

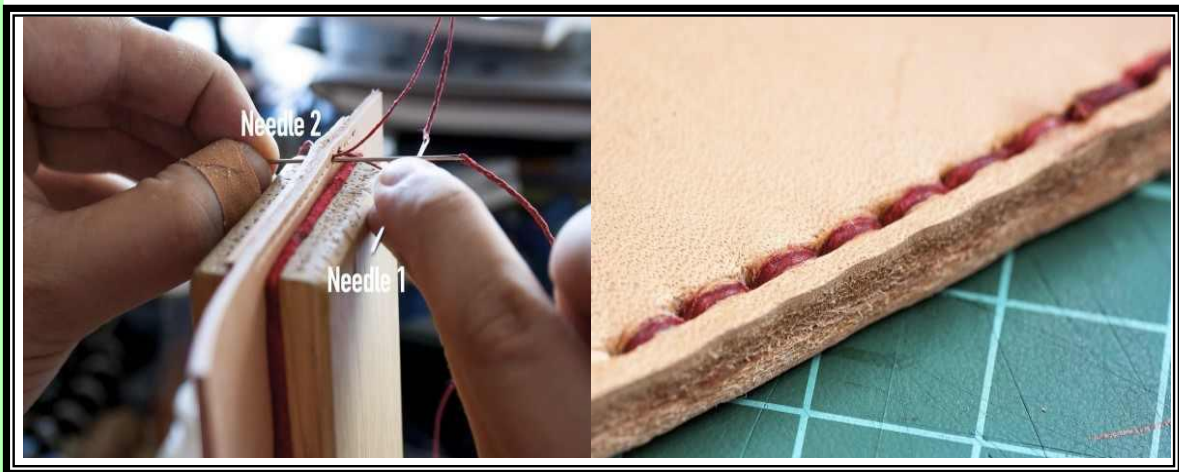
**National Technical and Vocational Qualification Framework**

**NTVQF**

## **Competency-Based Learning Material**

Machine Operations(Leather Goods, Footwear or Tannery)  
NTVQ Level 1

### **Sewing Leather By Hand**



**Bangladesh Technical Education Board**

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## **HOW TO USE THIS COMPETENCY-BASED LEARNING MATERIAL**

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Welcome to the module **Sewing Leather by Hand**. This module contains training materials and activities for you to complete.

This unit of competency, “**Sew leather by hand**”, is one of the competencies of National Certificate in Machine Operations NTVQ Level 1 Occupation, a course which comprises the knowledge, skills and attitudes required to become a Basic 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:** Sewing Leather by Hand

**MODULE DESCRIPTOR:**

This module covers the knowledge, skills and attitude required to sew leather by hand.

**Nominal Duration: 30 hours**

**LEARNING OUTCOMES:**

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

1. OSH practices are followed.
2. Prepare and set up workstations.
3. Prepare to sew leather.
4. Sew leather by hand.
5. Check sewn pieces.
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 according to industry practices.
5. Leather is measured and marked in the spots where stitches are to be applied.
6. Materials are collected, sorted and laid out in preparation for sewing.
7. Records are maintained.
8. Leather needle is selected.
9. A thick leather thimble is used to sew leather by hand.
10. Pliers are used to grab the needle on the other side of the leather.
11. Specially made waxed threads are used to sew leather by hand.
12. Leather adhesive is applied according to job specification.
13. Leather is sewn by hand according to workplace standard.
14. Components are assessed carefully during hand sewing.
15. Sewn products are checked for compliance with job specification and quality standards set by the industry.
16. Reject pieces are replaced and records maintained.
17. Work place is cleaned as per work place standard.
18. Waste is disposed of according to company regulations.

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## LEARNING OUTCOME 1 FOLLOW OSH PRACTICES

### CONTENTS:

1. Identify PPE and its functions.
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

<b>LEARNING ACTIVITIES</b>	<b>RESOURCES/SPECIAL INSTRUCTIONS</b>
Familiarizing the PPE Observing safe work practices	<ul style="list-style-type: none"><li>• Read information sheet 2.1-1.</li><li>• Answer the self-check 2.1-1.</li><li>• Refer your answer to the answer key 2.1-1.</li></ul>

## INFORMATION SHEET 2.1-1

### 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:**

- Do not try to make your own electrical repairs.
- Don't wear loose dresses/clothes.
- Keep your personal safety
- Provide enough space for comfortable movements in working place.
- Use a hair band if hair is longer than shoulder length, or tie your hair back
- Avoid being careless when working in leather sewing.

#### **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

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

After the earthquake, if the building is damaged

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

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## 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.

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.
- A. Evacuate the workplace following the established workplace evacuation procedures
- o Workplace evacuations will occur when an alarm sounds continuously and/or upon notification by emergency personnel.
  - o If necessary or if directed to do so by a designated emergency official, activate the workplace alarm as you exit the Industry.
  - o Be aware of people with disabilities in your area who might require assistance in an emergency evacuation. Be prepared to render assistance if necessary.
- B. 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.

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.

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### **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.

### **Rules and Regulations:**

- Use ID Card.
- Use Apron.
- Maintain duty time.
- Attendance
- Awareness of working place
- No necessary movement in working place.
- No unnecessary talking in working place.
- No disturb other person
- Use medical card when go to medical centre.
- Use toilet card when go to toilet

### **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

Consult with workers when selecting PPE and consider a person's individual characteristic and style preference.

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## 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
- 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 2.1-1

1. What are the safety requirements in working in a leather sewing industry?
2. What are the guidelines for fire safety precaution in the workplace?
3. What are the characteristics of PPE that should be provided in the workplace to ensure maximum protection to the workers?

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## ANSWER KEY 2.1-1

1. The safety requirements in a leather sewing industry are:
  - Do not try to make your own electrical repairs.
  - Don't wear loose dresses/clothes.
  - Keep your personal safety
  - Provide enough space for comfortable movements in working place.
  - Use a hair band if hair is longer than shoulder length, or tie your hair back
  - Avoid being careless when working in leather sewing.
2. The guidelines for fire safety precaution in the workplace are as follows:
  - 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.
3. 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

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## **LEARNING OUTCOME 2    SET UP WORKSTATION AND PREPARE TO SEW LEATHER**

### **CONTENTS:**

1. Set up workstation up according to industry practices.
2. Measure and mark leather in the spots where stitches are to be applied.
3. Collect, sort and lay out materials in preparation for sewing.
4. Maintain records.
5. Select leather needed.
6. Use thick leather thimble to sew leather by hand.
7. Use pliers to grab the needle.
8. Use specially made waxed threads.
9. Apply leather adhesive

### **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 according to industry practices.
4. Leather is measured and marked in the spots where stitches are to be applied.
5. Materials are collected, sorted and laid out in preparation for sewing.
6. Records are maintained.
7. Leather needle is selected.
8. A thick leather thimble is used to sew leather by hand.
9. Pliers are used to grab the needle on the other side of the leather.
10. Specially made waxed threads are used to sew leather by hand.
11. Leather adhesive is applied according to job specification

### **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:** Prepare and Set Up Workstation

<b>LEARNING ACTIVITIES</b>	<b>RESOURCES/SPECIAL INSTRUCTIONS</b>
Set up workstation and prepare to sew leather	<ul style="list-style-type: none"><li>▪ Read information sheet 2.2-1.</li><li>▪ Answer self-check 2.2-1</li><li>▪ Refer your answer to the answer key 2.2-1.</li></ul>

## **INFORMATION SHEET 2.2-1**

### **Set Up Workstation and Prepare To Sew Leather**

#### **Learning Objectives:**

After reading this INFORMATION SHEET, you will be able to set up workstation and prepare to sew leather.

#### **PREPARATION:**

- Prepare the workstation in accordance to safety and health requirements of the leather industry.
- Clean the workstation.
- Obtain needed materials and tools to sew leather by hand.
- Measure and mark the leather in the spots where the stitches should go. If you are making leather cowhide wallet using sinew, your stitches can be further apart than if you are making suede gloves.
- Create guide holes for the thread with an awl or leather punch; or, if working with soft leather such as suede or buckskin, you can simply mark holes with a pen and sew through the leather directly. Creating guide holes in the leather or marking the spots for the thread help keep the stitching even.
- Glue the two pieces of leather together as they are to be sewn. Use glue sparingly and let it dry before handling the leather. Also, don't place too much glue near the areas to be sewn--if glue seeps to the guide holes, sewing through it will be a chore.
- Some leather patterns will not need to be glued before being sewn. Pieces that require precise measurements (gloves, for instance) will.
- Thread your needle with artificial sinew or waxed thread. Unlike with sewing cloth, you will often use only a single strand for sewing leather; the waxed thread or sinew can be tied directly to the needle eye.
- Guide the needle through one corner of the leather piece and make a small knot in the end of the thread/sinew. This knot will keep the thread from slipping from the leather as you sew. Now you can hand sew the leather using a running stitch, whipstitch or whichever stitch you've chosen. Sometimes running stitches are used first, and then whipstitches are used around the edges for extra hold. Either stitch can be used alone, however.

#### **Types of hand sewing needles**

Hand sewing needles come in a variety of types/ classes designed according to their intended use and in a variety of sizes within each type.



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- **Sharp Needles:** used for general hand sewing; built with a sharp point, a round eye, and are of medium length. Those with double-eyes are able to carry two strands of thread while minimizing fabric friction.
- **Appliqué:** These are considered another all-purpose needle for sewing, appliqué, and patch work.
- **Embroidery:** Also known as **crewel** needles; identical to sharps but have a longer eye to enable easier threading of multiple embroidery threads and thicker yarns.
- **Betweens** or **Quilting:** These needles are shorter than sharps, with a small rounded eye and are used for making fine stitches on heavy fabrics such as in tailoring, quilt making and other detailed handwork; note that some manufacturers also distinguish between quilting needles and quilting *between* needles, the latter being slightly shorter and narrower than the former.
- **Milliners:** A class of needles generally longer than sharps, useful for basting and pleating, normally used in millinery work.
- **Easy- or Self-threading:** Also called **calyx-eyed sharps**, **side threading**, and **spiral eye needles**, these needles have an open slot into which a thread may easily be guided rather than the usual closed eye design.
- **Beading:** These needles are very fine, with a narrow eye to enable them to fit through the centre of beads and sequins along with a long shaft to thread and hold a number of beads at a time.
- **Bodkin:** Also called **ballpoints**, this is a long, thick needle with a ballpoint end and a large, elongated eye. They can be flat or round and are generally used for threading elastic, ribbon or tape through casings and lace openings.
- **Chenille:** These are similar to tapestry needles but with large, long eyes and a very sharp point to penetrate closely woven fabrics. Useful for ribbon embroidery.
- **Darning:** Sometimes called **finishing** needles, these are designed with a blunt tip and large eye making them similar to tapestry needles but longer; **yarn darners** are the heaviest sub-variety.
- **Doll:** Not designed for hand sewing at all, these needles are made long and thin and are used for soft sculpturing on dolls, particularly facial details.
- **Leather:** Also known as **glovers** and as **wedge** needles, these have a triangular point designed to pierce leather without tearing it; often used on leather-like materials such as vinyl and plastic.
- **Sailmaker:** Similar to leather needles, but the triangular point extends further up the shaft; designed for sewing thick canvas or heavy leather.
- **Tapestry:** The large eye on these needles lets them to carry a heavier weight yarn than other needles, and their blunt tip-- usually bent at a slight angle from the rest of the needle-- allows them to pass through loosely woven fabric such as embroidery canvas or even-weave material without catching or tearing it; comes

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in a double-eyed version for use on a mounted frame and with two colors of thread.

- **Tatting:** These are built along with an even thickness for their entire length, including at the eye, to enable thread to be pulled through the double stitches used in tatting.
- **Upholstery:** These needles are heavy, long needles that may be straight or curved and are used for sewing heavy fabrics, upholstery work, tufting and for tying quilts; the curved variety is practical for difficult situations on furniture where a straight needle will not work Heavy duty 12" needles are used for repairing mattresses. Straight sizes: 3"-12" long, curved: 1.5"-6" long.

A **thimble** is a small hard pitted cup worn for protection on the finger that pushes the needle in sewing. Usually, thimbles with a closed top are used by dressmakers but special thimbles with an opening at the end are used by tailors as this allows them to manipulate the cloth more easily. Finger guards differ from tailors' thimbles in that they often have a top but are open on one side. Some finger guards are little more than a finger shield attached to a ring to maintain the guard in place.



### **WAX THREAD**

Linen thread predates both nylon and polyester thread. It was used to sew parachutes, awnings, sails, shoes, saddles, holsters, golf bags, briefcases, rifle cases, luggage, etc. The most famous brand of linen thread is Barbour's Irish Linen Thread. Formerly made in Ireland, the company was dismembered and its assets sold to Coats and Clark. Barbour's linen thread is glazed with a light weight coating that holds the twisted strands together. It is produced in standard left and custom right twist and is sold in one pound spools.

While it is possible to use linen thread on a modern sewing machine, it is not really that strong unless you run it through a wax pot on the way to the needle. The wax solidifies inside the leather after a while. This permanently locks each stitch in place. Waxed linen thread is rot resistant and is able to remain functional even if one or more bottom stitches are worn down, as in the soles of shoes. Almost every hand sewn leather project is done using waxed linen thread. 6 cord waxed linen thread is incredibly strong and long lasting.

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It is difficult to sew waxed linen with a regular industrial sewing machine. Not impossible, just difficult. The wax clogs the guides and tensioners and the eye of the needle. It must be sewn at very slow speeds, with a larger needle than otherwise would be used. Six cord waxed linen thread would probably need a #28 or #30 needle to feed it and form a loop. Needles that are big are not available for normal industrial machines. Only the biggest harness or shoe stitchers have needles that big.

## LEATHER ADHESIVES



Glue is an adhesive that binds substances together, and some varieties work better on specific materials like leather. Certain types of glue are renowned for their adhesive and wear-resistant capabilities, such as polyurethane glues, cements, and cyanocrylate-based glues. These glues are thus particularly strong when used as a leather glue, as are glues that are water-resistant and flexible. Further, leather glues should have durable lid sealants and lid applicators that best match the glue's use.

Of course, the most effective leather glue will possess durable adhesive abilities. Polyurethane glue may be useful for leather, as it creates foam that seeps into small fabric gaps and forges a stronger bond when exposed to moisture. Rubber cement also works well as leather glue due to its fast evaporation and the rubber seal that is left behind when it evaporates.

## Seven Essential Leatherworking Tools



Leather is a premium choice of material for making bags, shoes, apparel, and more. Since leather is a durable, unique medium to shape, leatherworking requires a set

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of highly specialized tools made for cutting, piercing, stitching, forming, and decorating. A leather punch is needed to make clean holes like those found in leather belts, and awls can be used to pierce leather with other types of holes. Leatherworkers also need an assortment of knives for cutting and decorating. Due to the sheer strength of leather, ordinary needles are not strong enough to manipulate this material. Leather requires thicker, longer needles for stitching. Different types of hammers are required to form leather or flatten stitching. Other handy leatherworking tools include a cork board, strap cutter, and stitching clamps.

## 1. Punch



A leather punch is designed to make a clean hole through a piece of leather. This tool is needed when making belts, or when attaching other items to the leather. Leather punches come in single and multi-punch options. Round punches are the most common models and they are available in various sizes. A chisel punch is either an oval or pointed punch used primarily for giving strap ends a rounded shape. Some

chisel punches have multiple points, and most require two other pieces of equipment to make the hole: a mallet and cork board. Crew punches, also referred to as oval punches, create elongated holes, particularly those needed for buckles. A revolving punch, known also as a rotary punch, has up to six different heads from which to choose. Punches are often the most used tool when working with leather. Therefore, when purchasing punches, leatherworkers should opt for high quality tools rather than buy cheaper models that will require replacement after some use.

## 2. Awl



Depending on the item being made, not all holes punched in leather will need to be seen. Instead, some holes are intended to be very small, for stitches for example. In that case an awl is an essential tool to have on hand. An awl is a thin shaft with a pointed spike at the end, and it is designed to poke holes or enlarge pre-existing holes in leather. A wide range of sizes and shapes of awls are available, and all leather workers must have an assortment of awls in their collections. Awls can come with a straight tip or with hooked tips, sometimes called bent tips. A clicker's awl is a general, multipurpose awl, and a "must have" for all leatherworkers. A harness awl, also called a bridle awl, has a diamond shaped point

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and is most commonly used to put holes in leather prior to stitching. Harness awls are available in sizes ranging from 32 mm to 90 mm. A stabbing awl is useful for those stitching thinner, softer leathers like sheepskin or deerskin.

### 3. Knives



Leatherworkers, no matter the skill level, need an assortment of knives to perform basic tasks. Some leather knives are used for cuts and others are for adding accents to the leather. Round knives have been an essential piece of equipment for leatherworkers dating back thousands of years. Round knives have a handle with a half-circle shaped blade at the end. They are used to make long cuts, and can also be used for paring and skiving. Blades for round knives are found in 100

mm, 125 mm, and 150 mm diameters.

A single head knife is similar to the round knife, but has a quarter circle blade instead of a half circle. Some single head knives have a hook on the other side of the blade. They are useful for cutting old stitching in folded leather. Knives are also available in double-head models, but these are similar to a round knife. A paring knife, on the other hand, should be specifically designed for leatherworkers and will have a wide, chisel-like blade. The blade is typically angled making it ideal for shaving down leather before gluing and stitching. A paring knife should be used with a marble or litho block to protect the blade.

### 4. Needle

Leatherworkers planning to stitch pieces of leather together, or sew on accents, will need a needle stronger than the typical embroidery needle. There are two types of needles meant for leatherworking. Harness needles, also called blunt tipped needles, are ideal for leatherworkers who use an awl or punch to make holes prior to stitching. See the chart below to understand the different sizes of harness needles available.

Needle Size	Length (mm)	Gauge
Small	47	Fine
Medium	55	Medium

Needle Size	Length (mm)	Gauge
Large	57	Fine
XLarge	60	Medium
XXLarge	62	Heavy

A medium or large sized Harness needle can get nearly any job done. If working with a fresh piece of leather with no pre-punched holes, opt for a needle with a sharp, chiseled tip. In contrast, Glover’s needles can puncture and sew softer leather such as sheepskin.

### 5. Edge Bevellers



Edge bevellers are used for cleaning up the edges of leather. These tools give the item an even, finished appearance. Edgers come in a variety of shapes and sizes. Leatherworkers should have an assortment of Bisonette, V-shaped, French, and English bevelers for different effects when styling their leather creations.

### 6. Stamps

Leather stamps are a fun way to add color, shape, and patterned accents to leather goods. Stamps are hammered into the leather until the design is imprinted on the leather’s surface. Leather stamps come in a wide range of options. There are numerical and alphabetical stamps for personalizing leather gear. Simple shapes such as circles, diamonds, and squares are sometimes used to create more intricate patterns. Look for leather stamps in different shapes such as paw prints, leaves, flowers, and border patterns. Leather stamps also come in medium and large sizes, and often have more intricate designs. Look for leather stamp sets to get a variety of stamps at a good deal.

### 7. Hammers

With leather being one difficult material to pierce, many holes cannot be made without the help of a hammer. Hammers are used to form and shape leather. They are also used to strike other tools such as awls and stamps. Never use a steel hammer to strike any

other leatherworking tool; instead make sure the hammer's head has a plastic or rubber coating. A mallet is ideal, but other options are available. A broad-headed cobbler's hammer is used to make folds in leather. Harness hammers have a mushroom-shaped head and are used for shaping and molding wet leather and flattening stitches.

## **Additional Leatherworking Tools**

There are seven essential tools needed for leatherworking, but many advanced and professional leatherworkers will attest there are other tools that are beneficial to have in one's collection as well. Cork board, for example, allows leatherworkers to take the utmost care of their tools and keep them in proper working order. Strap cutters make cutting straight, even-width strips of leather a breeze. Plus, leatherworkers who take pride in their hand stitching need stitching clamps to simplify the process.

### **Cork Board**

A cork board is also called a leather cutting board. This is an essential item for keeping the other tools in proper order and it will also help increase the lifespan of the tools. Placing a cork board underneath the leather will keep tools sharp and protected from damage.

### **Strap Cutter**

A strap cutter is a wooden tool that helps cut even, parallel strips of leather. It is an imperative tool for people making belts. Strap cutters can be adjusted to accommodate the thickness of the leather and the width of the desired strap.

### **Stitching Clamps**

Leatherworkers with a passion for hand stitching will eventually need to invest in stitching clamps. They act like another set of hands and hold the leather steady while the worker can focus on the stitching.

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## SELF-CHECK 2.2-1

1. What are the steps in preparation before sewing leather?
2. What is the difference between sharp needles and embroidery needles?
3. What is the purpose of using a thimble?
4. Why is a corkboard considered to be an important tool in sewing leather?

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## ANSWER KEY 2.2-1

1. The steps in preparation before sewing leather are as follows:
  - a. Measure and mark the leather in the spots where the stitches should go.
  - b. Create guide holes in the leather or marking the spots for the thread help keep the stitching even.
  - c. Glue the two pieces of leather together as they are to be sewn.
  - d. Thread your needle with artificial sinew or waxed thread.
  - e. Guide the needle through one corner of the leather piece and make a small knot in the end of the thread/sinew. This knot will keep the thread from slipping from the leather as you sew.
  
2. Sharp Needles are used for general hand sewing; built with a sharp point, a round eye, and are of medium length. Those with double-eyes are able to carry two strands of thread while minimizing fabric friction. On the other hand, embroidery needles is identical to sharps but have a longer eye to enable easier threading of multiple embroidery threads and thicker yarns.
  
3. A thimble is a small hard pitted cup worn for protection on the finger that pushes the needle in sewing. Finger guards differ from tailors' thimbles in that they often have a top but are open on one side. Some finger guards are little more than a finger shield attached to a ring to maintain the guard in place.
  
4. A cork board is also called a leather cutting board. This is an essential item for keeping the other tools in proper order and it will also help increase the lifespan of the tools. Placing a cork board underneath the leather will keep tools sharp and protected from damage.

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## **LEARNING OUTCOME 3    SEW LEATHER BY HAND**

### **CONTENTS:**

1. Sew leather by hand according to workplace standard.
2. Assess components carefully during hand sewing.

### **ASSESSMENT CRITERIA:**

1. Safe work practices observed and PPE worn as required for the work performed.
2. Leather is sewn by hand according to workplace standard.
3. Components are assessed carefully during hand sewing.

### **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:** Sew Leather By Hand

<b>LEARNING ACTIVITIES</b>	<b>RESOURCES/SPECIAL INSTRUCTIONS</b>
Sew leather by hand	<ul style="list-style-type: none"><li>▪ Read information sheet 2.3-1</li><li>▪ Answer the self-check 2.3-1.</li><li>▪ Refer your answer to the answer key 2.3-1.</li></ul>

## INFORMATION SHEET 2.3-1 Sew Leather By Hand

### Hand Sewing Leather: How to thread your needles

Hand sewing leather is usually done using **one thread** with **two needles**. Here use waxed thread or sometimes add bees-wax to un-waxed thread. Waxing the thread prevents it from unraveling while sewing.

Sewing Needle:

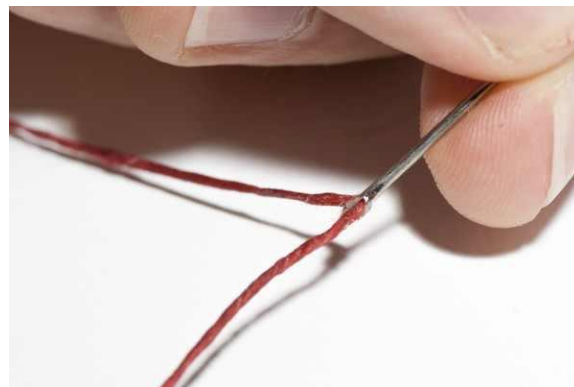


#### Step 1:



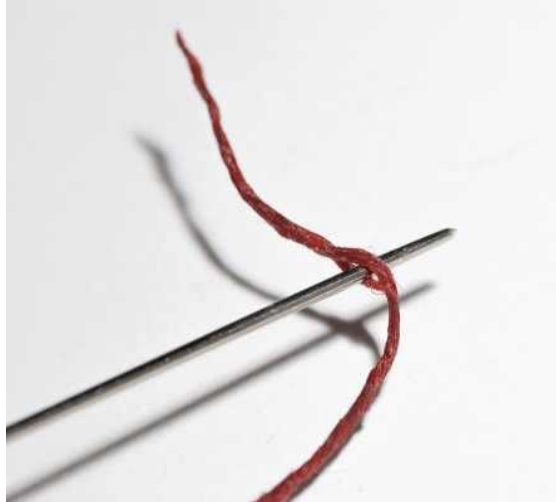
To help push the thread through the needle, cut it on an angle. The wax keeps the thread together and it makes threading the needle easier.

#### Step 2:

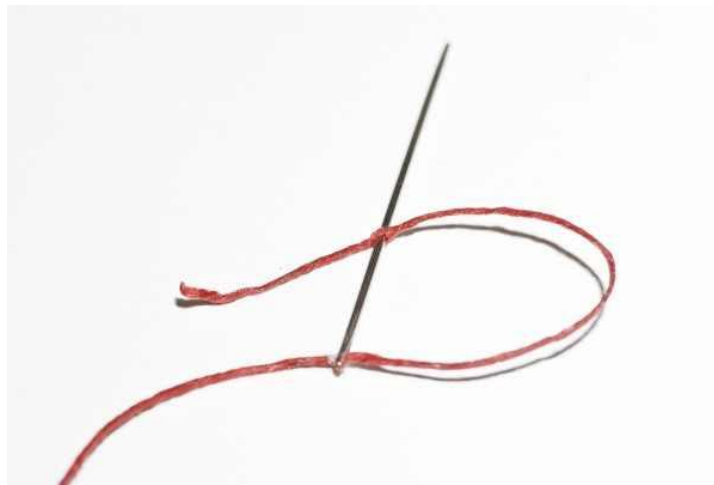


Pull the thread through and pierce it:

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**Step 3:**



Pull the thread back through:



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**Step 4:**



If you pulled it through all the way, you'll see that it formed a knot at the end of the thread (see above) and twist it to lock it in place.



**Done**

You can use some extra bees-wax to join the thread together if it doesn't have enough on it already. Repeat the same steps for the other end of the thread so you have 2 needles on one thread and then you're ready for sewing!



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**After choosing the leather you'd like to work with, here are 10 tips to sew leather by hand:**

**1. Pins.** Never use pins on leather. When you remove a pin, the hole will still be there. So unless you want a hole as a part of a pattern, never use pins in leather. To hold two pieces together to sew leather by hand, use clips. You can use any style of clip that can be found with school/office supplies at any stores. Binder clips are a good choice.

**2. Use a Leather Needle.** A leather needle is a special tipped needle that has three sharp edges to make it easier to sew leather. Some people prefer regular fabric needles. You can practice on scraps of leather to see which type you prefer.

**3. Choosing the Needle Shape.** A curved needle is harder to snap than a straight needle, but may be harder to use. You can practice with both to see which shape you prefer.

**4. Thimble.** A thick leather thimble is useful to sew leather by hand. It will help keep the needle from going through your finger.

**5. Pliers.** Pliers are used to grab the needle on the other side of the leather after using the thimble to push it through one side. Then you use the pliers to gently pull the needle the rest of the way through the hole. This helps to reduce wiggling which will enlarge the hole.

**6. Ruler and Marker.** Unlike fabric, when you sew leather by hand you cannot remove a stitch and start over without leaving a hole. Use a ruler and a marker to dot where you want the needle holes to be. This also gives you a mark to keep your stitches even and straight for a nicer look.

**7. Leather Chisel or Punch.** You can use a chisel or punch to make the holes prior to inserting the needle to make the needle go through the leather much easier. If you are sewing two pieces of leather together, make sure the holes are going to line up.

**8. Choosing the Thread.** There are specially made waxed threads you can buy to sew leather by hand. But you can use regular thread as well. Polyester thread is stronger than cotton thread.

**9. Beeswax.** Especially if you are using regular thread, you will need beeswax to make your thread smoother. Slide your thread over the beeswax to thinly coat. This will help the needle slide better through the leather with less of a chance of getting stuck.

**10. Leather Adhesive.** When you are done sewing two pieces of leather, you may want the seam to lie flat. This is best achieved by using a leather adhesive. Instructions are given with the adhesive.

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## Why is Hand Sewn Better?

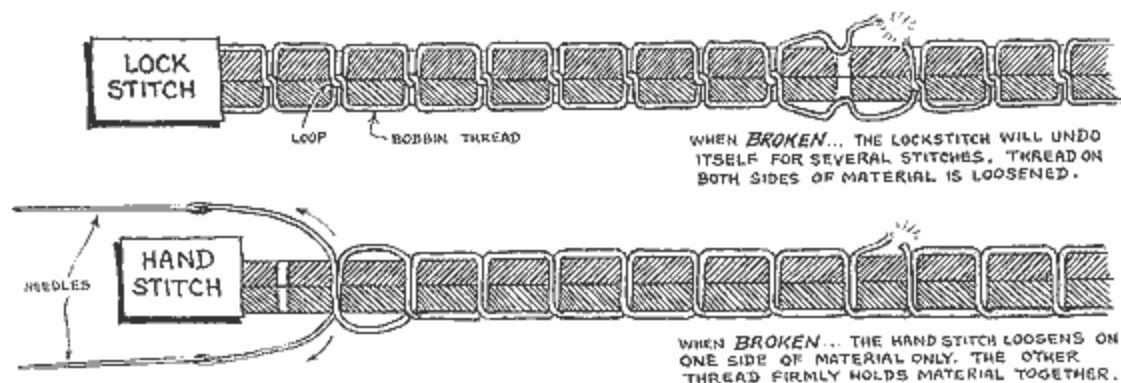
Leather products that are sewn by machine are a dime a dozen. While most of the business world seeks to produce things faster, I seek to produce things better. Hand sewing is superior to machine sewing.

Leather sewing machines commonly use the "lock stitch" (also called bobbin stitch). If just one loop of a lock stitch is broken, the other side will automatically be loosened, often this process of unraveling will continue until the entire product is ruined.

Hand sewing in the time honored manner will not unravel if one loop is broken. In his book "The Art of Hand Sewing Leather" Al Stallman said:

"Though slower, hand sewing is superior to machine sewing. It is the best method of stitching two or more pieces of leather together for lasting years of wear and service."

There are thousands of different sewing machines, designed for multiple or specific uses. The most common of the machine stitches is called the "lock" stitch. This is made with a top thread and a bottom thread ... which is in a small spool called the "bobbin". The lock stitch is formed by the top thread going around the bobbin spool, picking up the bottom thread, to form a loop. When properly adjusted, the loop is pulled between the two thicknesses of materials being sewn. The cut-a-way illustrations below show the differences in the LOCK STITCH ... and the HAND STITCH.



With hand sewn leather you get a one-of-a-kind, quality product that will stand the test of time. Time honored methods produce time honored products, experience the difference!

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## Basic Sewing by Hand:

To start out, you'll need your leather pieces (whatever project you're working on or maybe just some scrap to practice on), a Stitching Wheel, Stitching Groover, Sewing Awl, 2 Needles, Waxed Thread and any kind of scissors.



### ***Even more basic:***

If you're only sewing one project and you don't want to buy too many tools, you could start out with only a Sewing Awl, 2 Needles, Waxed Thread and scissors. To get even stitches, you would have to make sure that you mark each stitch by hand (using a ruler or something similar). It's very important to have even stitching with a constant distance to the edge as well as constant stitch length.

### ***Step 1: Gluing leather pieces***

Gluing the pieces in place helps with your sewing because you won't have to worry about the leather not lining up. Use any leather glue you can find.



### ***Step 2: Stitching Groove (optional)***

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If you have a stitching groove, use it to create the groove along which you'll sew. If you don't have one, you could mark a line with a ruler and any tool you can find that can leave a slight mark on the leather. **You will need a guide to sew along if you want it to look even!**



### ***Step 3: Mark Stitch Spacing (optional)***

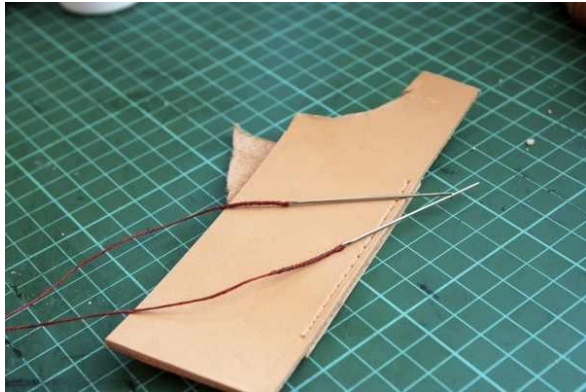
If you have a stitching wheel, mark the spacing like you can see it in the photo. Without one, you could use the awl to lightly mark the leather at even distances. Again, this is important preparation to get an even and professional look.



### ***Step 4: Prepare Thread & Needles***

Prepare your 1 thread with 2 needles (one on each end).

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**Step 5: Pierce the leather with the awl**



Note: I'm using a stitching pony in the photos. You won't need one to start with or if you only do a few projects but it helps to hold your leather in place while sewing.

The leather is very thick and you'll have to pierce the holes using an awl. When doing so, make sure you always hold it straight and don't pierce the leather at an angle. You can use your left hand to support the leather on the other side if it moves too much.

**Step 6: Pull first needle through**

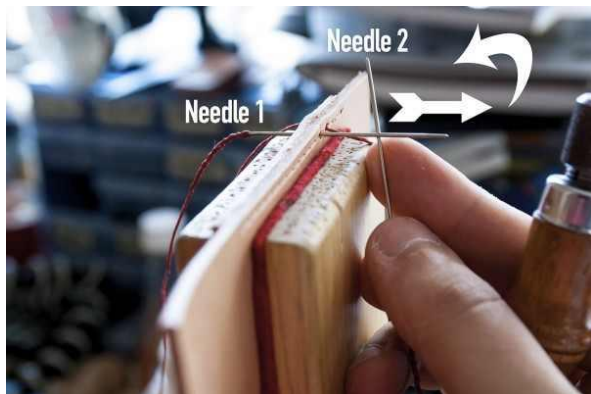
Pull the needle through the hole until you are at the center of the thread (each side should have the same amount of thread).



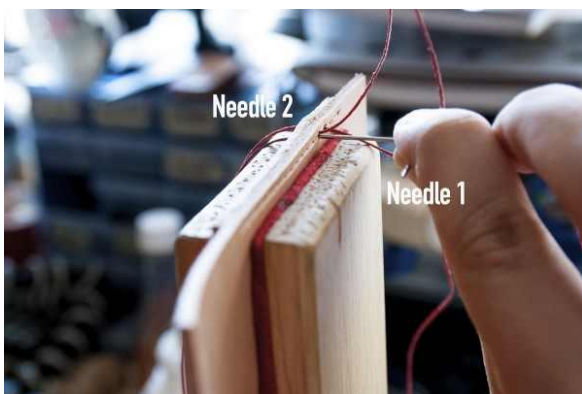
**Step 7: At the second hole**

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Pierce another hole next to the previous one with your awl and push the left needle (needle 1) through while holding the needle 2 behind it.

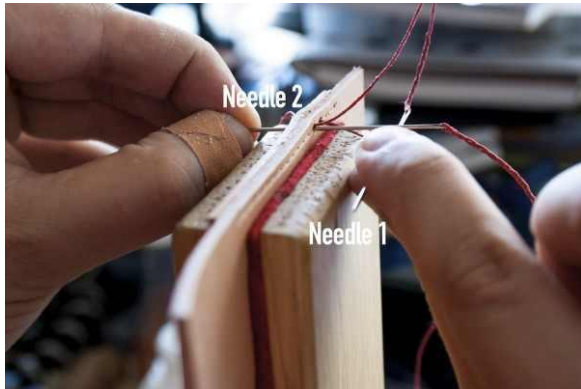


Once you pulled needle 1 through the hole, twist your right hand (holding both needles) towards you and push needle 2 through the same hole as the thread. **Be careful not to pierce the thread!**



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Here's another view:



Make sure to always pierce the needle next to the thread (closer towards you) to make the stitches more even. The rotation creates a knot that can now be pulled through the leather:



**Step 8: pull the thread tight & repeat previous step (Step 7) for each stitch**



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### ***Step 9: At the end of the stitch***

When you're finished, make sure to **backstitch 2 holes into the direction where you started** to secure the thread. You can use your awl to enlarge the existing holes.



### ***Step 10: Finishing***

Cut the threads close to the leather.



If you're using polyester thread or unwaxed thread that might start fraying, you can burn the ends of the thread to melt them. That will keep them from fraying. **Be careful not to mark or burn the leather!**



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***Finished!***

If you have a stitching wheel, you can run over the stitch again to even them out even more. It helps to give your project a better look and feel! Here's a closeup of a piece of hand sewn leather scrap:



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## SELF-CHECK 2.3-1

1. Why is the use of pin not recommended when holding two pieces of leather together when you sew them?
2. What is a leather needle?
3. Why is hand sewing superior to machine sewing when it comes to sewing leather?

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## ANSWER KEY 2.3-1

1. The use of pins to hold two pieces of leather together is not recommended because when you remove the pin, the hole will still be there. To hold two pieces together to sew leather by hand, use clips instead.
2. A leather needle is a special tipped needle that has three sharp edges to make it easier to sew leather. Some people prefer regular fabric needles.
3. Hand sewing is superior to machine sewing when it comes to sewing leather because leather sewing machines commonly use the "lock stitch". If just one loop of a lock stitch is broken, the other side will automatically be loosened, often this process of unraveling will continue until the entire product is ruined, while hand sewing in the time honored manner will not unravel if one loop is broken.

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## ACTIVITY SHEET 2.3-1

**Activity Title:** Sew Leather by Hand

**Performance Objective:** After completing this job, you should be able to sew leather by hand.

**Equipment/Materials:** As listed on the Specification Sheets

**Process/Procedure:**

1. Based on the instruction given, prepare all materials, tools and equipment before performing this job.
2. Perform the job following the OSH practice.
3. Perform sew leather by hand.
4. Present your work to your trainer.

**Assessment Method:**

Demonstration using Performance Criteria Checklist

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## **SPECIFICATION SHEET 2.3-1: Sew Leather by Hand**

To complete the above job you will need to following equipment and ingredients.

### **PPE (Personal Protective Clothing):**

- Safety goggles
- Apron
- Hand gloves
- Masks
- Finger guard
- Closed in shoes with rubber sole

### **Tools / equipment:**

- Hand sewing needles
- Thimble
- Wax thread
- Leather adhesive
- Punch
- Awl
- Knives
- Edge bevellers
- Stamps
- Hammers
- Cork board
- Strap cutter
- Stitching clamps

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**PERFORMANCE CRITERIA CHECKLIST 2.3-1**  
**ACTIVITY SHEET 2.3-1**  
**SEW LEATHER BY HAND**

Trainee's Name \_\_\_\_\_ Date \_\_\_\_\_

Performance Criteria Did I...	YES	NO
1. Maintain housekeeping standards in the workplace following OSH requirements?		
2. Perform the job following OSH requirements?		
3. Check equipment to confirm readiness for use?		
4. Carry out pre-start checks as required by workplace requirements?		
5. Sew leather by hand according to proper procedure?		

## LEARNING OUTCOME 4 CHECK SEWN PIECES

### CONTENTS:

1. Check sewn products for compliance with job specification and quality standards set by the industry.
2. Replace rejected pieces and maintain records.

### ASSESSMENT CRITERIA:

1. Safe work practices observed and PPE worn as required for the work performed.
2. Sewn products are checked for compliance with job specification and quality standards set by the industry.
3. Reject pieces are replaced and records maintained.

### 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 Sewn Pieces

<b>LEARNING ACTIVITIES</b>	<b>RESOURCES/SPECIAL INSTRUCTIONS</b>
Check sewn pieces	<ul style="list-style-type: none"><li>▪ Read information sheet 2.4-1</li><li>▪ Answer the self-check 2.4-1.</li><li>▪ Refer your answer to the answer key.</li></ul>

## INFORMATION SHEET 2.4-1

### Check Sewn Pieces

#### **Ensuring Quality of leather & leather products:**

Footwear need to be strong enough to support entire body weight and yet capable to providing feet with protection from hard and rough surface, as well as climatic and environmental exposure.

In industry, we have seen the following defects in footwear manufacturing. These are:

1. Weak upper Material tears off.
2. Finish of upper failure.
3. Grain layer of upper damage.
4. Decorative rivet pull off.
5. Decorative button coming up.
6. Heel Adhesion Failure.
7. Heel top lift coming up.
8. Null found on the insole.
9. Ski Hook break.
10. Decorative rivet pull up.
11. Zipper runner Break

In other case, we have seen some defects which are pre & post manufacturing defects of leather.

1. Grain off.
2. Loose grain & veins.
3. Process damage.
4. Bad Trimming.
5. Deep Veins.
6. Machine folds
7. Ticks mark
8. Deep scratch.
9. Intersecting growth mark.
10. Pain Holes

Comprehensive tests are needed to ensuring high quality and performance of products. This are-

1. Adhesion strength.
2. Component Strength.
3. Flexing Resistance.
4. Abrasion Resistance.
5. Sole Skied Resistance.
6. Restricted Substance testing.

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## Check sewn pieces for the following defects

### 1. Top Thread broken.



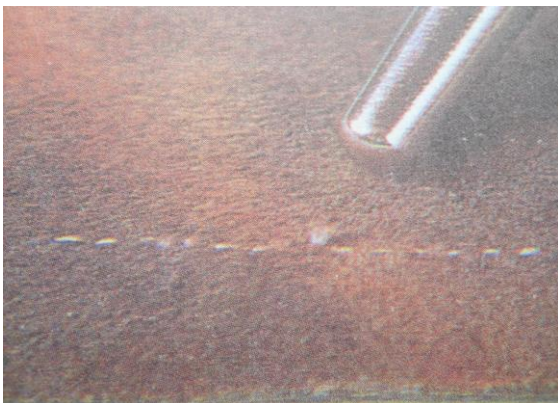
#### Causes:

- a. Burred needle.
- b. Bend needle.
- c. Course tension discs.
- d. Course groove in a thread guide.
- e. Burr on hook.

#### Correction:

- a. Replace needle.
- b. Replace needle.
- c. Smooth or replace tension discs.
- d. Smooth out thread guide.
- e. Smooth out hook.

### 2. Bottom thread broken.



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**Causes:**

- a. Burr on bobbin tension spring.
- b. Coarse throat plate.
- c. Bobbin over spinning.

**Correction:**

- a. Replace bobbin tension spring.
- b. Smooth out throat plate.
- c. Re-thread bobbin into bobbin case.

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## SELF-CHECK 2.4-1

True or False. On the blank provided before each number, write T if the statement is correct, otherwise, write F.

- \_\_\_\_\_ 1. Footwear need to be strong enough to support entire body weight and yet capable to providing feet with protection from hard and rough surface, as well as climatic and environmental exposure.
- \_\_\_\_\_ 2. Decorative rivet pulling off, Decorative button coming up and Heel top lift coming up are some examples of are pre & post manufacturing defects of leather.
- \_\_\_\_\_ 3. One of the comprehensive tests that are needed to ensure high quality and performance of products is flexing resistance.
- \_\_\_\_\_ 4. Broken top thread is caused by course tension discs.
- \_\_\_\_\_ 5. Over spinning of bobbin can cause broken bottom thread. It is corrected by replacing bobbin tension spring.

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## ANSWER KEY 2.4-1

1. T
2. F
3. T
4. T
5. T

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## **LEARNING OUTCOME 5    CLEAN WORK PLACE**

### **CONTENTS:**

1. Clean work place 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 is cleaned as per work place standard.
3. Waste is disposed of 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**

<b>LEARNING ACTIVITIES</b>	<b>RESOURCES/SPECIAL INSTRUCTIONS</b>
Clean work place	<ul style="list-style-type: none"><li>▪ Read information sheet 2.5-1</li><li>▪ Answer the self-check 2.5-1.</li><li>▪ Refer your answer to the answer key 2.5-1.</li></ul>

**INFORMATION SHEET 2.5-1**  
**Clean Work Place**

**Clean workplace:**

- A. Packing sewn components
- B. Checking or counting sewn leather pieces
- C. Returning unused material
- D. Disposing of scrap leather.

**Equipment is cleaned and stored:**

Keep clean the workplace from unnecessary things, so that nobody gets knocking and fallen down.

Keep working floor free from oil or grease. Slippery floor is extremely dangerous.

After completing the job, clean the tools and equipment using cloth and store.

Make hurry to keep tools and other materials in proper place after work.

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## SELF-CHECK 2.5-1

1. What are the activities involved in cleaning the workplace?
2. How will you avoid accident by cleaning the workplace?

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## ANSWER KEY 2.5-1

1. Activities involved in cleaning the workplace are:
  - A. Packing sewn components
  - B. Checking or counting sewn leather pieces
  - C. Returning unused material
  - D. Disposing of scrap leather.
  
2. Keep clean the workplace from unnecessary things, so that nobody gets knocking and fallen down. Keep working floor free from oil or grease. Slippery floor is extremely dangerous. After completing the job, clean the tools and equipment using cloth and store. Make hurry to keep tools and other materials in proper place after work.

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## REVIEW OF COMPETENCY

Below is your performance criteria checklist for the module Sewing Leather by Hand

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: