



5 Critical Points for Industrial Coating Product Selection

Selecting the right coating system is a complex decision that impacts performance, longevity, and project success. Understanding key technical factors ensures optimal protection and compliance with project specifications.

POINT 1

Understanding DFT Requirements

Dry Film Thickness Specifications

DFT (Dry Film Thickness) is the foundation of coating performance. You must determine both the required DFT per individual coat and the total system DFT. These specifications directly impact corrosion protection, durability, and adherence to industry standards like SSPC or NACE.

Each coat contributes to the total protective barrier. Insufficient DFT compromises protection, while excessive application wastes material and may cause adhesion failures. Always verify project specifications before procurement to ensure proper mil thickness per coat and cumulative system thickness.

Key Considerations

- *Required DFT per coat*
- *Total system DFT*
- *Industry standard compliance*
- *Application method impact*

Environmental and Substrate Conditions

Environmental conditions during application dramatically affect coating performance. Temperature, humidity, and substrate conditions must align with product specifications for proper cure and adhesion.

Temperature Range

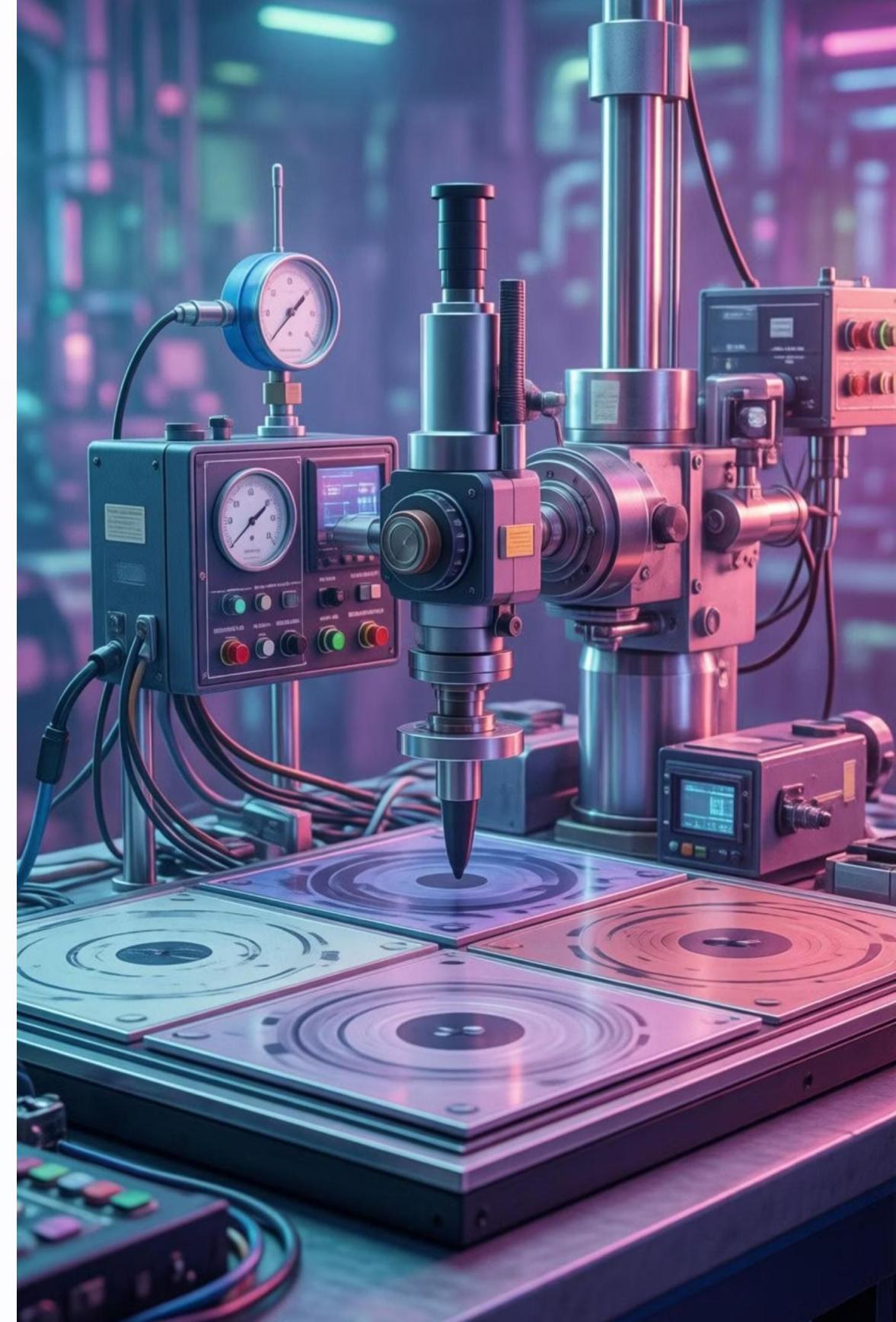
Verify ambient and substrate temperature requirements. Most coatings require 40-90°F, but specialized formulations exist for extreme conditions.

Humidity Levels

Relative humidity affects cure rates and adhesion. High humidity can cause blushing or poor film formation in many coating systems.

Substrate Condition

Surface preparation, cleanliness, and substrate material significantly impact coating selection. Steel, concrete, and composites require different approaches.



Specialty Coatings and System Compatibility

Challenging Surface Conditions

Wet, oily, or contaminated surfaces demand specialty coating formulations. Standard coatings fail on these substrates, leading to premature failure and costly rework.

High-temperature environments require specialized heat-resistant coatings that maintain integrity and adhesion under thermal stress. These formulations use advanced resins and pigments designed for elevated service temperatures.



Hybrid System Compatibility

When specifying multi-coat systems with different chemistries—such as an epoxy primer, polyurethane intermediate, and acrylic topcoat—intersurface adhesion becomes critical.

Verify compatibility between coat chemistries. Incompatible systems can delaminate, blister, or fail prematurely. Consult technical data sheets and conduct adhesion testing when mixing coating types within a single system.

Critical: Always verify manufacturer recommendations for coat-to-coat compatibility and recoat windows.

Solvent Content and Ventilation Requirements

Health, Safety, and Compliance Considerations

Solvent content directly impacts worker safety and project logistics. Coatings containing obnoxious or hazardous solvents—such as xylene, toluene, or MEK—require extensive ventilation, personal protective equipment, and may be restricted in confined spaces.

In poorly ventilated areas, solvent-heavy coatings pose serious health risks including respiratory issues, dizziness, and long-term health effects. They also increase fire hazards and regulatory compliance burdens.

01

Review Safety Data Sheets

Identify all solvents and their exposure limits before specification

02

Assess Ventilation

Evaluate available ventilation against product requirements

03

Consider Low-VOC Alternatives

Water-based or high-solids coatings reduce hazards and compliance issues

04

Plan PPE and Safety Measures

Ensure proper respiratory protection and monitoring equipment

When working in confined spaces or areas with limited ventilation, prioritize low-VOC, waterborne, or high-solids coating systems. These alternatives minimize exposure risks while maintaining performance standards.

About the Author: Mr. Chandrashekhar Pathak

Mr. Chandrashekhar Pathak brings over 40 years of hands-on experience with polyurethane systems, epoxy formulations, and process engineering. Now in his 70s, this blog is his personal initiative to give back to the industry that has been his lifelong passion.

His mission is to share practical insights, real-world lessons, and free guidance with fellow learners, engineers, students, and organizations. His contributions reflect a deep respect for expertise and a commitment to advancing the field.



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