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COLLEGE OF ENGINEERING & TECHNOLOGY

Ch-6 Advance Super finishing Technology

Powder Coating

Subject:MT
Code:-3151912

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What is it:

Powder coating is a finishing technology where a decorative and highly protective coating can be applied to a wide range of products. The process involves spraying finely ground, electro-statically charged particles of pigment and resin onto a surface to be coated. The charged powder particles adhere to the electrically grounded surfaces and then are heated and fused into a smooth coating in a curing oven.

What does Powder Coating Offer

- Superior Appearance
- Mechanical Resistance Properties
- Corrosion Resistance
- Solvent Resistance
- Highly durable: chip, scratch, fade and wear resistant
- Ready to use and require no mixing, Solvents, or catalysts

Liquid Finishes Vs. Powder Coating

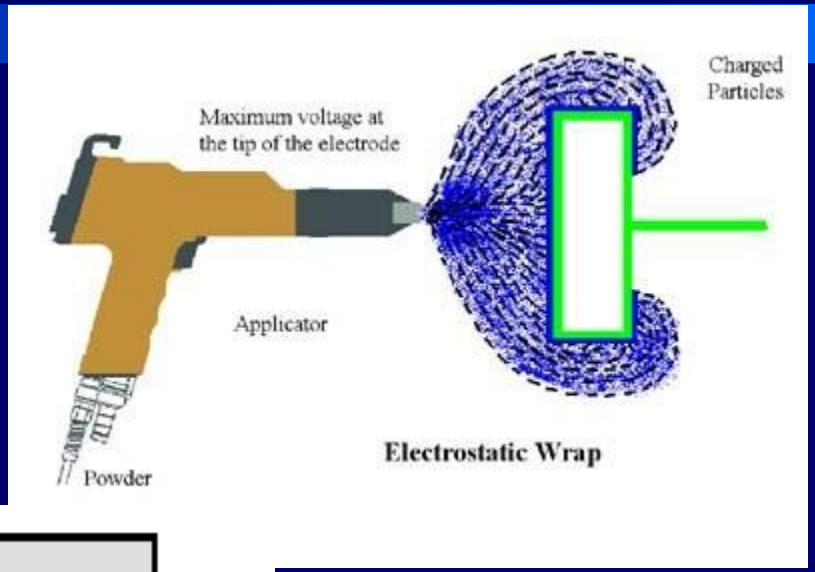
- Solvents Necessitate venting, filtering, and solvent recovery systems that is not necessary in powder coating.
- Liquid Spray Coating achieve material usage of 20-85% while powder coating has a Material usage of 95-98%
- Liquid overspray is lost in filters while 99% of Powder overspray is collected and reused

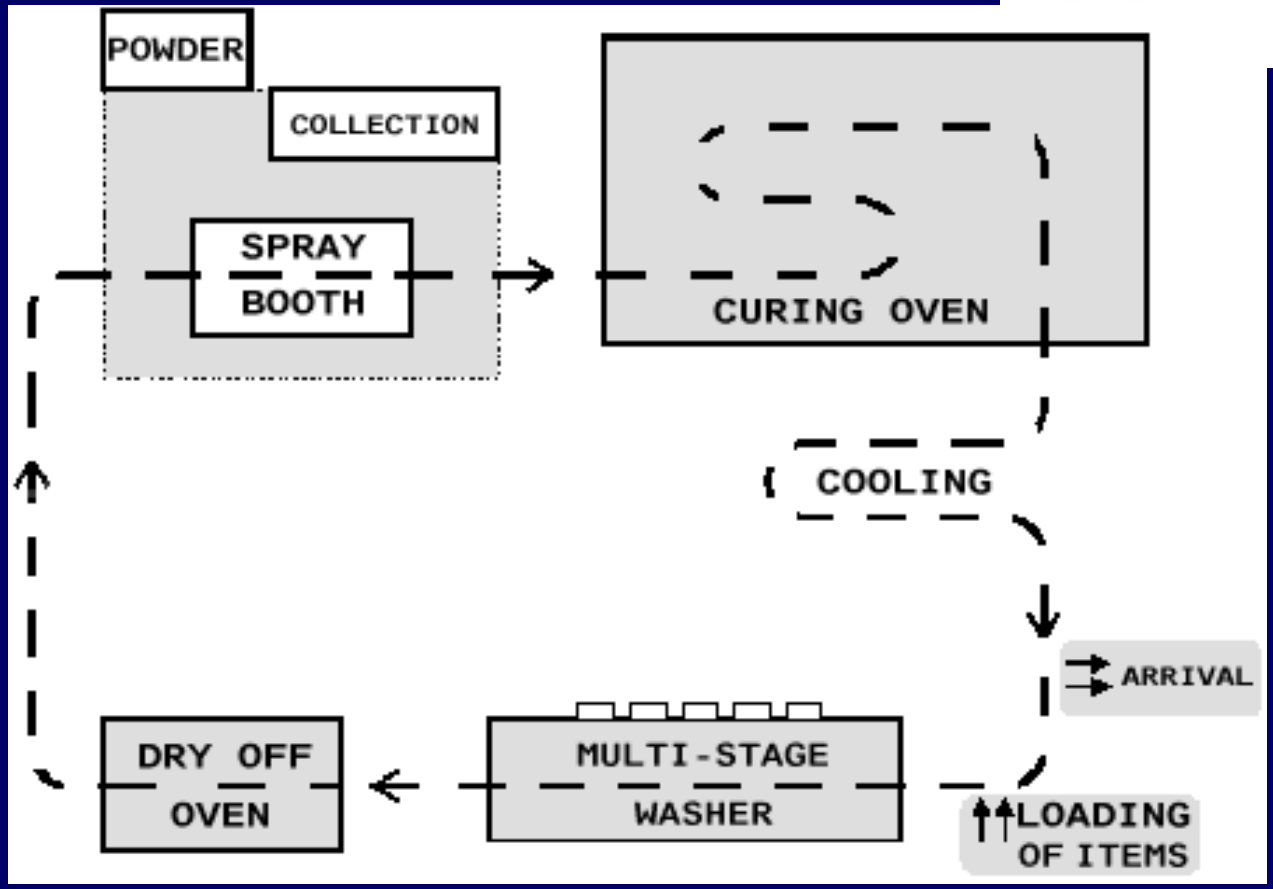
Powder Types

- **Thermoplastic**:
  - Powder melts and flows to form a film.
  - Continues to have the same chemical composition when it solidifies
  - Will re-melt when heated.
  - Thick coating surface and not in same market as liquid paint
  - Examples
    - **Polyethylene**
    - **Polypropylene**
    - **PVC**

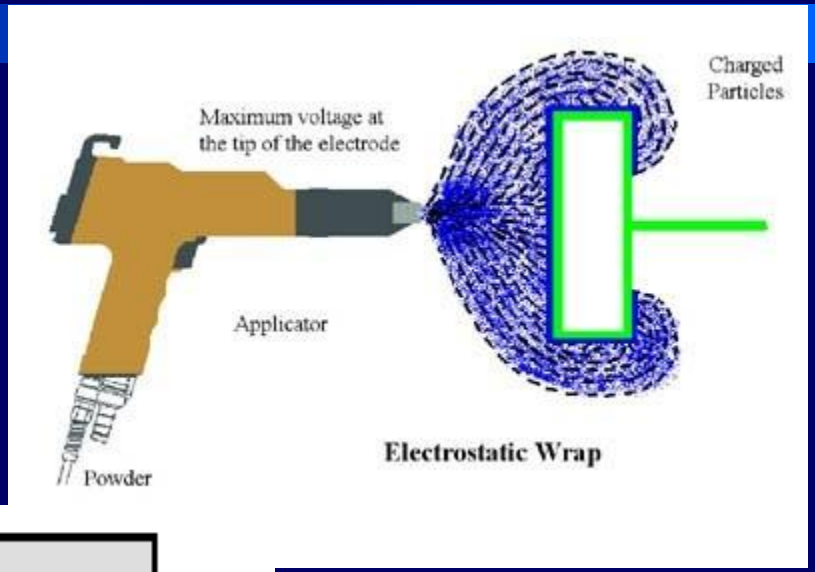
- **Thermoset**:
  - Powder melt flow and cross-link chemically to products
  - Cured coatings have different chemical structures than the basic resigns.
  - Will not re-melt when reheated
  - Can produce thin paint like coating of 0.001 – 0.003 inch thick.
  - Examples
    - Epoxy
    - Hydroxyl polyester (urethane)

Process


Maximum voltage at
the tip of the electrode
Charged
Particles
Applicator
Powder
Electrostatic Wrap


POWDER
COLLECTION
SPRAY
BOOTH
CURING OVEN
COOLING
ARRIVAL
LOADING
OF ITEMS
MULTI-STAGE
WASHER
DRY OFF
OVEN

Process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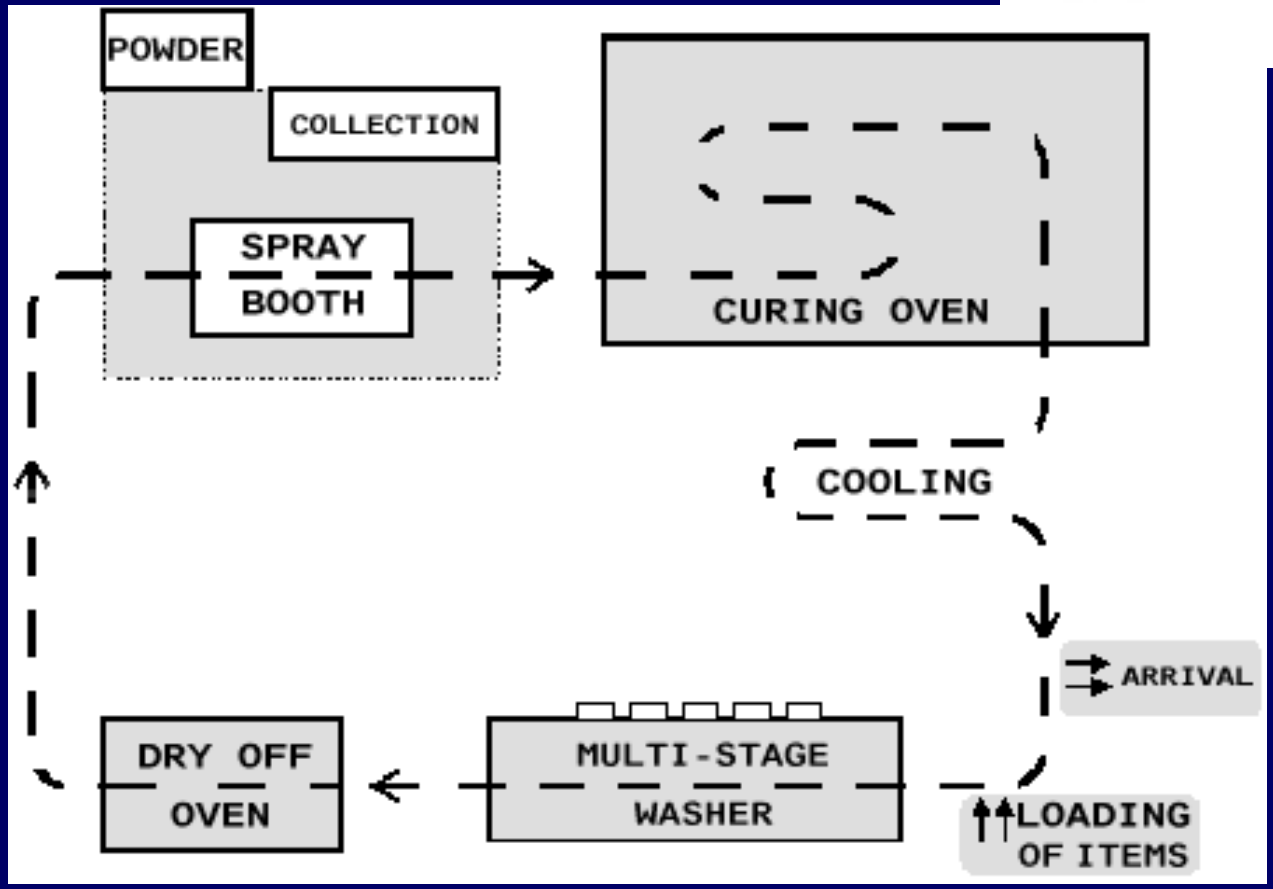
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