

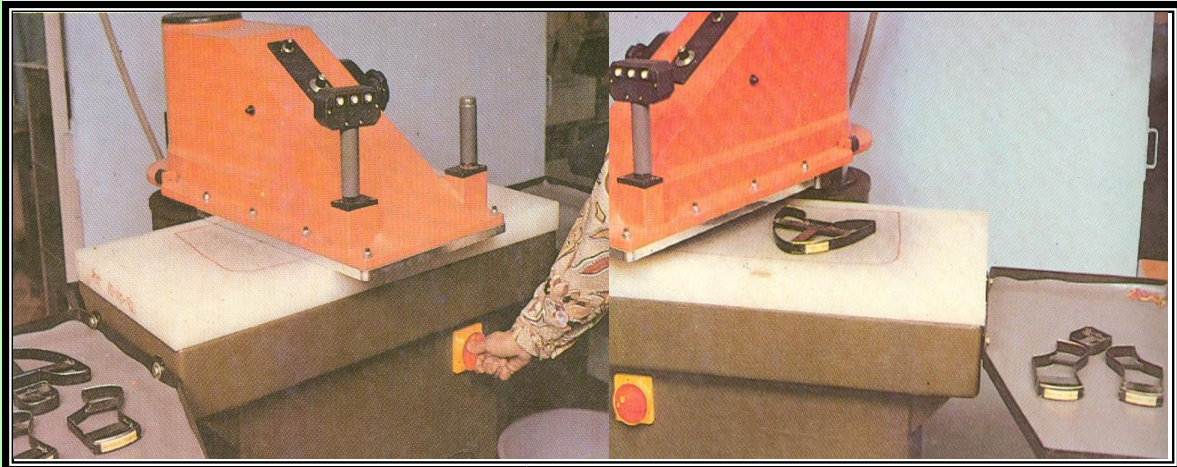
National Technical and Vocational Qualification Framework

NTVQF

Competency-Based Learning Material

Machine Operations
NTVQ Level 2

Cutting Synthetic Materials by Machine



Bangladesh Technical Education Board

Agargoon, Shere Bangla Nagar
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HOW TO USE THIS COMPETENCY-BASED LEARNING MATERIAL

Welcome to the module **Cutting Synthetic Materials by Machine**. This module contains training materials and activities for you to complete.

This unit of competency, “**Cut Synthetic Materials by Machine**”, is one of the competencies of National Certificate in Machine Operations NTVQ Level 2 Occupation, a course which comprises the knowledge, skills and attitudes required to become a Medium Skilled Worker.

You are required to go through a series of learning activities in order to complete each learning outcome of the module. These activities may be completed as part of structured classroom activities or you may be required to work at your own pace. These activities will ask you to complete associated learning and practice activities in order to gain knowledge and skills you need to achieve the learning outcomes.

Refer to **Learning Activity Page** to know the sequence of learning tasks to undergo and the appropriate resources to use in each task. This page will serve as your road map towards the achievement of competence.

Read the **Information Sheets**. These will give you an understanding of the work, and why things are done the way they are. Once you have finished reading the Information sheets complete the questions in the Self-Check Sheets.

Self-Checks follow the Information Sheets in the learning guide. Completing the Self-checks will help you know how you are progressing. To know how you fared with the self-checks, review the **Answer Key**.

Complete all activities as directed in the **Job Sheets and/or Activity sheets**. This is where you will apply your new knowledge while developing new skills.

When working through this module always be aware of safety requirements. If you have questions, do not hesitate to ask your facilitator for assistance.

When you have completed all the tasks required in this learning guide, an assessment event will be scheduled to evaluate if you have achieved competency in the specified learning outcomes and are ready for the next task.

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MODULE CONTENT

MODULE TITLE: Cutting Synthetic Materials by Machine

MODULE DESCRIPTOR:

This module covers the knowledge, skills and attitude required to assess and cut different qualities and types of materials for the leather industry.

NOMINAL DURATION: 30 hours

LEARNING OUTCOMES:

After completing this module, you **MUST** be able to:

1. OSH practices are followed.
2. Set up workstation
3. Assess material
4. Cut materials
5. Check finished product
6. Clean work place

ASSESSMENT CRITERIA

1. All safety requirements/regulations are adhered to before, during and after use.
2. Unsafe or faulty tools are identified and repaired according to designated procedures before, during and after use.
3. Personal protective clothing (PPE) worn.
4. Workstation is set up to reflect specifications and to achieve operator comfort and minimize fatigue.
5. Machines are cleaned and check for irregularities.
6. Cutting board are routinely cleaned, turned and maintained.
7. Striker plate is regularly checked for distortion and damage and irregularities report.
8. Records are maintained.
9. Materials are correctly assessed and graded against specification.
10. Various types and finish of synthetics and fabrics are checked according to work ticket.
11. Materials are sorted according to color, shade and specifications.
12. Knives and patterns are used to gain optimal materials use against workplace quality standards.
13. Machines are started up and shut down according to safety regulations.

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14. Knives are selected according to job specifications and size requirements and use according to OSH practices.
15. Pressure on press is adjusted to knife size and shape.
16. Parts are cut to workplace quality standards in relation to materials flaws.
17. Individual pairs are selected and color and grain matched to workplace quality standard.
18. Pairs are cut to achieve best yield according to appropriate allowance.
19. Distortion and defects on press cutting knives, dies and cutting board are identified and appropriate action taken.
20. Finish product is checked against workplace quality standard.
21. Faults are recorded.
22. Work place and machine are cleaned as per work place standard.
23. Waste is disposed off according to company regulations.

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LEARNING OUTCOME 1 FOLLOW OSH PRACTICES

CONTENTS:

1. Identify and wear PPE.
2. Identify OSH practices in the workplace.

ASSESSMENT CRITERIA:

1. Personal protective equipment (PPE) used during working.
2. OSH standards as set out by the workplace during working.

CONDITIONS:

Trainees must be provided with the following:

- Personal Protective equipment

Learning Materials

- Books, manuals
- Modules/references

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LEARNING ACTIVITIES

LEARNING OUTCOME: Follow OSH Practices

LEARNING ACTIVITIES	RESOURCES/SPECIAL INSTRUCTIONS
Familiarizing the PPE Observing safe work practices	<ul style="list-style-type: none">▪ Read information sheet 3.1-1.▪ The learner is encouraged to answer the self-check 3.1-1.▪ Refer your answer to the answer key.

INFORMATION SHEET 3.1-1

Follow OSH Practices

Learning Objectives:

After reading this INFORMATION SHEET, you will be able to identify the personal protective equipment used in a workplace and follow OSH practices.

Safety requirement inside the work place:

- All clicking presses should only operate with the use of both hands.
- Only the actual knife being used should be on the clicking board.
- Scissors and knife should not be allowed on the clicking board.
- Clicking knife should not be struck on the edge of the beam to release them, from the board, they can spring up.
- When using the grind stone for making or sharpening hand cutting knives use safety. Do not use a grind stone without glasses.
- Switch off grindstone when not in use
- Avoid wearing loose clothing it can get caught in machinery.
- Long hair or loose clothing should not be allowed near machinery.
- Care should be taken when handling knives with sharp edges, pins etc. These may cut your fingers.
- Never place your hands or fingers under the beam of the press to release a knife.
- Do not have anything on the clicking board after you turn off the machine. When the power is turned off the beam automatically lowers itself on the cutting board.
- When you are working with machine do not be careless.
- Know your Fire drill.
- Do not attempt to do your own electrical repairs.

While the tool or equipment is operating:

- Stay with running power tools.
- Do not walk away from a machine you have been using until it comes to a complete stop. It takes only a few seconds for a power tool to “wind down” after it has been shut off, but it still has the potential to injure someone if the parts are still moving.
- Keep your hands away from moving parts.
- Make sure the cutting part of a tool will not come in contact with the power cord.
- Maintain a firm grip at all times.
- Turn off power tools before making adjustments. Always unplug or lock out the tool before making adjustments or changing settings if there is any chance that the tool could accidentally start up.

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Fire precaution

- There should be at least two exits in every room at opposite sides.
- Exits should be clearly marked, unobstructed and unlocked and easy to open.
- Fire drills have to be conducted once every month.
- There should be battery operated fire alarms on each floors and emergency lights placed above exits and stairwells.
- The ratio of fire extinguisher should not be less than 01 per 1,000 square feet and traveling distance from work station to extinguishers should not be more than 75 feet.
- Fire extinguishers should be of appropriate size so that the workers can lift it properly. Extinguishers should be checked periodically.
- Fire extinguisher locations should be marked properly and fire extinguisher operation instructions should be posted with extinguishers in local language.

Earthquake

During the earthquake

- Keep calm
- Stay indoors where practical
- Keep away from windows and heavy furniture
- Take cover – use a doorway or get under
- a strong table or other sturdy structure

After the earthquake, if the building is damaged

- Turn off water, electricity and gas at mains
- Conserve your water
- Treat injuries
- Get in touch with neighbors they may need help
- When help is needed go to your nearest civil defense post
- Advise manager of damage sustained

Fire and emergency procedures

In all cases when an industry, all staff, becomes aware of fire and or smoke, the Fire Department MUST be notified immediately. Go to the nearest safe location and activate the fire alarm system at the pull station, or shout the alarm as you evacuate the building. If possible, telephone 123 after you exit the Industry.

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Give them the following information:

1. Name of the industry.
 2. Location of the fire within the Industry.
 3. A description of the fire and (if known) how it started.
- Evacuate the workplace following the established workplace evacuation procedures
 - Workplace evacuations will occur when an alarm sounds continuously and/or upon notification by emergency personnel.
 - If necessary or if directed to do so by a designated emergency official, activate the workplace alarm as you exit the Industry.
 - Be aware of people with disabilities in your area who might require assistance in an emergency evacuation. Be prepared to render assistance if necessary.
 - Know the location of fire exits and alarm systems in your area, and know how to use them.
- C. If you become trapped in an Industry building during a fire:
1. Stay calm, and take steps to protect yourself.
 2. If possible, move to a room with an outside window.
 3. If there is a telephone, call 123 and tell the dispatcher where you are. Do this even if you can see fire department personnel from the window.
 4. Stay where rescuers can see you through the window, and wave a light colored item to attract their attention.
 5. Stuff clothing, towels or paper around the cracks in the door to help keep smoke out of your refuge.
 6. Be patient. Rescue of occupants within large structures will take time.

Safety Equipment of Fire

Sprinkler systems and water flow detection devices are present in some workplace on Industry. Water flow in these devices is monitored by the Industry Emergency Dispatch Center and automatically triggers a response.

Smoke detectors are provided where required. REMEMBER, if you have a battery-operated smoke detector, you should change the batteries twice per year. It is recommended that you change your batteries in the fall and spring when clocks are reset for Day Light Savings Time.

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In residential facilities, battery-powered detectors that sound a low battery signal (a chirping sound at approximately 1-minute intervals) should be reported to Management.

Employer's responsibilities:

- Provide a safe and healthy workplace.
- Ensure that you and your co-workers are adequately trained, and keep records of your training.
- Provide a comprehensive occupational health and safety program, including
- A written health and safety policy (you can ask to see a copy) and an incident investigation procedure.
- Support supervisors, safety co-coordinators, and workers in their health and safety activities. A good employer encourages safe work practices at all times.
- Take action immediately when a worker or supervisor reports a potentially hazardous situation. Initiate an immediate investigation into incidents.
- Report serious incidents to Work Safe BC.
- Provide adequate first aid facilities and services.
- Provide personal protective equipment (PPE) where required.
- More information about PPE.

Selecting PPE

To ensure that the item of personal protective equipment (PPE) will provide the level of protection that is it designed to, PPE should:

- be appropriate for the type of work and give appropriate protection for the risk
- give adequate protection to the user
- not create additional health or safety risks
- be compatible with other PPE being used (e.g ear muffs with a hard hat)
- fit properly
- not interfere with any medical conditions of the user
- be easy to use
- be comfortable
- comply with relevant Bangladesh Standards

Using PPE

Make sure that:

- personal protective equipment (PPE) is used in accordance with the manufacturers' instructions
- the PPE fits correctly
- workers are instructed and trained in how to use it

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- appropriate signs should be displayed to remind workers where PPE must be worn

Training should cover arrangements for the provision, correct use, storage and maintenance of PPE and should be done:

- when new workers start work
- when you get new PPE
- to refresh workers' memories from time to time

Suitable PPE for machine operator:

- Safety goggles
- Masks
- Aprons
- Hands gloves
- Finger guard

Electrical safety can be increased through the following measures:

- Remove all faulty wires
- Conduct periodic check of electrical installation
- Do not use broken switches, plugs or leaking electrical wires
- Replace wooden electrical distribution boards
- Clean all lint built-ups on regular basis
- Check and clean machine motor casing from lint built- ups
- Keep all electrical dry irons after work on the floor after having disconnected the connection with current

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SELF-CHECK 3.1-1

- A. Give at least five (5) safety requirements while inside the workplace.
- B. Give at least five (5) safety requirements while the tool or equipment is running.
- C. What are the suitable PPE for machine operator?

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ANSWER KEY 3.1-1

A. Give at least five (5) safety requirements while inside the workplace.

- All clicking presses should only operate with the use of both hands.
- Only the actual knife being used should be on the clicking board.
- Scissors and knife should not be allowed on the clicking board.
- Clicking knife should not be struck on the edge of the beam to release them, from the board, they can spring up.
- When using the grind stone for making or sharpening hand cutting knives use safety. Do not use a grind stone without glasses.
- Switch off grindstone when not in use
- Avoid wearing loose clothing it can get caught in machinery.
- Long hair or loose clothing should not be allowed near machinery.
- Care should be taken when handling knives many have sharp edges, pins etc. Which can cut your fingers?
- Never place your hands or fingers under the beam of the press to release a knife.
- Do not have anything on the clicking board after you turn off the machine. When the power is turned off the beam automatically lowers itself on the cutting board.
- When you working in machine not to be careless.
- Know your Fire drill.
- Do not attempt to do your own electrical repairs.

B. Give at least five (5) safety requirements while the tool or equipment is running.

- Stay with running power tools.
- Do not walk away from a machine you have been using until it comes to a complete stop. It takes only a few seconds for a power tool to “wind down” after it has been shut off, but it still has the potential to injure someone if the parts are still moving.
- Keep your hands away from moving parts.
- Make sure the cutting part of a tool will not come in contact with the power cord.
- Maintain a firm grip at all times.
- Turn off power tools before making adjustments. Always unplug or lock out the tool before making adjustments or changing settings if there is any chance that the tool could accidentally start up.

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C. What are the suitable PPE for machine operator?

- Safety goggles
- Masks
- Aprons
- Hands gloves
- Finger guard

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LEARNING OUTCOME 2 SET UP WORKSTATION

CONTENTS:

1. Set up workstation up according to industry practices.
2. Clean and check machines for irregularities.
3. Clean, turn and maintain cutting board.
4. Regularly check striker plate for distortion and damage and irregularities.
5. Maintain records.

ASSESSMENT CRITERIA:

1. All safety requirements/regulations are adhered to before, during and after use.
2. Personal protective clothing (PPE) worn.
3. Workstation is set up to reflect specifications and to achieve operator comfort and minimize fatigue.
4. Machines are cleaned and check for irregularities.
5. Cutting board are routinely cleaned, turned and maintained.
6. Striker plate is regularly checked for distortion and damage and irregularities report.
7. Records are maintained

CONDITIONS:

Trainees must be provided with the following:

- Personal Protective equipment
- Tools, materials an equipment

Learning Materials

- Books, manuals
- Modules/references

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LEARNING ACTIVITIES

LEARNING OUTCOME: Set Up Workstation

LEARNING ACTIVITIES	RESOURCES/SPECIAL INSTRUCTIONS
Set up workstation	<ul style="list-style-type: none">▪ Read information sheet 3.2-1.▪ The learner is encouraged to answer self-check 3.2-1▪ Refer your answer to the answer key.

INFORMATION SHEET 3.2-1

Set Up Workstation

Learning Objectives:

After reading this INFORMATION SHEET, you will be able to set up workstation.

Introduction

Cutting room is an extremely important section in the garment manufacturing process which has a major impact on the profitability of the business. Following are the few reasons which describe the importance of the efficient management of the cutting room in garment manufacturing process:

- Cutting room being the feeding point to the factory has massive impact on all the further processes of Leather Goods manufacturing i.e. sewing, finishing etc.
- Efficient and well planned operations in cutting room ensures smooth flow of work to all further processes and can definitely lift up the utilization of the available resources.
- Cutting room controls the utilization of synthetic which is the biggest contributor to the cost of any Leather Goods. Even small wastage or saving of the fabric will have a huge affect on the margins of the orders.
- Cutting being the first operation of Leather Goods manufacturing lays the foundation of quality of the Leather Goods to be made. Any imperfection in cutting process can result in non-conformance of the quality standards of all further processes.

Cleaning Your Cutting Board

To remove mold from your cutting board, try scrubbing the board with a diluted bleach mixture. (One teaspoon of bleach to a quart of warm water.) Let the bleach stand on the board for a few minutes, then rinse and pat dry. If any trace of mold remains, try scrubbing the board with coarse salt. The abrasiveness of the salt will help remove mold while also removing odor from your cutting board. After rinsing the board of salt, scrub with diluted bleach again.

After the mold has been removed, practice good cleaning habits. Never immerse wooden cutting boards in water. Trapped moisture is how mold forms in the first place. Instead, after each use, wipe the board down with warm, soapy water or white vinegar. (Vinegar is a better disinfectant.) Use a clean, dry cloth to absorb extra liquid from the board.

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Preventive Care

To prevent mold or bacteria growth on your wooden cutting board, you need to season it. Treating the wood with a food-grade mineral oil will seal minor imperfections in the wood and prevent the absorption of food particles and moisture. Wipe mineral oil on your clean, dry cutting board until the wood won't take any more oil. Let the oil sit on the wood for a few hours or overnight, then wipe off any remaining oil with a dry cloth.

Reapply oil monthly or as needed.

For a tougher finish, you can shave 1/2 teaspoon of beeswax into a cup of food-safe mineral oil. Heat for 30 to 45 seconds in the microwave until the beeswax is melted. Mix the wax and oil together and apply.

Records are maintained:

- Manual handling device
- Strip steel cutting knife
- Forged steel cutting knife
- Cutting board
- Scissors
- Thickness gauge
- Markers
- Hammer

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SELF-CHECK 3.2-1

1. How will you clean a cutting board?
2. What are preventive care to prevent molds and bacteria on a wooden cutting board?

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ANSWER KEY 3.2-1

1. How will you clean a cutting board?

To remove mold from your cutting board, try scrubbing the board with a diluted bleach mixture. (One teaspoon of bleach to a quart of warm water.) Let the bleach stand on the board for a few minutes, then rinse and pat dry. If any trace of mold remains, try scrubbing the board with coarse salt. The abrasiveness of the salt will help remove mold while also removing odor from your cutting board. After rinsing the board of salt, scrub with diluted bleach again.

2. What are preventive care to prevent molds and bacteria on a wooden cutting board?

To prevent mold or bacteria growth on your wooden cutting board, you need to season it. Treating the wood with a food-grade mineral oil will seal minor imperfections in the wood and prevent the absorption of food particles and moisture. Wipe mineral oil on your clean, dry cutting board until the wood won't take any more oil. Let the oil sit on the wood for a few hours or overnight, then wipe off any remaining oil with a dry cloth. Reapply oil monthly or as needed.

For a tougher finish, you can shave 1/2 teaspoon of beeswax into a cup of food-safe mineral oil. Heat for 30 to 45 seconds in the microwave until the beeswax is melted. Mix the wax and oil together and apply.

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LEARNING OUTCOME 3 ASSESS MATERIAL

CONTENTS:

1. Correctly assess and grade materials against specification.
2. Check various types and finish of synthetics and fabrics according to work ticket.
3. Sort materials according to color, shade and specifications

ASSESSMENT CRITERIA:

1. Safe work practices observed and PPE worn as required for the work performed.
2. Materials are correctly assessed and graded against specification.
3. Various types and finish of synthetics and fabrics are checked according to work ticket.
4. Materials are sorted according to color, shade and specifications.

CONDITIONS:

Trainees must be provided with the following:

- Personal Protective equipment
- Tools and materials

Learning Materials

- Books, manuals
- Modules/references

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LEARNING ACTIVITIES

LEARNING OUTCOME: Assess Material

LEARNING ACTIVITIES	RESOURCES/SPECIAL INSTRUCTIONS
Assessing materials	<ul style="list-style-type: none">▪ Read information sheet 3.3-1▪ The learner is encouraged to answer the self-check 3.3-1.▪ Refer your answer to the answer key.

INFORMATION SHEET 3.3-1

Assess Material

Learning Objectives:

After reading this INFORMATION SHEET, you will be able to assess, grade and sort materials according to specification

Synthetic materials are mainly three types:

- High Quality.
- Medium Quality.
- Low Quality

In some senses, it is easier to cut synthetic materials than leather. Synthetic materials are uniform and regular in size and normally do not have flaws or differing areas of quality. However, quite often, they have directional constraints and it is equally important for the cutter to plan and cut as efficiently as possible. The unit cost of synthetic materials may be less than leather but the higher productivity achieved in cutting synthetic materials means that economy of cutting is just as important. The materials are usually cut in layers and a cutter who wastes 5 percent of a material could, in monetary terms, lose as much if not more than a leather cutter wasting the same amount.

The cutter should ensure that:

- Economy has a high priority by using the most economical layout for each style and shape of pattern,
- The material is laid up correctly and there is no excessive waste at the edges,
- The machine is adjusted for maximum efficiency and minimal wear of knives and boards.

There are many varieties of synthetic material used in shoe manufacture. The two main types are **roll material** and **sheet material**.

A. Roll Material:

- PU or PVC coated fabrics,
- Textiles: Knitted, Woven and non-Woven,
- Various laminates (for example Gore-Tex).

The rolled materials are usually supplied in up to 30 meters lengths wound onto a hardboard tube. They are cut using either the Gantry feed or Clip feed methods.

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- Gantry feed: Several rolls are mounted on a device situated to the rear of the machine that allows 2 or more layers to be fed directly onto the cutting block.
- Clip feed: The material is laid up into predetermined lengths (usually 3-7 Meters) and layers, then stapled or clipped together before being cut.

B. Sheet material:

- Sole material, usually resin rubber, PVC or PU
- Insole board, made from reconstituted materials,
- Various rubberized or plasticized materials,
- Foam rubbers.

The sheet materials are supplied packed flat on a pallet and are usually clipped or stapled together in layers prior to cutting.

Materials according to color, shade and specifications

1) PU Synthetic Shoes Leather Description

Features:

- a) Thickness: 1.0mm - 1.1mm
- b) Color: any
- c) Surface: smooth
- d) Backing: coagulated fabric
- e) Superior durability
- f) Good hand feel
- g) Properties similar to genuine leather
- h) Widely used for shoes manufacturing

2) PU Sofa Leather Description

Features:

- a) Thickness: 0.8, 1.0, 1.2, 1.4mm
- b) Width: 54"
- c) Uses: production of sofas, chairs

3) PU, PVC Synthetic Leather Description

Features:

- a) Width: 1.37m
- b) Thickness: 0.6 - 1.5mm (PVC with more)
- c) Specifications, thickness, such as color, pattern, embossed, are according to customers' requirements

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- d) The synthetic leather is suitable for making shoes, furniture, garments, Automobile seats, gloves, sofas, handbags and wrapping
- e) Competitive prices
- f) Reliable quality

4) Synthetic Leather Fabric Description

Features:

- a) Synthetic leather used in clothing
- b) Thickness: 0.7mm
- c) Width: 53 / 54"

5) Fabric Face (Bag and Case,) Description

Features:

- a) Calendared film coated - silk based fabric face garment leather
- b) Used for various garments and rain gears

6) PVC Synthetic Leather Description

Features:

- a) Width: 1.37m
- b) Thickness: 0.6 - 1.8mm
- c) Specifications, thickness, such as color, pattern, embossed, are according to customers' requirements
- d) The synthetic leather is suitable for making shoes, furniture, garments, automobile seats, gloves, sofas, handbags and wrapping
- e) Competitive prices
- f) Reliable quality

7) Rigid PVC Wood Patterned Decorative Film Description

Features:

- a) Specification: 0.35 x 1400mm
- b) Mainly used as the decorative overlaying material for cupboard panels and steel doors

8) PU Garment Leather Description

Features:

- a) Thickness: 0.8 - 1.3mm
- b) Width: 1.4m
- c) Competitively priced
- d) Reliable quality
- e) Used for the production of all kinds of garments

9) Detailed PU Synthetic Leather Description

Features:

- a) Thickness: 0.95mm - 1.0mm

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- b) Color: any color
- c) Composition: PU 59%, polyester / cotton 41%

10)PU Garment Leather Description

Features:

- a) Thickness: 0.8 - 1.3mm
- b) Width: 1.4m
- c) Competitively priced
- d) Reliable quality
- e) Used for the production of all kinds of garments

11)Detailed PVC Artificial Leather Description

Having good elasticity, brightly color, a genuine leather appearance this durable, water resistant, and anti - crumple material is suitable for manufacturing sofas, bags, suitcases, and shoes.

12)Detailed Handbag Leather Description

Features:

- a) Size:
 - 1) Width: 1.37m
 - 2) Thickness: 0.6 - 1.5mm (PVC with more)
- b) Specifications, thickness, such as color, pattern, embossed, are according to customers' requirements
- c) The synthetic leather is suitable for making handbags and packs
- d) Competitive prices
- e) Reliable quality.

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SELF-CHECK 3.3-1

1. What are two main types of synthetic materials?
2. Identify the types of synthetic roll material
3. Identify the types of synthetic sheet material

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ANSWER KEY 3.3-1

1. Types of synthetic materials

- A. Roll Material
- B. Sheet material

2. Identify the types of synthetic roll material

- PU or PVC coated fabrics,
- Textiles: Knitted, Woven and non-Woven,
- Various laminates (for example Gore-Tex).

The rolled materials are usually supplied in up to 30 meters lengths wound onto a hardboard tube. They are cut using either the Gantry feed or Clip feed methods.

- Gantry feed: Several rolls are mounted on a device situated to the rear of the machine that allows 2 or more layers to be fed directly onto the cutting block.
- Clip feed: The material is laid up into predetermined lengths (usually 3-7 Meters) and layers, then stapled or clipped together before being cut.

3. Identify the types of synthetic sheet material

- Sole material, usually resin rubber, PVC or PU
- Insole board, made from reconstituted materials,
- Various rubberized or plasticized materials,
- Foam rubbers.

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LEARNING OUTCOME 4 CUT MATERIALS

CONTENTS:

1. Use knives and patterns to gain optimal materials against workplace quality standards.
2. Start up and shut down machines according to safety regulations.
3. Select knives according to job specifications and size requirements and use according to OSH practices.
4. Adjust pressure on press to knife size and shape.
5. Cut parts to workplace quality standards in relation to materials flaws.
6. Select individual pairs and color and grain matched to workplace quality standard.
7. Cut pairs to achieve best yield according to appropriate allowance.
8. Identify and take appropriate actions on distortion and defects on press cutting knives, dies and cutting board.

ASSESSMENT CRITERIA

1. Safe work practices observed and PPE worn as required for the work performed.
2. Knives and patterns are used to gain optimal materials use against workplace quality standards.
3. Machines are started up and shut down according to safety regulations.
4. Knives are selected according to job specifications and size requirements and use according to OSH practices.
5. Pressure on press is adjusted to knife size and shape.
6. Parts are cut to workplace quality standards in relation to materials flaws.
7. Individual pairs are selected and color and grain matched to workplace quality standard.
8. Pairs are cut to achieve best yield according to appropriate allowance.
9. Distortion and defects on press cutting knives, dies and cutting board are identified and appropriate action taken.

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CONDITIONS:

Trainees must be provided with the following:

- Personal Protective equipment
- Tools and materials

Learning Materials

- Books, manuals
- Modules/references

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LEARNING ACTIVITIES

LEARNING OUTCOME: Cut Materials

LEARNING ACTIVITIES	RESOURCES/SPECIAL INSTRUCTIONS
Cutting materials	<ul style="list-style-type: none">▪ Read information sheet 3.4-1▪ The learner is encouraged to answer the self-check 3.4-1.▪ Refer your answer to the answer key.▪ Perform operation sheet 3.4-1▪ Evaluate your performance to Performance Criteria Checklist 3.4-1

INFORMATION SHEET 3.4-1 Cut Materials

Learning Objectives:

After reading this INFORMATION SHEET, you will be able to cut materials by machine according to specifications.

Knives and Patterns

- Place the cut piece aside. It is good practice after making a cut to turn your pattern over, ready for the opposite foot
- Keep aside the good interlocking offal off cuts. This will be used for cutting the back straps on the press.
- Take the back strap knife and interlocking offal off cuts to the press and cut the two pairs of back straps.
- Bundle up the outsides into their individual components and place them nearby aside. Layout your upper materials and upper knives and proceed to cut the upper to match the insides as indicated on the work ticket.
- The full back lining and tongue lining are cut out of Ceylon. The vamp lining is cut out of combined drill. The lining material indicated on the ticket.
- Vamp Knife: Although this knife is a $\frac{3}{4}$ cut, the front of the vamp must match the toe cap and strap for quality and grain. The area that is under the saddle can have marks in it. The outside portion of the vamp is allowed slightly less quality than the front of the vamp.
- Counter knife: This knife cut of counter part of a shoe. The counter is divided up into three main quality regions. The inside part of the counter taking small defects.
- The counter can be cut from slightly lighter leather as it is reinforced by the stiffener.
- There are two counters to 1 pair.
- Toe cap knife: This knife cut toe cap part of a shoe. This is the main part of the shoe, it must be cut from the best quality regions there are 2 pieces of each cut of 1 pair of shoe.

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- Quarter knife: This knife cut of only quarter part of shoe. The inside quarter is graded similarly to the outside but the complete quarter is generally accepted to be a grade lower than the outside quarter. There is one left and one right cut to a pair

Starting up and shutting down machines

- Turn the machine on and wait for 2 to 3 minutes to allow the machine to circulate the oil.
- Select the leather and place in the well at the back of the machine.
- Bring the Leather over the cutting board; care should be taken not to scratch the leather grain surface on the aluminium plate.
- Select the require knife.
- Adjust the pressure stoke height, if required, this should be a minimum of 10 mm above the knife and more than 15 mm.
- Swing the beam over the centre of the knife.
- Press the selected button on the left hand control at the same time as you press the button on top of the right hand control. Hold the button down until you feel the press coming up.
- Swing the beam away from the knife.
- Pick up the knife and the cut component.
- Place the cut component in an orderly fashion on the side bench.
- Repeat the same procedure, change knives when required.
- On completion of cutting, replace knife and leather.
- Turn off machine.
- The machine will rest on the cutting block when turned off.

Adjusting Pressure on press to knife size and shape:

- Setting the arm stoke. Place the knife on the clicking board.
- Setting of pressure control. It is very important that the press is set to the correct cutting pressure. Too much pressure will destroy the board and cause possible knife breakages.
- Place 1 piece of thin cardboard on the clicking board.
- Place the small knife on the cardboard.
- Test the machine for cutting depth.
- If the machine has been set correctly it should cut through, and only show a very small imprint on the cutting board.

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- If the knife cuts deeply into the nylon board reduce the pressure.
- Test the cutting depth in three different areas of the board

Individual pairs are selected and color and grain matched to workplace quality standard:

- The clicker will continue cutting until he has cut required pair age. They would normally be bundled in 5 pair lots. Check them perfectly.
- Bundle completed work. Please an elastic band at each end. The top piece should be turned over to protect the grain.
- Then ensure each completed 5 pairs are bundled securely together.
- BUNDLE OF CUT COMPONENTS:
- Elastic bands are placed on each group of components.
- Then each completed 5 pairs are bundled securely together.

Distortion and defects:

- Avoid more than one knife on the cutting board at any time.
- Do not hit the knife on the edge of the blade with the beam. This can damage the knife or cutting board, it could also make the knife flip up into your face.
- Do not allow your hands under the press for any reason. If a knife becomes jammed swing the beam to the side of the press away from the cutting board then remove the knife.
- Knife Sharpening: During knife sharpening must use safety goggle.
- Do not allow other objects such as scissors etc. on the board when leather cutting by machine.

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SELF-CHECK 3.4-1

1. Identify the steps of adjusting Pressure on press to knife size and shape?
2. Write the steps of starting up and shutting down machines.

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ANSWER KEY 3.4-1

1. Adjusting Pressure on press to knife size and shape

- Setting the arm stroke. Place the knife on the clicking board.
- Setting of pressure control. It is very important that the press is set to the correct cutting pressure. Too much pressure will destroy the board and cause possible knife breakages.
- Place 1 piece of thin cardboard on the clicking board.
- Place the small knife on the cardboard.
- Test the machine for cutting depth.
- If the machine has been set correctly it should cut through, and only show a very small imprint on the cutting board.
- If the knife cuts deeply into the nylon board reduce the pressure.
- Test the cutting depth in three different areas of the board

2. Starting up and shutting down machines

- Turn the machine on and wait for 2 to 3 minutes to allow the machine to circulate the oil.
- Select the leather and place in the well at the back of the machine.
- Bring the Leather over the cutting board; care should be taken not to scratch the leather grain surface on the aluminium plate.
- Select the require knife.
- Adjust the pressure stroke height, if required, this should be a minimum of 10 mm above the knife and more than 15 mm.
- Swing the beam over the centre of the knife.
- Press the selected button on the left hand control at the same time as you press the button on top of the right hand control. Hold the button down until you feel the press coming up.
- Swing the beam away from the knife.
- Pick up the knife and the cut component.
- Place the cut component in an orderly fashion on the side bench.
- Repeat the same procedure, change knives when required.
- On completion of cutting, replace knife and leather.
- Turn off machine.
- The machine will rest on the cutting block when turned off.
- Pack and bundle cut components.

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OPERATION SHEET 3.4-1

Title: Perform cutting leather materials

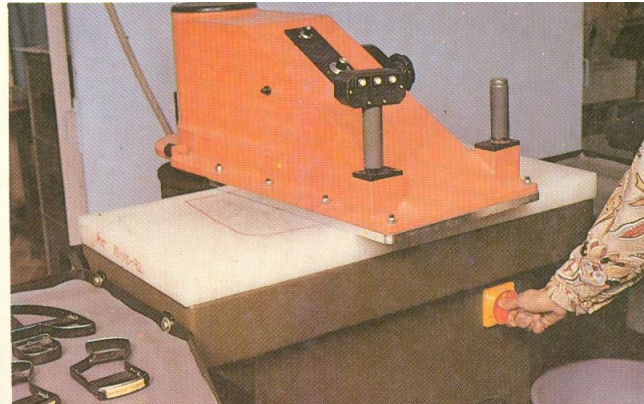
Performance Objective: After completing this activity, you should be able to cut leather materials according to job specifications.

Materials/Tools/Equipment:

1. Leather materials
2. Knives
3. Cutting machine

Process/Procedure:

1. Turn the machine on and wait for 2 to 3 minutes to allow the machine to circulate the oil.

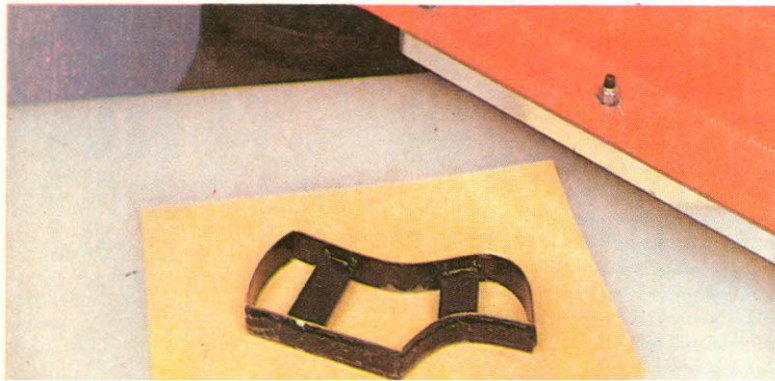


2. Set the arm stroke. Place the knife on the clicking board.

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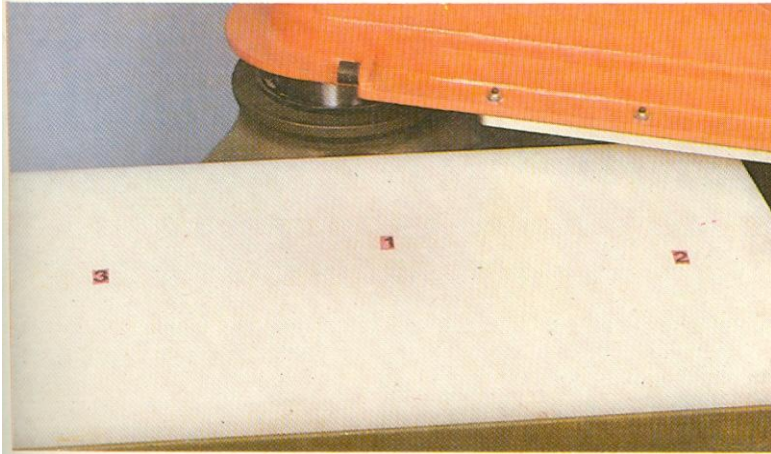


3. Turn the arm stroke adjustment control. Clockwise for down position. Anti clockwise for up position. Approx 10 mm to 15 mm clearance is required depending on the substance of the Synthetic.
4. Place the small knife on the cardboard.

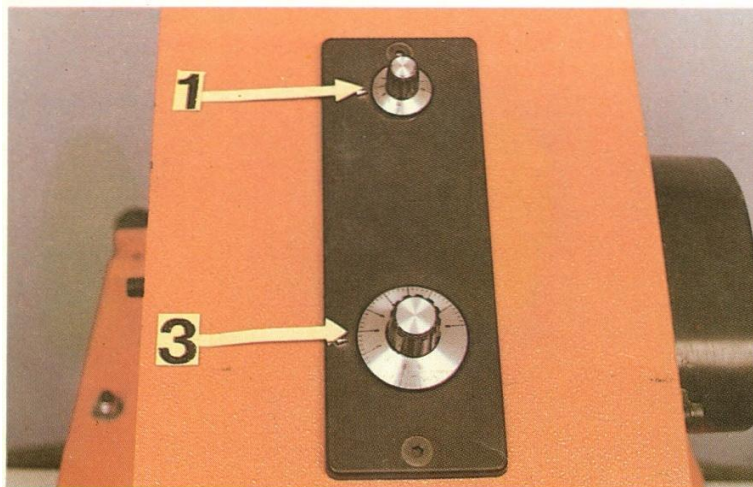


5. Test the machine for cutting depth.
6. If the machine has been set correctly it should cut through and only shove a very same imprint on the cutting board.
7. Test the cutting depth in three different areas of the board.

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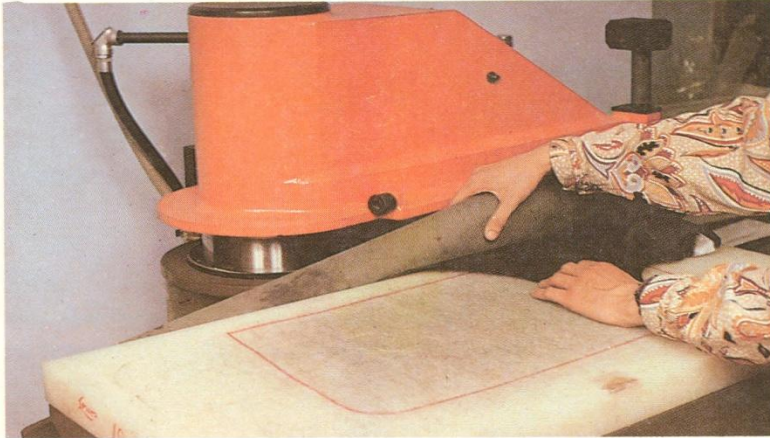


8. This system can only be used if the cutting block and the aluminium plate are in good Condition.
9. This system does not work adjust the cutting stroke pressure until you have minimum knife penetration into the board.
10. Depth of the cut can be altered by button No. 1 and button No.3.

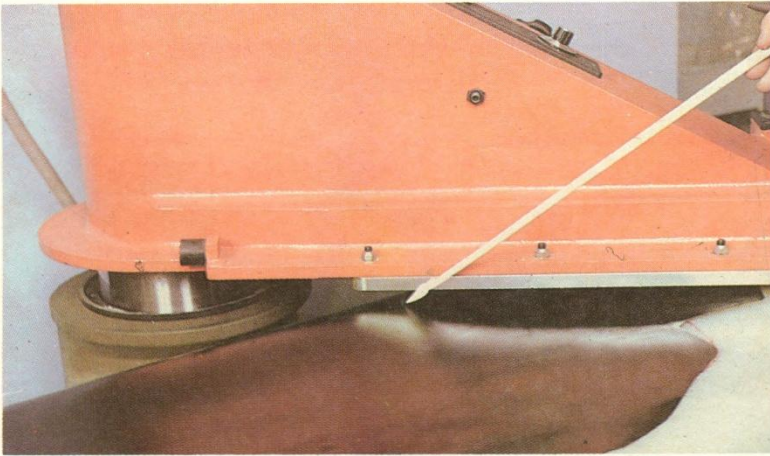


11. The pressure control adjustment is completed by turning the lower potentiometer clockwise for extra pressure and anti clockwise for less pressure.
12. Select the synthetic and place it in the well at the back of the machine.

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13. Bring the synthetic over the cutting board; care should be taken not to scratch the synthetic grain surface on the aluminium plate.



14. Select the required knife.

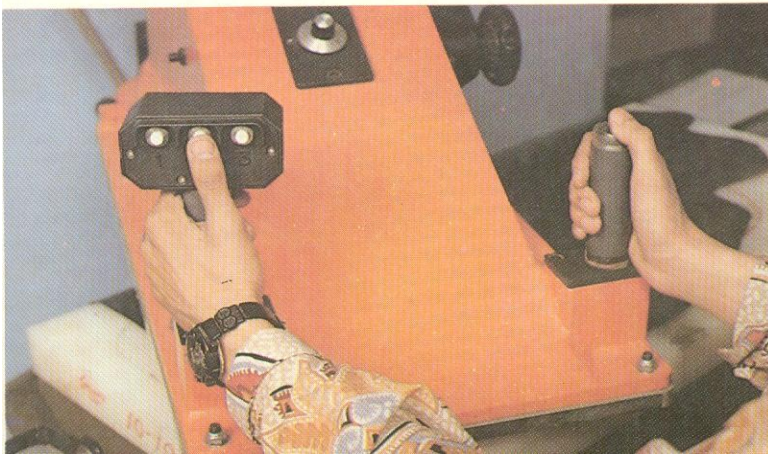


15. Adjust the pressure stroke height, if required, this should be a minimum of 10mm above the knife and no more than 15mm.



16. Swing the beam over the center of the knife.

17. Press the selected button on the left hand control at the same time as you press the button on top of the right hand control. Hold the button down until you feel the press coming up.



18. Swing the beam away from the knife.

19. Pick up the knife and the cut component.

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20. Place the cut component in an orderly fashion on the side bench.
21. Repeat the same procedure, change knives when required.
22. On completion of cutting, replace knife and synthetic.
23. Pack and bundle cut components.



24. Turn the machine off and wait for 2 to 3 minutes to allow the machine off.

Assessment Method:

Demonstration using Performance Criteria Checklist

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PERFORMANCE CRITERIA 3.4-1

Criteria	YES	NO
Did I....		
1. Adhere to all safety requirements/regulations before, during and after use.		
2. Identify and repair unsafe or faulty tools according to designated procedures before, during and after use.		
3. Wear Personal protective clothing (PPE)		
4. Set up workstation to reflect specifications and to achieve operator comfort and minimize fatigue.		
5. Clean machines and check for irregularities.		
6. Routinely clean, turn and maintain cutting board.		
7. Regularly check striker plate for distortion and damage and irregularities report.		
8. Maintain records.		
9. Correctly assess and grade materials against specification.		
10. Check various types and finish of synthetics and fabrics according to work ticket.		
11. Sort materials according to color, shade and specifications.		
12. Use knives and patterns to gain optimal materials use against workplace quality standards.		
13. Start up and shut down machines according to safety regulations.		
14. Select knives according to job specifications and size requirements and use according to OSH practices.		
15. Adjust pressure on press to knife size and shape.		
16. Cut parts to workplace quality standards in relation to materials flaws.		
17. Select individual pairs are selected and color and match grain to workplace quality standard.		
18. Cut pairs to achieve best yield according to appropriate allowance.		
19. Identify distortion and take appropriate action on defects on press cutting knives, dies and cutting board		
20. Check finish product against workplace quality standard.		

21. Record faults.		
22. Clean work place and machine as per work place standard.		
23. Dispose of waste according to company regulations.		

LEARNING OUTCOME 5 CHECK FINISHED PRODUCT

CONTENTS:

1. Check finish product against workplace quality standard.
2. Record faults.

ASSESSMENT CRITERIA:

1. Safe work practices observed and PPE worn as required for the work performed.
2. Finish product is checked against workplace quality standard.
3. Faults are recorded.

CONDITIONS:

Trainees must be provided with the following:

- Personal Protective equipment
- Tools and materials

Learning Materials

- Books, manuals
- Modules/references

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LEARNING ACTIVITIES

LEARNING OUTCOME: Check Finished Product

LEARNING ACTIVITIES	RESOURCES/SPECIAL INSTRUCTIONS
Checking finished product	<ul style="list-style-type: none">▪ Read information sheet 3.5-1▪ The learner is encouraged to answer the self-check 3.5-1.▪ Refer your answer to the answer key.

INFORMATION SHEET 3.5-1 Check Finished Product

Learning Objectives:

After reading this INFORMATION SHEET, you will be able to check finish product against workplace quality standard.

Check after cutting:

Look for

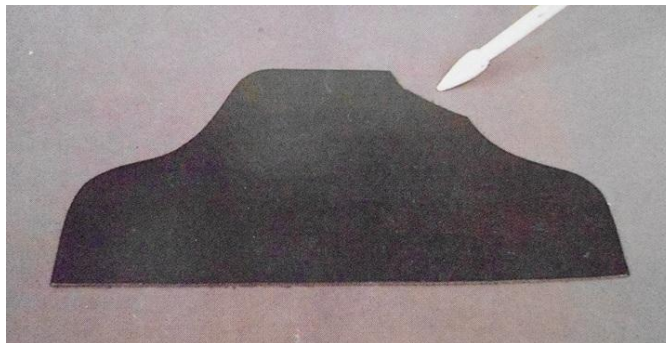
- The correct number of sections,
- The correct number of lefts & rights,
- Undercut or chipped sections & accuracy of prick marks,
- Correct direction & amount of stretch.

Steps:

- Check for quality on each piece.

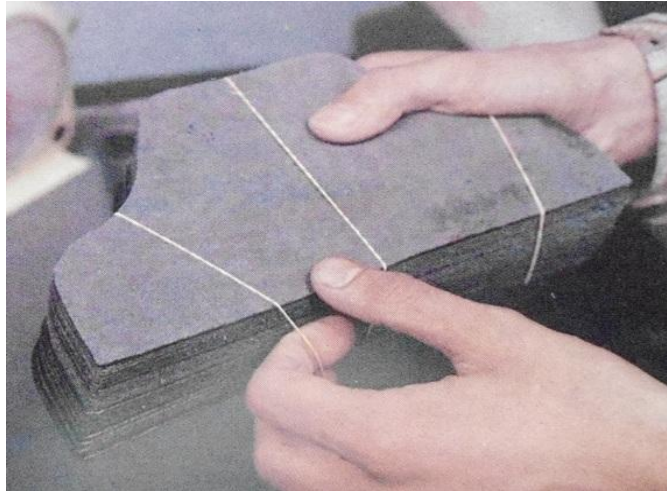


- All components should be cut to the exact shape of the pattern. There should not be any parts chopped off components.



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- Bundle the components nearly on top of each other; place an elastic band around them to hold them in position. Grain side in.



- After grain matching check the complete shoe, it must be numbered with the size and pair number.



- The clicker will continue cutting until he has cut required pair age. They would normally be bundled in 5 pair lots. Check them perfectly.

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- Bundle completed work. Place an elastic band at each end. The top piece should be turned over to protect the grain.



- Then ensure each completed 5 pairs are bundled securely together.



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SELF-CHECK 3.5-1

- Write the steps in checking finished products.

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ANSWER KEY 3.5-1

Steps:

- Check for quality on each piece.
- All components should be cut to the exact shape of the pattern. There should not be and parts chopped off components.
- Bundle the components nearly on top of each other; place an elastic band around them to hold them in position. Grain side in.
- After grain matching check the complete shoe, it must be numbered with the size and pair number.
- The clicker will continue cutting until he has cut required pair age. They would normally be bundled in 5 pair lots. Check them perfectly.
- Bundle completed work. Place an elastic band at each end. The top piece should be turned over to protect the grain.
- Then ensure each completed 5 pairs are bundled securely together.

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LEARNING OUTCOME 6 CLEAN WORK PLACE

CONTENTS:

1. Clean work place and machine as per work place standard.
2. Dispose waste according to company regulations.

ASSESSMENT CRITERIA:

1. Safe work practices observed and PPE worn as required for the work performed.
2. Work place and machine are cleaned as per work place standard.
3. Waste is disposed off according to company regulations.

CONDITIONS:

Trainees must be provided with the following:

- Personal Protective equipment
- Tools and materials

Learning Materials

- Books, manuals
- Modules/references

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LEARNING ACTIVITIES

LEARNING OUTCOME: Clean Work Place

LEARNING ACTIVITIES	RESOURCES/SPECIAL INSTRUCTIONS
Cleaning the work place	<ul style="list-style-type: none">▪ Read information sheet 3.6-1▪ The learner is encouraged to answer the self-check 3.6-1.▪ Refer your answer to the answer key.

INFORMATION SHEET 3.6-1

Clean Work Place

Learning Objectives:

After reading this INFORMATION SHEET, you will be able to clean workplace according to standard.

A clean and safe workplace

Poor housekeeping on the job site is a frequent cause of workplace accidents and worker injuries. These types of accidents can be easily be prevented by keeping the workplace clean. Good housekeeping makes jobs more efficient and safe. Housekeeping on the job means cleaning up scrap and debris, putting it in containers, and making sure the containers are emptied regularly. It also means proper storage of materials and equipment.

Good on-the-job housekeeping is one of the easiest ways to improve your safety and that of your co-workers. Poor workplace housekeeping creates accidents waiting to happen. We all know how fast rubbish accumulates on site scrap lumber, broken bricks, pieces of drywall, garbage from coffee breaks and lunches. Construction rubbish is often irregular in shape, hard to handle, and full of sharp objects. One of the biggest problems is packaging. Too often it gets removed from material and left where it falls. This creates tripping and slipping hazards. It also makes other hazards difficult to see. Even worse, it invites more mess. When the site is not cleaned up, no one cares about leaving garbage where it drops.

People often do not recognize housekeeping as a safety issue until after an accident has occurred. That is when bad housekeeping is revealed.

Day-to-day housekeeping and cleanliness should not be left for employees to do during the last few minutes of the work day. Housekeeping should be an ongoing effort.

Whether employees or employers fill out work orders, pick up after each task or clean the workplace themselves, each one plays a role in keeping the job site clean and safe.

Important guidelines to keep in mind on the site

- Many injuries that occur from poor housekeeping are caused by materials,
- Scrap, debris and trash left lying around the job site.
- Anything left lying around becomes a slipping or tripping hazard.
- Keep all of the materials stored on the job site in a neat and orderly way.
- Clean up scraps, debris, and trash as the work progresses.
- Focus on keeping walkways, ramps, ladder platforms, scaffolds and

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- Stairways free from materials, scrap and debris.
- If you are not using tools and equipment at the time, do not leave them lying around.
- Keep hoses, power cords and welding leads from lying across heavily travelled areas.
- Keep mud and other slick substances off walkways, ramps, ladders, platforms, scaffolds and stairways.
- Dispose of greasy, oily rags and other flammable materials in approved containers.
- Secure loose or light material stored on roofs and open floors to keep it from blowing away in the wind.
- Don't let material fall from any level of the project. Use an enclosed chute or lower the material in containers.
- Keep material at least 6 feet away from floor and roof openings, floor and roof edges, excavations, and trenches.
- Housekeeping is especially important when it comes to fire prevention.
- Flammable rubbish and debris should be immediately removed from the vicinity of welding, flame cutting, propane heating, or other ignition sources.
- Keep fire extinguisher stations clear and accessible.
- Good housekeeping is a good way to start improving health and safety on the job. Remember that a cleaner job site is always a much safer job site.

Elements of an effective housekeeping

Dust and Dirt Removal

In some jobs, enclosures and exhaust ventilation systems may fail to collect dust, dirt and chips adequately. Vacuum cleaners are suitable for removing light dust and dirt. Industrial models have special fittings for cleaning walls, ceilings, ledges, machinery, and other hard-to-reach places where dust and dirt may accumulate.

Special-purpose vacuums are useful for removing hazardous substances. For example, vacuum cleaners fitted with HEPA (high efficiency particulate air) filters may be used to capture fine particles of asbestos or fiberglass.

Dampening (wetting) floors or using sweeping compounds before sweeping reduces the amount of airborne dust. The dust and grime that collect in places like shelves, piping, conduits, light fixtures, reflectors, windows, cupboards and lockers may require manual cleaning.

Compressed air should not be used for removing dust, dirt or chips from equipment or work surfaces.

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Employee Facilities

Employee facilities need to be adequate, clean and well maintained. Lockers are necessary for storing employees' personal belongings. Washroom facilities require cleaning once or more each shift. They also need to have a good supply of soap, towels plus disinfectants, if needed.

If workers are using hazardous materials, employee facilities should provide special precautions such as showers, washing facilities and change rooms. Some facilities may require two locker rooms with showers between. Using such double locker rooms allows workers to shower off workplace contaminants and prevents them from contaminating their "street clothes" by keeping their work clothes separated from the clothing that they wear home.

Smoking, eating or drinking in the work area should be prohibited where toxic materials are handled. The eating area should be separate from the work area and should be cleaned properly each shift.

Surfaces

Floors

Poor floor conditions are a leading cause of accidents so cleaning up spilled oil and other liquids at once is important. Allowing chips, shavings and dust to accumulate can also cause accidents. Trapping chips, shavings and dust before they reach the floor or cleaning them up regularly can prevent their accumulation. Areas that cannot be cleaned continuously, such as entrance ways, should have anti-slip flooring. Keeping floors in good order also means replacing any worn, ripped, or damaged flooring that poses a tripping hazard.

Walls

Light-colored walls reflect light while dirty or dark-colored walls absorb light. Contrasting colors warn of physical hazards and mark obstructions such as pillars. Paint can highlight railings, guards and other safety equipment, but should never be used as a substitute for guarding. The program should outline the regulations and standards for colors.

Maintain Light Fixtures

Dirty light fixtures reduce essential light levels. Clean light fixtures can improve lighting efficiency significantly.

Aisles and Stairways

Aisles should be wide enough to accommodate people and vehicles comfortably and safely. Aisle space allows for the movement of people, products and materials.

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Warning signs and mirrors can improve sight-lines in blind corners. Arranging aisles properly encourages people to use them so that they do not take shortcuts through hazardous areas.

Keeping aisles and stairways clear is important. They should not be used for temporary "overflow" or "bottleneck" storage. Stairways and aisles also require adequate lighting.

Spill Control

The best way to control spills is to stop them before they happen. Regularly cleaning and maintaining machines and equipment is one way. Another is to use drip pans and guards where possible spills might occur. When spills do occur, it is important to clean them up immediately. Absorbent materials are useful for wiping up greasy, oily or other liquid spills. Used absorbents must be disposed of properly and safely.

Tools and Equipment

Tool housekeeping is very important, whether in the tool room, on the rack, in the yard, or on the bench. Tools require suitable fixtures with marked locations to provide orderly arrangement, both in the tool room and near the work bench. Returning them promptly after use reduces the chance of being misplaced or lost. Workers should regularly inspect, clean and repair all tools and take any damaged or worn tools out of service.

Maintenance

The maintenance of buildings and equipment may be the most important element of good housekeeping. Maintenance involves keeping buildings, equipment and machinery in safe, efficient working order and in good repair. This includes maintaining sanitary facilities and regularly painting and cleaning walls. Broken windows, damaged doors, defective plumbing and broken floor surfaces can make a workplace look neglected; these conditions can cause accidents and affect work practices. So it is important to replace or fix broken or damaged items as quickly as possible. A good maintenance program provides for the inspection, maintenance, upkeep and repair of tools, equipment, machines and processes.

Waste Disposal

The regular collection, grading and sorting of scrap contribute to good housekeeping practices. It also makes it possible to separate materials that can be recycled from those going to waste disposal facilities.

Allowing material to build up on the floor wastes time and energy since additional time is required for cleaning it up. Placing scrap containers near where the waste is produced encourages orderly waste disposal and makes collection easier. All waste receptacles should be clearly labeled (e.g., recyclable glass, plastic, scrap metal, etc.).

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SELF-CHECK SHEET 3.6-1

What is the importance of good housekeeping in the workplace?

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ANSWER KEY 3.6-1

What is the importance of good housekeeping in the workplace?

Poor housekeeping on the job site is a frequent cause of workplace accidents and worker injuries. These types of accidents can be easily be prevented by keeping the workplace clean. Good housekeeping makes jobs more efficient and safe. Housekeeping on the job means cleaning up scrap and debris, putting it in containers, and making sure the containers are emptied regularly. It also means proper storage of materials and equipment.

Good on-the-job housekeeping is one of the easiest ways to improve your safety and that of your co-workers. Poor workplace housekeeping creates accidents waiting to happen. We all know how fast rubbish accumulates on site scrap lumber, broken bricks, pieces of drywall, garbage from coffee breaks and lunches. Construction rubbish is often irregular in shape, hard to handle, and full of sharp objects. One of the biggest problems is packaging. Too often it gets removed from material and left where it falls. This creates tripping and slipping hazards. It also makes other hazards difficult to see. Even worse, it invites more mess. When the site is not cleaned up, no one cares about leaving garbage where it drops.

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REVIEW OF COMPETENCY

Below is your performance criteria checklist for the module Cutting Synthetic Materials by Machine

Performance Criteria	Yes	No
1. All safety requirements/regulations are adhered to before, during and after use.	<input type="checkbox"/>	<input type="checkbox"/>
2. Unsafe or faulty tools are identified and repaired according to designated procedures before, during and after use.	<input type="checkbox"/>	<input type="checkbox"/>
3. Personal protective clothing (PPE) worn.	<input type="checkbox"/>	<input type="checkbox"/>
4. Workstation is set up according to industry practices.	<input type="checkbox"/>	<input type="checkbox"/>
5. Leather is measured and marked in the spots where stitches are to be applied.	<input type="checkbox"/>	<input type="checkbox"/>
6. Materials are collected, sorted and laid out in preparation for sewing.	<input type="checkbox"/>	<input type="checkbox"/>
7. Records are maintained.	<input type="checkbox"/>	<input type="checkbox"/>
8. Leather needle is selected.	<input type="checkbox"/>	<input type="checkbox"/>
9. A thick leather thimble is used to sew leather by hand.	<input type="checkbox"/>	<input type="checkbox"/>
10. Pliers are used to grab the needle on the other side of the leather.	<input type="checkbox"/>	<input type="checkbox"/>
11. Specially made waxed threads are used to sew leather by hand.	<input type="checkbox"/>	<input type="checkbox"/>
12. Leather adhesive is applied according to job specification.	<input type="checkbox"/>	<input type="checkbox"/>
13. Leather is sewn by hand according to workplace standard.	<input type="checkbox"/>	<input type="checkbox"/>
14. Components are assessed carefully during hand sewing.	<input type="checkbox"/>	<input type="checkbox"/>
15. Sewn products are checked for compliance with job specification and quality standards set by the industry.	<input type="checkbox"/>	<input type="checkbox"/>

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16. Reject pieces are replaced and records maintained.	<input type="checkbox"/>	<input type="checkbox"/>
17. Work place is cleaned as per work place standard.	<input type="checkbox"/>	<input type="checkbox"/>
18. Waste is disposed of according to company regulations	<input type="checkbox"/>	<input type="checkbox"/>

I now feel ready to undertake my formal competency assessment.

Signed:

Date:

REFERENCES

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