

DEDICATED
TO
ALL OF MY TEACHERS

FOOTWEAR

From which the term “shoe” is originated: In English, the term “shoe” dates back to many centuries beginning with the AngloSaxon. “Sceo” meaning a foot covering and evolving into “Schewis”, then “Schooys” and finally “shoe”. The German “Schuh” has the name origin. Through the centuries the word “shoe” has evolved with at least 17 different spelling and some 36 variations of the plural.

Definition:

Any foot covering in the form of shoes, boots, slippers are used for utility and dress wear.

Any form of footwear made of various kinds of materials or combination of materials like leather, canvas, rubber, textiles, wood and synthetics to protect the foot from cold, heat, thorns, hazards etc. and to serve as a costume in the form of sandal, shoe or boot. These shall include walking shoes, dress shoes, occasional footwear, sports footwear, occupational footwear, orthopedic and surgical footwear meant for the use of babies, children, ladies or gents.

HISTORY OF SHOE AND SHOE MAKING

Shoe - without shoe a human being cannot live. Even the primitive human being might have covered his for warmth and protection.

The first “shoes” might well have been pieces of rush, bark or hide tied around the feet to protect the sole. The Egyptians covered their feet by woven palm and papyrus leaves. The Greek and the Romans sported sandal types made of for, wood or leather, with flat shoes and lacings.

Men have been wearing hoses possibly since 10,000 B.C. it was not until about 1850 that they were first made as “rights” and lefts”. Prior to that, all shoes were “straights”. Shoes reminded basically utilitarian until the Greek and the Roman periods

when they began to be regarded as items of clothing and vital parts of wardrobe. The Romans rarely went barefoot, and styling was important because certain pairs of shoes indicated social positions of

the wearers. In the 13th century, stylish people started wearing shoes with long, pointed toes. The toe points became so exaggerated that they were sometimes fastened to the knee by slender chains. Eventually the bizarre lengths were regulated by law. As per law, members of royal families could wear toes, of one length and commoners another. This continued till the end of the 15th century. Narrower, heeled shoe for women were trend during the reign of Queen Elizabeth - I Men wore, soft, thigh-high boots with heels. The jack boot, a stiff boot favored by American planters in the colonies, appeared about 1665. The end of the 17th century brought renewed popularity to low shoes, with red heels, square toes, and enormous butterfly bows that were eventually replaced by huge buckles.

The 18th century bore the influence of French fashion. Decorated leather shoes or silk shoes on high heels set under the arch of the foot were in fashion. After the French revolution, enthusiasm for classic fashion brought back flat heels and sandals, and English style country clothes were worn with study boots. In Victorian England dainty feet were much admired. Slippers with square toes were fastened by ribbons that crossed at the ankle.

In the orient, tall shoes were the range. Monks and noblemen took to platform shoes, as did geishas. The shoes, called geats, rendered their wearers stiffer and more formal looking. Another fashion from the orient was the tabi sock. This separates the big toe from the other toes in order to accommodate the thong. Geats were converted to sandals by the Japanese and by virtue of sandals one could determine the social status of a person. Modern shoes, as we know them today, probably have their roots in Tudor and Elizabeth, England. Shoes were made with buttons, laces, and eyelet and in general, decorations of all kinds. Vestiges of these facets of shoe design are visible today. Prior to 1800 shoes were made by hand and fabrication was primitive. Very shortly thereafter and throughout the latter half of the 19th

century, invention after invention bolstered the burgeoning shoe business. Modern mass production methods rapidly evolved and are currently in vogue. The application of computer in shoe production took place towards middle of the 20th century. Today computer is used for last and shoe design, cutting, stitching lasting and finishing.

A majority of the western countries have their own foot measurement system. It is interesting to note that shoes are manufactured in over three hundred sizes. The range spans a baby's size 0 (4inches) to a man's size 16 and widths run the gamut of AAAA (too narrow) to EEE (too wide). There is no database available for fashion trends cycles. Historians aver that styles and fashion trends repeat themselves every twenty - five years or so.

PURPOSE OF FOOTWEAR

The shoe has two primary functions to perform and has acquired through the years other lesser ones.

The primary functions are:

a) To protect the sole of the foot from the heat, cold, dampness, dirt or roughness of the ground in walking and standing. In its simplest form this is achieved in the primitive "sandal" which is nothing more less than a piece of leather, wood or other material, fixed under the foot by a strap or other means.

b) To the upper part of the foot, and if required, the leg, from cold, rain, thorns, heat and insect or other bites. In its simplest form this is a bag of leather or material wrapped round the foot and is here given

the generic name of “Moccasin”. It is essentially that worn by a hunter, as it is flexible and specially suited to forest conditions.

Lesser functions are:

A] To assist the foot to perform some abnormal task. This includes the various

sports such as, football, cricket, hockey, running, fishing, riding, mountaineering, dancing, etc. all of which today have their own special footwear. So, also, have many trades, such as mining, deep-sea diving munitions manufacture and fire-fighting, and the armed services. It should be noted here that more primitive peoples with much stronger and tougher feet can tackle many of these sports, pastimes or art occupations without special shoes, or, in fact, without shoes of any kind.

B] To complete a costume. This is particularly important today when costume designing includes not only the dress but also the hat, shoes. Gloves and handbag. In fact, the main purpose of the shoe may be to complete or enhance the remainder of the costume, the primary functions of foot-covering and sole-protection being subordinate to this.

C] To indicate rank or office. This is not applicable in western civilizations, unless we include the notorious “jackboot in this category, but formerly it was important, certain types of shoe being restricted to certain classes; there is obviously a very close link here with the purpose stated in above Para.

D] To overcome abnormalities in the foot itself, the surgical boot being the extreme example of this, while many shoes incorporate corrective devices, some more corrective in name than in fact.

E] To fulfill the fashion. In some cases, the protecting purpose becomes trivial and here the main purpose is to meet the fashion demand. Footwear is broadly

SEVEN BASIC FOOTWEAR STYLES

TYPES OF FOOTWEAR

Footwear is broadly classified into seven basic styles

1. DERBY



-Most commonly used formal and casual shoes.

- A very wide range of styles can be derived from a derby design - Unisex

- Can be identified from the following points:

a. Lock stitch or stay stitch

b. The quarter can be opened till half of the tread line.

c. The vamp and tongue will be on the same line.

d. In most of the cases quarter will be on the vamp.

2. OXFORD:



- a. Most widely used as formal shoes.
- b. Unisex
- c. Quarter is locked at the vamp point and hence opening of the quarter is limited.
- d. Has an independent tongue which is stitched at the final stage of the upper.
- e. In most of the case vamp will be on the quarter.

3. SANDALS:



- A popular unisex footwear which is very comfortably - The foot is free at the toe and heel- The sandal serves according to the specific need; adjusted with the help of buckle.

4. COURT SHOE:



Shoes for ladies formal and casual wear The top line will be below the vamp point Can be made in different heel heights.

5. SLIP ON:



Slip on is also called as pantafola & loafer.

As the name indicates these shoes can be slipped in and slipped out very easily.

Does not have lace.

Can be with or without elastic

Saddle is present in most of these designs.

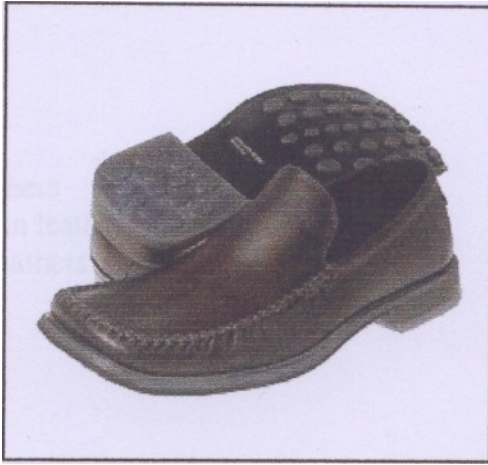
6. BOOT:

Casual shoes popular among kids and Teenagers

Different types of boots are Ankle Boot, High boot, Knee boot & Thigh boot.



7. MOCCASIN:



The most comfortable shoe to wear

- Expensive as more leather is consumed
- Formal & casual shoe
- Bottom will be covered with upper leather at the fore part
- Hand stitching gives a good appearance.

DIFFERENT RAW MATERIALS USED IN FOOTWEAR

MANUFACTURE:

We know that footwear has different components such as sole, insole, shank, upper, lace, eyelet, toe-puff, stiffener etc. So we will have to mention the name of Different materials used for different components.

(A). UPPER MATERIALS:

-

Leather: The properties which made leather unparalleled to be used as upper materials are the following:

- (i) Availability
- (ii) Strength and stretch
- (iii) Elasticity and plasticity
- (iv) Flex resistance
- (v) Foot comfort
- (vi) Heat resistance
- (vii) Water resistance
- (viii) Surface performance
- (ix) Ease of work
- (x) Color fastness
- (xi) Abrasion resistance

Types of leather:

Calf leathers Side leathers

- Full grain leathers Corrected grain leathers
- Printed side leathers Patent leather Suede leather Split leathers Kid leathers Pig leathers
- Sheep leathers
- Goat leathers Snake leathers
- Lizard leathers
- Kangaroo leathers Ostrich leathers Horse leathers Buffalo leathers

FABRICS:

- (a) Duck
- (b) Drill
- (c) Swans down
- (d) Flannelette
- (e) Combined linings
- (f) Faille
- (g) Acme backer
- (h) Satin
- (i) Crepe
- (j) Brocade
- (k) Canvas
- (l) Linen
- (m) Corduroy
- (n) Nylon mesh
- (o) Electro-flock
- (p) Deni

LINING MATERIALS

- (a) Cow split,
- (b) PU coated foam,
- (c) Flame laminated foam
- (d) PU film,
- (e) Fabric, Cow full grain leather, etc

INSOLE MATERIALS:

The following are used as insole material:- Leather

- Leather board - Fiber board
- Cellulose board

SOLING MATERIALS:

There are different types of soling materials. They are:

- 1) Leather
- 2) Leather board
- 3) Resin rubber
- 4) Vulcanized rubber-solid –cellular
- 5) Crepe rubber
- 6) Thermoplastic Rubber (TR)-1. Solid, 2.Cellular
- 7) PVC (Solid)
- 8) PVC (Cellular)
- 9) PVC (Blends)
- 10) PU reaction moulded-1.Cellular, 2.Solid
- 11) Thermoplastic PU-1.Solid, 2.Cellular
- 12) EVA (Cross-linked)
- 13) EVA (Thermoplastic)
- 14) Nylon (PA)

- 15) Polyester, solid, units
- 16) Polycarbonate.
- 17) Hytrel (EEC thermoplastic elastome

TOE PUFF MATERIALS:

Toe puff materials are as follow:

Vegetable tanned leather

Nitro cellulose impregnated fabric Poly styrene impregnated fabric

Thermoplastic toe puffs Print-on, Paint-on, etc.

STIFFENER MATERIALS:

Stiffener materials are as follow:- Vegetable tanned leather -
Leather board - Fiber board - Solvent activated plastics -
Thermo plastic counters

SHANK MATERIALS:

Shank materials are as follow:- High grade carbon steel -
Wood
- Mill board - Plastic
- Fibre board

FASTENERS MATERIALS:

Fasteners materials are as follow: Zips Lace
Buckles and straps Trims Elastics

ADHESIVE MATERIALS:

Adhesives materials are as follow:- Natural Rubber/latex -
Polychloroprene adhesive - PU adhesive

Sandal:

Certainly one of the oldest and simplest forms of foot covering which date back many thousands of years. Stone Age sandals were a spontaneous invention, which helped protect vulnerable feet from alien environments. Later the spread of trade among Mediterranean countries accounts why sandals became associated with affluence but it took until the Romans before they became robust footwear, worn by the army. The trade of sandal making was almost lost after the Fall of the Roman Empire and only rediscovered in the early twentieth century when the heeled sandal was associated with Hollywood's sirens. Now considered the sexiest shoe women can wear, the 'venez y voir' or come hither look is further enhanced with backless or slings back designs. All in an endeavour to catch 'back interest', that is admiring glances from suitable suitors whose eyes are transfixed on the beauty even after she has passed by. Sexy sandals are subtly erotic whereas bitchy sandals are flagrantly sexual (Jayne Mansfield). Women wearing the former are trying to convey a message, which says they want to be noticed and admired as feminine and sensuous women. According to Eisman (2002), today's male thong wearers may appear crude but beneath this veneer lurks a gentle, wounded soul. Dreamers and hopeless romantics choose Jesus sandals to represent their soulful and gentle personalities. Rough and ready types wear sport sandals similar in the way suburban dwellers drive four wheel vehicles. New Age self assured types exude their inner comfort by choosing reflexology sandals.

Feature of the sandal:

1. Certainly one of the oldest and simplest forms of foot covering which date back many thousands of years.
2. A popular unisex footwear which is very comfortable.
3. The foot is free at the Toe and Heel.
4. The sandal serves according to the specific needs as the length can be adjusted with the help of buckles.

History of sandal:

The word for sandal is not Grecian but does relate to pre-Hellenic times. Scientists estimate people first wore animal skins during the Ice Age (5000,000 years ago). Rough shoes protected the feet of Stone Age people from rock and thorns. The first suggestion of foot coverings appeared in rock paintings from the late Paleolithic period (15,000 years ago). Spanish cave paintings show humans with animal skins around their feet. A major disadvantage was animal skins decayed and rotted away in a very short time. Sandals were believed to be the first crafted foot coverings and successors to primitive wrappings. The designs were both simple and practical. Straps or thongs attached the stiff sole to the foot for protection. Two basic prevailed one involved thongs fitted between the toes and the other more sophisticated had loops and holes along the edge of the soles for attaching thongs to the foot (Broby-Johansen, 1968). Soles were made from almost anything that was available including leaves and wood. In Ancient Egypt sandals were made from papyrus and palm leaves; rawhide was used by the Masai in Africa. Wooden sandals were made in India and rice straw was used in China and Japan. The leaves of the sisal plant provided twine for sandals in South America whereas the indigenous populations of Mexico used the yucca plant. The oldest surviving examples of papyrus sandals are exhibited in the British Museum and dated at 1,500 BC. The thong or toe strap became distinctive in

sandal design. Subsequent civilizations preferred different toes, the Greeks for example made use of the great toe; the Romans, the second digit; and the Mesopotamians, the third toe. These distinctive, physical entities were also recognised and captured in Egyptian statues, and this was thought to represent celebration of other cultures. Sandals remain popular today yet their design has changed little from antiquity.

A brief history of sandals throughout the ages.

Seventeenth to Nineteenth century:

Early in the seventeenth century came the introduction of heels. In the era of the French king, Louis (1715-1774) a pair of shoes could cost as much as a peasant needed to live for an entire year. In times passed often shoes were bequeathed to members of the family and it is thought "following in your fathers footsteps" may have derived from this practice. Sandals were not popular during this time, first shoes then boots were the preferred styles of footwear.

The Twentieth century

The emergence of Hollywood brought with it the ultimate celebration of the fashion shoe (Mazza, 1994). The sandal made a fashion comeback in the nineteen twenties as skirts became shorter shoes became more important. The strap sandals with high thick heels were introduced in the 20s, according to Bigelow, (1970) shoes in the forties were heavy and clumsy. Shortage of material due the war meant there were many innovative designs for uppers and outsoles, Shoe designer Salvatore Ferragamo invented the wedge heel and also introduced a metal arch support which meant heeled shoes no longer required toe caps. The new pin up girls used this means to flaunt their charms and broadcast eagerly through developing popular mass media industries. Whilst high fashion shoes were considered normal for the glamour set through out the thirties and forties, daytime shoes which

revealed the toes were considered immodest. The first world War brought a shortage of fashion shoes. Shoe designers cleverly adopted other materials such as fabric, raffia and plastics and made shoe soles from cork. Even after the second World War Europeans were still involved with rationing and sandals upper were made from *ten. h^o' ?*, *<Sfcw* and tartfies, Sia'atore Ferragamo pioneered making sandal straps from cellulose and paper braided with gold threads. He also used lyon thread to make § transparent vamp or invisible sandal. During the 60's, sandals became flat and sensible with the arrival of the exererse sandal".

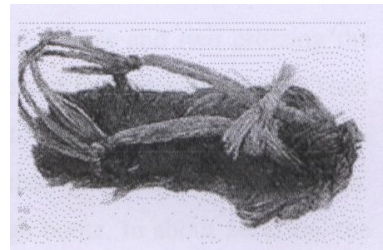
Early Civilization

The Sumerian civilisation were a notable non-Semitic culture which appeared in South Mesopotamia (Sumer) about the 5th millennium BC. From very early times their workmanship was of the highest order and as a people they were clad in skins and hides. Although Sumerians went barefoot excavations have unearthed a shoe with a turned up toe. The artefact was dated approximately to the "Ur Period" about 3000 BC and was thought to be the property of a king. Shoes were later worn at formal ceremonies by high dignitaries. The style of shoe become widespread throughout Syria and Phoenicia before passing to Etruria. Originally thought to have come from the mountain people. The up turned shoes were made from dyed leather and had a heel or elevated soles. The style eventually became associated with Cypriot fashion and is still worn today in Antolia and Syria. In the time of the Babylonians/Assyrians (circa 2000 BC) the king wore slippers made from fine leather with bands of white and gold, and red. Women's slippers were made in white leather and fastened with jewels. Servants went barefoot. Babylonian men & women wore leather sandals. The Assyrians wore shoes made from fabric or soft leather. The Assyrian kings wore leather sandals with an ornimented heel piece sloping towards the arch of the foot to the back

of the ankle. There were thongs round the big toe and two on either side finishing over the instep. Alternatively the regent wore sandals with an extra thong round the big toe. The sandals had thick leather soles and narrow leather thongs. Two came from between the two first toes and two crossing the instep and joined a fifth which was part of the sole and formed a heel band. Women wore flat leather slippers. Assyrian bowmen had leather boots with tongues protecting the top and came to the lower part of the calf. These were fastened with thongs in front. Persians shoes (540-330 BC) were tied below the malleoli or had three button like fastenings over the insteps. Shoes of white leather worn to below the malleoli and tied in front with matching thong leather. The Persians fastened their low, open-toed shoes with triple Laces.

Aboriginals and Torres Strait Islanders

In antiquity Aboriginal people seldom wore sandals to protect their feet. Most tribes went unshod but some from the Northern Territory of Australia and adjoining desert country wore a primitive sandal to protect



their feet from the scorching ground temperatures in summer (Reed, 1969). These were made from tree bark had no uppers and were retained by thongs to the first and fifth toes. Not particularly robust, the crude sandals required to be replaced several times during the hot season.

Assyrians

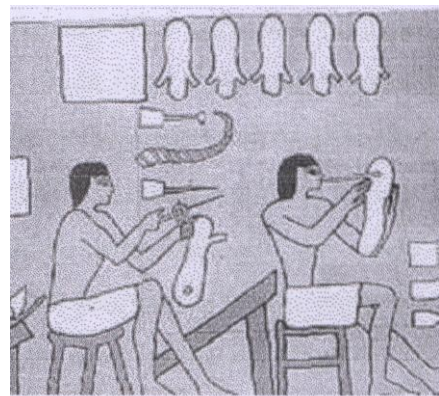
The first pointed shoes were worn by the Assyrians (2134-1250 BC) although sandals with upturned toes did not come into general use until about 1370BC . Earliest Assyrian sculptures show foot soldiers wearing simple flat sandals with protection for the heel. The sandals had a pointed cross-lacing of thongs around the big toe with others over the instep. Sandals were made either as a thin sole with heelcap made from red or different coloured leather strips sewn together. A second sandal had a thickened heel area tapering towards the toes. The sole was attached covering to the heel and sides of the foot, leaving the toes and instep exposed. Later Assyrian soldiers, especially the cavalry of the 8th & 7th centuries BC, wore laced boots or greaves that reached almost to the knees. Assyrian bowmen had leather boots with tongues protecting the top and came to the lower part of the calf, and were fastened with thongs in front. The king wore slippers in fine leather in bands of white and gold and red. Subsequent regents of Assyria wore foot coverings rounded at the toe and decorated with crescents, rosettes, and other designs. Their leather sandals were ornamented with a heel piece sloping towards the arch of the foot to the back of the ankle. There were thongs round the big toe and two on either side tying over, the instep. Alternatively kings wore sandals with an extra thong round the big toe. The sandals had thick leather soles and narrow leather thongs. Two came from between the two first toes and two crossing the instep and joined a fifth which was part of the sole and formed a heel band. Their queens wore embroidered slippers similar to 19th century pantoffles. Gentlewomen's slippers were made in white leather and fastened with jewels. Servants went barefooted. Huntsmen wore knee high boots.

In about 2000 BC the Assyrians started to wear boots and leggings prior to which the rank and file had fought barefooted. The Assyrian

boot was broad and rounded, the front was cut away with a loose leather flap covering the instep and leg. The lacing was loose so the foot was not constricted. Pointed boots were not introduced until the time of the Hittites (2000-1200 BC) and the Persians when they were found to be useful in close fighting. The Phoenicians in Syria (2300 BC) were the first people to dye leather and their distinctive red dyes were made from crushed beetles. Later the Babylonians allocated colours to rank with gold and bejewelled sandals the exclusive reserve of the king and his court, pastel colours were for dignitaries and the middle class wore red or yellow only. The Babylonian men & women wore flat leather sandals whilst the Assyrians wore shoes made from fabric or soft leather. Persians shoes were tied below the malleoli or had three button like fastenings over the insteps. Shoes of white leather worn to below the malleoli and tied in front with matching thong leather.

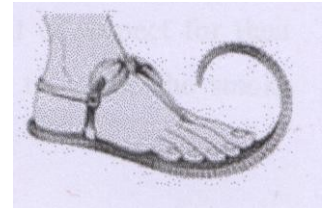
Egyptians

According to Ledger (1985) exhibits in the British Museum, the Victoria and Albert Museum and the Egyptian Museum in Cairo indicate shoes were worn as far back as 4000BC by Egyptian nobles. Their shoes were finely made from leather and elegantly matched their robes. Tomb and temple



wall paintings also depict this. Heeled shoes started to be discovered when ancient Egyptian cities were uncovered. In the tablets relating to Pharaoh Narmer (3000 BC) these depicted the Pharaoh followed by a slave bearing his sandals which would infer sandals were worn only by royalty.

Sandals dating back to 2000BC were discovered in the Fayum district of Cairo. These were held next to the foot by plaited or woven thongs between the great and second toes, then wrapped



around the ankles. Queen Hat-Shep-Sut (about 1552 BC) is said to have worn bejewelled sandals and enjoyed bathing her feet in scented oil. A popular Queen, she was thought to have made wearing sandals trendy and fostered the sandal trade of the time. A wall painting in her city of Thebes shows craftsmen fashioning sandals during the time of Thutmose III (1436 BC). Thutmose was thought to be the Pharaoh of the Exodus of the Israelites. By contrast Jewish footwear were made from rush, linen, leather, or wood and were tied to the feet with thongs. During Biblical times men wore brown or natural leather sandals. To the ancient Egyptians, footwear was a trapping of power and rank. According to Milne (1932) sandals may have had a protective function and saved the royal foot from the burning heat and sand flies, but it was not something those of low rank were allowed to do. Slaves and the poor went barefoot which would indicate, shoes were a luxury item. Pharaoh's sandal had peaked toes which historians believe was the influence of the Hittite (1280 BC). The first item recovered from the tomb of King Tut-Ankh-amen (1350 BC) was a magnificent box containing sandals and slippers. On the north wall of the outer chamber are two statues of the king and he is wearing shoes with a golden ring. In the tomb of Tut-Ankh-amen was also a shield decorated with figures wearing Assyrian Sandals. The Egyptian mummies were sometimes laid to rest wearing burial sandals made from linen and decorated with jewellery (Putnam, 1996). The Mummy of King Tut-



Ankh-amen had pointed sandals of embossed gold with the toes curled gently upwards. It was believed the sandals provided comfort in after death journeys. Golden duplicates of single thong sandals were used as funeral sandals for mummies in Egypt (Bigelow, 1970 p32). In a box

of personal possessions were sandals made gold with beautiful coloured glass marquetry. One with a papyrus sole, had a leather anklestrap edged with gold ribbon motif on wide straps, the motif represented the Nile scene of lotus flowers and ducks in delicate circles of gold, the straps composed of plaques topped with enamelled gold lotus blossoms. The leather sole was about 1/4" thick. Painted on the back of the king's throne were a representation of himself and his queen. Ankhesenamun was wearing simple sandals which followed her foot outline and attached to the foot with a single thong, actual sandals are an exhibit in the British Museum. A pair of bark sandals was found in the tomb with the representation of the King's enemies etched on the leather of the sole. Many shoe designers during the reported finds were inspired and contemporary fashion shoes in the 1920s had a distinctly Egyptian look. Sandals found in the mummy case of Harsiotef, thought to be king of Ethiopia at the end of the sixteenth century BC were lined with cloth upon which was painted a figure. Inscribed in hieroglyphics is "Ye have trodden the impure peoples under your powerful foot." This is now housed in the British Museum. Enemies were depicted differently, Libyans appeared with beards and long hair. Libyans were black figures and Syrians white cloaks, (reported in *The Chiropodist*, 1927 *The Leeds Convention*, 1926). Originally sandals were made from a footprint in wet sand. Braided papyrus was then moulded into soles and the sandals were attached by palm fibre thongs to keep them on the foot. The Egyptian sandal was held next to the foot by three ties or rings. The main thong passed between the big and second toe and joined the other straps on the instep to form a stirrup and tied behind the heel. Alternatively, a thong between toe two and three with the others on the medial and lateral aspect of the midfoot was used. Once the Egyptians learned to tan hide, sandals were made with a leather sole (Girrotti, 1986). Ironically Egyptian sandals were often carried to the point of destination, then thrown away for the occasion. Once leather footwear was available only Pharaohs and their immediate families were allowed to wear them. Allowances were made for high dignitaries and priests with

the latter esignated to wear sandals made from papyrus. Footwear did not differ according to BX. Soles were dyed and the sandals were made to accommodate right and left ttings. High born Egyptian women often adorned their sandals with jewels and recious metal. Later sandals were also made from gazelle skin and became ssoiated with active pursuits such as hunting. These may be the first examples of)orts and leisure activity footwear. The introduction of uppers seem to have had a rotective function. According to archaeologists it was customary to increase the ;ngth of a boy's sandal as he grew older until the point reached a good few inches eyond the end of the toes. It is not clear however whether this was for fit or ishion. The scourge of tight footwear seems to have been present then and books ating between 200BC and 200AD depicted corn cutters operating on feet icapacitated by tight uppers. During the New Kingdom, Egyptian soldiers wore :ather sandals with bands around the ankles and under the arch of the foot. There as a thong from between the big and second toes which in the front of the instep, andals woven of fine basket work began to appear. Women would also wear ippers. Later when sandals became more commonplace they were adapted to work tuations. Butchers would have their work sandals made with a slice of cork andwiched between two layers of leather on the sole to give them height to stand ver the carnage of bones and flesh. The three pieces of the sole were held Dgether by small wooden pegs. The butchers platforms added 12" from the floor /hich helped them cope whilst slaughtering the animals. It was also reported andals from Lower Egypt were discovered with a 'follow me' message on the sole in nail. Some authorities think these belonged to contemporary sex workers. Girls of sport wore study sandals made frm gazelle hide. Priests worshipped foot but wore palm leaf sandals which were made so that they could be slipped "om the front or rear. Egyptian priests would remove their shoes out of respect heir gods. A common cure for headaches in ancient Egypt was to inhale the Ke from burning sandals.

Biblical Times

In Biblical times animal skins were used for clothing. "...Unto Adam and also unto his wife did the Lord God make clothes of skin and clothe them..." Genesis III verse 21. Elevated sandals were worn by girls much to the consternation of their elders. "Haughty daughters of Zion walking and mincing as they go and making a tinkling with their feet. The lord will take away the bravery of their tinkling ornaments about their feet," Isaiah III verses 16-18. Going barefoot on religious ground was certainly mentioned in the Old Testament. Moses hearing the voice of the Lord when approaching the burning bush, at Mt Horeb was told .."Put off thy shoes off thy feet for the place whereon thou standest is holy ground." Following a bereavement , mourners went without shoes or with one shoe only, until Ezekiel was commanded by God to be shod. Shoes and sandals were used to seal bargains," ...Now this was a manner in former times in Israel concerning the redeeming and concerning changes for to confirm all things: a man plucked off his shoe and gave it to his neighbour and this was a testimony in Israel." Ruth IV verses 7-8. It was also customary when the husband died, for the wife to marry the surviving brother. ".. Then his brother's wife come unto him in the presence of the leaders and loose his shoes from off his feet and spit in his face. .. and his name shall be called in Israel 'the house of him that hath his shoe loosed'...." Deuteronomy 25 verse 9-10.

Cretans

Going barefoot indoors and in sanctuaries was common practice among all Mediterranean Civilisations and sandals were only worn when walking outside, Homer described his heroes putting on their shoes to travel or fight and in the temple of Nike Apteros, Athens there

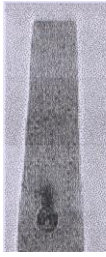
is a carving of Victory untying her sandals when withdrawing from action. Great court personages were seldom seen outside their regal mansions without footwear which would add weight to the argument only affluent men wore sandals and the poor went barefoot. Sandals worn during the re-Hellenic Period were finely worked and attached above the ankle with thick laces. Sometimes these were decorated with beads which were very fashionable, men's boots reached to the calf and had thongs that bound them to the leg. These were made from brightly coloured skins and had small heels on the sole. Hilly terrain was thought to be the reason why heeled footwear was worn as it provided greater control on sloping surfaces. Frescos from this period showed men wearing footwear whilst competing in games or attending ceremonies at the royal court. Although the same to do women of Crete had sandals, slippers and high boots with heels, they chose to wear these, infrequently. Trade between the Mediterranean civilisations is likely to account for the appearance of familiar footwear styles in areas where there would be no practical or logical reason for their existence. Historians believe heeled shoes for example may have appeared attractive to flat land dwellers who saw the opportunity to use them for reasons of stature.

African Sandals

Until comparatively recently sandals were the most widely used footwear in Africa. The Hausa culture from southern Sahara wore turned up sandals. Historians are unsure whether this was to protect their toe nails or as a symbol of status. Both men and women of the Hausa people painted their toe nails. The sole of sandals in Somalia were made several centimetres



wider than the foot which kept the wearer from sinking into sand and protected them from the scorching imperatives of the ground. The layered leather soles protected the feet from the heat, while the



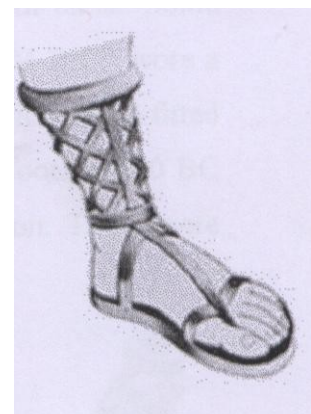
upturned fronts enable the wearer to walk more easily, with the rolling gait, on sand. Sandals were worn by high status in the court of Ashanti, in West Africa. Sometimes leather thong sandals were cut in the shape of human figures and were decorated with wooden figures covered in gold. Dyed leather from North Africa was renowned and soon the ancient Egyptians incorporated the famous red into their footwear. Wooden sandals with toe and heel stilts have been widely worn throughout Africa and Asia. Maisi sandals from East Africa were typically made from rawhide. The three cornered style had a squared off toe section with heel and thong. Sandals worn by the Acholi people, Uganda were also made from rawhide but had a concave sole with a big toe loop and tarsal band. The sandals had an extra wide sole to protect the wearer's foot from hot and stony surfaces. The leather was decoratively scored and inlaid with natural pigments. Hides were traditionally softened with cow dung and cured between layers of mangrove bark. Some Africans sewed slip on styles in colourfully pigmented leathers.

Asian Sandals

Hindus, like the Egyptians, made more ornamental use for footwear with the vast majority of the populous going bare foot (Franzine, 1993). Until relatively recently the Indian Army wore sandals as regular issue footwear. This style was copied and proved extremely fashionable in the West.

Greeks

Greek Gods and heroes were often depicted barefoot with at least one notable exception i.e. Aphrodite. Greek warriors or hoplites wore body armour with heavy leg greaves but no shoes. If art is to be believed the Trojan war was fought barefoot and Alexander the Great set off to conquer



half the world with barefoot armies. The Greeks did wear sandals however and these became quite sophisticated. The earliest shoes worn by the Greeks were made from leather or wooden soles attached to the feet by leather thongs. At first the shoe served only as protection from the elements but later in Roman times footwear was developed for colder climates. Slaves went bare foot and the inclusion of carved tongue or lingula into the sandals became the mark of a free citizen. In time Sicyonia became the main city for shoe making in Greece. By all accounts the Greeks took good care of their feet and adapted footwear for every type of activity. The arrangement of the sandal straps, worn in Ancient Greece, varied but usually consisted of a broad band across the front of the foot, and a thong between the toes. The thong was sown to the sole about one to two inches from the end. This was pulled through between the first and second toes and sometimes between the second and third toes to meet with four other laces anchored to the sole. The complete intertwined system finished above the ankle. Sandals were worn by both sexes and fastened in varied ways as can be seen from the marble models that served to advertise ancient shoemakers. Straps were very light and elegant, leaving the foot almost bare. Some were purple with piped edges attached to clasps elongated by short cords of plaited leather. Others were simpler, with a fan like spread of straps passing through the toes. The Greeks rarely wore upturned toes but did have the soles of their sandals studded with nails. The colour of sandals varied and were either worn in the natural colour of leather or dyed red, white or black. Some more affluent individuals had their sandals gilded. Alcibiades (450-404 B.C.) wore a shoe with a gently peaked toe made from pliable yellow leather or fabric which fitted snugly and had coloured lacing, intricately laced around the whole foot. By 400 BC shoe and sandal making had attained a high degree of sophistication. There were many types of sandal each designed or designated for different functions. In the time of Homer (8th Century BC), soldiers wore the Krepis. These were made from heavy leather with an ankle



strapping. There was also a lady's Krepis which was a brightly coloured version of the ankle sandal. The common wooden sandal was worn by ordinary people whereas the nymphidiai were wedding shoes. Priests wore phaikas and the kothornos and embates were specifically for tragic and comic actors in honour of Dionysus, the Greek God of wine and fertility. Kothornos also known as cothurnus or buskin had raised heels which resembled a clog. This would raise the actor above the crowd and thespians could play different roles using kothornoi of different heights. The swaggering gait of the Greek actors was understood to be erotic, sending many females into ecstasy. The very thick sole of the kothornos appealed to the Romans and they thought it fitting these should be worn by tragic actors. The name cothurna, became the name of the tragic genre, itself. The shoe had a thick cork sole designed to increase the actor's height (bushkin) It was ungraceful and always hidden by long robes. This style was later the inspiration for the classic revival in 19th century fashion, giving its name to a light sandal like shoe, tied with laces criss crossed up the leg. The crepida was similar to the Roman carbatina (or karbatine) and was formed by a thick sole with a narrow piece of cowhide leather covering the side of the boot, pierced along the top with several holes through which a thong passed attaching it to the instep. Sometimes the edges had leather buckles through which strips passed. Similar types of shoes were worn by the Teutons. Up to the 16th century German peasants were wearing karabtines and this type of simple footwear can be seen today in the traditional footwear of Romanian and Slavak countries. Whilst sandals were worn outdoors it was the normal custom to go barefoot at home. At first women did not wear sandals but as both style and quality of sandals flourished they became more popular. As shown by the Tangagra statuettes, dating from the 4th century BC, more elegant shoes were worn by women, e.g. red ones with yellow edged soles. Betrothed girls and young brides wore sandals made from leather

dyed white. Women of ill repute (or salmakides) used to wear the krepis and were said to attract men's attention because of the way they walked. By wiggling they created an audible "clack" when their shoes hit against the ground thereby deliberately flaunting their sexual charms. Spartan, Lycurgus in the 7th Century BC ordered the populace to go barefoot in an attempt to curb extravagant footwear but the edict failed principally because what differentiated slaves from free men was what they had on their feet.



Young women wore white leather sandals with a band across the foot at the base of the toes. Ankle and heel straps joined a narrow thong attachment to the sole at the arch of the foot. Ornamental heart shaped pieces of leather cover the insteps. The Greeks emphasised design and beauty with elegance, refinement, extravagance and rich ornamentation, especially for women. There are many references to these features within the poetry of Sappho (6th Century BC) and Homer (8th Century BC). An old Greek legend tells of an old man's advice to husbands to keep their women at home by giving their wives heavy shoes to wear. The clever women foiled their husbands by putting pieces of tree bark under the soles. The importance of the sandal in mythology is seen in the story of Persephone the daughter of Zeus and Demeter. Referred to as "she of the beautiful ankles" she was abducted to the underworld by Pluto and required to remain there for the duration of the winter months before reemerging in the Spring. Symbolically this represented the start of vegetative growth. Moments before her abduction Persephone walked through the quiet meadow wearing sandals. The sandal came to represent to the Greeks and Romans the boundary between death and rebirth, light and darkness, heaven and hell. It was commonly thought the body absorbed vital energies of the boundary where human and divine coexist through the sandal. Aphrodite, the Goddess of love, was often depicted naked except for a pair of sandals.

Participation in sport was barefoot and when athletic sandals were introduced ordinary Greek citizens thought them decadent, anaesthetic and somehow a violation of the Olympic ideal (Franzine). The Greeks developed sandals, shoes and boots and these can be seen in the many monuments that remain (Guhl & Koner, 1994). Shoes were a logical extension of the sandal with side extensions attached to the sole and held next to the foot by laces at the ankle. The top of the foot and toes were left bare but in closed shoes footwear was attached with laces across the foot. Shoes incorporated a small heel. Although the shoe was originally worn by soldiers the more elaborate version was worn mainly by effeminate young men. Boots were made from leather or felt and were closely attached to the feet reaching up to the calf. The pedila was an open fronted boot which was together with laces. Boots were reserved for athletes, hunters and travellers. Hunters wore high boots (cothurnes), these covered the whole foot and leg up to the calf level. They laced at the front over a broad tongue, and were made with a flat sole of wood or leather. These boots fitted either foot. Young Spartans were reported to wear red boots to hide the flowing blood from wounds. There was even a low hunting boot which resembled the North American moccasin, although there was no connection between the two. Among the ancient Greeks, shoemakers began to acquire the reputation for character which they have held ever since. Apollo the God of the physicians, was also the God of shoemakers, and it was customary for every shoemaker to keep a tame crow outside their place of business. Shoemakers have held a distinctive place among craftsmen through the ages and were often actively involved in protests against oppression. Shoemakers became esteemed citizens in ancient Greece. Footwear became so well established that many shoe makers eventually specialised in various tasks and products. Some cut hides, others assembled the various parts and there were even men and women's shoemakers. Shoes were made from many unconventional materials and for specific requirements. Sandals, shoes and boots were made with the soles of

leather, matting or felt, cut to the shape of the foot and varying in thickness; if the wearer wished to add to his height he wore a thicker sole. Lovers would carve the name of their loved one on their soles and with every step left an imprint in the sand to witness his total devotion. Pythagoras (582-507 BC) believed in reincarnation as animals and so required his disciples to wear sandals made from the bark of the tree. Philetas the poet who died in 290 BC was so thin he needed especially heavy shoes made from lead to keep the wind from blowing him over and out to sea. The most bizarre footwear was a pair of musical sandals made at the bequest of a flute player. The craftsman made him thick soles concealing a metal device that emitted

sounds under the pressure of his feet as he walked (Ledger, 1985). Despite the existence of shoes, the Greeks often walked barefoot in the streets and customarily would remove their footwear before entering their homes or the house of a stranger. The Greek historians, Herodotus and Strabo described the dress of the Medes, including a high shoe, or low boot, that opened in front and was fastened with buttons. The Median sovereign wore a high, long shoe which buttoned at the front and had a toe ring attachment. The colour was saffron or deep yellow. Greek historian Polybius records that soldiers had to be specially cautioned against devoting too much thought to their sandals at the expense of the rest of their equipment. Sicyonia was the main city for shoe making in Greece. Alcibiades (450-404 B.C) wore a shoe with a gently peaked toe made from pliable yellow leather or fabric which fitted snugly and had coloured lacing, intricately laced around the whole foot. Although the shoe was originally worn by soldiers the more elaborate version was worn mainly by effeminate young men.

Romans



Footwear played a major role in the development of the Roman Empire for not only did it provide protection for those who travelled by boat, like the Greeks, but also to soldiers who marched to the end of the Empire. Indeed as the empire increased in distance from Rome, supply lines to the outposts became impractical. Hence the Romans had to introduce the sandal and shoe making crafts to the conquered. This is thought by many historians to be the reason why the craft of shoe making spread. Whilst the Greeks were preoccupied with elegance and grace the Romans devised things suitable for their military activities. The Roman Empire stretched far beyond Greek boundaries and the terrain and weather conditions necessitated more sturdy footwear. The Romans adapted the Etruscan style of hobnailed footwear and the caligae provided a sturdy, hobnailed, thick-soled, heavy, leather, sandal with an upper that reached the instep. A lattice of soft, leather strips tied around the shins or the sandals were held against the bridge of the foot by a tongue. The toes were left bare. During the Roman republic (509BC - 43AD) the stocky, strong and rigidly schooled people went barefoot later adopting ankle boots of rawhide or leather which laced completely up the front enveloping the foot. Towards the end of the republic, ladies of quality wore sandals with very thick soles to make them look taller. White was popular at was popular but later more exotic colours were preferred. Pearls and other gems were added to decorate the footwear of the rich. The Ladies of Rome wore purple or green sandals whilst the women of Pompeii preferred white, red or gilded leather. Romans began to wear a variety of footwear between 300-27 BC. Caligae were worn by soldiers up to the rank of centurion, and came in several types i.e. speculatoria for scouts; equestris for horsemen; and clavata with iron nails protruding underneath for fighting on rugged ground. When Roman soldiers returned victorious to Rome they frequently

celebrated by substituting the bronze nails which held the caligae together with gold and silver tacks. Caius Caesar Germanicus (AD 12-41) was a Roman emperor (AD 37 - 41), better known as Caligula (or small shoe). When he was a boy he lived with his father in a fortified garrison and popular with his father's soldiers they nicknamed him Caligula because he wore children sized caligae. The campagus was worn by officers of high rank, the higher the shoe top indicated the higher his rank. The Romans adapted their boots from the Gauls and only wore them in bad weather. Gaulish boots became known as galoshes (Sunshine & Tiegreen, 1995). A non-military caligae or senatorum was the favourite choice of senators. Probably the earliest sandals were the cabatina. Primitive they were made from one piece of ox hide wrapped around the foot and laced over the instep. These were cut two inches longer than the foot size and drawn up over the foot with a thong. The thong was then laced over the instep. The street shoe or calcei also covered the foot and had a separate sole and top, instep lacing, which tied about the ankle with the knot in the back. Patricians wore these made of elegant leather and gold or silver ornaments. The soccus was a shoe worn by comic actors, women and effeminate men (leather Buskins or half boots were introduced in Roman Times and were worn by the tragic actors). Gradually this style of shoe became considered as "unnatural". Julius Caesar (101-44 BC) was reported to have offended the senate by wearing high, gold trimmed, red boots with high heels. Red was a colour worn by the young and considered incongruous for a man of his advancing years. He claimed to wear them in the fashion of the ancient kings of Alba from whom pretended to descend from. Suetonius assures us in his writing, Julius Caesar just wanted to look taller. Claudius I (10 BC- AD 54) Tiberius Claudius Drusus Nero Germanicus), was Roman emperor (AD 41-54), When Caligula was murdered (AD 41), Claudius was proclaimed emperor by the Praetorians. Despite suffering from a type of paralysis, he consolidated and renewed the empire. Claudius caused Messalina, his third wife, to

be executed. He was in turn supposedly poisoned by her successor, Agrippina II, after she had persuaded him to pass over his son Britannicus as heir in favor of Nero, her son by a former husband. Claudius was much reviled by his enemies; however, he seems to have had considerable administrative ability. During his reign marines were ordered to go barefoot because once some marines from Ostia demanded compensation for the emperor for the marching shoes they wore out. His answer was to forbade the entire fleet from wearing shoes. Claudius Caesar Drusus Germanicus (AD 37-68) Claudius II was better known as Nero and wore silver soled shoes, his wife Poppaea had golden ones. The soles were made from poured gold and straps sparkled with encrustation of rare stones. The effect was dazzling and undeniably sexy. Their horses were shod with golden horseshoes. Nero was reported to wear special gold sandals the day he killed his wife by kicking her to death. During the reign of Nero, shoemakers shut up shop and those people : wanting shoes had to beg favour from the tradesmen. Real money was required to buy shoes and often these were supplied under the counter. Shoemakers would personally deliver the goods and did so by night. This may well be why shoemakers have gained a reputation as untrustworthy. The real reason they did it was Nero *I* was systematically forging coinage from base metals and demanded the old gold and silver coinage was returned to his treasury. People began to hoard their coinage and austentatious footwear was sold illegally. During nero's reign, senators suspected of or confessing to being Christian were stripped of their purple togas, : their red laced boots removed, and their ivory stools smashed to bits. Emperor *I* Lucius Domitius Aurelianus (AD 212-275) ruled for five years between AD 270 - 275) tried to limit excesses of fashion by forbidding men from wearing coloured (red, yellow and green) shoes and allowing only women to choose materials and colours freely. He reserved the right to wear red or purple for himself and his sons. He succeeded Claudius II and defended the empire against the barbarians and ambitious rulers (e.g., Zenobia of

Palmyra). One of Rome's greatest emperors, he regained Britain, Gaul, Spain, Egypt, Syria, and Mesopotamia and revived the glory of Rome. He was murdered, and Marcus Claudius Tacitus succeeded him. Despite the efforts of Emperor Heliogabalus (AD 218-222) to ban women from ornamenting their shoes with gold and jewels, in the more luxurious days of the Roman Empire, thongs were decorated with gold and precious stones. Heliogabalus had his shoes decorated with diamonds and other precious stones and engraved by the finest artists. He never wore the same boots twice. Although sumptuary laws and price controls were later imposed by Gaius Valerius Diocletianus (AD 245-313), in AD 301 footwear came in many styles and colours each reflecting class distinctions. Only male citizens entitled to wear toga could sport the calceus which was a shoe or short boot. The colour of the calceus indicated social standing. Red was at first the colour for high magistrates but later became the Emperor's prerogative. Only those in the service of Edile were allowed to wear red. During the reign of Caesar Nero I (senators suspected of being Christians) were stripped of their red boots. Black or white became the preferred colours for senators and women's calceus were ornamented with pearls and embroidery and included subtle or brighter colours. Pale coloured sandals became the mark of wealth and privilege, this was because the lightening process was lengthy and expensive. Between AD 27-300 Roman footwear was a distinct badge of social position. According to Gaius Plinius Secundus (62-144 [AD) ladies had their indoor slippers lavishly ornamented with gold leaf and jewels. Generals during their triumphant marches wore red Calcei until eventually common people were allowed to wear them. The calceus was a soft shoe which had side slits and straps lacing at the front. Often made from coloured leather red was preferred by the nobility (black by politicians). The calceus came as a shoe or half boot covering the foot sometimes up as high as the calf. Often the low shoes strapped high on leg, and these were reserved for Roman senators wear (calceus particus). The calceus was probably the most

common outdoor shoe and would be worn by men and women. It was characteristic of the Roman citizen and slaves were not allowed to wear them. In Rome the calceus senatorum was probably black at first, before becoming white under the late Empire. The leg was quite high, with a slit on the inside fitted with a tongue. Its fastening was complicated, with criss cross thongs and dangling tabs. The mules with their red leather thongs were reserved for the Emperor. A variation of the calceus had pointed toes which bent upwards. These were widespread in the Mediterranean countries, particularly Etruria, from where it passed to Rome. It was worn in the East during the greater part of the Middle Ages. The Calceoulus was a lighter, more elegant calceus worn by women. The sole of the calceus followed the shape of the foot and the upper fitted neatly over the instep and was bound into place with thongs fastened to the back and tied round the ankle; a second pair of straps was attached at each side of the sole and tied to the instep. Officials wore high boots of red leather, and ladies often wore white boots tied with coloured silk straps. Half shoes or crepida laced across the instep were also worn. The gallicae was originally from Gaul and appear in Rome in the last century of the Republic. The gallicae was an entirely closed boot, and some authors place them midway between the sandal and the shoe. The pero was a light boot reaching the calf and laced all its length. It was worn in the country and made of raw, natural hide. The campagus was derived from this, and was made low, leaving a large part of the top of the foot bare. Gallienus launched the campagus and the zancha, the latter being a high leather boot fitting closely to the leg; it was supposed to have originated in Armenia or the Crimea, and indeed it may have been a style disseminated by the Scythians. The muleas was a red or violet coloured boot worn by Roman patricians who had served as magistrates. Some authors believe the muleas was confused with the calceus patricius of Roman senators. The Romans, like the Greeks never entered a house without removing their shoes. In the Republic however it was considered bad manners to go barefooted in the house.

They would exchange their outdoor footwear for banqueting slippers called soleae, which were carried by a servant, under their arm. Soleae were slippers made from felt and had cords from the sole which fastened over the instep. Alternately crepida, which were leather esparadrilles were worn. These were held on by a strap passing through the eyelets, with a wide range of fastenings. Historians are not in total accord and many believe Greek sandals were not generally worn because they were regarded as non patriotic. However others believe this was not the case. Women wore soccus indoors, a type of decorated, slipper, or calceoli. The soccus was an elegant and decorative slipper that appeared during the last years of the civilisation when trade with the Orient had introduced fabric made of silk fibre. The colourful shoe in reds, green, yellows or white was a delicate shell shape. (Bigelow, 1970 p56). All these type of shoes reached the ankle and had flat cords, these passed through slits made on the instep. The upper of woman's footwear was not divided into two pieces , like men's. Ladies shoes were made in red, green or yellow as well as white. The campagus was slipper men wore around the house. The pero had many variations; the senatorial style was made of black leather with silver C for Consul placed behind the ankle on the heel. Women wore a white boot laced with coloured silk straps. This was called the phaecassium. Emperors wore shoes in the current styles but made from richer materials. Women's feet were considered to represent a symbol of chastity and were worshipped by fetishists. Senator Lucius Vitellus kept a shoe of his mistress under his tunic and would kiss it frequently. This type of fetishism, according to Ovid in his *Ars Amandi*, led Roman women to confine their feet into tiny shoes. Prostitutes wore sandals and respectable women generally covered their feet more fully when walking out. Slaves were forbidden to wear shoes and the poorest citizens wore only sandals. Criminals were forced to wear heavy wooden shoes which made it difficult to escape from. Throughout development, comparatively little attention was paid to fitting qualities or comfort although some of the early

sandals displayed definite pairs. Shoemaking (or *ars sutrina*) flourished and the guild of shoemakers was established in Roman Times. Shoemakers were divided into those who produced *caligarii* for soldiers and *sandalarii* for civilian footwear. After the great fire of Rome the government started to mint a debased coinage. During this time shoemakers closed their workshops and anyone wanting shoes had to pay grossly inflated prices. All such trade took place at night. Foot gear changed little during the Imperial era of Roman history but during the early days of the Byzantine Empire the custom was adopted of cutting the upper of the *calceus* into intricate open-work patterns so that it became an open work sandal. There was evidence of right and left sandals. As an example of just how serious footwear was taken, Emperor Vaspasian (69-79AD), himself the son of a shoemaker, refused to give professional couriers a footwear allowance because he thought they could run faster barefoot. Probably the most famous Roman thongs ever worn belonged to Mercury, fabled messenger of the gods. His winged thongs were called *Talaria Crepida*. Like the Greeks before them the Romans thought shoes carried many meanings and were not just symbols of social position they were also considered good luck charms. Appropriate footwear could invoke the favour of gods and avert evil. The patron saint of shoemakers is St Crispin and traditionally shoe shops close on St Crispins Day (October 25th). He was born into a wealthy Roman family in the third century AD, but was converted early to Christianity. In these days it was not considered the done thing for a noble Romans to do and history indicates he was disinherited. Forced to make his own way in life he became a humble shoe maker. He became a lay preacher supporting himself by making and selling shoes. Eventually he was put to death for his beliefs in Soissons, France in 288AD. Shoes were worn outside has been discerned from the wearing down of steps leading to a building. Compared to the indoor surfaces the | erosion is related to footwear. Slaves were not permitted to wear sandals they were called 'cretin' because it was customary to mark their feet with chalk when

they were put up for sale. Those with dusty feet who's come on a long trudge to the market place were called 'tysati' because of the dust. For a time high priests wore highly ornated sandals decorated in gold and precious stones. Shoes in Rome became a prized possession. They were a mark of status more than a necessity to walk the streets. Due to the popular fashion of highly decorated footwear threatened to usurp the shoemaker. Lovers would often preserve the shoes of their loved ones because of their intrinsic value. It also became a custom for a mistress to present her lover with the token of her sandal.

Clerical Sandals



Although priests occupied an important position in ancient societies, they almost invariably performed their offices, barefoot. This was thought to have been an outward and visible sign of their inward, humility and purity. Clerical sandals were simple and devoid of any fashion and symbolised the cleric's separation from worldly vanities. With the fall of the Western Roman Empire and the barbarian invasions, craftsmanship declined in Europe. Common people went barefoot or wore rough shoes. During the Dark Ages shoes were crude protection with little emphasis given to fashion. "Sovereign's law" promulgated by Charlemagne (742-814 AD) required clerics to wear sandals when celebrating mass. Many medieval priests and Franciscan monks wore wooden sandals as a sign of disregard for material luxury. During the pilgrimages many went barefoot out of choice, or to do penance for their sins, whilst others wore sandals as a token gesture. In the High Middle Ages, when fashion revived, shoes took on a bizarre turn, incorporating many indecent overtones. Footwear was very expensive and it was common to bequeath footwear to others. Shoes were thought to take on the essence of the wearer and were often placed in roofs and fireplaces during building work, to fend off evil spirits. During the Middle Ages, the leather craftsmen of England organised themselves into guilds, or trade associations. The

Worshipful Company of Leathersellers, founded in 1492, still plays an active role in the UK, leather industry, in the field of technological education

Japanese Sandals



Ancient Japanese wore sandals appropriate to their position in the social strata. From the Imperial House, merchants and professionals, to actors, all had specific footwear. The braided sandals were called zoris. In the 19th century sandals were made from iron with hemp rope laces threaded through a series of iron loops on the perimeter. At the coronation of Emperor Hirohito he wore platform geta.

India, Pakistan & Persia

Hindu religion held the cow as sacred therefore leather was not used in sandal manufacture. Instead, wood, ivory or metal was preferred. The toe knob grip was a distinctive feature and sandals were carved from wood. Sometimes shoes were sheathed with intricate worked silver. Sometimes the sole section of toe and heel were on stilts and may have inspired the chopine.

The Renaissance (14-16 Centuries)

In Europe, the Renaissance was a time of turbulent change and discovery. Shoe fashions reflected these changes. Men's sandals became less thong like and more of a modern sandal design. Known as "tagliate a pezzi" or "cut to bits", the Renaissance sandal had open slits cut into the upper. Pragmatically this allowed the skin to breathe but was also used to display the wearer's brightly coloured hose.

Women rejected sandals at this time preferring wooden or cork clogs called pantoffles.

Seventeenth to Nineteenth Century

Early in the seventeenth century came the introduction of heels. In the era of the French King, Louis XV (1715-1774) a pair of shoes could cost as much as a peasant needed to live for an entire year. In times passed often shoes were bequeathed to members of the family and it is thought "following in your fathers footsteps" may have derived from this practice. Sandals were not popular during this time, first shoes then boots were the preferred styles of footwear.

The Twentieth Century - the fashion sandal

The emergence of Hollywood brought with it the ultimate celebration of the fashion shoe (Mazza, 1994). The sandal made a fashion comeback in the nineteen twenties as skirts became shorted shoes became more important. T strap sandals with high thick heels were introduced in the 20s. Wedge soled play shoes were also introduced for fun wear in the 30s. According to Bigelow, (1970) shoes in the forties were heavy and clumsy. Shortage of material due the war meant there were many innovative designs for uppers and outsoles. Shoe designer Salvatore Ferragamo invented the wedge heel and also introduced a metal arch support which meant heeled shoes no longer required toe caps. The Peekaboo style or toe cleavage corresponded to the development of the plastics industry which resulted in a rediscovery of the fashion for nail painting. By the thirties the sandal became the ideal vehicle for showing off the entire foot (O'Keefe, 1996). The new pin up girls used this means to flaunt their charms and broadcast eagerly through the developing popular mass media industries. Whilst high fashion shoes were considered normal for the glamour set throughout the thirties and forties, daytime shoes which revealed the toes were considered immodest. The First World War brought a shortage of raw materials and consequent decline in the

production of fashion shoes. Italy, in the thirties and forties was a time of national self sufficiency with shortage of hides and other raw materials. Shoe designers cleverly adopted other materials such as fabric, raffia and plastics and made shoe soles from cork. Even after the Second World War Europeans were still involved with rationing and sandals uppers were made from felt, hemp, straw and textiles. Salvatore Ferragamo pioneered making sandal straps from cellulose and paper braided with gold threads. He also used nylon thread to make a transparent vamp or invisible sandal. During the 60's, sandals became flat and sensible with the arrival of the exercise sandal. A decade later the heel was back and the sandals were made in exotic fun synthetics which was popular but left a slightly tarnished image. The introduction of seamless tights provided the opportunity to include back less sandals! which exposed more flesh and became very popular as a glamorous shoes.

Types of Sandal

The two basic types of footwear- the sandal and the moccasin- in their simplest forms require little constructional skill. The sandal, which is merely a protection for the sole of the foot, is a flat piece of rawhide, leather, wood, metal, plaited straw, or other material, cut or formed to the shape of the foot sole. This sandal's sole has then to be held on to the foot in some way, and the various methods which have been adopted in various parts of the world at different times still appear in modern shoe designs for the very good reason that all the possible methods appear to have been discovered, and therefore, new designs must incorporate them.

(1) Toe-peg

A turned or carved wooden peg with a knob on top and fixed to the sole is held between the great and second toe. The specimen shown in figure 2a, which has a wooden sole, came from India recently and the type is still commonly used in the East. The peg has also appeared on sandals produced in this country in recent years.

(2) Toe-band

A band of leather, fabric, rubber or other material, usually broad, is fixed over the forepart of the sole and the toes inserted under it. The specimen shown in Figure 2b has a piece of tire inner tube nailed to a wooden sole and came from Sarawak about 1938.

A variation of this method found on many sandals in conjunction with other straps further back is a single loop over the big toe. If toe-band is extended forwards to form a complete toe covering we have the mule, found all over the world. Probably the earliest shoe yet discovered is what appears to be a woven grass mule discovered in a cave in Oregon and estimated (by radio-carbon dating) to be about 9,000 years old.

(3) V-strap

In some ways this is a cross between (1) and (2), the point of the V passing between the toes to the sole while the ends of the two arms are fixed to the sole on either side of the foot. The type is very common in Japan, which is trip source of the specimen shown in Figure 2c, but flat rawhide sandals with a similar fastening are found in many parts of the world. An interesting variation of the method is Showr? an lh€ looif Of 9 of the second century, exhibited in the Victoria and Albert Museum; her the V is reversed, the point or junction of \t\e iwo am^bbeprvg et ar* ankle. \$rap while the arms themselves diverge forwards and join the sole on either side of the toes.

(4) Instep-band

This is similar to the toe-band but further back on the foot (Figure 2d). There is usually in addition a toe loop and a strap passing forward from the instep-band to a point on the sole between the toes to anchor the forepart of the foot. A common variation of method is to include also a strap passing round the back of the hell, this type having been found in Egyptian tombs- and on wall paintings. These specimens and paintings show that in some cases "cars" were left en the sides of the soles in cutting so that, when Subsequently turned up by -the sides of the foot, a thong could join them together over the instep; here we have the prototype of the lachet shoe of later centuries. Romano-british sandals of about the second cenfury A.D. found in London appear to have had complete 'quarters' round the back of the foot but a toe-loon and a between-toe strap at the front.

(5) Crossed Bands

Two bands cross over each other and the toes from either side & \ the be €nd of the sole to the opposite sides further back (Figure 2eV The well-known , and much copied, Indian 'chupplie' is a version of this method, as also are many modern interlaced sandals.

6) Multi-strap

The number of straps or bands passing over the foot from one side of the Sandals Sole to the ether may be increased in number (Figure 2f); they may be widened, interlaced, taken round the ankle and up the leg to give an infinite variety of patterns and increasing coverage of the foot until eventually a complete upper is produced and the foot-wear can no longer be termed a sandal. It may also become necessary to have some sort of fastening which may be undone to allow the sandal to put on or taken off.

Ornaments :

In recent years upper decoration has grown in importance as manufacturers have sought to respond to fashion demands . The addition of a relatively simple ornaments can give a basic upper design enhanced customer appeal.

As a result there is an increasing need to ensure these components meet proper standards of performance.

Function of components :

With greater importance being placed on ornaments as an integral part of the total design, there is a need to ensure fitness for purpose of the materials and components used. There are a number of key performance aspects which need to be considered-

- Aesthetics - the performance of the ornaments needs to be maintained through out the life of the footwear.
- Strength / durability - Neither the component itself nor its attachments o the upper must fail.In the case of ornaments loss or breakage can mean that a retailer may have to replace an expensive pair of shoes for a component which may cost very little.
- Safety /comfort - Ornaments should not have sharp edge nor should method of attachment For example : Metal prongs on stud present surfaces which could cause cutting or abrasion of the foot.

Types of ornaments :

Various types of ornaments are —

- Studs - Normally made of metal , have two or more lugs which penetrate the upper then bent over on the back of the material.
- Larger ornaments and buttons - Large ornaments may be attached by a number of different means. By rivets, by staples around a bar, By stitching or by a two part male and female fitting providing an interference fit.
- Bows and floral ornaments - Bows and floral ornaments are normally attached by staples. Hot melts have been used but superglue is now the preferred method.
- Linkage ornaments - Normally attached by stitching directly to the upper.
- Toe and heel ornaments - Normally attached by small lugs that are attached to the lasted margin before sole and heel attachment.

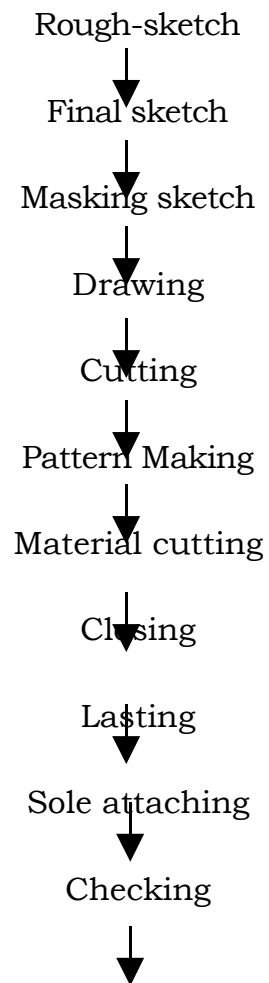
In recent years ornaments have become increasingly important as designers have looked towards using new types in more complex upper designs.

MANUFACTURING OF SANDAL

Normally there are two types of Sandal

- i) Ladies
- ii) Gents

FLOW CHART



MASKING:

1. Apply a strip of the down centre of the front. And down the back of the last
2. Apply lengthways strips to cover one side of the last completely.
3. When one side completed, the procedure should be repeated tin the other side.
4. When all the lengtn strips nave oeen applied, ocing the downed ones. Start at the top of the cone (about half way along the last), and work your way around the back of the last until you come to the same point on the other side. These strips should also be over lapped. Alter this, strips can be placed across the front of the last in one piece, starting at the top of the cone and working forwards (overlapping), until you reach the toe. At the beginning you will have to let them cross over onto the vertical side pieces. To avoid pleats in the Centre.
- 5, The next step is to trim the waste tape from the bottom of the last. Right up to the feather edge.
6. Now centre lines can be applied. The simplest way is to stretch a length of masking tape out on your cutting board (about the same length as the last), and draw a straight line down the middle.

DESIGN PROCESS

Inspiration for new design:

Know your customer's profile, that is, his or her age and socioeconomic background, in order to design clothes that he or she can afford and will want to wear. For example, if your customer is voting, design clothes that are trendy, fun, and affordable. Pay particular attention to the price of the skins you select for your design. Similarly, if you have an older "missy" customer, you may want to design a more conservative or classic garment, paying particular attention to interesting details. Skins would be chosen based price range of the clothes designed.

Attend forecast and trend shows:

Most designers want to know what the fashion industry trend services will be predicting for the upcoming season. While there are no trend services exclusively for leather apparel, forecast services such as Here & There, Promptly, and Pat Tansy provide information that can be used by leather apparel manufacturers. These services predict colour, fabric, silhouette and trend information for a membership fee.

Attend trade shows:

Numerous leather shows are held throughout the year. The shows allow designers to stay abreast of the latest trends and advances in leather skin tanning and design. New treatments, colours, and skins textures are continually being introduced there. Leather designers also should keep up-to-date on textile trends by attending the top fabric shows, for example, Premier Vision in Paris (October and March) and the International Fashion Fabric Exhibition in New York.

Make travel plans designed to create inspiration:

Many manufacturers find traveling to Paris, Amsterdam, London, Milan, Florence, Munich, Dusseldorf, Montreal, Tokyo, Barcelona, and Brussels inspirational. They might photograph merchandise in store windows, sketch items they see, and/or purchase items they might wish to copy or interpret for their own collections. This way management can firsthand the new merchandise and trends,

Read magazines and newspapers:

Designers should always read fashion magazines, for colour and trend directions. In addition to the specialized leather apparel magazines, designers should read all of the most important fashion magazines, both American and European. Designers also should regularly read trade papers, for example, *Women's Wear Daily* and the *Daily news Record* for up-to-the-minute information. If a designer is affiliated with a manufacturer that is a member of the Leather Industries of America or the Leather Apparel Association, then he or she also should be reading the newsletter produced by these trade organizations for current information.

Actively research museums and libraries:

Designers can gain inspiration from numerous sources, but one of the best ways is by studying what previous designers have done. Many museums throughout the world, such as the Metropolitan Museum of Art in New York, exhibit the costumes of a particular designer and/or of a certain period in history. These shows can have a surprisingly great influence on modern-day fashion trends. The Fashion Institute of Technology, also in New York, features wonderful

exhibits and an extensive costume library, as does the Muse de la Mode in Paris. All of the above-mentioned institutions also have book and magazine costume libraries.

Note non-fashion events and trends:

Designers should always be aware of all events occurring in the world. Current trends in music, movies, dance, theatre, and even local news can be potential sources of design inspiration. Some of the major fashion trends of the past have resulted from such influences. For example, many designers have tied their collection to the musical trends of grunge and hip-hop. Sometimes, just people watching from a park bench or from a table at a sidewalk cafe can provide enough inspiration.

Organizing and Planning Collection:

Once the designer has accomplished the preceding steps, he or she should possess information to organize and plan a collection. By focusing on the fashion interests and economic means of the customer, the designer should be able to forecast what fashions must be created.

The designer, having properly researched his or her market, should know what skins will be important during the coming season. A color story should be established for the line, that is, two to six colors (per quality) should be selected that will best complement the line.

One of the best ways the designer can organize his or her thoughts and ideas is to create a theme board. Later, a style board should be created. These not only help the designer visualize the line, but also are extremely effective in helping present concepts to the manufacturer's sales staff and retail buyers. The combination of a

theme and style board can be very cost effective; since they help the designer and manufacturer determine the viability of a line concept before the expensive process of sample making is initiated.

Create theme board:

A theme board is a visual presentation used by the designer to communicate the general concept or mood that will help sell a particular line to a target customer. Most theme boards (also called concept boards or mood boards) consist of a cubage of photographs, tear sheets, or photocopies from books or magazines, which are mounted on 1/4" or 1/2" foam core board. Typically, the dimensions inches of the foam core board are either 20x30 inches or 30x40 inches.

The photographs, photocopies, and tear sheets should complement the designer's color story. To make the best impression, assemble the board using the proper artist supply materials. Remember, when boards are presented, the audience will be several feet away. Therefore, make sure that visual materials are large enough to be easily seen by everyone in the audience. Strong visuals also should be chosen to create an effective, immediate impression.

Style board:

The style board includes flat sketches of all of the styles in a particular theme. Generally, the sketches show both the front and back views of each garment. They should be large enough to view the details of each garment, that is, never smaller than 3x4 inches each. However, sometimes style boards depict certain styles on a fashion figure for a more dramatic effect. The board must always include color swatches and style numbers.

For large collections, designers generally present both a theme and a style board to fully present their design concepts.

For smaller groups, many designers combine their theme and boards. The Siena Studio Presentation Board includes all of the key information that would normally be found in Siena's theme and style boards.

It depicts:

- The target customer
- The feature skin ("Bubble Lamb")
- The color story
- The mood
- The styles offered in the line.

Salespeople and merchandising aids for buyers. They also can, manufacturer from proceeding with a poorly conceived expensive samples. The remaining Steps in the design Process:

1. The pattern maker makes the pattern
2. The sample maker sews a muslin or canvas prototype
3. The designer fits the muslin and makes any needed corrections.
4. The sample maker cuts and sews the garment using production skins.

5. The designer fits the final sample and makes an additional adjustment.

When a company manufactures overseas, the process is different.

Once the designer creates the garment and it is approved for sample making, the process is as follows:

The designer completes a design/spec sheet that specifies everything the overseas pattern maker needs to know about the design, including exactly which skin or skins to use.

The overseas factory will follow the design/spec sheet and return the sewn sample in the specified skin.

The designer will find and inspect the garment and tell the overseas factory what corrections need to be made.

The overseas factory will continue to revise the garment until the designer is happy with it.

PATTERN MAKING:

Remove the masking tape and place on the pattern paper. Pattern is made according to the design.

Selecting upper materials, colors etc. to the products

All parts or sections of the shoe above the sole that are stitched or otherwise joined together to become a unit then attached to the insole and outsole. The upper of the shoe consists of the vamp or front of the shoe, the quarter i.e. the sides and back of the shoe, and the linings. Uppers are made in a variety of different materials, both natural and synthetic. Leather became the obvious cover of choice because it

allowed air to pass through to and from the skin pores thereby providing an opportunity to keep the feet, cool. The plastic properties of animal skins further help mould the shoe to the foot beneath. The ability for leather to crease over flexor surfaces facilitate the function of the foot. Ironically synthetics used as uppers display elastic properties, which mean the shoe upper never quite adjusts to the foot, shape in the same way as natural leather. Synthetics are cheaper to mass-produce and are now found in most mass produced footwear. Synthetic uppers are more waterproof. Woven fabric such as cotton corduroy can be used as uppers. Classified as breathable fabrics these help aeration.

In quality shoes the quarters and vamps are lined to enhance comfort and durability. Linings may consist of various materials ie leathers, fabrics, and manmade synthetics. The lining on the insole segment is called 'the sock' and may be full-length, three-quarter or just the heel section. Many linings are made of synthetic material and are usually confined to the quarters and the in sock.

The project demand for the upper materials that are materials using in vogue or not common in the sandal production.

According to the product outline, the upper and lining materials are in follows:

The upper materials selecting for the product no 1 is cow upper leather. The purpose of the selecting this leather is-

- The teenage girls are very much fashionable for their dress and most of them are using sandal by matching with their dress. The most fashionable teenage girl wear jeans pant and if a sandal product by the leather should be attractive for them.

- The tensile strength, tear strength of the leather are reasonably good enough compare with the other common materials using for sandal production.

The lining of the sandal is leather as for the shape retention and for the transferring perspiration produce by the foot.

MATERIAL CUTTING:

Upper & lining material cut according to the pattern



Material Specification:

Specification sheet for Product no. 1

Specification for UPPER and LINING

Component	Material	Thickness	Colour	Origin	Finish	Print
Upper	Leather	1 mm	Green	Cow		
Lining	Leather	0.5 mm	Beige	cow	—	—

Specification for SOLE

Material	Construction	Colour	Thickness	Wall height	Wall thickness	Shape of sole bottom	Rib width
Leather	Unit	Brown					

Specification for INSOLE

Component	Material	Type	Construction	Colour	Thickness
Insole board	Cellulose board		Non-woven	White	2.6 mm

Specification for ACCESSORIES

Component	Location	Type	Colour	Thickness	Shape
Ornaments	Upper	Single layer	Black with white ornaments	3.00 mm.	Sock shape

Technical Specification

Specification for REINFORCEMENT

Location	Construction	Material	Adhesion	Thickness	Colour	Attaching process
For upper reinforcing		leather	One side adhesion	0.6 mm	Black	By adhesive
Folding reinforcement		leather	One side adhesion	0.8 mm	White	By adhesion

STITCHING Specification

Needle			Thread				Reinforce
System	Number	Point	Material	Colour	Twist	Ply	
134	110	P	Cotton	Beige	Z	2	No

Specification sheet for Product no. 2

Specification for UPPER and LINING

Component	Material	Thickness	Colour	Origin	Finish	Print
Upper	Leather	1 mm	Golden	Cow		
Lining	Leather	0.5 mm	Beige	cow	—	—

Specification for SOLE

Material	Construction	Colour	Thickness	Wall height	Wall thickness	Shape of sole bottom	Rib width
Leather	Unit	Brown	5mm				

Specification for INSOLE

Component	Material	Type	Construction	Colour	Thickness
Insole board	Leather		Non-woven	Brown	5 mm

Technical Specification

Specification for REINFORCEMENT

Location	Construction	Material	Adhesion	Thickness	Colour	Attaching process
For upper reinforcing		leather	One side adhesion	0.6 mm	Black	By adhesive
Folding reinforcement		leather	One side adhesion	0.8 mm	White	By adhesion

STITCHING Specification

Needle			Thread				Reinforce
System	Number	Point	Material	Colour	Twist	Ply	
134	110	P	Cotton	Golden	Z	2	No

PHYSICAL TESTING OF SANDAL UPPER LEATHER

The shoe upper leather samples and their finished leather samples were tested for their various physical properties. These properties indicate the quality of the finished leathers produced. Due to limitation of time and the availability of instruments, selected physical tests were accomplished and these tests are briefly discussed below:

Tensile Strength And Percentage Of Elongation At Break Based on SLP-6, IUP/6:

The tensile strength and elongation at break was measured by Tensometer. Tensile strength is the force (Kg) per unit area of cross-section (Sq. cm) required to cause a rupture of the test specimen. So, Tensile strength of the specimens was calculated using following formula.

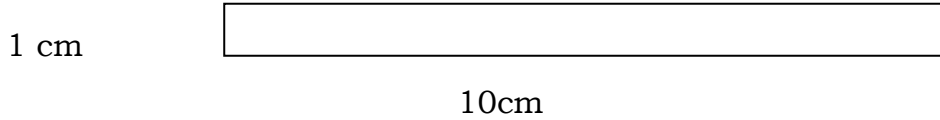
$$\text{Tensile strength} = \frac{\text{Breaking load (Kg)}}{\text{Thickness (cm) X Width (cm)}}$$

Breaking load mainly depends upon the number of collagen fibers acting in the direction of applied load, so it is more or less constant for a piece of leather specimen because the number of fibers in that piece is always constant.

The extent of elongation of the leather specimen at the time of its breaking, while applying the tensile force, expressed as the percentage on the original length of the said specimens the elongation at break. Elongations at break for these specimens are calculated from the distance of the jaws after breaking was occurred.

$$\text{Percentage of Elongation} = \frac{\text{Final length} - \text{Initial length}}{\text{Initial length}} \times 100$$

$$= \frac{\text{Length increased}}{\text{Initial length}} \times 100$$

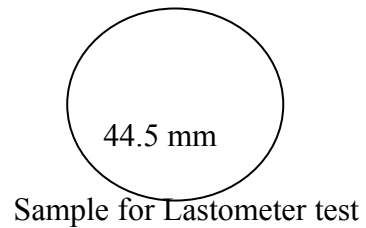
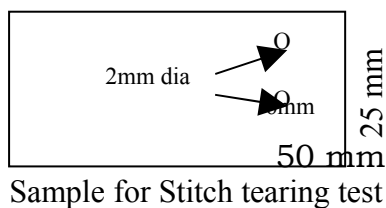


Sample for the determination of tensile strength

Stitch Tear Strength (double hole); SLP-8

The double hole stitch tearing strength can be defined as the load (Kg) required to tear the sample of the leather between two holes of 2mm. diameter each and whose centers are 6mm. apart, express of its unit thickness (cm):

$$\text{Thus, stitch tear strength Kg/cm thickness} = \frac{\text{Tearing load (Kg)}}{\text{Leather thickness (cm.)}}$$



Tests For Dry And Wet Rub Fastness (SLF-5 / IUF- 450 / DIN 53339):

The tests were carried out by official method of analysis SLF-5. This is a very useful test for finished leather. A revolving pad is made to rub the leather for a successive number of revolutions and the effects of such rubbing under both the wet and dry condition are studied using a grey scale. While a 2.5 kg load is used for dry rubbing and 730g load used for wet rubbing.

Dry rub fastness: leather dry, felt dry.

Wet rub fastness: leather dry, felt wet.

Assess the degree of damage or change in the finish coat, staining of the felt pad and change in colour of the test specimen.

THE MOST IMPORTANT QUALITY REQUIREMENTS

Sl.No.	Properties	Requirements
1.	Tensile Strength (kg/cm ²)	Min. 250 kg/cm ²
2.	% Elongation at Break	Max. 70 %
3.	Stitch tear strength (double hole) (kg/cm thickness)	Min. 100 kg/cm

PHYSICAL TESTING RESULTS AND DISCUSSION FOR DIFFERENT TESTS:

The results obtained by different physical testing on the prepared leathers are tabulated in this chapter followed by short description of the results.

a) **Table for the results of tensile strength and percentage elongation a break:**

Sample	Results for tensile strength and Elongation at break			
	Perpendicular		Parallel	
	Tensile strength kg/ sq cm	Elongation %	Tensile strength kg/ sq cm	Elongation %
Standard for shoe upper: Tensile strength = Min. 200-300 kg/cm ² % Elongation at break = Max.45-55 %				

b) Table for the results of stitch tearing strength :

Sample No	Thickness (cm)	Tearing load (kg)	Stitch tearing strength (kg/cm)
Sample No-1	0.08	14	175
Sample No-2	0.1	15	150
ISI Standard for shoe upper: Stitch tear strength = Min. 60-120 kg/cm			

c) Table for the results of wet and dry rub fastness tests:

Sample No.		Wet rub fastness							Dry rub fastness						
		16 Rev	32 Rev	64 Rev	128 Rev	256 Rev	512 Rev	1024 Rev	16 Rev	32 Rev	64 Rev	128 Rev	256 Rev	512 Rev	1024 Rev
Sample -1	L/R	4/5	4	3/4	3	3	3	2/3	5	5	5	5	5	5	4/5
	Felt	4/5	4	3/4	3/4	2/3	2/3	2/3	5	5	5	5	5	5	4/5
Sample -2	L/R	5	4/5	4	4	4	3	2/3	5	5	5	5	5	4/5	4/5
	Felt	4	4	3	3	2	2	2	5	5	5	5	4/5	4/5	4/5

PRODUCT PICTURE

PRODUCT 1



PRODUCT 2



Costing of the Product

Product number 1:

A. Material Costing

SI no	Items	MU	Unit Price	Amount	Cost (Tk.)
Upper					
01	leather (upper, insole cover and socks)	Sft.	100	1.5	150
Total Upper					150
Lining					
02	leather	Sft	100	1.5	150
Total lining					150
Sole					
03	Resin rubber	pc	15	2	30
Total Sole					30
Insole					
04	Insole board	Sht	15	1	15
05	Shank board	Sht	10	1	10
06	Steel Shank	Pc	5	2	10
Total insole					35
Reinforcement					
07	3 mm reinforcement tape 50 mm/roll, 38 prs/roll	roll	55	0.026	1.43
08	15 mm cotton tape 50 mm/roll	roll	250	0.0042	1.05
Total reinforcement					5.60
Adhesive & Others					
09	M. E.K 402	Kg	87	0.0015	0.1305
10	Sole edge colour	Kg	203.05	0.001	0.20
11	P.U. Cement	Kg	138.15	.003	0.414

12	Latex 60 Drc	Kg	65.00	0.0129	0.85
13	Thread Nylon 30/3, 1450 yds/cone, BLK	Mtr	70	.01	0.70
14	Needle 134 LR, 120/19	Pc	11	1	11.0
15	Emery No-2	Mtr	2200	.0005	1.1
16	Emery No 60	Mtr	1700	.0005	0.85
17	ornaments	pc	15	2	30
Total Adhesive and others					45.24
Shoe Box					
17	Box	Pc	8.50	1	8.50
18	Tissue Paper	Pc	1.70	1	1.70
19	Adhesive	Pot	5	1	5
Total Packaging					15.20
Total Materials					380.84
Production cost (100% of material cost)					380.84
Total cost					396.04
					396.04

Product number 2:**A. Material Costing**

SI no	Items	MU	Unit Price	Amount	Cost (Tk.)
Upper					
01	leather (upper, insole cover and socks)	Sft.	110	1.5	165
Total Upper					165
Lining					
02	Cow Beige leather	Sft	40	1.5	60
Total lining					60
Sole					
03	leather	sht	40	2	80
04	Heel/crepe rubber	pc	12	2	24
Total Sole					104
Insole					
04	Insole leather	Sht	80	1	80
05	Shank board	Sht	10	1	10
06	Steel Shank	Pc	5	2	10
Total insole					101
Reinforcement					
08	3 mm reinforcement tape 50 mm/roll, 38 prs/roll	roll	55	0.026	1.43
09	15 mm cotton tape 50 mm/roll	roll	250	0.0042	1.05
Total reinforcement					5.60
Adhesive & Others					
10	M. E.K 402	Kg	87	0.0015	0.1305
11	Sole edge colour	Kg	203.05	0.001	0.20
12	P.U. Cement	Kg	138.15	.003	0.414

13	Latex 60 Drc	Kg	65.00	0.0129	0.85
14	Thread Nylon 30/3, 1450 yds/cone, BLK	Mtr	70	.01	0.70
15	Needle 134 LR, 120/19	Pc	11	1	11.0
16	Emery No-2	Mtr	2200	.0005	1.1
17	Emery No 60	Mtr	1700	.0005	0.85
	ornaments	pc	5	2	10
Total Adhesive and others					25.24
Shoe Box					
18	Box	Pc	8.50	1	8.50
19	Tissue Paper	Pc	1.70	1	1.70
20	Adhesive	Pot	5	1	5
Total Packaging					15.20
Total Materials					460.84
Production cost (100% of material cost)					460.84
Total cost					476.04
					476.04

Remarks:

Fashionable ladies sandals significant trend to the women. Bangladesh may be one of the important manufacturer country and can earn a lot of foreign currency by exporting the sandals because the raw materials are available here and very low cost.

Labour cost also cheaper here comparing with other countries. If the government take proper step to improve the Technology and private Entrepreneur Invest more capital in this sector, then it will be very helpful to rising the sector.

Conclusion:

Fashionable Footwear is an essential Part of modern life It is used not only for Protecting but also for maintaining status. Most Ladies Sandal ore ornament oriented and highly expensive. As a developing country of third world our technologist should have concentrated more on quality shoe with low cost It we want to compete in world footwear market. We have cheep manpower, we have cheep raw material, we only need to. take proper step for developing this. sector.

Reference

1. Text book of Footwear manufacture.
2. Text bok of Footwear materials.
3. Manual of shoe making - Edttor - R.G. Miller.
4. Step by step pattern cutting Handbook.
5. Shoe designing a - manual Leather Technology Missing.
6. Lecture notes on shoe making.
7. Product knowledge - Swayam Siddha
8. Cutting - FDDI
9. Manual of Cost accounting