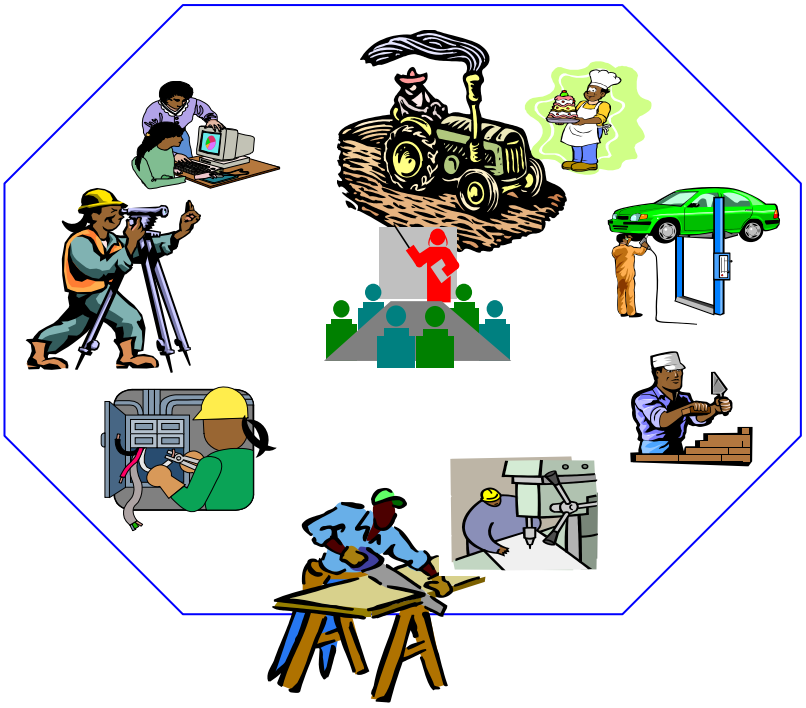
Footwear Production LEVEL II

Based on Nov, 2019 V5 OS and Feb, 2020 V1 Curriculum



Module Title: - Performing footwear finishing packaging

LG Code: IND FWP2 M10 LO(1-4) LG(43-46)

TTLM Code:-IND TTLFWP2 TTLM 1220v1

Dec, 2020

Contents

LG #43	LO#1. Prepare tools, materials and equipment and machine

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topic–

- **Identifying and selecting materials and components for finishing.**
- **Identifying tools and equipment.**
- **Identifying and rectifying of common problems and faults of materials.**
- **Identifying suitable personal protective equipment**
- **Describing safety of operator and work place for finishing operation**

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- **Materials and components used for footwear finishing are identified and selected as per the required specification.**
- **Tools and equipment are identified as per the required work specification and made ready for operation.**
- **Common problems and faults of materials are identified and rectified.**
- **Suitable personal protective equipment for safety with regards to tools, equipment and machines is identified**
- **Safety of operator and work place for finishing operation is described.**

Learning Instructions:

Learning Activities:-

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1”.
3. Accomplish the “Self-check. Request the key answer / key to correction from your teacher or you can request your teacher to check it for you.
4. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Information Sheets 1.
5. Read the information written in the “Information Sheet 2”.

6.Accomplish the “Self-check 2”. Again you can request the key answer / key to correction from your teacher or you can request your teacher to check it for you.

Information Sheet 1- Identifying and selecting materials and components for finishing

1.1Materials and components for finishing

- labels/ tags
- laces
- socks
- cleaner
- cream
- wax
- spray
- dye/colorant
- pigments
- shoe box and carton
- poly bag
- tissue paper
- shoe lifter
- Teflon tape
- Sticker
- Silica gel
- Micro pack sticker

1.1.1Laces: A strip of material strung through the eyelets of a shoe in order to pull the shoe closed and adjust its girth.

1.1.2Cleaner

Solvent cleaners

The solvent in this type are usually derived from Petroleum and can be mixed with other solvents of the same type to give different cleaning powers.

These are suitable for removing grease, oils and waxes, and the weaker blends can be used for overall cleaning of certain finishes. They are very quick in drying.

Solvent cleaners are petrol, dissel, and kerosene oil. Kerosene oil is mixed with solvent emulsion type cleaners for softening heavy preservative coating. It is also used for general solvent cleaning, but its use should be followed by a coating or rinse with some other type of protective agent. Kerosene does not evaporate as rapidly as dry cleaning solvents and generally leaves an appreciable film on cleaned surfaces, which may actually be corrosive. Kerosene films may be removed with safety solvents, water emulsion, cleaners or detergent mixtures.

Cleaner / polishers

Cleaner/ polishers are supplied as gels and contain solvent cleaners and polishing agents, which remain on the surface after the solvents have evaporated.

Application is by sponge or cloth and after drying can be polished on a power mob.

These are very suitable for patents and PU coated fabrics, and have the advantage of giving an acceptable semi- bright finish without having to spray.

Water based cleaners

Before starting finishing operation, ensure that the surface to be finished has been clean.

The purpose of cleaning is that no any dust or contaminant are present on the upper surface of the shoe.

The main purpose is- To remove

- ✓ The Dirt
- ✓ Adhesive overspill
- ✓ Other unwanted marks and contamination

Cleaning can be done before or after removing the last from the shoe. The latter is preferable for better shape retention of the shoe.

When necessary, cleaning of lining is also done.

Principles to follow when cleaning

1- Relate the choice of cleaner and the method of cleaning to the type of contamination that is being removed and the types of finish on the upper.

For example----

Solvent base cleaners should be used to soften natural rubber (because water based will not).

However, do not try to remove rubber solution from suede with a solvent- based cleaner or " tide- marks " will result. Suede has to be cleaned dry and rubbing with crepe rubber.

2- Use dry method in preference to wet.

3- Use the mildest treatment possible that will effectively remove the contamination. The stronger the cleaner, the more finish it will remove in cleaning.

Start with the mildest cleaner, and try progressively stronger cleaners until the dirt is removed.

Water based cleaners are very mild types of cleaners and contains soaps, wetting agent, dispersing agents and emulsifying agents (detergent) and sometimes weak alkali such as ammonia or suspended in water.

Water based cleaners are mild (soft) enough to be used for machine cleaning and are suitable for overall remove of the general grim and dirt picked up in the factory from handling. Care should be taken with cleaners containing ammonia on same types of leather finishing.

Water and solvent based cleaner

Water and solvent based cleaners are made from solvents that mix with water such as methylated spirit and acetone. Some of these can be very strong, and will quickly attack and strip off some finishes.

These cleaners are suitable for overall cleaning of certain finishes that are unaffected by these solvents such as P U COATED fabrics, patents etc. They have a big advantages over water based that they dry much quicker.

Conditioners

Conditioners are water based and are designed to open up the surface for efficient cleaning.

Cleaning can be done both " wet " and " dry " method either by hand or by machine.

Cleaning dry, by hand

The items used for this cleaning methods are-

1- CREPE RUBBER- For removing adhesive

2- SOFT SPONGE RUBBER- For brushing the suede nap.

3- BRUSHES- Wire and stiff bristle type-

-For removing general dust and dirt from Suede.

- For brushing up the suede nap.

Abrasive waxes

Abrasive wax used for cutting or smoothening of grain surface, and for filling and provide the special effects

This operation is required for finishing of leather and to give shining or polishing effect on upper leather. This is also converting or merges the course grain leather into fine grain upper leather. To produce or bring the burnishing effect and brush- off effect.

Characteristics

1- High smooth finish and provide good and durable gloss.

2- It provides the better cutting effect.

3- It is found both solid and liquid form. Liquid abrasive penetrates in the leather fibers and enhance its natural color and give wet look.

Polishing waxes

Polishing wax used as the final operations to polish and protect the finish, that is done in the shoe finishing room. It also enhances the gloss of the shoe. It is also two types-

1- carnauba 2- synthetic

Carnauba wax- Melting Point= 78- 81 Degree Celsius

Carnauba wax is a yellow, brittle material of high melting point, extracted from the leaves of the Brazilian palm. It may be purified by melting, filtering and bleaching to give more uniform (component) substance and a paler color. It is an expensive component of leather polishes, producing a high shine which is durable. Not easily finger- marked and to which dust and dirt do not easily deposit on the surface. These properties are due to its hard nature and high melting point.

It can be emulsified to give quality shoe cream, or such emulsion may be incorporated with leather finishes to give a waxy feel. It has smooth, non tacky and good plating or polishing properties.

Base coat polish

Apply base coat on clean shoe-

1- Remove oil, grease and other contamination prior to application.

2- Remove dust with tack rags just prior to base coat.

3- Observe the recoat time.

After the color has been smoothly layered on the base, the next step is to polish a base coat before a clear coat. The polishing is done by using special brush. It is not a complicated process. Each time base coat done carefully, the base coat must be allowed to dry and then be re-examined for further imperfection that may have to be polished out.

A finish may be applied by brush or spray gun, allowed to dry and then wax polished on a revolving lines mop and soft hair brushes.

Alternatively, a friction wax may be used which color the sole and impregnates the surface. This also requires wax polishing. Black sole bottoms requires an additional operation of brushing with a leather pad before polishing.

Top coat polish

Top coat provides the gloss and protects the leather from damages. It also gives the leather the FEEL and aesthetic appeal.

The final coat is usually free from resin is designed to increase fastness to wet and dry rubbing and help to obtain adequate resistance to hot plating. Small quantities of wax preparations are also used to obtain a warm feel to the best possible surface smoothness. Gloss can be controlled in a suitable manner by the thickness of the finishing film. The finishing coat are hardened with dilute formaldehyde or mixture of formaldehyde to get the water proof leather.

Properties

1- The top coat protect the shoe from damage due to rubbing and scratches.

2- To provide level appearance of the color.

3- To provide the suitable shade (burnishing effect, two- tone effect, antiquing effects etc.) as per fashion demand.

4- To retain its properties during the all shoe manufacturing operation and could be easily dressed.

5- To be easily cleaned and polished.

6- Durability against rubbing on dry and wet.

7- Permeability to water vapor and air, ensuring that hygienic properties.

8- Should be fast to stain and light.

9- Should not crack on being extended or flexed.

10- Resistant to heat, cold and moisture.

11- Durability of the finish in wear.

12- To protect the shoe against adverse chemicals and physical influence.

1.1.3 wax

Repairing waxes

Repairing waxes are gap filling crayons and do not shrink on flexing. These are-

1- Repair crayons

2- Repair pastes

3- Uniforms, Renovators.

4- Pigment paints.

The purpose of repairing is to bring the shoe to an acceptable standard before continuing with other operations in the shoe room. It can be done by repair crayons, repair pastes, and spray paints for grainy upper materials. The paste or spray can be either water or spirit based.

Repairing includes both upper and bottom repairs, of a minor nature, such as scratches uppers at upper roughing, heel scouring and very slight cuts during upper clicking, lasting etc. For bottom main repair are may be in heel, especially at the seat and heel breast.

The purpose of these repairs is to bring the shoe to a good standard, before continuing with the other operations in the finishing.

1- Never repair deep scratches, cut etc. on the upper as their repair will only leave mark which would be seen on the finished shoe and therefore should not be accepted.

2- For minor stretches, cuts, use very fine grit size abrasive to first even the surface, then apply repair crayons or pigment pasters and finish off with renovators etc.

3- Pigment and dyes must match the color of the upper

4- If only the finish is damaged, use uniformers or renovators.

5- For repair of soles use-

- ✓ PU paint for PU soles
- ✓ TPR paint for PU soles
- ✓ TPR paint for TPR soles
- ✓ Creams and polishes + color of leather soles

Restorative waxes and creams generally contain higher level of pigments or dyes with binder and can help the damaged surface of leather to regain a measure of its original appearance. If only the finish of the leather has been removed good repairs are possible, but where the damage is deep into the grain the wax may not be enough to camouflage the more fibrous nature of the surface.

1. Repair crayons

It is available in sticks or Discs form. It is soft crayons, based in very soft, medium and hard forms of color. It is used for gap filling of heavy damage. It is not suitable for flexible area.

2. Repair pastes

It is available in thick paste form. It is colored resin emulsion used on brush or knife. It is not filling the gap properly for light damage. Dry in 5- 20 minutes and not suitable for flexible area.

3. unformers, renovators

It is available in solution or emulsion form. It is pigmented, solvent or waterborne form, and applied with spray or brush.

4. pigment paints

It is in paste form and water based applied with hand brushes. It is suitable for slight damage on shoe feather line.

Repairing waxes are two types-

1- soft wax

2- hard wax

Soft wax

For rapid repair of scratches and minor defects on many surfaces in area of least wear and tear.

Hard wax

For a more permanent hard wearing repair to busy areas and delicate surfaces, such as foils and prints, with a heat resistance up to 110 degree Celsius, this wax is suitable.

Sole edge colors

A water base edge containing pigment waxes and gums is applied by hand to the sole edge. A machine may be used. The edge must be completed and evenly covered with the ink, but there must be no ink on the upper and stitching.

Sole edge colors are very important to improve the appearance of the bottom parts of the shoe, with the application of these coloring materials, the water resistance of the heel increases. Its final appearance is like shined looks a original finish on heels and soles.

Features and directions-

1- Shake well with cap on.

2- Shoe must be clean and dry.

3- Invert bottle and gently press applicator against shoe to release product.

4- Spread polish evenly and allow to dry to a shine.

5- Rinse applicator with water after use and blot dry to keep foam soft, replace cap.

6- If spilled, clean up before dry, Gently dab spill with a dry cloth, the wipe with a damp cloth.


COCO
CHANEL


EDGE

1.1.4 Pigment

Pigment for repairing

Pigment represent a very important constituents of present day leather and shoe finishing composition. The use of pigments in the finishing had its start in America during the World War First, because the supply of dyestuff from Germany was cut off. While pigmented finishes lacked the brilliance and beauty of finishes based on the dyestuffs, they have the advantages of covering stains and defects and presenting a uniform color over the whole skin or hide. This advantages becomes more and more important as time went on since increasing amount of buffed side leather and decreasing amount of full- grain leather (calf)were being finished. As a result, even when dyestuffs become available again, the use of pigments was never given up. The pure aniline finish is still used on a considerable amount of calf and this is covered by the use of dye solution and small amount of pigment if needed.

Glazed kid is also finished with aniline finishes as are a number of novelty leathers. In a general way, the big volume leathers are finished with coating which contains pigments.

The pigments normally use in leather finishes are as follows—

White	Titanium Dioxide
Black	Carbon black, bone black, iron oxide
Yellow	Lead chromate
Orange	Lead chromate
Brown	Iron oxide
Blue	Iron blue
Green	Chrome green
Red	Cadmium sulphide

For repairing of any major or minor defects we take any suitable pigment with addition of filler and adhesives. Apply the season in suitable amount, then dry well. After that removing the excess season with the help of fine emery paper then finishing.

Sprays for suede and nubuck

There are three main spray treatments for suede and nubuck

1- The spraying of a fixative solution to fix the powder used at taking and to improve the " bloom " of the suede.

2- In the case of black color, a high staining dye may be used to ensure absolute uniformity of color.

3- Suede pig skins may be treated with an expensive coating to improve water repellency. In this case a special spray gun has to be used and strict safety precautions must be exercised because of the toxic nature of the liquid.

The characteristics of this leather is the velvety effect due to raised naps on the surface which gives " writing effect " on the surface-

- Dry clean the shoe.
- Spray water based renovators to uniform the color and revive the nap.

If required, spray shower proofing chemicals.

Liquid polish

Polish usually contains several kinds of synthetic waxes, paraffin waxes, resin, solvents, auxiliary agent and water. As well as the requirements of the consumer, cost of the components is an important factors in the formulations. While shoe finishing are non commonly and loosely referred to as inks and stains many more chemical products are in general use in shoe factories as essential raw materials for finishing purpose. In big cities polishes are used for both shining the shoes and protecting them against dust etc. In all types of color and design the polishes are needed with every types of shoes.

Liquid polish used as a protectors, which is normally applied by aerosol spray, confer on the footwear material a measure of water / oil repellency and hence reduce the severity of subsequent staining. The depth of absorption and hence the degree of protection depends upon the absorbency of the material. They are therefore most popular for unfinished leathers like suede and nubucks.

Get into the habit of polishing leather shoes regularly. A polish conditions and helps retain leathers natural oils. It masks scuffs and marks, enhances the color and provides a protective layer from light rains and spills.

Polishing instruction

Polishing should take no more than a few minutes…

1- Start by removing any dirt or debris by wiping the shoes with a damp cloth.

2- Apply a small amount of shoe cream and spread evently in a circular motion over shoes. You can use either cotton cloth or a polish application brush to apply.

3- Take a minute to allow the shoe cream time to dry on each shoes.

4- Once dry, buff off with a polishing cloth or polishing pad for high shine.

Tips and tricks

1- Try and match the polish as close as you can to the color of your shoes.

2- If you choose the color neutral, use this on light colored shoes only as it tends to leave a white film on dark colored shoe over time.

3- Place shoes in shoe trees, this provides a film surface to polish on.

4- Always remove shoe laces before polishing to give the tongue of the shoe a good clean and ensures that your shoe laces do not get stained by the polish.

5- If the shoe have stains or greasy oil marks on them, use " SPOT STAIN REMOVER " before polishing.

Information Sheet 2- Identifying tools and equipment.

Tools and equipment for finishing

Scissors: for cutting thread of work when finished and for trimming all loose threads away from work.

Blunt knife

In the lasting operation, the complete surface of the bottom of the shoe is coated with a rubber solution or thermoplastic adhesive (hot melt). The blunt knife is used to remove wax and thermoplastic adhesives (hot melt). Could be used on suede and nubuck leather and for repair work

Crepe and resin rubber

Generally used to remove polyurethanes, latex, and rubber adhesives from grained upper and lining.

Crepe rubber

It is a natural product produced by coagulation the latex from the rubber tree. Latex is formed into thin sheets, and then laminating and pressing a good number of sheets together to give a specific thickness. Chemically it is a polymer made from " Isoprene" monomer units which has sufficient strength not

to need vulcanizing. The crepe which is harder and lighter in color provides better wear comfort.

Advantages

1- It is comparatively cheap to process.

2- It has good wear resistance.

3- It has self-sealing ability and provides a very good resistance to flex crack but slips on dry surface.

4- It is very light in weight (0.88 gms./ c.c.)

5- Resilience is high and the strength is moderate.

Disadvantages

1- It is very sensitive to heat and become soft and sticky in worm condition. It has tendency to spread under body weight.

2- It has a poor resistance to ageing. If it is exposed to heat of sunlight it shows surface hardening and cracking.

3- It is sensitive to solvents mainly petroleum and oil.

Natural rubber

Natural rubber is a cultivation based product. It depends upon the suitability of the plantation of HEVEABRASILIENSIS tree. The research work to develop an artificial rubber began. The styrene and butadiene are the two main raw materials. A styrene butadiene copolymer made in emulsion with a charge ratio of 25% styrene and 75% butadiene were chosen as the best possible general purpose rubber.

Emery paper

Emery paper is a type of paper that can be used for sanding down hard and rough surfaces. Emery paper is sold in sheets of varying sizes. Emery products choose on the base of the level of abrasiveness or grit. In the shoe industry it is used for the following purposes

1- To roughen the pleats/ crease on lasted shoe bottom.

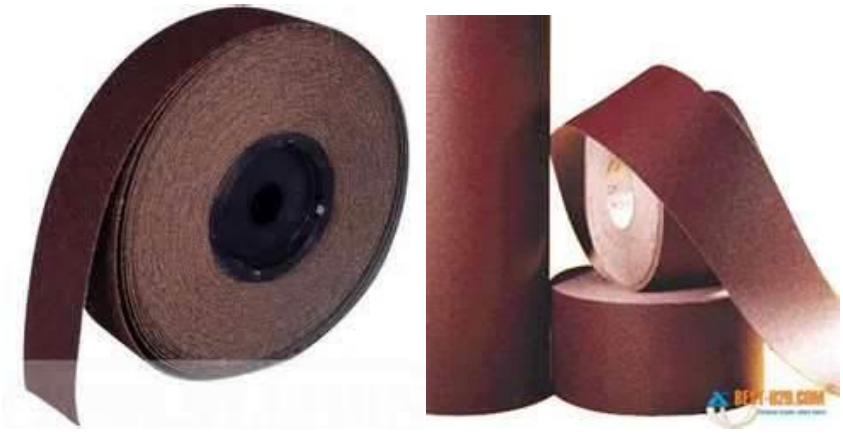
2- To roughen the surface of lasted upper and bottoms material to be attached with adhesives.

3- To roughen (finish) the edge of micro rubber sole.

4- To roughen the surface of bottom (leather) of shoe sole to give a smooth surface before applying bottom finish.

5- Crust leather is scoured with 300- 360 grit of abrasive to smooth the surface of leather before making corrected grain leather.

Emery paper available in the market in various nos. such as No- 24- 60, No- 80- 120, No- 150- 240, No- 300- 360 etc. These numbers represent the grits of the abrasive paper. An international system is used by the abrasive determines the number of grits to a squire inch of material. As such the number grits is bigger it means more numbers of grits are within one squire inch area, and that will be fine grit. In the same manner for smaller grit it will be reverse. The coarser grit is commonly used for roughing edge of the upper before cementing however a fine grit is used to scour the grain of leather sole to give a smooth surface.



Inking brushes

Brushes are differ greatly in terms of size, texture, material and cost. It is made from goat, Siberian weasel, pig, mouse, buffalo, wolf and rabbit hair while exotic once can be made from tiger, fowl, deer, and even human hair.

The inking brushes are three types.

1. Big size brushes
2. Medium size brushes
3. Small size brushes

The smallest brushes are used for very small pieces and for fashioning designs for seals. Medium brushes are most widely used because it can produce a variety of thickness of line , from very thin to fairy thick. The larger brushes are used only for very large pieces. In footwear, the brushes are used to color the edges. A water based edge finish containing pigment, waxes and gums is applied by hand to the sole edge. A machine may be used. The edge must be completely and evenly covered with ink, but there must be no ink on the upper and sole. The flesh side of the sole has a ¼ inch margin of ink applied. This is done to minimize the danger of ink being applied to the upper when the sole in edge ink during finishing.

Sea sponge

Sea sponge have evolved over the last 500 million years and now include between 5,000 and 10,000 species variations. The majority of sponges live in salt water, with only 150 species surviving in fresh water alone. While sea sponges are classified as animals, they have pigments of chlorophyll, making them similar to many plant and bacteria species.

There are four classes of sea sponges

1. Horn Sponges
2. Tropical reef Sponges
3. Gloss sponges
4. Calcareous sponges

It is difficult to pin down the exact number of sponge species as many distinctive species have been named more than once and new species continue to be found. While there are close to 10,000 different names for species of sponges, it is more likely that there are 6,000 actual different species. Sponges are found in a wide variety of shapes, from blob- like formations to cones and tubes, and vary in size from as small as a few millimeters to as much as two meter in height.

There are only about six species of sea sponges that are sold commercially as bath sponges. These species are selected for their dense make- up and flexible skeleton. In their natural environment, these sponges are black, however they are placed into acidic solutions to decalcify the skeletons and then bleached to remove color.

Suede (wire) brush

This is soft brass wire brush. Used to remove dust and loose foreign substances from suede and nubuck leather. Brushed lightly in one direction to give same nap.

Suede brush cleans and brushes up the knap in the suede. If the suede is shiny use a little piece of 120 grit sand paper they bring up the knap even more. In this way we use shoe brush 100% horse hair they provides the high gloss shine in suede leather. Similarly use shoe shine cloth, after polishing, it provides extra- bright high gloss shine. The bars removes shiny marks and stains. The brush brings the nap of the leather to its original appearance.

Suede and nubuck wire brush to raise the nap of the leather on shoes, boots, hand bags or any other suede / nubuck items. Especially good for reaching hard-to- get place.

For the cleaning of suede and nubuck product manufacturer use the following products for their long life preservation.

1- Suede and nubuck protector

2- Suede and nubuck cleaner

3- Tarra go suede dye - To restore color to old suede shoes and accessories.

Suede and nubuck protector

Suede and unpack protector provides protection against water and stains. Keep suede and netback shoes, boots, coats, bags etc. Looking new. Coats footwear with a special polymer that creates an invisible shield to provide maximum protection against water and stains.

suede and nubuck cleaners

The cleaners cleans, conditions and softens suede and nubuck leather. Removes dust and dirt from shoes, boots, belts, clothing and more. The cleaners built in bristle top makes application and cleaning easy and mess free.

Information Sheet 3- Identifying and rectifying of common problems and faults of materials

Finishing faults

Brushing

Generally this operation carried out in shoe room with the help of brushing machine, with provision for cotton and wool brushing, for cutting and polishing purpose.

Rollers are also called the Brushes of the Brushing machines. The machines rotates at variable speeds, polishing is normally recommended at low speeds with the use of polishing wax. Cotton brush can be applied at variable speed , high speed for leather, which needs more abrasive action, e.g. Burnishing leather, Brush- off leather and corrected grain leather with heavy pigmentation.

In polishing normally use rollers of brushing machine at low speed with the use of polishing i.e. synthetic wax or carnauba wax.

Whereas when high abrasive action is not required then roller of brushing machine at medium speed with the use of abrasive wax.

If rules do not follow the faults will occurs.

These are the main reasons for improper brushing-

1- Dressing and materials finish is not compatible or inadequate cleaning.

2- Due to the dirty sponges and contaminated cleaner pots.

3- Due to high humidity, water in solvent, or faulty air supply.

4- Due to excessive heat supply in process.

5- Due to over spraying with butyl acetate.

6- Leather with low absorbency.

7- Low adhesion of finish caused by silicon, oil , greases etc. on the surface of the leather.

8- Spew in the process is the fault of tannery, degrease and then apply the base coat.

9- Cracking of the grain during lasting normally caused by insufficient elastic rectangle. Apply a softener on the grain / flesh side few minutes before lasting.

10- Whiteness appearance due to heavy filler used without its absorption capacity. It deposit on the leather surfaces, then refinish the above shoes.

Streaks on upper

In shoe room, during finishing of upper faults like streaks on upper occurs. Normally this fault arises during liquid dressing due to uneven spray pattern. Distribution of finishing during cleaning and filling i.e. If cleaning and filling does not done properly as per quality and standard norms.

This fault also arises due to poor quality of spraying.

When leather is new, it has a rich, smooth appearance, overtime, the leather will begin to fade in spots where it is repeatedly warn. The color will appear uneven, with light streaks appearing throughout the leather. This happens to leather furniture, such as on the seats or leather jackets at the crease of the arms. Fortunately, a warn leather finish can be restored to an almost new appearance with the right materials.

Instructions

1. Apply a leather cleaners to a clean rag, wipe the entire surface of the leather item to be cleaned. This not only removes the surface dirt , but it opens the pores in the material , allowing the re-coloring balm to work more effectively.
2. Select a re- coloring balm in the appropriate shade. The shade usually come in a few basic color and can fit a range to shades in that color family.
3. Apply the balm to a clean cloth. Beginning at the top of the item to be restored, rub the cloth in a circular pattern. This will work the color into the leather. As the color seeks into the pores, the streaks will disappear and the color will be restored. Add additional amounts of balm to the cloth, as necessary.
4. Buff the leather surface with a clean cloth once the entire item has been covered with the balm. Continue buffing until there is no longer a color transfer between the item and the cloth. The buffing will create a smooth, even appearance.
5. Apply a leather cream to protect your leather item against further wear and fading.

Stain marks

During finishing operation, like incorrect dressing , uneven cleaning, contaminated dressing as well as atmospheric contaminations. Due to above reasons generally fault like stain found on the upper surface of the finished leather, because of tackiness and not proper penetration of finishes as well as uneven dryness of the finished film.

This problems also arises due to poor spray pattern, due to shaking of liquid or season not done before apply it on the surface.

Stain on upper finish

Determine the types of leather:

1. Put a drop of water on the surface of the leather, if the water soaks in the leather is unfinished and will requires more tanning chemicals. If it breaks up, the leather is finished and you can begin cleaning.
2. Take unfinished leather (like suede) directly to a dry cleaners for stain removal.- Unfinished leather is extremely absorbent and the stain will be very difficult to remove.

Determine the depth of the stain

1. If the stain is fresh and only on the surface of the leather item, begin cleaning according to the steps.
2. If the stain is older or has soaked into the leather, you will likely have to re dye the leather professionally to remove he stain.

Cleaning your leather

1. Read carefully the instruction of your leather, if possible because the manufacturer may recommend a certain conditioner or cleaner to remove stain.

2. Wipe the leather gently with a cloth dampened with hot soapy water or use a leather shampoo to clean the affected area. Treat your leather on a regular basis with quality protection products.

Uneven shine

This fault arises due to uneven dressing, cutting as well as uneven polishing. Apart from this using un appropriate wax as per the finish on leather surface also results as uneven shine on the upper

Besides this different absorptions of dye or finish on different parts of skin and hide also cause uneven shine. In correct adjustment of the spray gun applying the final coat or top coat also results as uneven shine. Then there is a possibility of low glass and shine as well as full appearance of shoe upper and finally we cannot get the required quality in finished shoe.

One of the reason that leather is so popular that in addition to its great natural richness, it also take well to a large variety of finishes. There is literally something for every person taste.

Uneven shine finish is called distressed types of finish. In this , finish is a combination of physically ‘ DISTRESSING” the leather. For example the process might include using a hairbrush and then applying wipes of pigments to produce an uneven color. The goal is to make a item look old or worn.

Another way to distress leather is to spot with water and then as it dries, it will shrink slightly giving it a pinched look. If you prefer, you can simply wear it and let natural take its course.

Information Sheet 4- Identifying suitable personal protective equipment

Ohs requirements of finishing room

The finishing department is more related to use of solvents and chemicals at the working floor. Hence it should cover four main points:

- Health risks resulting from exposure to solvent hazards at work
- Solvent fire and explosion hazards
- Principle of prevention
- Emergency procedures employed

Health risks

The effects of the solvents can be acute or chronic depending upon concentration and length of exposure to the body. Main effects are irritation and allergic reaction to skin, eyes and respiratory tract.

Fire hazards

Solvents in the work place are major fire and explosive hazards. The improper storage, handling or transport may result in minor fire to major disaster resulting in loss of human life.

Fire in principle needs three elements to survive:

1. Fuel
2. Heat
3. Oxygen

To check any fire hazard these elements should be controlled. In this respect we can classify the chemicals used in finishing department in two categories:

1. **Water based products:**

   There is no risk of flammability during drying or application but some of the residues may ignite if exposed to a naked flame. Soil deposits must be disposed of correctly.

2. **Solvent based products**

   Most of them contain low flash point solvents and they will ignite instantly if come in the contact of naked flame or hot surface. Safety precautions must be respected.

Principals of prevention

It should base on organizational as well as operational control.

Four basic principle of operational control are:

1- Eliminate the hazard (replace as for as possible, solvent based chemicals to that of water based).

2- Put a distance / shield between the solvent and worker. The items being sprayed must kept within the work area of spray booth and there should not be over spraying. The inhalation of fumes is dangerous and can be avoided by using a proper spray booth, spraying technique and wearing a mouth cover.

3- Provide general and local ventilation e.g. spray booth with exhaust fans and running water to reduce concentration of airborne contaminants such as fumes, gases, vapors and mists.

4- Protect the workers by using personal protective equipment like dust mask respirators, protective goggles, gloves etc. Water based and spirit products, mainly the spirits, degrease the skin if kept in contact for a prolonged period of time. Use of after work creams are suggested.

5- Spillage, disposal, cleaning. Major spillage of solvent products should be immediately soaked by dust or sand to prevent spreading and in particular to avoid contaminating drains.

Information Sheet 5- Describing safety of operator and work place for finishing operation

Once all machinery and plant have been identified, the hazards associated with them can be identified.

- **Physical hazards** are such as noise, heat/cold, radiation, microwaves, etc.
- **Chemical hazards** are derived from chemical used in the work place including toxic gases, noxious fumes and flammable/ corrosive liquids.

- **Ergonomic hazards** are related to physical dimensions of equipment, the placement of equipment and accessibility of a storage area, the weight of equipment or the support of furniture.
- **Movement hazards** are caused by a manual handling such as lifting or moving loads and repetitive movement**.**

Occupational Health and Safety requirements

Protective clothing

Protective clothing is that protects the head, body, and extremities, and consists of at least the following components: Foot and leg protection, hand protection, body protection, eye, face, and head protection. All firefighting members will wear protective clothing meeting the requirements of OSHA (29 CFR 1910.156) and summarized below:

1.Foot and leg protection. Foot and leg protection will be achieved by either of the following methods:

Fully extended boots which provide protection for the legs; or
Protective shoes or boots worn in combination with protective trousers.

2.Body protection

Body protection will be coordinated with foot and leg protection to ensure full-body protection for the wearer. This may be achieved by one of the following methods:

Wearing of a fire-resistive coat in combination with fully extended boots; or
Wearing of a fire-resistive coat in combination with protective trousers.

2.Hand protection.

Hand protection will consist of protective gloves or glove system which will provide protection against cut, puncture, and heat penetration.

3.Head, eye, and face protection.

Head protection shall consist of a protective head device with earflaps and chinstrap. Protective eye and face devices will be used by fire-brigade members when performing operations where the hazards of flying or falling materials which may cause eye and face injuries are present.

4.Emergency actions

- Raise the alarm – anyone who discovers a fire shall immediately inform all his colleagues who might be affected by the fire.

- Attack the fire – try to extinguish the fire with the available first aid firefighting equipment only if safe to do so.

5.Safety requirements

Cutting machine/clicking machine

In using a Cutting machine/clicking machine the following safety rules must be followed.

Do not operate the machine without prior approval

Do not work without written job order card

Only one person is allowed to work on the machine at one time

Before the start of the cutting, check the die for the Article, Size, and Upper/lining/interlining.

Before starting cutting, set the pressure and adjust the aluminum plate 10mm above the die

Check the die for deformation of shape before proceeding for cutting

Do not keep the Dies on top of the other

Switch off the machine when not in use

Use only one die on the Nylon board while cutting material

Safety of spray booth

1. Switch off the machine when not in use.
2. Operators are required to tie their wearing cloths of similar loose parts of their dress at their back.
3. Do not work more than one person on the machine at a time in one place.
4. Wear the mask while on working on the machine.
5. Clean the machine thoroughly every day.
6. Do not wear loose sleeved garments as the sleeves may become caught while operating the machine, wear tight on overalls.

Safety of brushing machine

1- Switch off the machine when not in use.

2- Switch on the dust extractor while operating the machine in order to prevent spreading of harmful dust.

3- Operators are required to tie their wearing cloths of similar loose parts of their dress at their back.

4- Do not work more than one person on the machine at a time in one place.

5- Wear the mask while on working on the machine.

6- Clean the machine thoroughly every day.

7- Do not wear loose sleeved garments as the sleeves may become caught while operating the machine, wear tight on overalls

Safety of ironing machine

1- Switch off the machine when not in use.

2- Operators are required to tie their wearing cloths of similar loose parts of their dress at their back.

3- Do not work more than one person on the machine at a time in one place.

4- Clean the machine thoroughly every day.

5- Wear the mask while on working on the machine.

6- Do not wear loose sleeved garments as the sleeves may become caught while operating the machine, wear tight on overalls

Safety of top-line forming machine

1- Switch off the machine when not in use.

2- Operators are required to tie their wearing clothes of similar loose parts of their dress at their back.

3- Do not work more than one person on the machine at a time in one place.

4- Wear the mask while on working on the machine.

5- Clean the machine thoroughly every day.

6- Do not wear loose sleeved garments as the sleeves may become caught while operating the machine, wear tight on overalls.

LG #44	LO#2. Prepare workstation and set up the machine

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topic–

- Setting -up and arranging workstation
- Collecting, sorting, laying out and preparing footwear for finishing operation.
- Setting-up and adjusting finishing machineries for operation.
- Cleaning and maintaining routine finishing machineries

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Workstation is set-up and arranged according to work specifications and OHS practices.
- Footwear are collected, sorted, laid out and prepared for finishing operation.
- Finishing machineries are set-up and adjusted for operation according to task requirements.
- Finishing machineries are routinely cleaned and maintained.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1”.
3. Accomplish the “Self-check. Request the key answer / key to correction from your teacher or you can request your teacher to check it for you.
4. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Information Sheets 1.
5. Read the information written in the “Information Sheet 2”.
6. Accomplish the “Self-check 2”. Again you can request the key answer / key to correction from your teacher or you can request your teacher to check it for you.

Information Sheet 1- Setting -up and arranging workstation

Prepare work station

Shoe making is a rough and tough process. Most of the operations during its manufacture are meant for giving it a proper shape. During process, the upper material is subjected to a wide variety of abrasive and stretching operations, which can adversely affect its appearance and sometimes even in heart its characteristics.

The process which enhance the appearance and restores the inherent characteristics of the upper leather is called “ SHOE FINISHING”. Finishing is done to upgrade the quality and the aesthetic appeal of the product or to give some special

appearance like shadow effect or Antique effect. It also impart the desired color and level appearance to the material.

Hence good shoe finishing will enhance the image of our enterprise and product brand image. This image can be influenced by the overall looks and appearance, which in turn is affected by the following, all of which are achieved by the finishing work.

Finishing in general has got four fold objectives:

1. **Protection-** Against dry and wet rub, scuff, water, acid, alkali, fire etc, in the case of leather. Fungus spray or silicon pocket for protect shoes from moisture.

2. **Decoration-** Two-tone effect, multi- color, multi design, gloss etc for their special appearance**.**

3. **Physical characteristics-** The characteristics like flexural endurance, degree of brightness, special effects- shadowing, antiquing, cleaning- lack of marks and flaws, durability of the finish in wear, water resistance, feel (waxy finish etc.)

4. **Up gradation-** Up gradation can be started as a 4^{th} dimension of leather finishing because while the available hides and skins are 80-90% defective and also their supply limited, the demand for quality goods is ever increasing.

For the using of the best chemicals and the proper application all are achieved by the following work-

- Degree of brightness
- Feel (waxy finish etc.)
- Special effect-shadowing, antiquing.
- Cleanliness -Lack of marks and flaws.
- Durability of the finish in wear.

Water resistance of the shoe upper can also be enhanced by a suitable finish.

Common materials used in shoe making

Materials used for shoe making from shoe finishing point of view are as follows:-

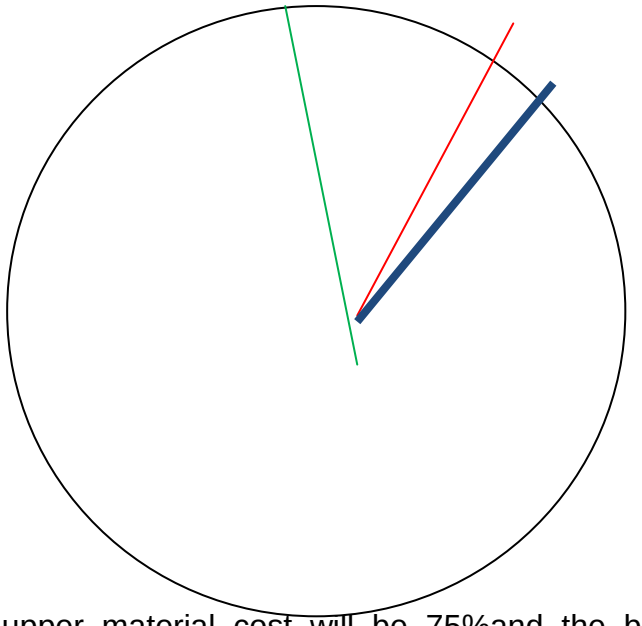
Materials	
UPPER MATERIAL	BOTTOM MATERIAL
1. Leather	1. Sole
2. Synthetic	2. Insole etc
3. Heel	
4. Fabric	

So, the end purpose of shoe finishing is to add value for the customer, by improving the aesthetic.

Upper leather

Finished materials

Other bottom materials



In a shoe manufacturing the upper material cost will be 75%and the bottom material cost is 20%. The finishing cost will be only 5%. Hence, in this figure you easily compare that a small expenditure in finishing can significantly improve customer's interest in the product and consequently to higher return.

Function of shoe finish

The functions of shoe finishing are as follow-

1. To produce a standardized color and appearance

2. To produce a uniform degree of gloss.

3. To protect the leather against adverse chemical and physical influence.

4. To produce a surface that can be suitably cleaned by the ultimate user.

Besides these the color matching play an important role in the shoe finishing operations.

Color matching guide

The principle used in the guide to color matching is known as color circle. Circle is made with three primaries by placing it on the corner of a equilateral triangle. Rest of the color which are made by the different composition of primaries are shown on perimeter of the circle and side of the triangle.

-

Introduction to color matching

Most often it is very difficult to come to an agreement between two parties when the question of color matching comes. We find each one talking in subjective aspects in some orbitary language, which results disagreement. Whenever the question arises regarding the tinge of the shade, redder or greener, whether the shade is lighter or darker, there make a chance of difference in answer of different dyes. This depends upon the sensitivity of different dyers and how close they have absorbed the shade. However this is another thing that both the dyers may match the same shade by using their own concept, but their statement regarding a single shade may vary. This has been so for very subjective concept. Probably this is the root for the development of a proverb " color matching is more an art than a science."

Introduction of spectrophotometer have made an endeavor to disprove this proverb and set a counter logic in support of opposite statement i,e, Color matching is scientific and it needs appreciations in photo physics, photo- chemistry, optics, quantum mechanics, chemistry of colorants, geometry, mathematics and computer applications.

Color matching involves all the steps through which we find the color value of the shade in terms of hue, Chrome, intensity, tone, brightness and with the help of these color values we predict the proportion of binding blocks to match a given sample as closely as possible.

During selection of dyes one should have the idea about primary, secondary and territory colors and also about the result that will be obtained by addition of different proportion of primary, secondary and territory colors.

Primary colors

Yellow, Blue and Red are the primaries colors. All colors are resultant blend of these three primaries.

Secondary colors

When any two of the primary colors are mixed, the color we get is called secondary colors.

For Example-

5 blue + 5 yellow = Green

5 yellow + 5 Red = Orange

5 Red + 5 blue = Purple

Other binaries from different percentage of primaries are shown on the perimeter of the circle.

Tertiary colors

When two secondary colors are mixed, the color we get are called Tertiary colors. Tertiary color consists of three primaries.

Purple + orange = 5 R + 5 B + 5 Y +5 R = Russet (Red Grey)

(Being red in excess)

Orange + Green = 5 Y+ 5 R +5 B + 5 Y = Citron (Yellow Grey)

(Being yellow in excess)

Green + Purple = 5 B + 5 Y +5 R + 5 B = Olive blue Grey

(Being blue in excess)

Key points

All the colors located in color triangle are based on pure yellow, pure blue and pure red. But when ever any one of the primaries colors after combining these becomes differ-

Suppose the yellow available is slightly reddish yellow, then-

5 Y + 5 R = Orange, will be reddish than expected- 5 Y + 5 B = Green will contain some red brought in by this yellow which will locate it towards olive.

How to kill a color

Each secondary has one primary color missing. For instance orange is missing blue, while green is missing red. So remove a red cost by addition of green. Similarly orange kills blue and purple kills yellow.

Yellow + red = orange missing blue, Hence addition of blue kills orange.

Blue + yellow = Green missing red, Hence addition of red kills green.

Red + blue = Purple -missing yellow, Hence addition of yellow kills purple.

Tone (cast)

Inclination of one color towards another color is termed as Tone.

Example: Yellow FB-G (BASF dye stuff) has greenish tone, Brown FB-R has reddish tone. Hence meaning is that, Base color is brown but it deviates towards red.

Properties of leather before finishing

For manufacturing of aniline or semi aniline finish, we select the leather to examine their nature in order that correct formulation, the application method and the drying conditions are carefully determined.

The desirable characteristics of leather prior to finishing operations are-

1- The leather should have flat, smooth grain with a fine grain structure, tight flanks and even substance.

2- The grain surface should not be excessively greasy. Greasy grains will cause inadequate finish, poor coverage and a streaky appearance.

3- The leather should not be too absorptive.

4- The leather must be well laid out to facilitate brushing and spraying operations.

Information Sheet 3- Setting-up and adjusting finishing machineries for operation

Machines use for finishing operation

1. **Spray booth**
2. Brushing and polishing machine
3. Ironing machine
4. Top- line forming machine
5. Spraying cabin
6. Heat seater
7. Wrinkle chaser

Spray booth

On most spray guns for top spraying, the following adjustment are required-

a. Adjust material flow by the screw that controls how much liquid is being sprayed when trigger is fully depressed.

b. Adjust the spray patterns.

- The shape of the spray pattern on some guns can be altered between round and oval.
- " Pear drop " and " banana" shape are incorrect and likely to lead to uneven coverage.

c. Take care of the spray pattern position. This is important on oval spray patterns which should be vertical.

d. Adjust air pressure.

Note that air pressure is not controlled on the gun, but usually on an air pressure controller somewhere near.

The quality depends on-

- Supply of clean, compressed air
- Selection of suitable guns, nozzle sizes and air caps.
- Good maintenance of the equipment.
- Adequate extraction of the fume generated during spraying.
- Spraying method.

Compressed air

Airline can become contaminated with oil or water and the compressor must be drained daily.

Spray booths

It must be of adequate size and should be fitted with a flameproof motor.

Spray gun

The two main types of gun are-

Gravity fed

The dressing is held in a cup on top of the gun. These are usually for the application of repairers, informers and shadow. The dressing is held in a cup below the gun or the gun is connected to a larger reservoir.

The suction fed guns are usually used for top dressing where high production rates are essential. The use of 5 liters of reservoir of dressing

connected by a siphon to the spray gun is normal. The correct type of connecting base must be selected. Rubber base are satisfactory for water borne dressings but special fluid bases and connectors are needed for spirit borne dressings. If these are not used the base can leak and the dressing may siphon on the floor. This prevents from film forming on the surface in top dressing.

Maintenance of spray gun

Correct cleaning of the gun will give the following results-

1. It provides trouble free running. At the end of the day flush out the gun and cup with water or spirit such as acetone. The cleaner can be left in the gun overnight providing the equipment is clean.
2. Never totally immerse the spray gun in sprit. This can damage the packing.
3. Oil the needle and air valve daily.
4. Clean air and fluid holes with compressed air or a bristle. NEVER USE WIRE.

Spraying techniques

A technique should be developed to obtain an overall even coat of the dressing, without streaks, runs, misted or rough finish. The following are some factors that are important-

1. **Check spray patterns**

   The spray patterns should be checked momentarily spraying on a piece of waste material such as cardboard held squire to the gun. Uneven patterns are usually due to obstructions or damage at the fluid tips.

1. Check air pressure to the gun. This should be 2.8 to 3.5 Bar. Or (40 to 50 psi).
2. Hold the shoes and boots putting the hand inside the best. The hand is used to present the shoe at the correct angle (not to move it past the gun). The hand will protect the inside of the shoe from over spray.
3. A glove should be worn for protection.
4. By holding the shoe on the top of the heel may result in leaving marks on successive shoes from the accumulation of spray on the thumb and

fingers . The shielding effect of fingers and thumb can also leave noticeable areas not sprayed on the side of the heel.

5. Have correct altitude, and distance of the gun from the shoe—

   The nozzle of the gun should be kept squire to the upper surface, at the distance of 30 cm. (12 inches). The fluid flow should be adjusted to give sufficient dressing to " wet out " causing runs.

   The best method may be to start at the toe, moving along the feather edge, up to back seam, along the top- line , over the instep, along the other side top line, down the back seam, along the feather to the toe, and up the center of the vamp to the top of the quarters.

   The gun must be moved with one hand, while the other presents the shoe in the right altitude. The spray should be started and finished JUST OFF the shoe, and must be kept moving at a CONSTANT SPEED over the surface.

6. **Ensure drying**

   Once spray is completed, very great care must be taken to avoid touching the wet surface, or allow anything to contact it until it is thoroughly dry.

Application procedure

1. Use good quality sponges and clean the same with water before and after application.
2. For cleaning the shoe use clean starch free cotton cloth and change the cotton cloth regularly.
3. Always allow some time (5 minutes) for drying all water based products, in between each operation.
4. Before and after spraying water based products, clean the gun with water only.
5. Solvent based products to be sprayed at less pressure (45Psi).
6. Before and after spraying solvent based products, clean the gun with solvent thinner or acetone only.
7. Water based products at more pressure (60- 70 Psi).

8. For safety measure clean the surface of shoe (degrease) after application of abrasive and before applying the top dressing.

Machine operation instruction

Switch off the machine when not in use.

8- Operators are required to tie their wearing cloths of similar loose parts of their dress at their back.

9- Do not work more than one person on the machine at a time in one place.

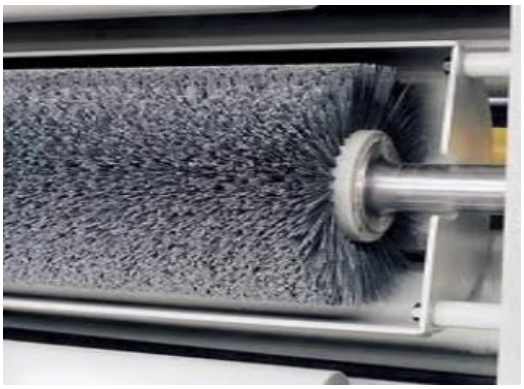
10- Wear the mask while on working on the machine.

11- Clean the machine thoroughly every day.

12- Do not wear loose sleeved garments as the sleeves may become caught while operating the machine, wear tight on overalls.

Brushing machine

This operation is required for finishing of leather and to give shining or polishing effect on upper leather. This is also converting or merges the course grain leather into fine grain upper leather. To produce or bring the burnishing effect, two tone effect, polishing effect to the upper part of the shoes with the help of suitable waxes.



Generally this operation carried out in shoe room with the help of brushing machine, with provision for cotton and wool brushing for cutting and polishing purpose. In polishing, normally use roller of brushing machine at low speed with the use of polishing i, e, synthetic wax or carnauba wax. Whereas when high abrasive action is not required then rollers of brushing machine at medium speed with the use of abrasive wax. If rules do not follow the above method provides uneven shining and creates problem in shoe finishing.

Brushing machine have surface preparation abrasive brush with all the necessary technical devices required to obtain a perfect finish on the flat surface. Machines are designed to suit individual customers applications and requirements. It provides the uniform brushing effect on the grain surface of the shoe.

The technical specification of this machine is-

- Height 175 cm
- Width 130 cm
- Depth 85 cm
- Weight 350 kg
- Power 3 Kw

Machine operations

1. Switch on the machine whenever required.

2. Grain leather to be brushed well, as well as poromeric materials also.

3. Use either the soft / hard cloth or woolen brush as per the requirements of finishing.

4. We must maintain the following-

A) Machine speed should be 900- 1100 rpm, 400- 500 rpm from cloth brushing as well as woolen brushing respectively.

B) Use appropriate wax for finishing.

C) Cloth brushing--------- Abrasive wax

D) Woolen brushing------ Carnauba wax

E) The course grain surface to be polished or merged well.

F) To bring the shining or polishing effect to the shoe.

Machine operations instruction

Safety

13- Switch off the machine when not in use.

14- Switch on the dust extractor while operating the machine in order to prevent spreading of harmful dust.

15- Operators are required to tie their wearing cloths of similar loose parts of their dress at their back.

16- Do not work more than one person on the machine at a time in one place.

17- Wear the mask while on working on the machine.

18- Clean the machine thoroughly every day.

19- Do not wear loose sleeved garments as the sleeves may become caught while operating the machine, wear tight on overalls.

Ironing machine (long boots)

Specifications

1- Long boot ironing machine is a two station forming machine with heated metal lasts, suitable for longboot.

2- Each station is equipped with an independent regulators to adjust the stretching of uppers according to the type and number of the uppers.

3- Each last is equipped with a separate mini- safety switch protecting each resistance independently.

Specification

- Item model TS- 987 B
- Machine size = 98 * 70 * 150 cm
- Net weight = 200 kg
- Power applied = 600

This machine is well equipped and it is useful for ladies shoes, Gentlemen shoes, Ironing leather. It contains and used in boot ironing machine, aluminum molds, heating device, ironing long boots, pedant switch etc.

Features

1- This machine equips with heating device.

2- The aluminum mold is separated to upper and lower parts. They expands long boots.

3- The aluminum mold can be rotated 180 degree. It is for the convenience of ironing long boots.

4- A pedant switch is equipped in the machine for easy operations----.

5- It is automatic machine saves man power and increases efficiency.

6- Electric counter device to control weight for easy replacement.

7- Low breakdown rate, high machinery life- span.

8- High revolving speed results in large production. Compact machine size contribute to factory space saving.

9- Two styles of aluminum molds can be loaded simultaneously. This machine equips with heating device.

This machine is useful to chase the wrinkle in ladies and gents long boot with the help of heating rollers.

Machine operation instructions

Safety

Switch off the machine when not in use.

1. Operators are required to tie their wearing cloths of similar loose parts of their dress at their back.
2. Do not work more than one person on the machine at a time in one place.
3. Clean the machine thoroughly every day.
4. Wear the mask while on working on the machine.
5. Do not wear loose sleeved garments as the sleeves may become caught while operating the machine, wear tight on overalls

Hand irons

Hand irons are used in footwear and garments industry to remove the wrinkles and fold marks. It is used to improve the quality and produce the shining of apparel and allied products.

Generally the quality of the footwear and garments is measured in three characteristics:

1- Durability

2- Utility

3- Emotional appeal

With respect to the raw materials used, the product design and the constructions of the product. Durability factors are tensile strength, tear-strength, abrasive resistance, color fastness and cracking and bursting strength. Utility factors are air permeability, water permeability, thermal conductivity, crease retention, wrinkle resistance, shrinkage and soil resistance. Appeal factors are eye appeal of fabric or leather / leather garments face, tactile response to the fabric surface, fabric hand and eye appeal of the leather garments face, design and drape. The principles involved are the same whether the garments is made of leather, plastic, foam or textile such as women, knit or felt fabric.

Pressing and molding process

Molding is the process that change the surface characteristics or topography of a garment or shoe or one of its section by application of heat, moisture or pressure. Pressing, pleating, blocking, mangling, steaming, creasing, curing and casting are trade terms for various molding processes in producing clothing and footwear.

Pressing has two major divisions.

1- Buck pressing

2- Iron pressing

A buck press is a machine for pressing a garments or section between two contoured and heated pressure surfaces that may have steam and vacuum systems in either or both surfaces. Before 1905, all garments pressing was done by hand irons heated directly by gas flame, stove plate heat or electricity.

In iron pressing, a hand iron functions as top pressure surface. The two major types of hand irons are steam ejectors and dry irons. Electric hand irons are equipped with thermostats that regulate temperature. Steam heated irons, whether ejection or dry, have fixed temperatures depending on the pressure of the steam supplied to the iron. Many hand irons are equipped with lift devices and gear devices to control stroke rate and minimize operator fatigue. Hand irons are made in a variety of sizes, weights, shapes and surfaces, the specific usage determines the combination.

Top- line forming machine

This machine is applicable to final moulding and finishing, before removed and packed, melt the glue of the heel deformed with electric heating and then cool it down for moulding. The heel after moulding will have a straight and perfect shape. In addition, the heating and cooling will remove the damp so as to keep it from mold growth.

- Free regulated temperature and heating time upon the material of vamp.
- Time can be adjusted when the temperature reaches 150 degree centigrade. It has a good moulding effect.

Specifications

- Dimension (L * W * H) = 700 * 620 * 1250 mm.
- Net weight = 185 kg
- Power = 0.75 kw
- Voltage = 220 v / 50 Hz
- Production = 1400 Pairs/ 8 Hrs.

Machine operation instructions

Safety

7- Switch off the machine when not in use.

8- Operators are required to tie their wearing clothes of similar loose parts of their dress at their back.

9- Do not work more than one person on the machine at a time in one place.

10- Wear the mask while on working on the machine.

11- Clean the machine thoroughly every day.

12- Do not wear loose sleeved garments as the sleeves may become caught while operating the machine, wear tight on overalls.

LG #45	LO#3 Perform Finishing and packaging of the work

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topic–

- **Identifying different types of leather finishes.**
- **Identifying and describing finishing processes I and II.**
- **Performing finishing operations**
- **Identifying and sorting, packaging and labeling materials**
- **Checking products as per customer specification**
- **Performing packaging operations**
- **Taking action to prevent accidents and to eliminate risks to personal safety.**
- **Completing production and other records**.

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Different types of leather finishes are identified.
- Finishing processes I and II are identified and described.
- Finishing operations are performed according to customer specifications and standard procedure.
- Packaging and labeling materials are identified and sorted
- Products are checked as per customer specification
- Packaging operations are performed according to customer specifications and standard procedure.
- Action is taken according to OHS practices to prevent accidents and to eliminate risks to personal safety.
- Production and other records are completed

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1”.
3. Accomplish the “Self-check. Request the key answer / key to correction from your teacher or you can request your teacher to check it for you.
4. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Information Sheets 1.
5. Read the information written in the “Information Sheet 2”.

Accomplish the “Self-check 2”. Again you can request the key answer / key to correction from your teacher or you can request your teacher to check it for you

6. Read the information written in the “Information Sheets 3”.
7. Accomplish the “Self-check.

8. Read the information written in the “Information Sheets 4”.
9. Accomplish the “Self-check.
10. Read the information written in the “Information Sheets 5”.
11. Accomplish the “Self-check

Information Sheet 1- Identifying different types of leather finishes.

Shoe finishing

Shoe finishing is very important as for as the final appearance and better visibility. This appearance deals with the art of improving the quality and the market value.

Objective

1- To provide surface coating so as to protect the shoe from damage due to rubbing and scratching.

2- To give level appearance of color.

3- To give suitable shade as per the fashion demands.

Properties of ideal finishing film

Shoe finishing is the technique of a film formation on the grain layer. It should have the following properties.

1- Protective coating.

2- Resistance to heat, cold and moisture.

3- Should not crack on being extended or flexed.

4- Should be fast to stain and light.

5- Should be easily cleaned and polished.

6- Durability against rubbing on dry and wet leather.

7- High adhesion.

8- Permeability to water vapor and air, ensuring the hygienic properties of leather.

The finishing film have three different coats-

1- Bottom coat or Ground coat

2- Middle coat or Intermediate coat

3- Final coat or Top coat.

Bottom coat or ground coat

The object of the bottom coat is to fill and cover the opened- up surface of the leather, to seal together the fibers exposed due to buffing operations and so contribute towards enhancing the strength of the finish film. It is also meant to level up the varying absorptive property of the leather surface and even up the shade desired in the final leather. In many cases the ground coat also expected to act as a plasticizer reservoir. As for as possible, the bottom coat should be designed to cover faults.

Middle coat or intermediate coat

The middle coat is intended to be a covering and leveling coat so that any finishing marks or grain defects can be eliminated and covered at this stage. By adding various properties of matting agents the desired degree of gloss is adjusted. The middle coat provides the thickness of the finish film. To obtain increased resistance to hot plating and also to confer a more leathery feel higher proportion of resin binder are added in the middle coat.

Final coat (or) top coat

The final coat is usually free from resin is designed to increase fastness to wet and dry rubbing and help to obtain adequate resistance to hot plating. Small quantities of wax preparations are also used to obtain a warm feel and the best possible surface smoothness. Gloss can be controlled in a suitable manner by the thickness of the finishing film. In final or top coat the tanners generally used hydraulic lacquer with water or solvent based nitrocellulose lacquer with nitrocellulose thinner to maintain the gloss.

Finishing may improve the quality of leather in so for as-

1- Levelness of color on the skin.

2- Uniformity of shade from skin to skin and pack to pack.

3- Changing the color.

4- Imparting color or pattern to un-dyed leather.

5- Adding a transparent film through which the natural appearance of the leather may be viewed.

6- Adding a transparent color film to the leather.

7- Covering the leather with an opaque film in order to obliterate all defects.

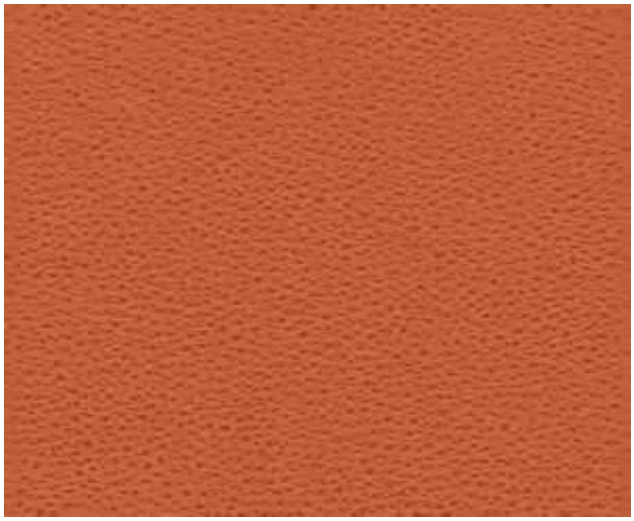
8- After the surface of the materials splits.

9- Improve the scuff resistance of the leather.

10- Improve the water resistance of the leather, i,e, the finish should not discolor or swell and hence protect the leather and retain its good appearance.

11- Give a leather of optimum cutting value.

12- Seal the leather surface so that it remains clean.



Full grain calf, aniline and semi aniline leather

1. Full grain calf

The full- grain leather generally made by the cow calf leather and vealer calf leather. The skin from young animal have a fine texture and tight grain, they are very supple, and leather is thinner than that of more matured 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 making top quality footwear uppers with aniline and semi- aniline finish. The baby calf skins are small in area, containing between 4.5 to 7 square feet. The leather is usually measure up to 1.2 mm in thickness. The grain will be tight and fine and produce a supple good quality leather.

Since the leather is light weight, it is suitable for women's shoes. However, it is too light for men's shoes without backing.

Calf leather has close fibrous structure with little variation in substance over the whole area of the hide. The leather could be smooth, boarded or suede finished, have a rubbery feel with good lasting characteristics, are used in the manufacture of high quality ladies and men's shoes. In vealer calf, these are approximately half grown and will produce a full skin which can be up to 17 square feet in area and up to 1.6 mm thick. The leather produced from these types of calves still has a fine tight grain.

With full grain leather, the hide of the animal used are not treated significantly. Full grain leather is not sanded, it can still be dyed, called an aniline finish. Not dyed full grain leather is harder to find. In fact, if you do not buy full grain leather with an aniline finish, you will usually find it with a semi aniline finish. This is a clear finish placed on the leather that will allow imperfection in the leather to show. Actually many desire the semi aniline in full grain leather because it gives a more natural look to the leather.

Unlike other types of leather, full grain leather uses the whole hide rather layer of the hide. In contrast, top grain leather another very desirable product uses the top layers of the animals hide. Using the whole hide make full grain leather much thicker, and great for products that require a certain amount of durability. For instance, you will find great messenger bags, and briefcases made by designer like Kenneth cole, using exclusively full grain leather. Louis Vuitton make some beautiful full grain leather hand bags that can be quite pricey, as much as 1000US dollars each.

Many different types of shoes may be made with full grain leather. Natural choice include the cow boy, boot, but popularity of full grain leather has resulted in athletic, dress, golf, and a variety of other style shoes made with this leather. You will also find a number of furniture pieces, upholstered with full grain leather only. These are more desirable because of their exceptional durability and their actual improvement in look and feel the longer they are used.

The best quality calf skins and kid skins are still finished with the classical protein finish involving the application of many dilute proteins coats and employing glazing, ironing and plating operations. This kind of finishing procedure gives excellent smoothness of grain combined with a mellowness of feel and it has been difficult to

match this combination of properties precisely with plated finishes. On poorer grade skins, particularly if they have to be buffed, the pigmented resin base, lacquer emulsion-top type of finish combined with plating operations gives a very good appearance and feel. A considerable amount of kip is made today in America in a boarded effect and for this kind of appearance excellent results are obtained with pigmented resin base coats, lacquer emulsion top coats, and boarding operations.

2. Aniline leather

Aniline finished leather is generally made by 1st and 2nd grade leather. Means the grain should be free from any defects. This types of skins have a fine texture and tight grain. They are very supple and the leather is thinner than that of more mature animal. Aniline finished leather has close fibrous structure with little variation in substance. Aniline leather is a type of leather dyed exclusively with soluble dyes without covering the surface with top coat. The resulting product retains the hide and skins natural surface with the grain visible pores, scars etc. of the complete original animals skin structure.

Originally the dyes used for this process were synthesized from aniline through chemical reactions. These dyes used to be called “aniline dye”. Hence leather processed with these dyes are called aniline leather.

There are different kinds of aniline leather, but the same kind of dyes are used in the process. The dyes used in process are clear and transparent chemicals that allows the grain structure of leather to be seen. These dyes shows natural texture, but not protect the leather from damage.

2. a. Aniline finishing

In aniline finishing the grain surface should be 100% visible. Snuffing operations are not done but buffing should be done on flesh side for better visibility of color. In aniline finish the first operation is Impregnation of grain surface.

Aniline leather is “ Leather that has not received any coating of pigmented finish.” The finish is completely transparent, so that the original grain surface can be seen through the finish completely unhindered by any pigment particles.”

2. b. Impregnation of grain surface

In aniline finishing, it is necessary to fill the grain surface of leather by surface impregnation. Which improve the quality of the finished leather? The impregnation agent

penetrate in grain layer, tighten it, in addition to offering the following advantages to the subsequent finish coats.

1- Due to the presence of the impregnating agent in the grain layer there is a partial penetration of the base coat thus giving better coverage.

2- The finished coat is nicely anchored to the grain when plated.

3- The grain break becomes smooth and fine.

Surface impregnates are of two types.

1- Solvent base 2- Water base

Solvent based

Impregnates are usually pre-condensed poly-urethane resin which penetrate the grain surface and react with the moisture and the active chemical group in the leather.

Water based

Impregnates are much simpler to use and less hazardous water based impregnates are premixed with penetrations and require simple dilution with water.

After impregnation the leather are dried overnight, hot or cold plated, very light buffed with the finest paper, brushed off and the base coat finish applied on the grain surface.

3. Semi aniline finished leather

Semi- aniline finished leather is defined by " Leather which has been aniline dyed or stained, incorporating a small quantity of pigment, not so much as to conceal the natural characteristics of the hide.

Semi- aniline finish is the combination of aniline and finished leather. Usually they do not do any grain correction because there is no scars or blemishes to hide. The leather is given to a very light color coat or may be just a light clear coating. So we find a good texture and appearance with this type of leather.

4. **Finishing process of full grain calf leather- aniline, semi aniline**-After lasting or de lasting we take the material for finishing-

The characteristic of these leather is the color transparency and brightness. For finishing of this type of leather some of the systems are-

1- Clean the shoe

Apply the suitable sealing cream

Dry well, put a small quantity of abrasive wax on a cotton brush and then brush it at a medium speed.

Polish it with a woolen brush with the addition of carnauba wax.

2- Clean the shoe

Apply the suitable sealing cream

Once dry, put a small quantity of abrasive wax on a cotton brush and then brush it at a medium speed .

Apply the top dressing

Polish it with a woolen brush treated with carnauba wax, once the shoe is dry.

3- Clean the shoe

Apply the sealing cream

Once dry, put a small quantity of abrasive wax on a cotton brush and then brush it at a medium speed.

Apply a self-shining cream by sponge

Once dry, brush it with a cotton brush and then polish it with a woolen brush treated with carnauba wax.

Brush off leather

Brush off leather is a thick leather generally finished with heavy finish base, on which a removable product, either in contrast color or darker in shade than the base, is applied. Once the leather is brushed, it becomes brilliant with a two- tone effect.

For brush off effect, the leather is having two coats of color of different shades. The top most coat is partly brushed off in shoe finishing.

Finishing procedure

1. Apply a hard abrasive wax (cutting wax) on to a power driven revolving cotton sheet mob, partly brushed off the top most color coating to bring about the brush off look.

   Further brushing, when necessary, can be done by applying a " Filler wax " on to the revolving cotton sheet mob, and brush the surface of the leather.

2. Finally, polish on power driven woolen mop.
3. FOR NATURAL GLOSS ELEGANT LOOK

   Clean the shoe

   Once dry, brush on cotton brush at 700- 800 RPM with abrasive wax.

   Clean the shoe

   Apply suitable cream.

   Once dry, brush on a cotton brush at 700- 800 RPM with abrasive wax.

   Polish it with a woolen brush treated with carnauba wax 700- 800 RPM.

Nubuck and suede leather

Nubuck leather is very similar to suede, but with a very distinctive difference. Both have been sanded to give them a soft feel. The difference is that Nubuck leather is sanded on the inside part of the leather, whereas suede is sanded on the outside.

Nubuck is the type of leather with a soft, velvety surface and is same of the most expensive leather to purchase. Unlike the less expensive suede, this type of leather is for more durable and is excellent for use on items like furniture because it will last much longer than suede. It is subjected to the same kind of easy staining that occurs with suede and often requires pretreatment or stain resistant protection to extend its life.

It is easy to confused about whether a leather item is nubuck or suede since both look and feel similar. Both types of leather are sanded to produce the velvet soft feel that is so desirable. The main difference is that nubuck is sanded on the outer surface of the leather, while suede is sanded on the inner layer of the skin.

Suede has a soft surface, however, it is made from leather that is inherently less durable than the highest quality leather. If you want suede, you have to compromise. Nubuck offers the best of the strongest leather, it is as soft and touchable as suede.

The open fiber structure of suede leather and of nubuck leather should be prevented from gluing and cannot be treated with any material which forms films. First class suede is after drying carefully buffed and full rewetted to dye again. All suede

are mechanically opened in the fibre structure simply by drumming in the dry state or more carefully by brushing. Suede leather in many cases are sprayed with an aqueous finish of aniline dyestuffs composed with some fat to give the single fibre a certain glance.

Suede is made from animal skin by buffing its inner surface with emery to turn out a soft, napped finish that can also be dyed. Suede is a thinner and more flexible material than leather, and can not withstand precipitation and typical leather cleaning. A few drop of water can change suede, softness into an uneven, discolored, stiff and stained fabric, so it requires a different types of cleaning

Goat glazed leather

Goat is one of the best material for manufacturing of full grain glazed finish leather, which have the fine texture and compact grain structure. The best quality materials for glazed goat leather is available in Muzaffarpur (Tirhut belt) in Bihar (INDIA). This is produced from the half matured goat, usually chrome tanned having an area 3- 4.5 square feet. This type of goat leather has close fibre structure with little variation in substance over the whole area of the skin. The leather could be smooth, have a rubbery feel, grain similar to sheep skin with good lasting characteristics , are used in the manufacture of high quality of ladies and gents footwear.

For glazed finish only buffing process is done in flesh side, no snuffing on grain side because the grain should be 100% visible.

Impregnation

The impregnation is done on grain surface to avoid the excess penetration of season in the leather fiber.

Dye solution	200 ml
Protein Binder	400 ml
Water	400 ml
	1000 ml/1 liter

One spray coat, Dry well, Again plain plate 80Degree C Temp. and 120 Bar pressure.

season coat

Dye solution	100 ml
Casein Binder	150 ml
Egg albumins	15 ml
Wax emulsion	10 ml
Penetrator	10 ml
Ox- blood	10 ml
Liquid Ammonia	10 ml
Water	690 m
	1 liter

One or two spray coat, check covering, Dry well, then send the material for Glazing machine to produce proper glaze.

If you require water proof glazed goat skin, then apply-

Formaldehyde	200 ml
Water	800 ml
	1 liter

One spray coat, Dry well, then provide Top coat for proper dressing.

Shoe finishing process of goat glazed leather

The characteristics of this material is its natural grain and bright and transparent finish.

1. Clean the shoe.

   Apply the filler.

   Apply a high shine top dressing.

   Brush it on a cotton brush with abrasive wax.

   Polish on a woolen brush with carnauba wax.

2. Clean the shoe.

   Apply a high shine top dressing.

   Brush it on a cotton brush with abrasive wax.

   Polish on a woolen brush with carnauba wax.

3. Apply the super tique staining cream on lasted upper.

   Pass through heat setter.

   Iron the shoe at 60-70 degree Celsius.

   Brush on cotton brush with abrasive wax.

   Brush on cotton brush without wax.

   Sole attaching and other operations

   De-lasting

   Clean the shoe

Apply the Filler.

Apply the suitable top dressing.

Brushing on cotton brush with wax

Polishing on a woolen brush with wax

Non- leather

In recent year, the demand for leather has for outstripped supply and there is now a world shortage of skins and hides.

By taking into account the increase in world population and the increasing use of leathers in articles other than shoes, it is thought that the supply of skins and hides will be at least 30% less than the potential demand by the world. This has led to the emergence of various forms of artificial leathers.

There are two main types of artificial leathers at present available to the shoe industry. They are-

1- Coated fabrics

2- Synthetic poromerics

Coated fabrics

These materials were first developed by using a coating of linseed oil over either woven, knitted or non- woven fabrics. Linseed oil has now been replaced by thermoplastic coatings such as P. V. C. or curable coating such as polyurethane.

Pu coated fabrics conventional (solid) up coated fabrics by transfer coating

Any special finishing effects are first applied to the release paper and dried. The PU used is usually linear but for patent effects a 2 part PU is preferred. The PU as a 30% to 35%solution in a solvent such as dimethyl form amide or methyl ethyl ketone. The solution is spread onto the release paper and dried in an oven at 130 degree C – 150 degree C. The purpose of using a twill is to ensure that the fibers raised are mainly from the weft threads. The warp yarns will not be weakened by the brushing.

One or two parts PU adhesive is applied to the fabric such that only the raised fibre tips are coated. The layer on the release paper is then laminated immediately to the fabric and heated to remove solvent from the adhesive. 2-part PU requires longer heating periods than the linear PU to bring about the cross- linking reaction. Only when cross- linking is completed the release paper is removed. The two part adhesive systems give better bonding to the fabric and are less susceptible to heat softening or hydrolysis damage.

Coagulated pu coated fabrics

A special permeable micro porous structure can be created in PU solution in dim ethyl for amide to a non solvent. The non solvent must be able to mix with the DMF in all proportions and water is ideal for this. In practice, better control of the coagulation is obtained, when the water already contain a small proportion of DMF. The PU solution may be applied only to the top surface of the fabric or to both surfaces by immersing the fabric in the solution. The fabric is usually cotton or cotton/ polyester, but viscose and viscose/ polyester materials have recently appeared in the market.

Pvc coated fabrics

PVC plastisol, without blowing agent, is spread in a thin film onto a silicone-treated release paper then gelled and fused. The paper may be embossed if required or first sprayed with a lacquer. This will form the top layer of the final product. A second plastisol layer, containing blowing agent, is spread on top of the first and passed into a low temperature oven. When the layer begins to gel but is still quite tacky. It is combined with the backing fabric. The laminate then passes to the main fusion oven where the PVC melts and the blowing agent is activated to produce the expanded structure. The material is then cooled and the release paper stripped away.

Poromeric materials

These materials have absorption and permeability properties similar to leather. The material consists of a surface of polyurethane film, with either a microporous or microcellular layer beneath.

In addition to these two main types collagenous poromerics are being experimented with and being used to a small degree. With these materials tanners can use either of the following method.

A) The reformation of tanned leather fibers from leather scrapes into fibrous sheets.

B) The dissolution of un tanned leather fibers from the raw skins followed by the reformation into sheets which are then tanned to produce the finished product.

In view of the large range of artificial leather available, it is difficult to summarize the precise advantages and disadvantages of them all. It is true to say that some artificial leathers lack some of the unique properties of leather, but in some you will find greater strength, more abrasion resistance and the ability to retain better shape and cleanliness.

Fabrics

When fabric is used for upper material in place of leather, problem of substances and quality do not apply as these are uniform. The principle of tightness and stretch does apply, as the weft threads (those running cross) are usually more stretchy than the warp threads (those running lengthwise) . However, the lines of tightness are regular and consistent. Patterns can be cut on-

The warp system - (lengthwise)

This is ‘ tight to toe” but make them liable to breakage in manufacture.

The weft system- (across)

This is more flexible-

The bias system- (diagonal)

This is usually employed when a vamp lining is combined to a plumper (thickening layer) so that equal elasticity in each.

It will be obvious that fabrics (unlike leather) can be cut strictly to a system, so that waste is reduced to a minimum between patterns. When cutting uppers from fabrics which are decorated, it is necessary to match exactly the design on both shoes of pairs.

Methods of cutting

The action of cutting the component can be either by hand or machine. Traditionally, cutting was done by hand, but today many of the larger companies use machine cutting. Which method is chosen is largely a question of economics. If the pair age of shoes likely to be sold on any one style justifies the cost of a set of press knives, the shoes will be machine cut, if not they will be hand cut. Larger companies making many pairs of the same style are more likely to machine cut, while the smaller companies who make only a limited pair age of each style are likely to hand cut.

The quality of the finished upper should not be affected by the method used, whether, it is by hand or machine. Man made materials, because of their uniformity, can be cut multi- thick and need much less skill in cutting than leather.

Self-Check -1	**Written Test**

Name: _____ Date: _____

Time started: _____ Time finished: _____

Directions: Answer all the questions listed below.

Part- A

Fill in the blanks: **(3 = 3)**

1- Shoe finishing is a --------and----------process.

2- Good shoe finishing will enhance the image of our enterprise and product----------

3- A small expenditure in shoe finishing improve customers interest and consequently to----------.

PART- B

True or False: **(3 = 3)**

1- Nubuck leather is sanded on the inside part of the leather , whereas suede is sanded on the outside.?

2- In goat glaze leather, snuffing is done on grain side.?

3- In fabrics, warp threads running lengthwise.

Note: **Satisfactory rating 100%**

You can ask you teacher to correct your work.

Information Sheet 2- Identifying and describing finishing processes I and II.

Shoe finishing process

Cleaning

Before starting the finishing operation, ensure that the surface to be finished has been cleaned. The purpose of cleaning the upper of the shoe is to remove,

- The dirt
- Adhesive overspill
- Other unwanted marks and contamination

And prepare the shoe surface to accept dressing and other finishing treatments.

Cleaning can be done before or after removing the last from the shoe. The latter is preferable for better shape retention of the shoe.

Principles to follow when cleaning

1- Relate the choice of cleaner and the method of cleaning to the types of contamination that is being removed and the types of finish on the upper.

   For example- Solvent based cleaners should be used to soften natural rubber (because water based will not).

   However, do not try to remove rubber solution from suede with a solvent-based cleaner or " tide marks" will result. Suede has to be cleaned dry by rubbing with crepe rubber.

2- Use dry methods in preference to wet.

3- Use the mildest treatment possible that will effectively remove the contaminations.

The stronger the cleaner, the more finish it will remove in cleaner.

Start with the mildest cleaner, and dry progressively stronger cleaners until the dirt is removed.

Types of liquid cleaners

The types of cleaners can be divided into the following categories-

1- Water based cleaners

2- Water + solvent based cleaners

3- **CLEANERS** Solvent based cleaners

Water based

These are usually very mild types of cleaners and contain soaps, wetting, dispersing and emulsifying agents (detergent) and sometimes weak alkali such as ammonia dissolved suspended in water.

Water based cleaners are soft enough to be used for machine cleaning and are suitable for overall remove of the general grim picked up in the factory from handling. Care should be taken with cleaners containing ammonia on some types of leather finish.

Solvent + water based cleaner

Cleaners of this type are made from solvents that mixed with water such as methylated spirit and acetone. Some of these can be very strong and will quickly attack and strip off some finishes.

These cleaners are suitable for overall cleaning of certain finishes that are unaffected by these solvents such as PU coated fabrics, patents etc. They have a big advantage over water based, that they dry much quicker.

Solvent based cleaners

The solvent in this type are usually derived from petroleum and can be mixed with other solvents of the same type to give different cleaning powders.

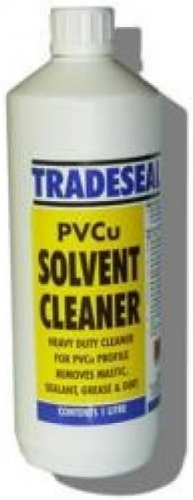
These are suitable for removing grease, oils and waxes and the weaker blends can be used for overall cleaning and certain finishes. They are very quick in dry.

Cleaners / polishers

Cleaners / polishers are supplied in gel forms and contain solvent cleaners and polishing agents which remain on the surface after the solvents have evaporated.

Application is by sponge or cloth and after drying can be polished on a power mop.

These are very suitable for patents and PU coated fabrics, and have the advantage of giving an acceptable semi- bright finish without having to spray.



Conditioners

Conditioners are water based and are designed to open up the surface for efficient cleaning.

cleaning methods

Cleaning can be done both wet and dry methods. It can be done by hand or by machine.

Cleaning dry by hand

The items used for this cleaning methods are-

Crepe rubber- For removing adhesive.

Soft sponge rubber- For brushing the suede nap.

Brushes- Wire and stiff bristle type.

For removing general dust and dirt from suede.

For brushing up the suede nap.

Scouring pads- For removing general dust and dirt from suede.

Dull knives- For scraping away hard substances like waxes. Sometimes warming the knife slightly to get the knife under to lift contaminants from the surface.

Emery paper- Various fine grades of grit for raising and even up any suede nap that has been badly treated or discolored. Cleaning dry also is the method on all types of fabrics, as liquids leave " tide marks". The best solution is to avoid getting the shoe dirty in the first place as heavy staining is impossible to remove.

Cleaning dry by machine

The machine can have power driven, revolving brushes of various shapes. The method requires that the upper finish of material will stand up to friction and the heat generated by brush.

Apply just sufficient pressure to remove dirt without damaging the finish. Usually, removing some stubborn contaminants by hand method is necessary.

Cleaning wet by hand

Advantages of hand cleaning is that selective cleaners can be used and an operative can give to each shoes individual treatment .

1- Apply the cleaner by cloth (white cotton pieces are best) wrapped round the fingers by rubbing gently over the surface. Or by sponge when very little rubbing pressure is required. Stubborn dirt may need extra rubbing or application of a more suitable cleaners. Crepe rubber and dull knives can be used.

2- Change cloths frequently and wash out sponges regularly.

Cleaning wet by machine

The machine has an application for cleaner and usually a mild water - based type is chosen for general cleaning.

1- Adjust the amount of cleaner applied to the revolving brush to " wet- out" the material without being excessive.

2- Take care not to over brush and damage the finish.

3- Follow the following work method.

- Clean the feather area with the small welt cleaning brush.
- Clean the upper with bigger wet brush.
- Dry the upper on the cloth mop.
- Polish on the woolen brush.

Wetting out and drying out

A cleaner to be effective must " wet- out" the material being cleaned. If the liquid does not spread out on the surface, but runs over the drops, it is not wetting the finish and should not be used.

After cleaning upper must be allowed to thoroughly dry out before other operations are carried out, otherwise there were be a lack of adhesion with the next coat of dressing. Bloom may be develop later on the box.

cleaning for various soiling materials

Cleaning materials	Cleaning agent
Color code Paint (on material edge)	Detergent
Thread lubricant	Detergent
Spray marking	Detergent
Silver pen	Solvent
Grease	Solvent
Thermoplastic adhesive	Solvent / Detergent
Rubber adhesive	Blunt knife
PU adhesive	Crepe rubber/ Adhesive
Neoprene adhesive	Rubber / solvent

2.1.2.Repairing

During the shoe making process upper material is subjected to a variety of abrasive and stretching actions, which can adversely affect the appearance of the shoe.

The damage may be due to the following reasons:

1- Over roughing along the featheredge

2- Scuffing of the finish during handling.

3- Damage to the finish by solvents and heat.

4- Grain crack during lasting.

5- Increase in shade variation of upper leather.

Repairing includes both upper and bottom repairs, of a minor nature, such as scratched uppers at upper roughing, heel scouring and very slight cuts during upper clicking, lasting etc.

For bottoms, main repairs area may be in the heel, especially at the seat and heel breast.

The purpose of these repairs is to bring the shoe to a good standard, before continuing with the other operations in the finishing. It can be done by repair crayons, repair pastes, and spray paints for grainy upper materials. The paste or spray can be either water or spirit based.

1- Never repair deep scratches, cuts etc. on the upper as their repair will only leave marks which would be seen on the finished shoe and therefore should not be accepted.

2- For minor scratches, cuts, use very fine grit size abrasives to first even the surface, then apply repair crayons or pigment paste and finish off with renovators etc.

3- Pigment and dyes must match the color of the upper.

4- If only the finish is damaged, then use uniformers or renovators.

5- For repair of soles use-

- PU paint for PU soles
- TPR paint for TPR soles

- Creams and polishes + color of leather soles.

2.1.3.Wrinkle chasing and ironing

Wrinkle chasing is the operation to remove small creases that may appear after cleaning.

This technique is to apply heat to the surface of the upper, or lining materials, to shrink the surface slightly and tightening the grain (if leather) and there by removing the creases.

Ironing

Special electrically heated hand irons which are thermostatically controlled are used for removing wrinkles. Sometimes the whole leather surface is ironed to improve the finished quality

Precautions

1- Avoid a heat build in a small localized area, which may damage the finish of the leather, or shrink the leather upper. Have TEFLON CLOTH on the iron to prevent burning. Maximum temperature of the iron 70 – 75 degree centigrade and with the Teflon up to 96 degree centigrade. May apply water before ironing to prevent burning, or anti crease wax if water cannot use.

2- Patent and high gloss finishes are very easily or loose gloss in the heat. It is sometimes an advantage to apply a little Vaseline or anti creasing wax as a lubricant especially when ironing.

3- Discoloration of pastel shades, white and aniline finishes, all have a tendency to discolor under heat. Check the effect on scrape before attempting the bulk.

4- High grease content leather, the heat may bring the grease to the surface and prevent adhesion of later dressing or cause bloom to appear after boxing.

5- Synthetics, wrinkle chasing is relatively ineffective, and most of these materials have poor resistance to the heat.

Hot air blower (hot blast)

Hot air under pressure is directed over the surface of the material.

The machine is stationary (mounted on a bench) and the shoe is moved under the air steam. Some of these machines have the facility to inject water spray or steam into the air jet, which is said to be beneficial to leather by reducing the tendency to burn, and promoting shrinkage.

Boot leg treeing machine

For good appearance, boot legs are shaped by a special treeing machine designed for the purpose

a) Leg of the shoes is mulled by steam to make it ready for shaping.

b) Heated aluminum ‘ legs’ is inserted into the boot leg.

c) The aluminum leg is then stretched (split in the center) to heat and give shape to the leg of the upper.

d) The leg of the upper while stretched is also heated by radiation from the heating elements outside the boot for heat setting.

2.1.4. filler or base coat

Fillers are available either in cream or liquid forms. These products are used to fill upper leathers, which have developed an " open or hungry" look after lasting. They act as a base coat for subsequent top dressings. They seal the surface so that the top coat does not sink in and only minimum quantity has to be applied to give the desired appearance and luster. Fillers also enhance the gloss and are necessary for inferior quality leather.

They are available as follows:

Degree of " fill"	Usage
Light	For light leather finishes (protein finish)
Medium	For resin finished leather
Heavy	For leather with open or Hungry look

They are usually available in black for black leathers and colorless for other leather colors. Occasionally the base coats can be color matched with helps to lessen shade variations. They are usually applied by hand using sponges and they should dry out "steak free".

Use of correct fillers will also help in cases where there are problems of adequate adhesion between the top coat and the shoe upper.

Leather finish	Leather	Base/ filler
Protein	Aniline calf, Glazed kid	Light filler
Resin	Resin, semi-aniline Rub off, pearlized	Any type when necessary
PVC	Patent, coated split	None, only color match
Wax	Burnish, oil pull-up	Light filler if required
Suede, nubuck	Suede, Nubuck	None

2.1.5.Top coat or final coat

This operation is often the final treatment which gives the shoe its luster and determines its final appearance. Top dressing is either water based or solvent based.

The success of the dressing rests on-

1- Correct and through cleaning.

2- Compatibility of the dressing with the material finish.

3- Condition of the upper before applying the dressing.

4- Correct application.

5- Correct spray gun adjustment and technique.

Types of dressing and application

Water based dressing

Water based top sprays of older types were based on wax emulsion and protein. The modern sprays are made from acrylic resin emulsions and suitable for use on protein and nitrocellulose coated leathers but not for polyurethane. They are colorless or with colors. Liquid dressing are of two types. Wax based and PU based.

Wax based dressing requires brushing, which gives a natural shine to the shoe.

P U based dressing normally does not require brushing. It gives an artificial shine.

1- Check compatibility of the dressing with upper material because non-compatibility shows as cracks, peel off or white marks.

2- Apply dressing by hand or spraying according to finishing system selected.

solvent based dressing

Solvent based dressing from strong coating, which are compatible with a wide range of upper materials. They are fast drying and are based on cellulose derivatives, acrylics or polyurethane. They can be clear or colored and are available in a wide range of luster from matt to high gloss.

1- Check compatibility of the dressing with the upper material.

2- Apply dressing by hand or spraying.

pu based dressing

It is not repairable if something goes wrong during finishing and one want to refinish after the removal of first finish.

Cutting or polishing

Shoe polish is a waxy paste cream, or liquid used to polish to provide shine, water proof and restore the appearance of leather shoes, boots etc. and extending the footwear life.

Various substances have been used as shoes finish for hundreds of years, starting with natural substances such as wax and tallow. Modern polish formulas were introduced early in the 20th century and many of those original formulations are still in use today. Shoe polish is usually made from a mix of natural and synthetic materials including Naptha, turpentine, dyes and gum Arabic, using a chemical processes. Shoe polish is usually flammable, can be toxic and if misused can stain skins. It should be used in a well ventilated area with care taken to protect cloths, carpet and furniture.

Polishes and creams are non- film forming. Normally wax polishes are used and are widely available either neutral or pigmented to match the color. Surface waxes can impart a measure of water repellency to footwear although they cannot be regarded as water proofing agents. Waxes and creams are also suitable for gloss enhancement or to give some special appearance (antique effect) on leather look synthetic material. Cream could be soft, medium or hard. Soft and medium creams

are those that require to be polished, and are referred to as the creams to be polished. Hard creams are available as self- shining creams. They do not require polishing or brushing operation.

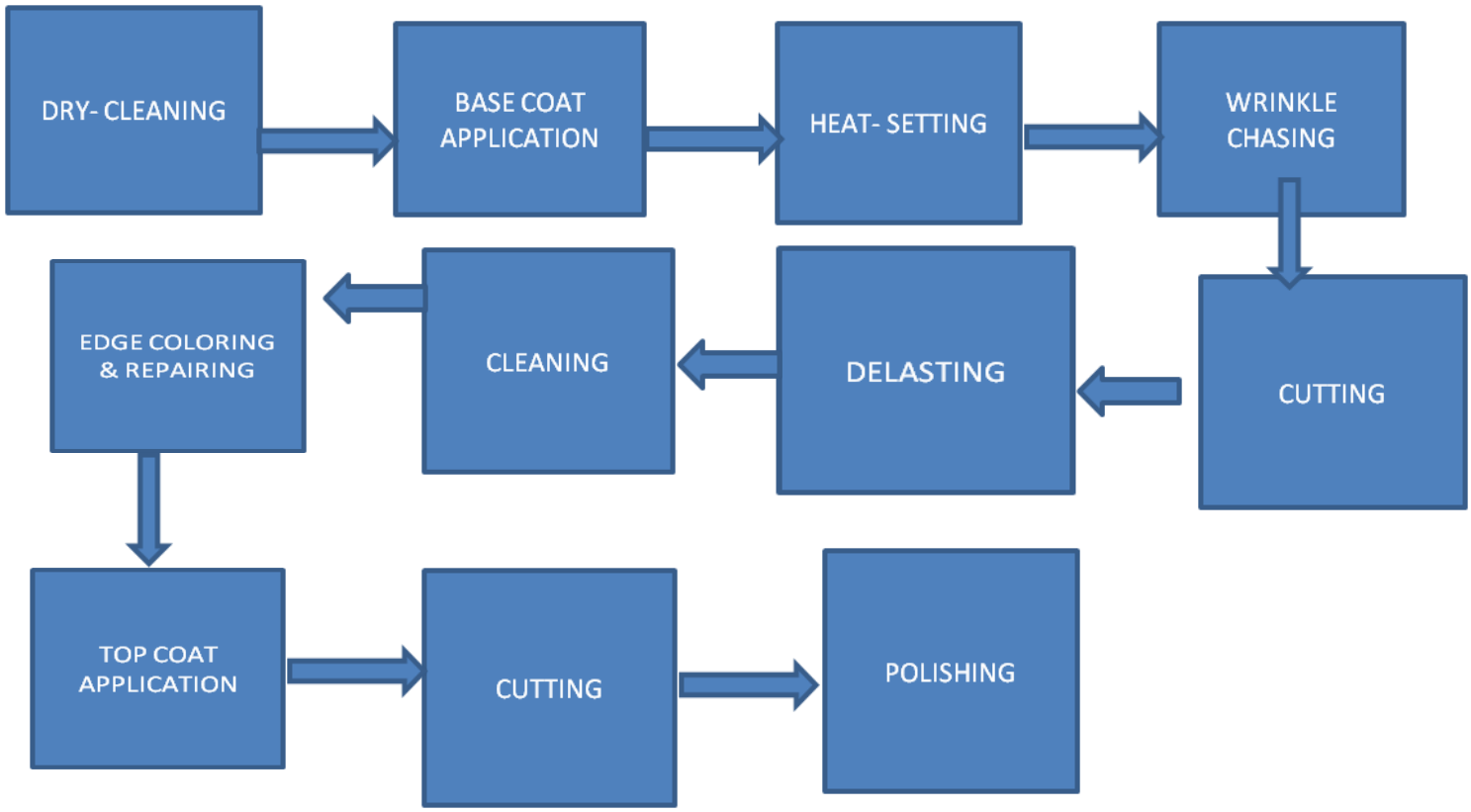
PRODUCTION FLOW DIAGRAM

nformation Sheet 3- Performing finishing operations

Finishing operation :.

- trimming loose threads
- checking/inspecting
- cleaning of sole and upper
- Repairing
- Ironing and wrinkle chasing
- Cream application (base coat and top coat)
- Brushing and polishing
- spraying
- hand or machine sewing buckles
- attaching accessories or trims
- inserting heel cushion pads
- flaring
- lining trimming

Flow diagram for finishing process



Information Sheet 4- Identifying and sorting, packaging and labeling materials

- labels/ tags
- laces
- shoe box and carton
- poly bag
- tissue paper
- shoe lifter
- Teflon tape
- Sticker
- Silica gel
- Micro pack sticker

Lacing, oiling, spraying, cleaning, socks attaching are some steps of finishing department. According to the customer instruction tissue, silica, sticker, shoe tree, hang tag is applied with shoe in a box. Then several boxes are put in a carton and taped

Information Sheet 6- Performing packaging operations

6.1 Packing operation:

Packing is the science, art and technology of enclosing products for distribution, storage, sales and different methods of uses. Packaging also refers to the process of design, evaluation and production of packages.

The purpose of packaging:

1- Physical protection:

The objects enclosed in the package may requires protection from, among other things - socks, vibration, compression, temperature etc.

2- Barrier protection:

A barrier from oxygen, water, vapor, dust etc is often required. Permeation is a critical factor in design. Some packages contains desiccants or oxygen absorbers to help extend shelf life. Modified atmospheres or controlled atmospheres are also maintained in shoe packages. Keeping the contents clean, fresh and safe for the intended shelf life is a primary function.

3- Containment or agglomeration:

Small objects are typically grouped together in one package for reasons of efficiency. For example- a single cartoon of 10 pair shoes require less physical handling than 10 single shoes boxes.

4- **Information transmission:**

Packages and label communicate how to use, transport, recycle or dispose of the package or product with pharmaceuticals, food, medical and chemical products, Some types of information are required by governments. Some packages and labels are also used for track and trace purposes.

5- Marketing:

The packaging and labels can be used by marketers to encourage potential buyers to purchase the product. Package graphic design and physical design have been important and constantly evolving phenomenon for several decades.

Marketing communications and graphic design are applied to the surface of the package and (in many cases) the point to sale display.

6- **Security:**

Packaging can play an important role in reducing the security risks of shipments. Packages can be made with improved temper resistance. Packages can be engineered to help reduce the risks of package pilferage. Some package constructions are more resistant to pilferage and some have pilfer indicating seals. Packages may include authentication seals and use security printing to help indicate that the package and contents are not counter foil. Packages also can include anti – theft devices, such as dye- packs, that can be activated or detected by devices at exit points and require specialized tools to deactivate. Using packaging in this way is a means of loss prevention.

7- Convenience:

Packages can have features that add convenience in distributions, handling, stacking, display, sale, opening, reclosing, use, dispensing and reuse.

8- Portion control:

Single service or single dosage has a precise amount of contents to control usage. Bulk commodities (such as salt) can be divided into packages that are a more suitable size for individual households. It is also aids the control of inventory and selling.

6.2 Packaging types:

1- Primary packaging (shoe box packing):

Primary packaging is the material that first envelops the product and holds it. This usually is the smallest units of distribution or use and is the package which is in direct contact with the contents.

2- **Secondary packaging (Carton Packing) :**

Secondary packaging or carton packing is outside the primary packaging, perhaps used to group primary packages together

3- **Tertiary packaging (Container Packing):**

Tertiary packaging or container packing is used for bulk handling, warehouse storage and transport shipping. The most common form is a palletized unit load that packs tightly into containers.

LG #46	LO#4. Check final quality of the finished pair and dispatch

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topic–

- **Checking footwear against final quality inspection standards.**
- **Identifying, rectifying and returning faults to appropriate section for repair.**
- **Completing quality records and documentation following standard formats.**
- **Dispatching Completed footwear**

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to –

- Footwear is checked against final quality inspection standards.
- Faults are identified, rectified and returned to appropriate section for repair if necessary.

- Quality records and documentation are completed following standard formats.
- Completed footwear is dispatched

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Read the information written in the “Information Sheets 1”.
3. Accomplish the “Self-check. Request the key answer / key to correction from your teacher or you can request your teacher to check it for you.
4. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Information Sheets 1.
5. Read the information written in the “Information Sheet 2”.
6. Accomplish the “Self-check 2”. Again you can request the key answer / key to correction from your teacher or you can request your teacher to check it for you.

Information Sheet 1- Checking footwear against final quality inspection standards

Inspection of footwear

Inspection of footwear totally depends upon the quality control in different stages. This system is based on the following principles:

1- Well defined specifications.

2- Checking and testing all input materials.

3- In- process quality control.

4- Final quality check.

5- Monitoring quality.

The main objective is to achieve a consistent quality standard for the product.

1- Inconsistant quality-

Some consignment are above the required standard and some below the standard. The variation is too large and not acceptable to customers.

2- Lack of clear understanding of quality-

Each staff member of a company has a different view on quality and there is no clear company standard for materials or clear identification of major and minor faults.

3- Tendency to save money on testing-

Testing is the fix parameter of the company. If the company doing not testing, then it will cause a great loss of the company.

4- Insufficient planning to ensure quality.

5- Lack of Top management commitment to quality.

6- Tendency to monitor quality at the end of the line instead of in- process quality control.

7- Poor documentation.

8- Tendency to take only corrective action but not preventive action.

9- Lack of understanding on how to achieve quality.

10- In most factory good quality is only a matter of chance.

Main areas of quality control

1- Material

2- Cutting

3- Closing

4- Lasting

Footwear quality control

1- The main responsibility of a company to produce a better quality to the manager (Production) and production supervisor of each line is to improve the quality in their product.

2- The objective of the quality system should be to prevent a problem rather than a postmortem after shoe are made. This means a shift from end of line quality checks to one that anticipates problems and corrective action taken before major damage occurs.

3- Continuous improvement and involvement of the workforce is essential for success. Schemes that operate in fits and start like quality week are not likely to have long term benefits.

4- It is possible to measure quality and managements should watch the quality index chart every month to ensure upward progress.

5- Why quality important for us?

During the last few years increased competition, recession in many countries and over capacity in footwear manufacturing worldwide have put great pressure on manufacturers to either improve quality or perish.

6. It is the recent survey that manufacturers lose 10- 15% of their sales due to poor quality. These quality improvements can bring about genuine cost reductions.

7. The biggest problems in world is inconsistent quality. Variations in quality from lot to lot create major problems for shoe chains to sell merchandise.

8. Most companies lack of testing centre. They look at laboratory tests as additional costs rather than a way to plug major losses. Cost of quality is rarely measured for e,g, rejections, rework, recut orders etc.

What is quality?

1- Quality is the totality of features and characteristics of a product or a service that affect its ability to satisfy the stated or implied needs of a customer.

2- Quality is not absolute. It is relatively to other goods and services.

3- Quality changes with time and customers perceptions.

4- Quality cannot be achieved by inspection only. It can only be improved by small continuous product and process improvements.

5- Quality consistency requires us to concentrate on the process rather than on the product alone.

6- Good quality requires a clear understanding of design principles that 80% of the quality problems are attributable to management. Workers are NOT the real problems.

7- Quality brings customers loyalty.

8- Commitment to quality must begin at the top of the organization.

9- There should be a clear company vision of quality and it business value. There is no point having a quality policy and yet shipping sub standard material as a calculated risk.

10- It is important to have a clear documented company policy on quality and ensure that this is available to all employees.

11- Team work is the key to quality.

12- Most of the developing countries give full authority to workers when it comes to quality. A worker can thus stop production line if there is a serious quality problem. In such cases the entire top management team will be on the shop floor in minutes and will leave only when the problem is solved.

13- Good quality will automatically result in productivity improvements.

14- The policy should be to DO it right the first time.

15- Companies must invest in training, special purpose machines, design and research to improve quality.

16- An open mind is essential to build a quality culture.

17- In a good organization each error is part of training and learning. The key to success is to ensure that a mistake is not repeated again in the organization.

18- Company must recognize that quality is the key to survival in business.

Keys to a good quality system

1- Everyone must know what to check and how to check.

2- List major and minor defects and display it.

3- Check all inputs materials for quality / quantity.

4- Make specifications clear to the supplier at the time of ordering materials.

5- Do not dilute your standards.

6- When a mistake occurs look for corrective and preventive action. Corrective action- Immediate action taken to solve problem. Preventive action- Step taken to prevent a recurrence of the problem.

7. Keep a defect file as a learning system.

8. Clearly fix responsibility for quality in each department.

9. Quality cannot be controlled at the end of line. It must be built into the system.

10. Continuous improvement in small steps is the key to success.

11. Have a good monitoring system.

12. Good housekeeping is important for good quality.

How can a supervisor control quality on his line

In most factories supervisors spend their time pushing production and do not have time to check quality. Many supervisors are not aware of what they should check or how they should check. Lastly the right tools like gauges, scales etc. must be provided to the person to enable him do the job well.

1- It is important for a supervisor to drawn up a time table of how to spend the day.

2- In the time table at least 2 – 3 hours should be allocated for monitoring quality. This could be over four half half hour sessions.

3- During the first session he could look at 3 operators in his line and study their operations in depth. For example- if a sewing supervisor is checking a particular operation the following steps are essential.

   a) Check cleanliness of machine and surroundings.

   b) Stop machine and check needle and threads used to see if this is as per specifications.

   c) Check if assembly instructions are available to operator.

   d) Pick a tray of 10 pairs and check 100% for this operations. See % of defects. If it is more than 5% stop the operations and find out reason for faults.

e) Demonstrate to operator how to correct fault.

f) Ask operator to do one pair correctly based on your instructions. If this is okay allow him to proceed for 10 prs & recheck tray.

g) Discuss quality problems with operators and invite his suggestions.

h) If a guide is to be used make sure it is used. Guide improve quality and productivity.

4- Repeat such quality checks with other operators also. You should be able to cover all operators in your line at least once a day. This will prevent any major errors since you have checked all operations in detail.

5- Check the first five pairs of shoes coming out of production daily to see if there are major problems to be attended immediately.

6- Spend half an hour a day listening carefully to workers on how to improve quality. They can offer excellent solutions.

7- When you spot a problem take action to correct it and stop production, many supervisors simply allow the problem to multiply further. For example- if there is a machine fault and stitching is incorrect stop the machine and rectify the fault.

8- Always look for corrective and preventive action in each case. If the same mistake is requiring for 3- 4 days the supervisor is not doing his job.

9- The biggest problems with supervisors are that they see a mistake but allow it to continue on the ground that they can do very little in this case, if this happens more than once suck the supervisor immediately.

Pre- production check

1- No pattern to be released from the design centre unless it is labeled.

Pattern No:……..

Last No……

Size:……

Component:…….....

Date: ……

Signature---

Make a rubber stamp and ensure that these are stamped on all patterns issued to production.

2- If a pattern is modified first recall all old patterns of this style, and then only release the modified patterns. Inform the Production manager in writing about the change.

3- Always check graded set of patterns and release a complete set. One person should be responsible for this. A master set should always be kept in the design room for reference.

4- All patterns should be kept neatly style wise in the cutting & sewing line. The general tendency is to throw the patterns on the conveyors. This is not a good practice. Every evening the supervisors is responsible for putting all patterns in place. If a pattern is damaged it should be replaced immediately.

5- Patterns not stamped or signed should be destroyed.

6- When a new design is released the following must be sent together:

a) cutting Dies / Patterns

b) Marking patterns

c) stitch marking templates

d) Technical specification sheet

e) Assembly instructions. This includes sequence of operations also.

7- Every new pattern should be checked thoroughly before starting production.

a) First make 1 pair in mean size & make the shoe. Fill up the production card for new style.

b) If the pair in the mean size is satisfactory then grade patterns & last one pair each size & fill up production card for new style.

c) Correct problems mentioned in the production card. Get production manager signature on the production card.

d) Check and hand over patterns to Production Manager.

Quality control in cutting

1- In leather footwear manufacturing leather cost alone account for 65- 70% of the cost of the shoe, it is said that money is lost or made only on the cutting table.

2- It is therefore important to economises yet maintain quality in leather cutting since this is the highest value item in the shoe.

3- Important factors in cutting-

a) Direction of cutting

b) Follow line of stretch and tightness

c) Grain matching pair wise

d) Shade matching pair wise

e) Dealing with vein marks / Growth marks

f) Avoiding fat pockets in sheep leather

g) How to manipulate different parts of a shoe in a hide/ skins

h) Optimum interlocking.

4- How to handle leather in cutting room

a) Leather should be shorted in the store and issued with a cutter ticket to each cutter.

b) Check dies for accuracy before use. Also make sure the right dies and sizes are used.

c) Make sure the cutting board is plain well before use.

d) Dies should not have rust on them. Edges should be sharp, if not sharpen dies before use.

e) Sort leather for the day with each cutter into three bundles.

1- Large skins 2- Medium skins 3- Small skins

f) Use large skins for large size patterns and small skins for small sizes. Always start cutting from the largest size to the smallest size, some cutter use a large and small size dies at one time.

g) Cutter should mark defects with white pencil on the skin before cutting.

h) Always keep a sample shoe in the cutting room for cutters to see.

i) A sample layout with tracing on a skin/ hide should be displayed in the department.

j) All cutting must be done pair wise.

k) There should be clear instructions on the wall by means of charts showing-

1- Layouts 2- Major/ minor defects 3- Size- system

4- Fitting chart 5- Special customers instructions 6- List of dies available.

Quality control in sewing

Sewing is the more labor intensive operation in shoe making and involves a number of machines and factors affect sewing.

Most supervisor do not know how to control quality in sewing or how to spend time monitoring quality. They are also not aware of what they should check and how to go about it.

For example- if a stitch is to be specified there are three parameters required-

1- Stitch density i,e, stitch/ cm.

2- Thread type and number.

3- Needle type and number.

How to ensure good quality on a sewing line

1- Ensure that all machines are working correctly.

2- Ensure that right machines used for each operation.

3- Do not produce unless you have:

a) Sample b) Stitch specifications c) Marking patterns d) Thread color details e) Taping specs.

4- Produce 2 pairs in one size and check thoroughly with QC inspector and supervisor independently. If there are faults find ways to correct them and reproduce uppers (2 pairs) again. If these are not ok repeat the process till 2 pairs are perfect.

After this produce 2 pairs in each size and check quality thoroughly. These must be produced on the line itself.

Check the first 100 pairs once again to ensure that quality is satisfactory and repairs are under 3% and rejects less than 1%. If nonstop the production and plug the cause of defects before further production.

Stitching faults

1- Slip stitch. Skipped stitch.

2- Top tension

3- Bottom tension

4- Top thread breaking

5- Stitch length variation

6- Bottom thread breaking

7- Needle holes too large for thread to cover

8- Thread fraying- thread too large for needle.

9- Staggered stitching

10- Needle deflection

11- Loop knots on top/ bottom of material

12- Unbalanced or loose stitching

13- Stitching uneven- not straight

14- Improper skiving

15- Too much adhesive- cause looseness in leather.

Quality control in lasting

In order to achieve a consistent quality standard in lasting preparation is very important. If the tooling and preparation of work for the machine is not accurate we cannot get the best results.

These are the following checks on daily basis:

1- Carbon paper test for sole press adjustment before starting production every day.

2- Check accuracy of working of counter molding machine, heat setter, flash activator by using an infra-red or digital thermometer.

3- Check that moulds on counter molding machine, toe band, wiper plates, pincers and sole press pads suit the last being used.

4- Lining are shorter than upper in the lasting margin.

5- Insole are molded correctly and fit the last.

Quality control points in lasting

1- Check all pairs after lasting and before roughing, the advantage is that if there are any defects in lasting they can be corrected or if they cannot be corrected then they are taken off the line so that further value addition does not occur on a reject upper.

2- The roughing operator should have soles with him to check that he is not under roughing or over roughing. The roughing operator should also check that there are no pleats or creases and all glazed surfaces have been roughed well. In case there is a roughing fault do not attach soles.

3- Final QC to check quality of workmanship, finish as per customers' requirements.

4- Polishing brushes must be clean to avoid stains on shoe.

Defects in lasting

1- Back seam crooked.

2- Back height not pair wise.

3- Wrong back height.

4- Toe vamp crooked.

5- In side quarter must be 2 – 3 mm higher than outside quarter.

6- Wrinkles in lining.

7- Poor sole adhesion.

8- Improper roughing.

9- Balance not correct.

10- Insufficient lasting margin.

11- Too many wrinkles in seat lasting.

12- Nails protruding inside the shoe.

13- Incorrect toe spring.

14- Quarter not in line.

15- Medallion on toe falling over toe.

16- Socks not covering insole correctly.

17- Counter not sticking well to upper and lining.

18- Improper skiving of counter and toe- puff.

Guide line -inspection of footwear

It is a normal in the footwear industry to inspect pair by pair at the end of the process. The following guideline will help to ensure that the inspection is done correctly:

1- Do not inspect unless there is an approved sample signed by the customer.

2- A Technical Specification sheet for each style approved by the Production manager/ customer.

3- Sufficient light should be available on a clean table. Lighting levels should be 1300 lux.

4- A list approved by the production manager showing major and minor defects is allowed & 2- 3% minor defects are allowed. Without a list of major and minor defects no inspections is possible. In case a major defects occurs not listed in

the defect list, the quality controller should not be blamed. This new defects should be added to the list for future lots.

5- Keep a tape, scale 12" and 6", crepe rubber piece and stitch gauge with you always.

6- Inspect plan wise and keep track of size arise pairs passed as shown in the chart below-

Plan no.		Model.		Color.		Pairs
Size	5	6	7	8	9	10
Order	60	95	70	198	40	32
Pairs						495

This chart immediately gives the status of inspection size wise and ensures that wrong sizes are not sent.

7- Major defects should be destroyed or punched , so that they are not recycled or mixed with good shoes. Keep the defective shoes with you till you get replacement.

8- Keep track of defects as shown in the quality inspection report. This report gives number of pairs defect wise. Look for the top three defects and take steps to correct them immediately. Stoppage of production could also be one of such measures. If the same defect reoccurs for three days the quality control has failed and the quality control inspector is responsible. One should remember that recording of defects is not the main job. Corrective and preventive action is the main job of the quality control inspector.

9- Take a 10 minute break after every two hours otherwise inspection fatigue occurs. During these periods go to the line and look at ways to correct quality problems.

10- A shoe must be inspected by looking at it with the toes facing and with the back strap flack seam facing you. Shoes must inspected pair wise always.

11- Have a 10 minutes discussion daily with production supervisors, about major problems and how to correct these. If these are not attended, to stop inspection and report to the production manager.

12- Quality inspectors suddenly change standards of inspections when a complaint is received. Many times he rejects up to 70 – 80%. This is simply ridiculous

because with such a high rate of rejection it means that the quality control system has collapse and the quality control inspector is responsible.

13- The following chart must be clearly displayed at the quality control table-

1- Back height chart

2- Major and minor defects list

3- Key points raised by the customer if any

4- Approved sample and defect file.

14- Keep a defect file for each customer. Whenever a complaint is received keep a copy in this file along with corrective and preventive action taken. The purpose of this file is to catalogue defects and ensure that they do not recur.

15- Final inspection by self is not enough. This must be supported by laboratory test reports on materials and the final shoes. Fit and wear trials immensely in quality control.

16- Remember that final inspection is only a post- mortem. It is much better to spend time on in process quality control. You follow the following rule always " DO IT RIGHT THE FIRST TIME".

How to conduct external inspections

Many customers send their representative for final inspection or use organizations like SGS to do the inspection. This procedures cover fully packed consignments.

1- Inspections can only be done on the basis of an approved sample & technical specifications from the customer.

2- A copy of the order should be available with packing instructions.

3- A copy of the invoice should be available showing style wise quantities and color. Packing lists should also be available.

4- The consignment should preferably be kept in an inspection room with cartons stacked serially as per packing list.

5- Count number of cartons to ensure that there is no shortage.

6- Check the quantities of the two lowest and two highest sizes of the order physically i, e, if an order is from 5 – 11 size check quantity of sizes 5, 6, 7, 10, 11 physically. Since these are edge sizes quantities will be small & can be checked easily. This is to prevent any packing mistakes/ mal practice.

7- Draw samples for inspection as per random sampling table.

8- Draw pairs for inspection in all sizes.

9- Keep a list of major and minor defects and inspect shoes & tabulate results on the inspection sheet.

10- Take one pair at random and send it for lab. Test for following tests-

1- Sole adhesion

2- Sole abrasion

3- Sole flexing

4- Cold crack if shoes going to cold climates the test is done at 20 degree c.

11- Seal cartons checked with special tamper proof tape. Keep record of cartons opened and sizes checked.

12- Check cartons labeling, boxes, box levels to ensure that they are as per order

13- Issue certificate if the quality is satisfactory.

14- In case tests for PCP, Azo dyes are required do these tests before issuing certificate.

Test criteria for visual examination

Restitution of the last shape:

- Longitudinal profile
- Crow section
- Toe tip
- Heel seat
- Upper close

Stand of the shoe:

- Point to thread
- Heel position
- Heel pitch
- Side pitch

Upper material and lining material:

- Uniformity of color
- Uniformity of glaze
- Dirt and smudge
- Visible material defects
- Wrinkles
- Loose grains
- Mechanical damages
- Sticky

Bottom material/ bottom parts:

- Uniformity of color
- Uniformity of texture
- Uniformity of glaze
- Susceptibility of breakage

Working – lip of upper seams:

- Types of stitch
- Stitch density
- Edge distance
- Stitch pattern thread
- Tension needle hole
- Mechanical damages

Preparation of upper:

- Skived edges
- Folded edges
- Edge inking

Shoe fastner

Lace fastener:

- Eyelet hole
- Reinforcement
- Shoe laces
- Hook eyelets
- Lace strips

Hook and loop fastner:

- Version
- Adhesive length
- Attachments

Zipper:

- Running ability
- Coverage
- Incorporation look

Buckles:

- Attachments
- Firmness
- Overlay
- Abrasion

Shoe assembly:

- Vamp length
- Back height
- Upper closer
- Lasting wrinkles
- Pressure marks
- Grain coating
- Traces Distortion

Shoe bottom:

- Heels cover sole
- Cementing sole
- Arching position of the sole
- Sole finish
- Heel attachment
- Insole wrinkle
- Top piece fastening

Information Sheet 2- Identifying, rectifying and returning faults to appropriate section for repair

Style ref: 4130368	**Order No: 27732**	**Customer: DUNNES STORES**
Supplier:XYZ	**Location: India**	**Quantity to Inspect: 84 pairs**
Inspected by: GUSTO FOOTWEAR	**Date Inspected 31-01-13**	**Order Qty- 804 Pairs**
Previous most common fault:	**Inspected carton -No.'s 13,67,50,32,25,1&10**	
Confirmation Sample Available: YES		
Size Range From 37 to 42	**Sizes Inspected- ALL SIZES**	

FAULTS	MAJOR	MINOR	FAULTS	MAJOR	MINOR
Dirty/Stained on heel grip	nill	nill	Dirty/col-Stained on sole	NIL	NIL
Socks pasting problem	NIL	NIL	Heel Fault	NIL	NIL
Colour Fault (VP)	NIL	NIL			
Stitching problems	NIL	NIL			
Lining/Counter flaw/faults	NIL	NIL	Poor Sole Attachement		1
Adhesive mark on leather	NIL	NIL	Poor Heel Attachement	NIL	NIL
Sole balancing problem	1	NIL	Toe Shape/ tillted	NIL	NIL
Spot mark on leather	NIL	NIL	Damage welt	NIL	NIL
Qtr Fixing/ Eyelet facing prob	NIL	NIL			

Trim/Buckle/Wrinkle on top ine binding	NIL	NIL	Over roughing		1
Yellowing/Loose leather	2	NIL	Poor finishing		1
Wrinkle on vamp	1	NIL	GRAND TOTAL	4	3

Role & responsibility of lasting & finishing Department Supervisor-

The lasting & finishing supervisor should be responsible for the following activities-

- ✓ To achieve the target as per daily production plan.
- ✓ To prepare conveyor loading plan in line with the production plan.
- ✓ To prepare daily feeding & production report and work- in- process (WIP) report of all the lasting line.
- ✓ To ensure minimum 3 times last rotation in 8 hours.
- ✓ To prepare the machine wise efficiency and performance report for all the operators working in the lines.
- ✓ To prepare the consumption report of adhesive, primers & other materials order wise and to put efforts to control the consumption.
- ✓ To maintain in- process quality control in the lines and to minimize rejection / rework.
- ✓ To maintain the lasts and their storage.
- ✓ To see that all the machines in the department are in good working condition.
- ✓ To check that cleaning of machines is done by the operators on daily basis.
- ✓ To be responsible for the safety aspects.
- ✓ To control the absenteeism in the department.
- ✓ To ensure proper housekeeping in the department.
- ✓ Responsible for all the other activities in the department.

Information Sheet 3- Completing quality records and documentation following standard formats.

Preparation of daily production report

Daily production (Feeding & Packing) report must be prepared by the lasting in-charge on same day and must be placed on table of the production manager by 9.00 AM. The report must have the details of feeding & packing of shoes in all the lines. Only packed shoes will be considered as the production of the department rest everything must be considered as WIP of lasting department. The format for the daily production report is given below-

XYZ SHOE FACTORY												
LASTING DEPARTMENT												
DAILY FEEDING & PACKING REPORT												
DATE:									ATTENDANCE:			
				TYPE	SIZES							TOTAL
				M	38	39	40	41	42	43	44	
FEEDING				W	34	35	36	37	38	39	40	
LINE NO.	PLAN NO.	MODEL	COLOUR	C	33	34	35	36	37	38		
TOTAL												
PACKING												
LINE NO.	PLAN NO.	MODEL	COLOUR									TOTAL

TOTAL									

REMARKS:

PERPARED BY: **APPROVED BY:**

XYZ SHOE FACTORY													
Final packing report													
PACKING REPORT													
DATE:								ATTENDANCE:					
PACKING LABEL:				TYPE	SIZES								TOTAL
				M	38	39	40	41	42	43	44		
				W	34	35	36	37	38	39	40		
	PLAN NO.	MODEL	COLOUR	C	33	34	35	36	37	38			
						SIZES							
TOTAL													
PACKING													
LINE NO.	PLAN NO.	MODEL	COLOUR										TOTAL
TOTAL													

REMARKS:

PERPARED BY: **APPROVED BY:**

Information Sheet 4 Completing footwear dispatches

The ready shoes must be packed in the shoe boxes with the packing slip duly filled.

The dispatch of the shoes must be done in specific size assortment.

PACKAGING & LABELLING					
Swing Tickets(MN)	NIL	NIL	BAR CODE STICKER REF	NOT OK	NOT OK

Damaged box end label(MJ)	NIL	NIL	Egg crates(MJ)	NIL	NIL
EAN number in lining(MJ)	NOT OK	NOT OK			
Shipping mark(RP/Bulk)(MJ)	NIL	NIL	Ticketing incur. Position(MJ)		NIL
COMMENTS ON DEFECTS & ACTIONS TO BE TAKEN					
7 pair of major & minor are above mentioned faults were found in this shipment.					
Date referred to QC Dept				RESULT Pass	Pass

Packing Details

Note: Quality is ok but packing is not ok by my end so pls recheck it again

Signature of Inspector with Company seal.

Reference Materials

Book:

TTLM of footwear level one on os Version 4January 2012 **Perform finishing operations**

WEB ADDRESSES

AKNOWLEDGEMENT

We wish to extend thanks and appreciation to the many representatives of TVET instructors and respective industry who revision new OS on footwear and Teaching, Training and Learning Materials (TTLM) proposed in LIDI (LEATHER INDUSTY DEVELOPMENT INSTITUTE) .

experts of Oromia Regional TVET bureau and Federal TVET bureau in Bishofitu city BIN INTERNATIONAL HOTEL

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