

A Better Way to Evaluate Real-World Coating Performance

1. Substrate & Surface Condition

Substrate

Carbon steel	Stainless steel	Aluminum
Galvanized steel	Other _____	

Surface Condition

New/clean surface	Rusted or oxidized	Previously coated
Contaminated with oil/grease	Rough/blasted surface	

Surface Preparation Planned

Solvent cleaning	Abrasive blasting	Power tool cleaning
Chemical pretreatment	Unknown/not defined	

2. Temperature Exposure

Maximum Operating Temperature

Ambient	Below 150°F	150-300°F	300-500°F
	500°F-800°F	800-1100°F	1100°F+

Operating Conditions

Constant temperature	Frequent heating/cooling cycles
Rapid temperature swings	Startup/shutdown cycling

3. Environmental Exposure

Moisture & Humidity

Dry indoor environment	Humid conditions	Condensation present
Direct water exposure	Washdowns or steam exposure	

Corrosive Exposure

Salt/coastal exposure	Industrial pollutants	Chemicals or solvents
Acid or alkali exposure	Dirt/debris buildup	

Outdoor Exposure

UV/sunlight	Rain/weather	Freeze/thaw conditions
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4. Mechanical & Service Conditions

Mechanical Stress

Abrasion/wear	Impact/chipping
Vibration	Flexing/bending

Service Expectations

Easy maintenance/recoat access	Long-term durability required
Difficult shutdown access	Minimal maintenance expected

5. Application Considerations

Application Method

Liquid coating	Powder coating
Spray	Brush/roller

Application Environment

Controlled shop application	Limited cure conditions
Field application	Heat-sensitive substrate

6. Previous Coating Performance

Has a coating failed previously?

No prior issues	Rust/corrosion	Peeling/delamination	
Blistering	Fading/chalking	Heat degradation	Mechanical wear

Final Evaluation Questions

Before selecting a coating system, ask:

- Are multiple stressors occurring simultaneously?
- Will the coating experience thermal cycling?
- Are moisture and contaminants fully considered?
- Does the coating system match the expected service life?
- Is surface preparation appropriate for the environment?
- Is this a product issue or a system design issue?

Key Takeaway

Successful coating selection is rarely about finding the single highest-performing product on paper. The best coating system is the one designed around the actual operating environment, including temperature, moisture, contaminants, mechanical stress, application conditions, and expected service life.

Submit your completed checklist to technicalinquiries@forrestpaint.com for technical review and coating recommendations.