AMPTE24 PLASTICS PROCESSING TECHNOLOGY-II

UNIT-1 THERMOFORMING & CALENDERING

1.1 Basic principles & types of thermoforming processes,
1.2 Thermoforming moulds-processing parameters- faults, causes and remedies.
1.3 Principle and process description, types of calender units 2, 3 and 4 rolled calenders, Design of calender roll,
1.4 Heating and temp control, roll crown, roll crossing and roll bending, materials for calendering, calendering sheets and films, embossing, coating and lamination by calender, comparison between calendering and extrusion.

UNIT-2 ROTATIONAL MOULDING

2.1 Introduction-principle-process-machinery used-materials-moulds process parameters-merits & demerits of roto moulding.
2.2 FRP & Laminates - Introduction, FRP Processing methods-contact moulding-hand lay-up, Spray up method-vacuum bag & pressure bag moulding, filament welding Centrifugal casting, pultrusion, pulforming matched die moulding
2.3 Laminates, definition of terms-high, medium and low pressure laminating process, types of machinery, impregnation systems- decorative and industrial laminates, continuous high pressure laminating process, application.

UNIT-3 CELLULAR PLASTICS

3.1 Introduction-process to create foam in resins
3.2 Mechanical foaming, chemical foaming, physical foaming
3.3 Processes to shape and solidify foams
3.4 Low Pressure foam moulding, high pressure foam moulding,
3.5 RIM Casting foams, steam chest moulding structural foam moulding–applications- Foamed extrusion.
3.6 Casting Processes- Introduction- casting processes viz: Mould casting, Empedding / potting, Encapsulation
3.7 Dipcasting-slush casting Roto casting, cell casting, static powder casting, continuous casting, solvent casting, operation and control of above csting processes plastisol processing.
3.8 Coating Process- Introduction- Roller coating methods, powder coating
3.9 Fluidaised bed coating, Electro static spray coating
3.10 Equipment, process and applications.

UNIT-4 MACHINING & JOINING OF PLASTICS

4.1 Introduction-Importance of machining- methods viz; cutting, drilling, blending, filling etc., joining-principles-cohesion principle, adhesion principle
4.2 Solvent cementing. Dop cementing, welding of plastics-viz high frequency welding thermal sealing, spin welding, vibration welding, hot plate welding, ultrasonic welding,
4.3 Adhesive ponding-examples: Mechanical fasteners.

UNIT-5 OTHER SECONDARY PROCESSES LIKE PRINTING,

5.1 Painting, Hot slamping,

5.2 In mould decoration,

5.3 Electro plating and vacuum metallising.

References Books:

1. Plastics Materials & Processing - By Schwartz & Goodman. Injection Molding - By Athalye, A.S.
2. Injection Molding Technology - By V.D.I.
3. Innovation in Polymer Processing - By Stevenson.

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