

LT-301: LEATHER MICROSCOPY AND BACTERIOLOGY

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Unit I

History: Histology of hides and skins-cells,, tissues, fibers, muscles, glands, epidermis, dermis etc. histological characteristics of buffalo and cow hides, goat and sheep skins, reptiles skins.

Unit II

Compound Microscope: Mechanical and optical part of compound microscope, image formed, defects in eye pieces and their rectification etc. different types of microscopes.

Unit III

Fiber Structure and Assessment: Orientation of fiber, structure in curing, soaking, limping, picking tanning and optimal conditioning of fiber structure in various types of leather assessment of leather.

Unit IV.

The Bacterial Cell and it's Internal Structure: Nutrition of bacteria and the preparation of culture media. Metabolism and respiration of bacteria-sterilization-effect of environment upon bacteria-isolation and identification of bacteria classification of bacteria usually found ion hides and skins-bacterial proteolysis disinfections and disinfectants-bacteriology of curing soaking, liming and bating.

Unit V

Mycology: Isolation, identification and classification of fungi associate with leather processing, Morphology and physiology of fungi, Mycological problems of leather industry and their prevention.

Entomology: Influence of the following parasite diseases, skin leather quality and their prevention, warblestickes, mosquito lice, insect damage to dry hides and skin caused by hide beetles and mothes and their prevention. Preservation, cleaner processing in beam house practices principal and practice involved in long and short terms preservation techniques for hides and skins, preservation defects, salt free curing options, sulfide free unhairing systems, ammonia free systems salt free pickling systems, strategies to bring down BOD, COD and TDS of effluents.

Recommended Books

1. Pelczar, Reid, "Microbiology"
 2. Staineer, "Microbiology"
 3. Seelay, Demark, "Microbes in Action"
 4. Reed, R, "Science for Students of Leather Technology"
- "Histology of Hides and Skins-A Monograph" CLRI Publication.

LT-351: LEATHER MICROSCOPY AND BACTERIOLOGY LABORATORY MICROSCOPY

Microscopy

1. Study of optical part of a compound microscope. Setting up of compound microscope.
2. Identification of hides and skins of different species from their anatomical structure.
3. Identification of hides and skins of different species from their grain pattern.
4. Assessment of sole leather.
5. Preparation of microscopical slides by paraffin wax and freezing method.

Bacteriology

1. Preparation of different culture media.
2. Staining of bacteria.
3. Isolation and identification of pure culture.
4. Proteolytic activity of bacteria.
5. Culture of anaerobic bacteria.
6. Enumeration of bacteria in skins or in tannery liquors.
7. Isolation and identification of fungi in leather.
8. Identification defects caused on hides, skins and leather.
9. Measurement of cell size of given bacteria/fungi.
10. Assessment of finished leather, heavy leather and light leather.

Recommended Books:

1. Pelezar, Reid "Microbiology"
2. Strainer "Microbiology"
3. Seclay, Demark "Microbes in action"
4. Histology of Hides & shies - A monograph CIRT Publication.

LT-552 LEATHER PROCESSING LAB=I

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1. Manufacture of vegetable tanned sole leathers.
2. Manufacture of Chrome sole leathers.
3. Processing of harness and saddlery leather.
4. Full chrome and Chrome retan upper leathers.
5. Lining Leathers from different raw materials and tannages.
6. Water proofing of sole leathers.

Recommended Books:

1. Tuck, D.H., " The Manufacture of Upper Leathers".
2. Sarkar, K.T., "Theory and Practice of Leather Manufacture".

LT-652: LEATHER PROCESSING LAB-II

Different types of leathers using Raw / wet Blue/ E.I.

Cycle saddle leathers, Picking band, apron bag tanned leathers, Foot ball leathers, cricket ball leathers, Volley ball leathers, upholstery leathers.

E.I. Kips, Upper leathers from different raw materials and tannages.

Aniline and Semi aniline calf

Recommended Books:

1. Dutta. S.S., "An Introduction to the Principles of Leather Manufacture".
2. Sarkar K.T. " Theory & Practice of Leather Manufacture".
3. Dey J.M. " Practical Aspects of the manufacture of upper leather."

LT-701: PROCESSING OF LEATHER-I

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Unit-I

Finished leathers and composition of finishes, tanned leathers semi finished leathers wet blue-wet white properties, general practices in vegetable and chrome tanning.

Heavy Leathers: Vegetable tanned sole leathers, Bag tanning, different types of finished leathers, Belting leathers, Harness and saddlery leathers, Chrome and waxed soles, picking band leathers. Picker and apron leathers, Hydraulic and pneumatic leather such as hand pump leathers.

Unit-II

Leather for liquification plants for air, Oil seal, Gas, etc Sports Goods leathers like Football. Rugby ball, Volley ball, Hockey ball, Cricket Ball etc. Gloves leathers for wicket keepers, Batting, Boxing etc.

Unit-III

Light Leather : Full chrome retan, hunting suedes, softies, nappa, and burnishable Upper leathers, Printed. Shrunken grain and upholstery leathers.

Unit-IV

Water proof and water repellent upper leather, Nubuk and white leather. E.I. training, dressing of E.I. tannery leathers in to upper, lining, Bag leather, leather for leather goods kattas, bunwar etc.

Unit-V

Defferent types of leathers using chrome splits, Formulation and different dyestuffs, fat liquors, retaining agents.

Recommended Books:

1. Dey J.M. "Practical Aspects of the manufacture of Upper leather".
2. Tuck, D.H. "The Manufacture of Upper leather".
3. CLRI Publication.

LT-751: LEATHER PROCESSING LAB-III

Nappa leathers, Patent leathers, Shrunken grain leathers, Suede upper leathers, Burnishable upper leathers, laminated leathers, Upgrading of splits, Luggage leathers, Garment leathers,

Glazed kid leathers, Nubuck leathers, Dress Glove, Resin upper leathers, Upgradation (Finishing) Techniques, skins with hair on.

Manufacture of different types of light/ Fancy crust.

Recommended Books:

1. Dey, J.M. Practical Aspects of the manufacture of upper leathers.
2. Tuck, D.H. "The Manufacture of upper leathers".
3. CLRI Publication.

LT - 021: LEATHER TRADES ENGINEERING

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Unit - I

Clutch mechanism, crank-slede and straight motion and lever mechanism and development of tannery machines, Balancing and Vibration - their application in high speed slicking action for helically bladed cylinders, Bush, ball, roller and ring oil bearings, cam, springs and their application and function in tannery machines.

Unit-II

Development of hydraulic and pneumatic steering mechanisms accessories and control applied to tannery machines, air compressors, dust control equipment, blowers, etc. Automatic controls and their application in all Instruments, drying mechanisms and different types of dryers.

Unit-III

Detailed study of Beem-house, tanning and finishing machines, their description, construction with sketch, a selection. Foundation and Erection of machinery. Role of newer equipment like autospray, roller coats, continuous embossing machines.

Unit-IV

Internal transport, safety precautions, power, water and steam distribution, drainage and disposal in tanneries.

Unit-V

Maintenance of tannery buildings: Electrical, water and steam distribution, drainage and disposal in tanneries.

Recommended Book:

1. Sharp house, J.H. Leather Technician's Handbook."
2. Mechanical Engineering Text Book.

LT 802: PROCESSING OF LEATHER - II

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Unit-I

Goat skins: Glazed kid, resin uppers, glazed uppers, shoe suede, garment suede, Lining leathers.

Unit-II

Chamois leathers, printed leathers, morocco and book binding leathers, E.I. Goat skins and their dressing into different types of leathers.

Unit-III

Sheep Skins: Vegetable tanning and chrome tanning of sheep skins, conversion into different types of finished leathers-sheep napa, garment, suede, uppers. Lining leathers, glove leathers, diaphragm leathers.

Unit-IV

Exotics and others: Reptile leathers, hair on tanning and dressing of fur skins.

Unit-V

Upgrading of leathers: Retanning special finishing effects for up gradation of lower ends like. Embossing. screen printing block printing, transfer film finishing, seal and Sink finish, popcorn effect, punching etc.

Roller coating and other modern equipments, Burnishable and oil pull up leathers.

Recommended Books:

1. Dey, J.M., "Practical Aspects of the manufacture of Upper Leathers."
2. Sarkar, K.T., Theory & Practice of Leather Manufacture."
3. Dutta, S.S., " An Introduction to the principles of leather Manufacture."
4. CLRI Publications.