedures 1.8 Roving produced is delivered according to SOP 1.9 Produced waste is collected according to workplace procedures 1.10 Roving particulars are documented according to organisational standards
6. Produce ring spun yarn	7.1 Safety precautions are observed according to occupational health and safety standards (OSHA)

	7.2 Ring frame is set up for production according to operating instruction 7.3 Roving is obtained and fed into ring frame according to SOP 7.4 Ring frames are operated according to workplace procedures 7.5 Ring spinning process is monitored for smooth operation according to SOP 7.6 ***Ring spinning process defects*** are identified and corrected where possible according to organisational standards 7.7 Unsolved defects are reported according to workplace procedures 7.8 Ring spun yarn produced is delivered according to SOP 7.9 Produced waste is collected according to workplace procedures 7.10 Ring spun yarn particulars are documented according to organisational standards
7. Perform yarn winding operations	8.1 Safety precautions are observed according to occupational health and safety standards (OSHA) 8.2 Winding machines are set up according to product specifications 8.3 Inspected ring cops are loaded on winding machine according to SOP 8.4 ***Winding machines*** are operated according to workplace procedures 8.5 Winding process is monitored for smooth operation according to SOP 8.6 ***Winding process defects*** are identified and corrected where possible according to organisational standards 8.7 Unsolved defects are reported according to workplace procedures 8.8 Full packages produced are delivered according to SOP 8.9 Produced waste is collected according to workplace procedures 8.10 Winding operations are documented according to organisational standards

8. Produce rotor spun yarn	8.1 Safety precautions are observed according to occupational health and safety standards (OSHA) 8.2 Rotor spinning machine is set up for production according to operating instruction 8.3 Sliver is obtained and fed into rotor spinning machine according to SOP 8.4 Rotor spinning machines are operated according to workplace procedures 8.5 Rotor spinning process is monitored for smooth operation according to SOP 8.6 ***Rotor spinning process defects*** are identified and corrected where possible according to organisational standards 8.7 Unsolved defects are reported according to workplace procedures 8.8 Rotor spun yarns produced are delivered according to SOP 8.9 Produced waste is collected according to workplace procedures 8.10 Rotor spun yarn particulars are documented according to organisational standards
9. Produce continuous filament yarns	9.1 Safety precautions are observed according to occupational health and safety standards (OSHA) 9.2 ***Filament producing machines*** are set up for production according to ***product specifications*** 9.3 Polymer chips are obtained and fed into melt extruder machine according to product specifications 9.4 Extruder is operated according to workplace procedures. 9.5 Extruder operations are monitored for smooth process flow according to workplace procedures. 9.6 Continuous filament yarns are doffed according to SOPs 9.7 Extruded filaments are obtained and fed into texturizing machine according to product specifications 9.8 Texturizing machine is operated according to workplace procedures.

	9.9 Texturizing operations are monitored for smooth process flow according to workplace procedures. 9.10 Extrusion and texturizing process defects are identified and corrected where applicable according to SOPs 9.11 Unsolved defects are reported according to workplace procedures 9.12 Texturized filament yarn is doffed off according to SOPs 9.13 Produced waste is collected according to workplace procedures 9.14 Produced filament yarn particulars are documented according to organisational standards
10. Control yarn production and quality parameters	10.1 Safety precautions are observed according to occupational health and safety standards (OSHA) 10.2 Efficient production requirements are identified according to work plan 10.3 Production efficiency is monitored according to SOPs. 10.4 Production process is controlled according to production requirement 10.5 Product in process is inspected according to quality requirement 10.6 Process non-conformance is identified and documented according to workplace requirements.

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range
1. Blow room machines may include but is not limited to:	• Bale plucker • Bale open • Beaters • Condensers

Variable	Range
2. Carding input may include but is not limited to:	• Laps • Chute flock
3. Carding process defects may include but is not limited to:	• Patch web • Bulk sliver • High carding waste • High breaks
4. Drawing process defects may include but is not limited to:	• Defective stop motions • Defective auto levellers
5. Lap forming machine may include but is not limited to:	• Sliver lap forming • Ribbon lap forming • Unilap lap forming
6. Sliver lap forming process defects may include but is not limited to:	• Defective stop motions • Bulky sliver • Lap breakages
7. Combing process defects may include but is not limited to:	• Long fibres in wastage • Coiler choke-ups • Roller lappings • Lap licking
8. Ring spinning process defects may include but is not limited to:	• Thick and thin places • Broken end • Roller lapping
9. Winding machines may include but is not limited to:	• Cone winding machine • Cheese winding machine
10. Winding process defects may include but is not limited to:	• Tight winding • Patterning • Hard nose • Soft nose
11. Plied yarn producing machines may include but is not limited to:	• Parallel winding machines • Two-four-one twisting machine

Variable	Range
12. Rotor spinning process defects may include but is not limited to:	• Clogged rotor groves • Ineffective piercing
13. Filament producing machines may include but is not limited to:	• Melt extruder machine • Cold extruder • Yarn texturizing machine

REQUIRED KNOWLEDGE

The individual needs to demonstrate knowledge of:

- Understanding the importance of
  - Types of fibres
  - Types of yarn
  - Yarn count
  - Sliver hank
- Process flow in a spinning mill
- Material flow in a spinning mill
- Working principles
- Functions of different machines in ring spinning department
- Importance of colour coding followed for different counts
- Guidelines for operating the ring spinning machines
- Guidelines for taking charge of shift from previous shift fitter
- Guidelines for handing over the shift to the next shift fitter
- Functions and methodology for operating different material handling tools
- Waste collection system &equipment used
- Importance of cleanliness at workplace
- Work allocation
- Safety procedures to be followed
- Communication

REQUIRED SKILLS

The individual needs to demonstrate skills in:

- Machine operation
- Product inspection
- Measure yarn count
- Convert textile fibres to sliver
- Convert slivers to thread
- Manufacture staple yarns

- Creeling
- Drafting zone
- Top arm settings
- Spacers
- Cots and aprons
- Spindle tapes
- Jockey pulley alignment
- Rings
- Spindle
- Travellers
- Traveller clearer setting
- Pneumatic pipe fitting
- Changing gear wheel
- Variation alignment
- Drafting setting
- Ring centering
- Lappet setting
- Flutter roller eccentricity
- Top arm pressure checking
- Gear end service
- Piston service
- Timing belt checking
- Bobbin holder checking
- Spindle oil checking
- Lubrication

EVIDENCE GUIDE

This provides advice on assessment and must be in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency.	Assessment requires evidence that the learner 1.1 Produced blow room lap 1.2 Produced card sliver 1.3 Produced draw frame sliver 1.4 Produced sliver lap 1.5 Produced combed sliver 1.6 Produced textile roving 1.7 Produced ring spun yarn 1.8 Performed yarn winding operations 1.9 Produced plied yarns

	1.10 Produced rotor spun yarn 1.11 Produced continuous filament yarns 1.12 Controlled yarn production and quality parameters 1.13 Operated textile spinning machines 1.14 Documented spinning processes
2. Resource Implications.	The following resources should be provided: 2.1 Textile testing equipment 2.2 Spinning machines 2.3 Textile fibres 2.4 Material handling equipment 2.5 Software 2.6 Markers 2.7 Tools and equipment 2.8 Spinning machines (Ring frame, rotor, air jet, extruder, repco) 2.9 Textile raw materials 2.10 Textile products 2.11 Hygrometer 2.12 Thermometer 2.13 Pressure gauge 2.14 Fibro-graph 2.15 Comp sorter 2.16 Doubling machines
3. Methods of Assessment.	***Competency may be assessed through:*** 3.1 Practical tests 3.2 Observation 3.3 Case studies 3.4 Written tests 3.5 Oral questioning
4. Context of Assessment.	Competency may be assessed: 4.1 On-the-job 4.2 Off-the –job 4.3 During Industrial attachment
5. Guidance information for assessment.	This unit may be assessed on an integrated basis with others within this occupational sector.