

Epoxy vs. Urethane Cement vs. Polished Concrete

Which floor fits your facility?

By **Henry Hunt**, Partner, Topcoat Services USA · For owners, facility managers, contractors and specifiers



18,000 SF Class 3 polished floor, L.L. Bean Outlet, Framingham, MA. Other polishing contractors had classified this slab as not viable.

A lot of the failed floors we get called to fix weren't bad product or a bad install. They were the wrong system for the room. Epoxy in a process room that gets hot washdowns every night. A polished slab where someone mops with an acidic cleaner. A good coating put down over a slab nobody tested for moisture.

Epoxy, urethane cement and polished concrete are all good floors. They're good at different things, and the price per square foot on a bid won't tell you which one you need. This paper covers how each one works, where it tends to hold up, where it doesn't, and what we'd want to know before putting any of them in a spec.

1 Start with what the floor has to survive

Before comparing products, write down what the floor will actually see. Most trouble comes from a short list.

Heat and cold. Hot washdowns, steam cleaning, ovens and freezer doors make a floor expand and contract fast. Systems not rated for it can crack or let go.

Chemicals. Look past the process chemicals. Blood, fats, sugars and the cleaners used every night do real damage, and acids etch bare concrete.

Moisture in the slab. Vapor and alkalinity moving up through the concrete can damage coatings and affect other finishes. Slabs on grade without an effective vapor retarder are the usual suspect.

Traffic. Forklifts, pallet jacks, dropped tools, and in garages and hangars, hot tires.

Prep. It isn't a service condition, but it decides how the floor handles everything above.

Rule of thumb

Hot, wet or chemical: look at urethane cement first.

Dry, busy, and appearance matters: look at polished concrete.

Need color, a seamless coating, or a specific chemical-rated formulation: look at epoxy.

Most buildings end up with two of the three. Product data sheets, not rules of thumb, set the final choice.

2 The three systems

All three are proven. The part people skip is where each one doesn't belong, so we've spent as much time on that as on the strengths.

Resinous epoxy

A two-part resin bonded to a prepared slab. The systems we install most often run roughly 30 to 60 mils, frequently with a quartz or flake broadcast and a urethane, polyaspartic or novolac topcoat. Thin-film epoxy coatings are much thinner, and epoxy mortars are much thicker.

Good at: color and finish options, abrasion, seamless cleanable surfaces, and chemical resistance that ranges from moderate to severe depending on formulation. Novolac epoxies and epoxy mortars are built for heavy chemical and impact service.

Watch out for: heat and slab moisture. Most standard epoxies are rigid and are not designed for repeated thermal shock. Each product has its own moisture limit, and damp slabs often need a rated mitigation primer. Topcoats wear and need renewal over time, and many epoxies yellow under UV. We removed about 27,000 lbs of failed epoxy mortar from a food manufacturing room before replacing it with a urethane-based system.

Return to service: set by the product data sheet and slab temperature. Ask for walk-on, light service and full chemical cure times separately.



High-build epoxy in an aviation hangar.

Urethane cement

Urethane resin combined with cement and graded aggregate, installed from about 1/8" to 3/8" depending on product and system. Sherwin-Williams lists Poly-Crete SL at 1/8", the SLB system at 3/16", and Poly-Crete MD at 3/16"–1/4".

Why it handles heat: manufacturers formulate these products so their coefficient of thermal expansion is close to concrete's, so floor and slab expand and contract at similar rates when temperatures swing. Sherwin-Williams cites this for Poly-Crete MD. Temperature limits still vary by product and build, so check the data sheet for the exposure you have.

Good at: thermal shock and cycling, food acids and caustics, constant water, and many slabs with elevated moisture. Moisture tolerance is product-specific, not unlimited.

Watch out for: cost and looks. It is often the most expensive of the three, color choices are limited, and aromatic products tend to yellow under UV. It needs anchor cuts at edges, drains and terminations. Some fast-cure topcoats have a strong odor during install.

Return to service: product- and topcoat-dependent; confirm on the data sheet.

Polished concrete

The slab is ground with progressively finer diamonds, densified and usually protected with a penetrating or guard-type treatment. The concrete is the wearing surface.

Good at: lasting in the right space. There's no film to peel, blister or delaminate, so it avoids those coating failure mechanisms. Upkeep is cleaning plus burnishing or re-polishing as wear requires. In dry, high-traffic spaces it is often among the lowest-cost floors over time, depending on slab condition, traffic and maintenance.

Watch out for: acids, standing water and the slab you start with. Acidic spills and many cleaners etch it, and guards slow staining rather than prevent it. Slab moisture still needs evaluating, because it can affect treatments, dyes and appearance. Cracks and patches stay visible. On the Framingham job the slab had about 1/2" of thinset and thousands of patches. Grinding off roughly 3/4" reached sound concrete, and the GC dropped a planned overlay. Not every slab can be saved that way.

Return to service: polishing is complete after the final pass, but applied treatments have their own dry times. For example, PROSOCO lists traffic within 1 hour of final burnishing for LSGuard, and light foot traffic at 4 hours with normal traffic overnight for PolishGuard, under typical conditions.



Urethane cement with integral cove, cold storage walk-in.



The Framingham floor after fit-out.

3 Side by side

A general comparison for typical commercial work. Product, build, topcoat, slab and exposure all move these ratings, so confirm against the manufacturer's data sheets.

	Epoxy	Urethane cement	Polished concrete
Heat and cold (hot washdown, freezer cycling)	Limited for most standard epoxies; check product	Strong for rated products and builds	No film to debond; slab joints and edges still see thermal stress
Chemicals, acids, cleaners	Good to strong; novolac formulations for aggressive exposure	Strong; confirm against the chemical chart	Limited; acids and many cleaners etch concrete
Moisture in the slab	Product-limited; may need a rated mitigation primer	Often higher tolerance; each product has its own limit	No film to blister; treatments, staining and appearance still need evaluation
Forklifts, carts, impact	Good; improves with build and aggregate	Strong	Good; joints and edges are the weak points
Wet, sanitary, washdown rooms	Good with the right system and cove	Strong	Not suited to standing water or washdown
Slip resistance	Broadcast options	Broadcast options	Limited; depends on finish, cleaning and contaminants
Color and design	Broad	Limited	Moderate (dyes, aggregate exposure)
Time before use	Per data sheet; longer on cold slabs	Per data sheet; fast-cure topcoats exist	Polishing done when last pass is; treatments have their own dry times
Upkeep over the years	Topcoat renewal as it wears	Inspect edges, cove and drains; repair chips	Cleaning, plus burnishing or re-polishing as wear requires
Cost to install	Varies widely with build	Often the highest of the three	Varies with slab condition and finish level
Long-term cost	Depends on recoat cycle and exposure	Often favorable in harsh process rooms	Often favorable in dry, high-traffic spaces

4 What we usually see by facility type

Most buildings need more than one answer. Think room by room.

Facility	Usual starting point	Notes
Food and beverage processing	Urethane cement	Novolac epoxy can work in dry rooms like packaging.
Commercial kitchens	Urethane cement	Grease, hot water and slip usually point the same way.
Cold storage and freezers	Urethane cement	MMA systems rated for low-temperature cure are an option.
Retail and big-box	Polished concrete	Epoxy or urethane cement in back-of-house and prep areas.
Warehouse and distribution	Polished concrete	Epoxy where you need striping or have chemical zones.
Manufacturing	Depends on the line	Dry assembly: polished or epoxy. Wet or chemical: urethane cement or a chemical-rated epoxy.
Healthcare	Epoxy in clinical and wet areas	Polished can work in lobbies and corridors.
Schools and municipal	Polished in corridors and commons	Epoxy in labs, restrooms and kitchens.
Hangars, garages, service bays	Epoxy with a urethane or polyaspartic top	Confirm the topcoat is rated for hot-tire pickup and fluids.
Labs and pharmaceutical	Urethane cement or epoxy	Get the chemical list first, then pick the chemistry.

5 Questions to answer before bid day

- 1. What hits the floor?** Get the actual list: chemicals, cleaners, washdown temperatures, wheel loads. “Food plant” isn’t enough to spec from.
- 2. What’s the slab like?** Age, condition, existing coatings, and moisture. In-situ RH testing per ASTM F2170 should happen before the spec is final.
- 3. How long can the space be down?** The shutdown window often decides the chemistry. Fast-cure products can shrink it, but they cost more.
- 4. How does it need to look, and for how long?** Sunlight and traffic patterns change how a floor looks over time.
- 5. What does it cost over 15 to 20 years?** Add up maintenance, recoats, repairs and the shutdowns that come with each one.

6 Prep decides the outcome

Each product requires a surface profile, stated on its data sheet and measured against the ICRI 310.2R concrete surface profile (CSP) chips, which run from CSP 1 to CSP 10. Profiles commonly called for:

Thin-film epoxy	Lower CSP range
High-build epoxy	Moderate CSP range
Urethane cement	Moderate to higher, plus anchor cuts
Polished concrete	Diamond grind sequence

Grinding and blasting concrete also falls under OSHA's respirable crystalline silica standard (29 CFR 1926.1153). Required controls depend on the task, equipment and compliance method. Our grinders run with dust collection, and indoors we HEPA-vacuum between passes.

7 Look at the whole life of the floor

A cheaper coating can cost more over time if it needs frequent recoats and each one shuts down the space.

The bid price is the first cost of a floor, not the total cost.

Where polished concrete fits, it's often among the lowest lifetime costs. Urethane cement costs more up front but often outlasts standard epoxy in harsh process rooms. Exposure, maintenance and slab condition decide the real ranking.

Performance values vary by manufacturer and product. Use current manufacturer technical data sheets and the applicable ICRI, ASTM and OSHA documents for project specifications.

About the author. Henry Hunt is a partner at Topcoat Services USA, a family-owned, veteran-owned commercial flooring contractor in Hyannis, Massachusetts, working across Cape Cod and New England. Topcoat self-performs resinous epoxy, urethane cement and polished concrete with its own crews and equipment. If you've got a floor decision coming up, reach out. We'll come look at the slab and tell you what we'd do.

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