

National Technical and Vocational Qualification Framework

**NTVQF**

## Competency-Based Learning Material

National Certificate for Machine Operator  
NTVQ Level 1

### Identifying Materials for Leather Goods Production



**Bangladesh Technical Education Board**

Agargaon, Shere Bangla Nagar

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## HOW TO USE THIS COMPETENCY-BASED LEARNING MATERIAL

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Welcome to the module **Identify materials used in leather goods production**. This module contains training materials and activities for you to complete.

This unit of competency, “**Identifying materials used in leather goods production**”, is one of the competencies of Machine Operator NTVQF Level 1 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:** Identifying Materials Used In Leather Goods Production

**MODULE DESCRIPTOR:**

This module covers portion of the required knowledge, skills and attitude in machine operation. This will guide you in identifying materials used in leather good production. This module will also enable you to identify different types of machine used in cutting leather

After completing this module, you will be assessed through written tests and demonstration of some packaging techniques.

**NOMINAL DURATION:** 30 hours

**LEARNING OUTCOMES:**

At the end of this module you MUST be able to:

1. Identify materials in leather goods production
2. Identify materials for different applications
3. Identify performance of raw materials
4. Identify common defects of raw materials
5. Clean workplace

**ASSESSMENT CRITERIA**

The trainee will be assessed by observing the following performance criteria:

1. All safety requirements/regulations are adhered to before, during and after use.
2. Unsafe or faulty tools are identified and marked for repair according to designated procedures before, during and after use.
4. Types of raw materials used in leather goods industry are identified.
5. Materials for different applications in the leather goods industry are identified
6. Defects and problems related to the various applications of each type of material are identified.
7. Handling and care instructions for each material is identified.
8. Physical properties of materials are identified.
9. Performance characteristics of materials are identified.
10. Common surface defects are identified.
11. Causes for defects are identified.
12. Quality practices relating to defects are identified
13. Work place is cleaned as per work place standard.
14. Waste is disposed off according to company regulations.

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## **LEARNING OUTCOME 1: IDENTIFY MATERIALS IN LEATHER GOODS PRODUCTION**

### **CONTENTS:**

1. Identify the types of leather materials and their applications in leather production
2. Determine the synthetic materials used in leather goods
3. Enumerate other non leather materials in leather goods production

### **ASSESSMENT CRITERIA:**

1. Types of leather materials and their applications in leather production are identified.
2. Synthetic materials used in leather goods are determined
3. Other non leather materials in leather goods production are enumerated.

### **CONDITIONS:**

Students/trainees must be provided with the following:

- References/manuals
- Books

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## LEARNING ACTIVITIES

### LEARNING OUTCOME

Identify Materials in Leather Goods Production

| LEARNING ACTIVITIES                               | RESOURCES/SPECIAL INSTRUCTIONS  |
|---|---|
| Identifying materials in leather goods production | <ul style="list-style-type: none"> <li>• Read Information Sheet 6.1-1</li> <li>• Answer Self-Check 6.1-1 and compare your answer with the answer key</li> </ul> |

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# INFORMATION SHEET 6.1-1

## Materials Used In Leather Goods Industry

### Learning Objectives:

After reading this information sheet, you should be able to identify materials used in leather goods industry.

### Materials used in leather goods industry may include:

- Leather materials
- Synthetic Materials
- Accessories
- Adhesives
- Chemicals

### Leather Materials

#### Leather types

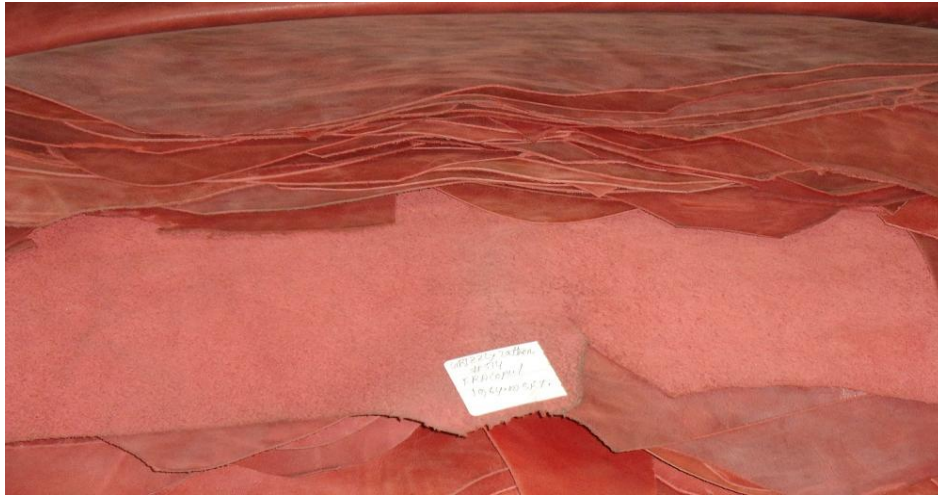
#### In general, leather is sold in three forms:

- **Full-Grain leather**, made from the finest raw material, are clean natural hides which have not been sanded to remove imperfections. Only the hair has been removed. The grain remains in its natural state which will allow the best fibre strength, resulting in greater durability. The natural grain also has natural breathability, resulting in greater comfort for clothing. The natural Full-Grain surface will wear better than other leather. Rather than wearing out, it will develop a natural "Patina" and grow more beautiful over time. The finest leather furniture and footwear are made from Full-Grain leather. Full grain leathers can mainly be bought as two finish types: aniline and semi-aniline.



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- **Corrected-Grain leather**, also known as Top-Grain leather, is fuzzy on one side and smooth on the other. The smooth side is the side where the hair and natural grain used to be. The hides, which are made from inferior quality raw materials, have all of the natural grain sanded off and an artificial grain applied. Top grain leather generally must be heavily painted to cover up the sanding and stamping operation. Corrected grain leathers can mainly be bought as two finish types: semi-aniline and pigmented.



- **Suede**, is leather that has had the grain completely removed or is an interior split of the hide/skin. During the splitting operation the grain and drop split are separated. The drop split can be further split (thickness allowing) into a middle split or a flesh split. In very thick hides the middle split can be separated into multiple layers until the thickness prevents further splitting. The strongest suedes are usually made from grain splits (that have the grain completely removed) or from the flesh split that has been shaved to the correct thickness. Suede is "fuzzy" on both sides. Suede is less durable than top-grain. Suede is cheaper because many pieces of suede can be split from a single thickness of hide, whereas only one piece of top-grain can be made. However, manufacturers use a variety of techniques to make suede appear to be full-grain. For example, in one operation, glue is mixed with one side of the suede, which is then pressed through rollers; these flatten and even out one side of the material, giving it the smooth appearance of full-grain. Latigo is one of the trade names for this product. Reversed suede is a grained leather that has been designed into the leather article with the grain facing away from the visible surface. It is not a true form of suede.

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Leather can be classified into calf, cow hide, kid, goat, buffalo, kangaroo, reptile, sheepskin

**Calf Leathers:** Skin from young animals have a fine texture and tight grain; they are very sample, and the leather is thinner than that of more mature animals. The younger the animal the more these factors and qualities are emphasized.

Calf is recognized all over the world as the finest material available for marking top quality footwear uppers.

**Goat Leather:** “Kid” is the term applied to full chrome tanned leather made for kid of goat skins for use as footwear uppers.

The size of these skins various considerable according to the age of the animal when slaughtered. Just as in bovine leathers, where the grain is tighter and finer in calf leather than in side leather a different is apparent between the skins of young and old goat. Although goat skins are relatively thin they are strong and have a very hard-wearing grain.

**Sheepskin:** Sheep are grown in most countries for their wool or meal, with the skin or “pelt” being a by-product. Wool pelts do not have great strength characteristics and more suited to use in clothing. With proper selection and processing they could be used as lining leathers.

Crust vegetable tanned “Persian” sheep skins come from the Middle East, where the sheep grow a wool-fiber resembling hair. The resulting skin is tighter in grain that the sheepskin and must stronger. It is excellent for use as shoe linings, usually dyed and finished is fawn or grey shades.

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**Other less-common leathers include:**

- **Buck skin or brained leather** is a tanning process that uses animal brains or other fatty materials to alter the leather. The resulting supple, suede-like hide is usually smoked heavily to prevent it from rotting.
- **Patent leather** is leather that has been given a high gloss finish. The original process was developed in New York, New Jersey by inventor Seth Boyden in 1818. Patent leather usually has a plastic coating.
- **Shagreen** is also known as Stingray skin/leather. Applications used in furniture production date as far back as the art deco period. The word "Shagreen" originates from France and is commonly confused with a shark skin and stingray skin combination.
- **Vachetta leather** is used in the trimmings of luggage and handbags, popularized by Louis Vuitton. The leather is left untreated and is therefore susceptible to water and stains. Sunlight will cause the natural leather to darken in shade, called a patina.
- **Slink** is leather made from the skin of unborn calves. It is particularly soft, and is valued for use in making gloves.
- **Deer Skin** - This is probably the toughest leather in the world, given that most wild deer are constantly getting in and out of thorny thickets in the forests. Deerskin has always been prized across societies - notably the North American Indians who used to treat it with lime and other compounds to make the raw deer hide more supple, often "staking" it out in different weather conditions etc. Modern deer skin is no longer procured from the Wild as it were, with "deer farms" breeding the animals specifically for the purpose of their skins. Such farmed deer skins are usually procured from New Zealand and Australia in today's times. Deer Skin is prized for use in Jackets and Overcoats as well as high quality personal accessories like handbags and wallets. It commands a high price owing to its relative rarity as well as its proven durability.
- **Nubuck** is top-grain cattle hide leather that has been sanded or buffed on the grain side, or outside, to give a slight nap of short protein fibres, producing a velvet-like surface. There are two other descriptions of leather commonly used in specialty products, such as briefcases, wallets, and luggage.
- **Belting leather** is a full grain leather that was originally used in driving pulley belts and other machinery. It is often found on the surface of briefcases, portfolios, and wallets, and can be identified by its thick, firm feel and smooth finish. Belting leather is the only kind of leather used in luxury products that can

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retain its shape without the need for a separate frame; it is generally a heavy-weight of full-grain, vegetable-tanned leather.

- **Nappa leather, or Napa leather,** is extremely soft and supple and is commonly found in higher quality wallets, toiletry kits, and other personal leather goods.

### **Several tanning processes transform hides and skins into leather:**

1. **Vegetable tanned leather:** is tanned using tannin and other ingredients found in vegetable matter, such as tree bark prepared in bark mills, and other similar sources.
2. **Chrome tanned leather:** is tanned using chromium sulfate and other salts of chromium.
3. **Aldehyde-tanned leather:** is tanned using glutaraldehyde or oxazolidine compounds
4. **Chamois Leather:** is also falls into the category of aldehyde tanning and like brain tanning produces a highly water absorbent leather.
5. **Synthetic-tanned leather:** is tanned using aromatic polymers such as the Novolac or Neradol types (syntans, contraction for synthetic tannins)
6. **Alum-tawed leather:** is transformed using aluminum salts mixed with a variety of binders and protein sources, such as flour and egg yolk.

### **The following are not 'true' leathers, but contain leather material.**

- **Bonded Leather , or "Reconstituted Leather",** is not really a true leather but a man-made material composed of 90% to 100% leather fibres (often scrap from leather tanneries or leather workshops) bonded together with latex binders to create a look and feel similar to that of genuine leather at a fraction of the cost. Bonded leather is not as durable as other leathers, and is recommended for use only if the product will be used infrequently. One example of bonded leather use is in Bible covers.
- **Bi cast leather** is a man-made product that consists of a thick layer of polyurethane applied to a substrate of low-grade or reconstituted leather. Most of the strength of bicast leather comes from the polyurethane coating, which allows this material to be used where strength or durability are required.

The vast majority of leather is sold according to its area. The leather is placed through pin-wheel or electronic measuring machines and its surface area is determined. The

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unit of measurement is square meter, square decimeter or square foot. The thickness is also important, and this is measured using a thickness gauge (the unit of measurement is millimeters, e.g., 1.8 mm is a standard thickness for a school shoe). In some parts of the world top-grain thicknesses are described using weight units of ounces. Although the statement is in ounces only, it is an abbreviation of ounces per square foot. The thickness value can be obtained by the conversion:

## **Synthetic Materials**

**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.

- 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.

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- 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:

- Thickness: 1.0mm - 1.1mm
- Color: any
- Surface: smooth
- Backing: coagulated fabric
- Superior durability
- Good hand feel
- Properties similar to genuine leather
- Widely used for shoes manufacturing

2) PU Sofa Leather Description

Features:

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

3) PU, PVC Synthetic Leather Description

Features:

- Width: 1.37m
- Thickness: 0.6 - 1.5mm (PVC with more )
- Specifications, thickness, such as color, pattern, embossed, are according to customers' requirements
- The synthetic leather is suitable for making shoes, furniture, garments, Automobile seats, gloves, sofas, handbags and wrapping
- Competitive prices
- Reliable quality

4) Synthetic Leather Fabric Description

Features:

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

5) Fabric Face (Bag and Case, ) Description

Features:

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

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#### 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 colour, 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 colour, pattern, embossed, are according to customers' requirements
- c) The synthetic leather is suitable for making handbags and packs
- d) Competitive prices
- e) Reliable quality.

#### **Other polymers used as plastics include:**

**Paper Boards:** The reinforcing papers referred to are those most commonly employed, and there is a sufficient range of thicknesses and qualities to meet the requirements of almost any class of fancy leather goods. The choice of reinforcement can influence the appearance and character of the finished article considerably and selection should be made of care. Some idea of the effect of a proposed reinforcement can be obtained by placing a piece of the paper and of the leather together and testing by holding and bending the combination in the fingers. The stiffening effect of turning over the leather edges and of the adhesive must be borne in mind, especially if the reinforcement is to be adhered all over the flesh side of the leather.

All the papers and the cheaper kinds of board reinforcements are stronger in one direction than in the opposite direction.

#### **Fabrics Reinforcement Materials:**

**Cotton Fabrics:** Cotton fabric which has been coated on one side with an adhesive compound is made for reinforcing thin leather and fabrics such as brocade, Marcaine etc.

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**Nylon fabrics:** Nylon is often combined with other fibers, such as spandex and PVC, and can be woven into any pattern. It is often used in bridal wear and, unlike polyester and acetate, can be easily dyed. Nylon's uses are incredibly vast: it can be found in flags, toothbrush bristles, racket strings, machine parts and even sutures. Characteristics that have made nylon and nylon fabric in particular so popular include:

- Rugged durability
- Stretch and elasticity
- Resistant to tears and abrasions
- Resistant to heat and water
- Resistant to molds, mildew, and chemical damage
- Melts instead of catching fire

Due to the fact that nylon is a synthetic fiber derived from widely available ingredients, it is one of the most cost effective fabrics, making it ideal for beginning sewers or anyone who wishes to explore thriftier clothing options. And, because nylon fabrics come in all degrees of stretch and are great at wicking away moisture, they are perfect for leotards, jerseys, shorts, and any other situation requiring the freedom of movement. Nylon fabric is cool, durable, and extremely low-maintenance, which has led to its meteoric rise in popularity over the past 70 years.

**Polyester fabrics:** Polyester is a very popular synthetic fabric, often found in combination with natural fibers to provide strength and resistance to both wrinkles and the elements.

Polyester fabric can be found in high-quality, wrinkle resistant shirts, pants, and costumes, as well as in bedding and home décor. Polyester fleece is popular in wetsuits and other garments that require heat retention and insulation, and the fabric is immensely popular in outdoor applications, such as overcoats, sleeping bags and climbing suits. Polyester's uses go beyond clothing, as it can be found in plastic bottles, ropes, even fancy balloons. Polyester fabric is a truly remarkable material which lends strength, warmth and durability to any project.

**Accessories**

- Locks – metal, plastic, anodized.
- Buckles - metal, plastic, anodized.
- Decorative pieces, eg. Stickers, Logos.
- Rivets - metal, plastic, anodized.
- Buttons- metal, plastic, anodized.
- Velcro.
- Zipper - metal, plastic, anodized.
- Beads – metal, plastic, stones.

**Adhesive**

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An adhesive or stick on is a material, usually in a liquid or semi-liquid state, that adheres or bonds items together. Adhesives come from either natural or synthetic sources. The types of materials that can be bonded are vast but they are especially useful for bonding thin materials. Adhesives cure (harden) by either evaporating a solvent or by chemical reactions that occur between two or more constituents.

## **Chemicals**

The following is a list of chemicals commonly used in leather making:

Beamhouse and Tanyard

*Biocides* - Biocides prevent the growth of bacteria which can damage the hides or skins during the soaking process

*Surfactants* - Surfactants are used to help with the wetting back of the hides or skins

*Degreasers* - Degreasers help with the removal of natural fats and greases from the hides or skins

*Swell regulating agents* - Swell regulating agents help prevent uneven swelling of the hides or skins during liming

*Lime* - Lime is used to swell the hides or skins

*Sodium sulphide* - Sodium sulphide chemically destroys the hair on hides or skins

*Sodium hydrosulphide* - Sodium hydrosulphide chemically destroys the hair on hides or skins. It does not create as much swelling as sodium sulphide

*Low sulphide unhairing agents* - Low sulphide unhairing agents help to reduce the amount of sulphides used in a tannery thus reducing the environmental impact of tanneries

*Caustic soda* - Caustic soda is used during the liming process to help swell the hides or skins

*Soda ash* - Soda ash is used during the soaking or liming processes to help raise the pH of the hides or skins

*Ammonium sulphate* - Ammonium sulphate is used during the deliming process and helps remove lime from the hides or skins

*Ammonium chloride* - Ammonium chloride is used during the deliming process and helps remove lime from the hides or skins

*Sodium metabisulphite* - Sodium metabisulphite is used during the deliming process and helps prevent the formation of toxic hydrogen sulphide gas during deliming. It also acts as a bleaching agent

*Formic acid* - Formic acid is used during the pickling process to lower the pH of the hides or skins

*Sulphuric acid* - Sulphuric acid is used during the pickling process to lower the pH of the hides or skins

*Salt* - Salt is used during the pickling process to prevent acid swelling of the hides or skins

*Sodium formate* - Sodium formate is used during the tanning process to assist with the

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penetration of chromium tanning salts into the hides or skins

*Chromium sulphate* - Chromium sulphate is the tanning agent used to make wet blue

*Aldehyde tanning agents* - Aldehydes are tanning agents used to make wet white

*Magnesium oxide* - Magnesium oxide is used during basification and raises the pH of the hide or skin to allow the chromium or aldehyde to chemically bind to the skin protein

*Fungicide* - Fungicides are chemicals that are used to prevent the growth of moulds or fungi on tanned hides or skins

## Dyehouse

*Surfactants / Wetting agents* - Surfactants help in the wetting back of the wet blue in the dyehouse

*Degreasers* - Degreasers help remove grease or fats that may be present on the wet blue as a result of the wet blue coming into contact with machinery

*Sodium formate* - Sodium formate helps raise the pH during the neutralization process

*Sodium bicarbonate* - Sodium bicarbonate helps raise the pH during the neutralization process

*Formic acid* - Formic acid reduces the pH for the rechroming process or helps with chemically fixing dyehouse chemicals to the leather at the end of the dyehouse processes

*Chrome syntans* - Chrome syntans are used during rechroming to improve the softness of the final leather

*Chromium sulphate* - Chromium sulphate is used during rechroming to improve the softness of the final leather

*Syntans* - Syntans are used to give properties such as softness, fullness, roundness to the leather

*Resins* - Resins are used to give fullness and a tight grain to the leather

*Polymers* - Polymers are used to give fullness and a tight grain to the leather

*Dyes* - Dyes are used to give the leather a colour desired by the customer

*Dyeing auxiliaries* - Dyeing auxiliaries help disperse the dyes evenly

*Fatliquors* - Fatliquors are oils that are added to leather to give softness to the final leather

## Finishing

*Acrylic resins* - Acrylic resins give specific properties to the leather finish such as adhesion, water resistance

*Butadiene resins* - Butadiene resins give specific properties to the leather finish such as good coverage

*Polyurethane resins* - Polyurethane resins give specific properties to the leather finish such as good toughness and good light fastness

*Fillers* - Fillers help fill small blemishes on the leather surface

*Dullers* - Dullers help reduce the gloss of the finish

*Crosslinkers* - Crosslinkers are used to toughen the leather finish and improve the water resistance properties of polyurethanes

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*Handle modifiers* - Handle modifiers are used to give the leather surface a waxy or slippery feel

*Nitrocellulose lacquers* - Nitrocellulose lacquers are used in the top coat of a leather finish

*Acrylic lacquers* - Acrylic lacquers are used in the top coat of a leather finish

*Polyurethane lacquers* - Polyurethane lacquers are used in the top coat of a leather finish

*Viscosity modifiers* - Viscosity modifiers are used to increase the viscosity of a finish mixture

*Pigments* - Pigments are coloring agents that help hide defects on the leather surface

*Dyes* = Dyes are coloring agents that are used to slightly change the color of the leather finish or to give the leather finish a more natural look

*Defoamers* - Defoamers are used to prevent bubbles from forming in the finish mixture

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## SELF-CHECK 6.1-1

**I. True or False.** Write TRUE if the statement is true and false if otherwise.

\_\_\_\_\_ 1. Full-Grain leather is made from the finest raw material, are clean natural hides which have not been sanded to remove imperfections.

\_\_\_\_\_ 2. Suede leather is also known as Top-Grain leather which is fuzzy on one side and smooth on the other.

\_\_\_\_\_ 3. "Not true leather are those material that does not contain leather material

\_\_\_\_\_ 4. roll materials are PU or PVC coated fabrics which are usually cut using either the Gantry feed or Clip feed methods.

\_\_\_\_\_ 5. Nylon is often combined with other fibers, such as spandex and PVC, and can be woven into any pattern.

**II. Enumeration.**

1. Give four classification of leather according to source.
2. What are the three types of synthetic materials according to quality.
3. Give three types of fabric reinforcement materials
4. What are the three classifications of chemicals used in leather production?

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## ANSWER KEY 6.1-1

### I. True or False

1. TRUE
2. FALSE
3. FALSE
4. TRUE
5. TRUE

### II. Enumeration

1. Classification of leather according to source
  - a. calf leather
  - b. goat leather
  - c. sheep skin
  - d. cow hide
2. Three types of synthetic materials according to quality
  - a. low quality
  - b. medium quality
  - c. high quality
3. Three types of fabric reinforcement materials
  - a. Cotton fabric
  - b. Nylon fabric
  - c. Polyester fabric
4. Classification of chemicals
  - a. Beamhouse and Tanyard
  - b. Dyehouse
  - c. Finishing

|                        |   |                              |                                |                  |
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## **LEARNING OUTCOME 2: IDENTIFY COMMON DEFECTS OF RAW MATERIALS**

### **CONTENTS:**

1. Identify common surface defects of raw materials
2. Determine defects in footwear manufacturing

### **ASSESSMENT CRITERIA:**

1. Common surface defects of raw materials are identified
2. Defects in footwear manufacturing are determined
3. Causes of common faults and defects of materials are identified

### **CONDITIONS:**

Students/trainees must be provided with the following:

- References/manuals
- Books

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## LEARNING ACTIVITIES

**LEARNING OUTCOME:** Identify Common Defects of Raw Materials

| LEARNING ACTIVITIES                         | RESOURCES/SPECIAL INSTRUCTIONS  |
|---|---|
| Identifying common defects of raw materials | <ul style="list-style-type: none"> <li>• Read Information Sheet 6.2-1</li> <li>• Answer Self-Check 6.2-1 and compare your answer with the answer key</li> </ul> |

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## INFORMATION SHEET 6.2-1 Common Defects of Raw Materials

### Learning Objectives:

After reading this information sheet, you should be able to identify common defects and faults of raw materials used in leather production.

### Some common leather surface defects are..

1. Colour Fastness.
2. Flay cuts.
3. Vein Marks.
4. Trimming Bad Offal Area.
5. Bad Grain.
6. Warble Flay/ Holes or Scars.
7. Tick mark.
8. Growth marks.

**Color fastness:** Sometimes have a problem with the colour fastness to test this wet a pieces of white cloth and rub on the surface of the grain, if lightly rubbed approx. 20 times reciprocations, the colour should not come off.



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**Flaying cut:** The skin is usually the by-product of a slaughtered animal the main product being the meat. When the skin is removed cuts through or partially through the skin may occur through the misuse of the flaying knife. These will appear on the flesh side of the skin



**Vein Marks:** After the skin has been tanned, veins may be visible through the surface finish of smooth leather. Mainly in goat but sometimes found in kid. These deep vein marks are more noticeable from the flesh side



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**Tick Marks:** The tick burrow's its head into the skin of the animal to suck the blood, at the same time he injects a poison into the animal which infect and after the tick withdraws he



**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 tear 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

|                        |   |                              |                                |                  |
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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.

For, improving quality of the products, we can take few necessary steps. These are:

1. Production Quality Assurance—In-Process.
2. Create a win-win in your supply chain.
3. Production Quality Assurance—Final Shipment.
4. Testing Control.
5. On Time Delivery Monitoring.
6. Sales Root After Cause Analysis.

|                        |   |                              |                                |                  |
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## SELF-CHECK 6.2-1

Answer the following questions.

1. What are the common surface defects of leather materials? Give five defects.
2. What are the common defects in footwear manufacturing? Give at least five.

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## ANSWER KEY 6.2-1

1. Common leather surface defects are:
  - a. Flay cuts.
  - c. Vein Marks.
  - d. Warble Flay/ Holes or Scars.
  - e. Tick mark.
  - f. Growth marks.
  
2. Common defects in footwear manufacturing are:
  - a. Weak upper Material tear off.
  - b. Finish of upper failure.
  - c. Grain layer of upper damage.
  - d. Decorative rivet pull off.
  - e. Decorative button coming up.
  - f. Heel Adhesion Failure.
  - g. Heel top lift coming up.
  - h. Null found on the insole.
  - i. Ski Hook break.
  - j. Decorative rivet pull up.
  - k. Zipper runner Break

|                        |   |                              |                                |                  |
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## REVIEW OF COMPETENCY

Below is your performance criteria checklist for the module Identifying Materials used in Leather Goods Production

| 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 marked for repair according to designated procedures before, during and after use. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Personal protective equipment (PPE) worn   | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Types of raw materials used in leather goods industry are identified.  | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Materials for different applications in the leather goods are identified.  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Defects and problems related to the various applications of each type of material are identified.                            | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Physical properties of materials are identified.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Performance characteristics of materials are identified  | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Common faults, problems and surface defects of materials are identified.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Possible causes for common faults, problems and surface defects are identified.   | <input type="checkbox"/> | <input type="checkbox"/> |

I now feel ready to undertake my formal competency assessment.

Signed:

Date:

|                        |   |                              |                                |                  |
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