

Dip Coater

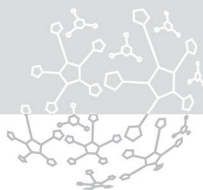
Dip coating process is considered as one of the oldest commercially deposition methods consisting of following steps. It starts with immersing the substrate into the tank containing precursor solution at a constant speed followed by leaving it motionless for a certain dwell time to ensure sufficient interaction of the substrate with the coating solution. Then, the substrate is withdrawn at a constant speed, forming a thin layer of precursor solution on the surface. Finally, the solvent evaporates, forming the thin film on the substrate. The coating can be subjected to further heat treatment in order to burn out residual organics.

A large variety of repeatable dip coated film structures and thicknesses can be fabricated by controlling many factors including functionality of the initial substrate surface, submersion time, withdrawal speed, number of dipping cycles, solution composition, concentration and temperature, number of solutions in each dipping sequence, and environment humidity. The dip coating technique forms thin films using self-assembly and the sol-gel techniques. Self-assembly give film thicknesses of exactly one monolayer. The sol-gel technique creates films of increased, precisely controlled thickness that are mainly determined by the deposition speed and solution viscosity.

Application

- Anti-reflective coatings on windows
- Optical coatings on bulbs, lens
- Optical filters
- Circuit boards
- Semiconductor Wafers
- Photoresist coating
- Sensors
- Field-effect transistor
- LEDs





Comparison between dip coating and spin coating:

Spin Coating	Dip Coating
Coating of one part at a time	many parts can be processed simultaneously
Suitable for low volume operations e.g.: small optical labs	Suitable for high volume operations e.g.: lens manufacturing facilities

Specification	
Motor Power	2.4 KN.m
Accuracy with 25 g Load	6%
Max Load	250g
Speed Monitoring	PLC monitor
Pulling Rate	100-5 mm/min
Effective Height of Pulling	150mm
Max Specimen Dimension H×W×T	3×5×15 cm

Advantages:

- Simultaneous coating of top and bottom of parts
- Almost all one-component materials that are able to flow can be processed
- No waste of material
- High output
- Proper coating quality
- Low costs and high productivity

