

AMCT17 GLASS ENGINEERING II

UNIT-1 GLASS MELTING FURNACES

- 1.1 Construction and operation of pot furnace and day tank furnace.
- 1.2 Tank furnace- types, design & construction, refractories used.
- 1.3 Electric tank furnace- design & operation,
- 1.4 Electrodes used, electric boosting in tank furnace.

UNIT-2 OPERATION OF TANK FURNACE

- 2.1 Heating process
- 2.2 Temperature distribution, efficiencies, heat balance,
- 2.3 Thermal insulation & cooling.
- 2.4 Measurement and control- temperature, pressure,
- 2.5 Volume and fuel/air mixture, glass level.
- 2.6 Reversal, heating and cooling of glass furnace, hot repairs.

UNIT-3 FABRICATION PROCESS

- 3.1 Fore hearth & Feeder, hand operations, flatware
- 3.2 Sheet glass, float glass, plate glass, patterned glass.
- 3.3 Hollow ware- press & blow, blow & blow,
- 3.4 IS machine, bulbs & tubes?

UNIT-4 ANNEALING

- 4.1 Introduction, nature of generation & release of strain,
- 4.2 Temporary & permanent strain,
- 4.3 Dependence of strain on cooling rate,
- 4.4 Detection & measurement of strain,
- 4.5 Annealing equation, problems in annealing,
- 4.6 Annealing glass plate, optical glass, and ideal annealing cycle.

UNIT-5 VALUE ADDING PROCESSES IN GLASS

- 5.1 Mirror, chemical vapour deposition,
- 5.2 Physical vapour deposition process,
- 5.3 Laminated glass, tempered glass,
- 5.4 Decorated glasses, vycor & micro porous glass,
- 5.5 Sealing glass, neutral glass,
- 5.6 Photosensitive glass, glass ceramic, glass fibers.

References Books:

1. Tooley F.V, Handbook of Glass Manufacture, Vol I&II, Ogden Publishing Co., NY, 1960.
2. Alexis G.Pincus, Melting Furnace Operation in the Glass Industry, Magazines for Industry Inc., NY, 1980.
3. Cummings K, The Technique for Glass Forming, B.T.Batsford Ltd., London, 1980.