

AMLT16 PRINCIPLES OF LEATHER FINISHING

UNIT-1 CLASSIFICATION OF FINISHES

- 1.1 Characteristics of film.
- 1.2 Theory of adhesion.
- 1.3 Gloss and gloss retention. Different layers of finish coat.
- 1.4 Theory of film formation. Nature of polymers used in finishing.
- 1.5 Factors influencing the intermolecular forces of attraction. Plasticization and plasticizers.
- 1.6 External and internal plasticization i.e. co-polymerisation, substitution branching.
- 1.7 Function of different ingredients, gloss measurement.

UNIT-2 PIGMENTS

- 2.1 Its functions in leather finishing, classification, requirements in general.
- 2.2 Insolubility, particle size and particle size distribution, determination of particle size distribution,
- 2.3 Interaction of pigments with the medium, surface properties, effect of different additives on the charge and dispersion properties of the pigment, stability properties,
- 2.4 Impact of pigment volume concentration on different properties. Method of preparation of aqueous pigments paste. Optical properties of pigments-origin of colour in inorganic compound- opacity, Hiding power and tinting strength.
- 2.5 Light fastness and thermal resistance. Difference between inorganic pigments and organic pigments. General manufacturing procedure of pigments.
- 2.6 Chemistry and properties of different pigments e.g. Titanium dioxide, Iron pigments, quinacridone pigments, Phthalocyanine pigments, Azo pigments, and Carbon black.
- 2.7 Extender pigments- their functions in surface coatings.
- 2.8 Chemistry and properties of Luminescent pigments.

UNIT-3 BINDERS

- 3.1 Theory of film formation: different types of polymeric materials and their suitability as film formers,
- 3.2 Different factors influencing film properties, Glass transition temperature, its importance in film formation.
- 3.3 Chemistry & properties of leading film forming polymers-
- 3.4 Polyacrylates, polyurethanes, polyacrylate- Butadiene copolymers, Styrene- Butadiene copolymers.
- 3.5 Chemistry and properties of Polyethylene, polypropylene, polystyrene, polyvinyl chloride, polyvinyl acetate, polyvinyl alcohol etc. in brief and reasons for their unsuitability in leather finishing- along with condensation resins- e.g. phenol formaldehyde, urea-formaldehyde, epoxy resins and alkyd resins.
- 3.6 Chemistry and properties of casein film and modified casein film, Nitrocellulose lacquer- their chemistry and properties, manufacturing process of N.C. lacquer and N.C. lacquer emulsion.

- 3.7 Role of emulsifiers in producing a hydrophobic rough film, drawback of these top coating film formers.
- 3.8 Crosslinking polymers- their suitability in leather coating and merits over conventional thermoplastic polymers.
- 3.9 Requisites of a polymer for cross linking phenomena.

UNIT-4 PLASTICIZATION

- 4.1 Definition and classification- requirements of plasticization- mechanism plasticization and glass transition temperature relationship
- 4.2 Effect of plasticization on film forming properties- important type of plasticizer.
- 4.3 Solvents & Diluents: Definition- theoretical considerations of solvents- thermodynamically considerations- different important properties of solvent and diluent- other properties
- 4.4 Individual properties of some solvents and diluents.
- 4.5 Chemistry, properties and uses of other important auxiliaries in leather finishing e.g. Brightening dyes, formaldehyde, wax emulsion, silicon emulsion, other water proofing agents, matting agents, filler penetrator etc.

Reference Books:

1. Chemistry of Tanning Processes- K.H. Gustavson, Academic Press, N.Y.
2. Introduction to the Principles of Leather Manufacture- S.S.dutta, 3rd edition. I.L.T.A.
3. Chemistry of synthetic dyes- K.Venkatraman, Academic Press, N.Y.
4. Synthetic Detergents- A. Davidson & B.M. Milidsky.

