US COATINGS

THE INDUSTRIAL COATINGS SELECTION GUIDE

Which protective coatings are best for your industrial assets? And how can you know for sure?

Anyone who's researched protective coatings knows how exhaustive and sometimes complicated the resources they find can be. We want to make things a little simpler. Use this guide as a triage resource to point you toward the industrial coatings that make the most sense for the assets you want to protect.

HOW TO USE THIS GUIDE

The first and most fundamental factor affecting the selection of an industrial maintenance coating is the asset's substrate. For simplicity's sake, we break it down into two broad categories.

First, we'll discuss metallic substrates. This category is further broken down into subsets based on characteristics of the asset's service environment. Second, we'll discuss non-metallic substrates like drywall, concrete or concrete masonry units. These are also broken down based on service environment characteristics.

Use this guide to build a rudimentary understanding of industrial coatings and aid you in your initial consultations with a coatings manufacturer.

PROTECTING METALLIC SURFACES

Metallic assets vary widely in their applications, from indoor facility safety railings to ballast tanks to high-temperature piping. Air, water and other exposures will impact different coating formulations in different ways. For example, the preferred coating for a warehouse safety rail wouldn't work out well if applied to high-temperature piping at an oil refinery.

Many variables interact to determine how well a coating sticks to the surface it's meant to protect. The service temperature of the substrate is the starting point. From there, we'll break the decision down further according to surface preparation standards and how long you expect the coating to last.

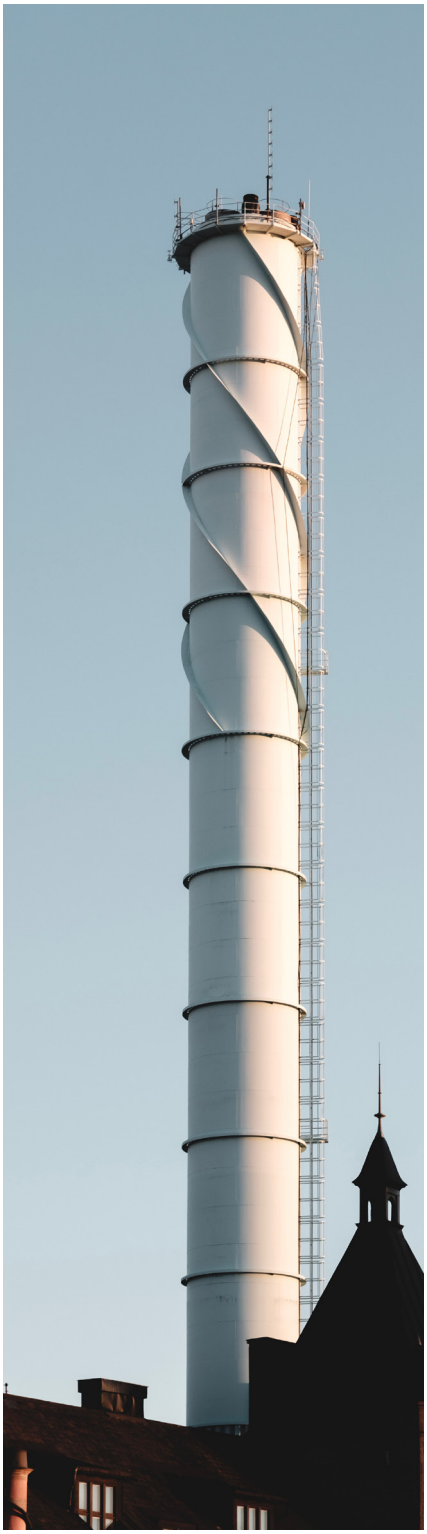
We'll discuss all these factors systematically below. But first:

A note on linings for tanks or vessels

Tank linings are best discussed with a coating manufacturer on a case-by-case basis. That's because there are so many factors at play:

- What kind of tank is it?
- Will it store liquids, solids or both?
- How frequently will it be emptied and refilled, and how abusive is that process to the coating?
- How long do you expect the protective coating to last?

There are too many variables. To truly make the best choice when deciding among protective tank or vessel lining solutions, owners should talk about the tradeoffs with a manufacturer. Want to discuss it with us? Contact us here.



COATING METALLIC SUBSTRATES AMBIENT TO 200°F

For industrial coatings, one formula does not fit all. The interplay among environmental exposures, surface preparation standards and estimated service lives drives an owner's decision—and in this temperature range, there are many suitable coating options to consider.

For example, if you want to protect an asset for a long time (up to 25 years), you'll need a higher-quality coating engineered to perform for that long. And to get the most out of that coating, a more stringent surface preparation method is recommended. Applying a high-performance coating over a moderately prepared surface increases the risk of premature failure. For assets requiring less lengthy protection (five or fewer years), owners can afford a lesser surface preparation technique and apply a more economical coating.

But owners can approach the decision from the opposite direction, too: If you want to make the bare minimum investment, you can choose the more economical coating and the less intensive surface preparation. Just realize that you'll likely have to repaint much sooner.

The interplay among environmental exposures, surface preparation standards and estimated service lives drives an owner's decision

Surface prep, service life and coating recommendations

Typically, metallic surfaces coated to protect against atmospheric exposure up to 200°F are specified to meet SSPC's SP 2, SP 3 or SP 6 surface preparation standards.

SP 2 AND 3

The SP 2 standard covers non-power hand tool cleaning. SP 3 covers surface preparation using power assisted hand tools. When either method is specified, the most appropriate coating systems are:

Up to 5-year service life

- Direct-to-metal alkyd
- Alkyd primer with alkyd topcoat
- Direct-to-metal acrylic
- Acrylic primer with acrylic topcoat

5- to 10-year service life

- Surface-tolerant epoxy
- Direct-to-metal epoxy primer with polyurethane topcoat
- Direct-to-metal epoxy primer with epoxy topcoat

SP 6

SP 6 covers commercial abrasive blast cleaning. It's a much more intense surface preparation method that leaves substrates cleaner compared to SP 2 or SP 3. A better-prepared surface means coatings can stick to it longer before failing. Accordingly, the higher-quality, higher-performance coatings are recommended depending on specific service characteristics:

10- to 15-year service life

- Epoxy primer with epoxy topcoat
- Epoxy primer with polyurethane topcoat
- Organic zinc primer with epoxy topcoat
- Organic zinc primer with polyurethane topcoat

15- to 25-year service life

- Inorganic zinc primer with epoxy mid-coat and polyurethane topcoat
- Inorganic zinc primer with siloxane topcoat
- Inorganic zinc primer with polyurethane mid-coat and fluorourethane topcoat

US Coatings manufactures a broad range of coatings appropriate for metallic assets in this service temperature range:

- Epoxy primers and finishes
- Polyurethane finishes
- Zinc primers
- Alkyd and siloxane coatings

We're ready to help you further narrow down which coating system is best for your industrial assets.

COATING METALLIC SUBSTRATES AT HIGH TEMPERATURES

The calculus changes a bit for owners choosing protective high-temperature coatings for industrial assets. Sustained and periodic temperatures of an asset have the greatest impact on coating performance. That's why we omit service life estimates alongside recommended coatings for high-temperature service. In these cases, performance is more accurately measured in temperature shocks and cycles than in years. Owners should discuss the anticipated shocks and cycles of their high-temperature assets with a coating manufacturer to determine the best protective coating.

Surface preparation for high-temperature substrates must usually meet SSPC's SP 2, SP 3 or SP 6 standards. The SP 2 standard covers non-power hand tool cleaning. SP 3 covers surface preparation using power assisted hand tools. SP 6 covers commercial abrasive blast cleaning—a much more severe process.

200°F to 350°F	350°F to 650°F	650°F to 1200°F
• For surface prep to SP 2 or SP 3, a phenolic alkyd primer with silicone alkyd topcoat. • For surface prep to SP 6, inorganic zinc primer with phenolic epoxy topcoat. Note that at around 300°, organic resin coatings tend to break down after short periods of time. Inorganic resin formulas are recommended for the upper portion of this temperature range as well as in the following temperature ranges because they're much better at withstanding heat stress.	• For surface prep to SP 2 or SP 3, a silicone acrylic primer with silicone acrylic topcoat. • For surface prep to SP 6, an inorganic zinc primer with silicone acrylic topcoat.	• For surface prep to SP 2 or SP 3, a straight silicone primer with straight silicone topcoat. • For surface prep to SP 6, an inorganic zinc primer with straight silicone topcoat.

As stated earlier, higher-performance coatings are recommended for the more stringent SP 6 surface preparation standard. In general, owners who want to maximize the performance of a high-performance coating should not apply it over a moderately prepared surface. The tradeoff in terms of investing in more stringent surface preparation and a high-performance coating system is that it will perform as designed over longer periods of time at reduced risk of failure if applied properly.

Also note that high-temperature coating formulas aren't appropriate for lower-temperature service. For one thing, it's overkill. For another, some high-performance coatings require high heat for proper curing. Applying these coatings in environments lacking suitable heat will result in slow or incomplete curing and increase failure risk.

To learn more about US Coatings' lineup of high-temperature coatings, contact us or download high-temperature coating product sheets here.

COATING NON-METALLIC SURFACES: IS IT A WALL OR A FLOOR?

For non-metallic surfaces like concrete, concrete masonry units or drywall, that's the most important question. A handful of important variables eventually determine which coating system is best, but it all starts by determining whether you're protecting a wall or a floor.

In either case, we further break the decision down based on three general service environments: light duty, heavy duty and severe duty. Here's what we mean by each:

- **Light duty:**
  Normally dry surface subject to occasional cleaning; surface exposed to foot traffic or rubber-wheeled carts.
- **Heavy duty:**
  Often wet surface with frequent washdowns; surface exposed to heavy foot or forklift traffic.
- **Severe duty:**
  Always wet surface with frequent steam cleaning; surface exposed to substantial abrasion and impact.

US Coatings manufactures wall and floor protection systems suited to protect your facility, including:

- Water-based acrylics
- Epoxy sealers
- Urethanes

We're ready to help you further narrow down which coating system is best for your industrial assets.

WALLS	FLOORS
For light duty, a water-based acrylic block filler or acrylic sealer.	**For light duty,** an epoxy sealer with epoxy finish or an epoxy sealer with quartz or vinyl flakes.
For heavy duty, Water-based epoxy block filler with water-based epoxy finish.	**For heavy duty,** a self-leveling epoxy or quartz-filled epoxy (applied either by broadcast or by trowel).
For severe duty, a fiberglass-reinforced epoxy system.	**For severe duty,** a trowel-applied epoxy mortar or cement urethane.

THE BEST RESOURCE IS YOUR COATING MANUFACTURER

No site, situation or asset is identical. The variables affecting the performance and protection of your critical industrial assets means collaboration between owners and coatings manufacturers is paramount.

That's what makes US Coatings unique. We're not a giant firm bent on outselling competitors and boosting the bottom line. For us, it's about building relationships and giving honest guidance about how to maximize the productivity of the assets you depend on.

Think we can help? Let us know.

Phone
314.205.1500

Address
2355 Weldon Pkwy
St. Louis, MO 63146