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“Installing Polished Overlays With Consistent Results”
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WHAT IS A POLISHED OVERLAY?
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- Blend of engineered Portland and other hydraulic cements
- Available in Light Gray, Gray and White
- Pourable, pumpable and self-leveling
- Fast-setting and walkable in 2-3 hours
- Polishable in 24 hours
- Chemically bonded using an epoxy with sand broadcast
WHAT IS A POLISHED OVERLAY?
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- Accommodates thicknesses from 3/8” to 2” neat, up to 5” with aggregate
- Creates a flat, hard, smooth surface with high compressive strength
- Dense surface suitable to be ground and polished to expose small aggregate and simulate the look of concrete
HOW ARE OVERLAYS DIFFERENT FROM STANDARD CONCRETE?

- Polished overlays are a blend of various cements, sand and polymers mixed with water.
- Standard concrete also uses these ingredients but includes course aggregate in as much as 60-80% of the mix.
- Aggregates add strength, compensate for shrinkage, provide for greater abrasion resistance.
- These varying material compositions require different polishing processes.
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- Standard concrete cures and dries approximately 35% through hydration and 65% via evaporation.
- Polished overlays rely on a much greater degree of hydration than evaporation.
- Most overlay materials bind up to 90-100% of the mix water via hydration, resulting in fast set times and rapid strength development.
WHY ARE OVERLAYS USED?

- Existing concrete surfaces vary in age, condition, finish and mix designs
- Existing concrete may be deteriorated, spalled, cracked, un-level and contaminated
- Existing substrate may include floorcoverings, adhesive residues or coatings
- Polishing a variety of existing surfaces will not result in uniform, monolithic appearance
WHY ARE OVERLAYS USED?
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- Retail stores / grocery
- Schools and institutions
- Warehouses
- Showrooms and office space
- Restaurants and hospitality
- Residential
- Military

*Recommendations on interior vs exterior, degrees of traffic, water / stain resistance vary by manufacturer
WHERE ARE OVERLAYS USED?
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[Image of concrete floors before and after overlay application]
SIZE OF U.S. POLISH MARKET?

- Industry experts estimate the size of the U.S. concrete polishing market in 2016 at 360 million square feet.
- The polishing market has grown over 25% per year in the last two years.
- Projected growth rates of 25-30% are expected through 2020.
- Polish growing at a much faster rate than other hard surface flooring.
SIZE of the U.S. Concrete OVERLAY MARKET

- Industry experts also report that **65% of all polish project are renovations**
- **75% of these renovations incorporate an overlay** into some portion of the project
- In **new** concrete polishing applications, approximately **only 3% use an overlay**
PREPARATION REQUIRED?

- All concrete must be sound, solid, clean and free of all oil, grease, dirt, curing compounds or any bond breakers.
- Minimum tensile strength of 200 PSI, when tested per ASTM C1583.
- Do not acid etch or use sweeping compounds.
- Mechanically prepare the surface to a minimum ICRI Surface Profile of 3 (CSP #3).
PREPARATION REQUIRED?

CSP-2 (Grinding)  CSP-3 (Light Shot Blast)  CSP-4 (Med. Shot Blast)

CSP-5 (Med-Heavy Blast)  CSP-6 (Heavy Blast)  CSP-7 (Heavy Blast)
PREPARATION REQUIRED
PREPARATION REQUIRED?

➤ Inspect substrates for moisture, per ASTM 2170
➤ Moisture vapor emissions shall **not exceed** overlay manufacturer’s requirements
➤ If MVE’s exceed the manufacturer’s specified limits, follow guidelines which may include the installation of a **moisture control system**
➤ Consider attending ICRI’s **Concrete Slab Moisture Educational Program** to hone skills
PREPARATION REQUIRED?

- Prepare existing joints and cracks
- **Honor all moving joints** and crack up through the overlay, including expansion, isolation and control joints
- All **non-moving cracks should be filled** with a low viscosity, rigid, polyurethane crack and joint filler
OVERLAY BONDING AGENT

- Two-component, single coat epoxy primers are recommended by most polished overlay manufacturers because of weight, head pressure of equipment and polishing process.
- Solvent-free, low viscosity 100% solid resins.
- Epoxy primers suitable for porous and non-porous substrates.
- Primers help to minimize cracking and can be used as crack filling material.
- Receives sand broadcast.
BONDING AGENT INSTALLATION PROCESS

- After mechanical surface preparation to obtain a minimum ICRI surface profile of 3 (CSP3), vacuum the prepared surface
- Open separate, pre-measured units of epoxy resin and hardener, stir the components, **add the hardener to the resin**
- Blend for approximately three minutes with a low speed drill and epoxy paddle
BONDING AGENT INSTALLATION PROCESS

- Apply the freshly mixed epoxy primer to the prepared substrate in a uniform direction and at approximately 10 mils thick.
- Apply primer using a paint roller with nap length appropriate for surface, notched squeegee, paint brush for corners and hard to reach places.
BONDING AGENT INSTALLATION PROCESS

- While the primer is still in a wet state, broadcast an **excess of fine sand consistently over the entire area**
- Grain size of sand should be **less than 1/50”** (98.5% passing sieve size #30 or #35)
- When broadcasting sand, use a **NIOSH-approved dust mask** compliant with OSHA requirements for handling of sand
SAND BROADCAST
BONDING AGENT INSTALLATION PROCESS

- **Do not stand or walk** on the freshly applied epoxy when broadcasting the sand.
- Use approximately **one pound of sand per square foot of area** and avoid all general traffic over the area for six hours or dry.
- **After approx. 16 hours broom sweep and vacuum** the surface to remove loose sand.
- This clean and prepared surface is now the primer and bonding agent for overlay.
QUALITY ASSURANCE

- Carefully select material, equipment and tooling manufacturers with **warranty and proven track record** of products and process to polish overlays

- Before performing the work, install an **onsite mock up** of specified products, process, surface, finish, color, sealers and joint treatments for review / approval

- Conduct **pre-installation conference** with owner, architect, GC and manufacturer to review site conditions, specs, schedule, etc.

- Attend manufacturer’s **factory training**
QUALITY ASSURANCE

- Polished overlays are intended for foot traffic, moderate rubber-wheeled forklift traffic
- Not suitable for hard plastic or steel-wheeled environments
- Not suitable for heavy-duty manufacturing, chemically harsh or industrial sites
- Dragging heavy metal equipment or loaded pallets with protruding nails will gouge, indent and damage
QUALITY ASSURANCE
Polished Overlay
Mixing and Application
Polished Overlay Installation

1. Designed to be mixed with a specific amount of water, using a high speed drill (minimum 650 rpm) for 2 minutes
Polished Overlay Installation

2. Using **appropriate tools** can greatly increase productivity and ease of application
Recommended Tools:

- Spreader
- Spiked Shoes
- Mixing Drum
- ½” Drill
- Smoother
- Mixing Paddle
- Measuring Device
Rolling Cart

Spiked Roller

Contain Dust

Level Peg

*Barrel Not Included*
Polished Overlay Installation

3. Pour material in **rapid succession** to ensure good healing/blending from batch to batch
Polished Overlay Installation

4. Can be **pumped** for **fast track** and **large scale** applications
Pumping Polished Overlay
Polished Overlay Installation

5. **Range** of applications include flattening or levelling applications
Ideal for flattening/smoothing large areas
Do you need Flat & Smooth... or Level?
May require **3/8” minimum**

May require **1/2” to 1 ½”**
Polished Overlay Installation

6. Self-Leveling polished overlay installation option provides **time** and **labor savings** compared to trowelable applications.
STEPS FOR POLISHING THE OVERLAY

- GRIND / POLISH WITH 60-80 METAL-BONDED DIAMONDS
- VACUUM AFTER EACH STEP TO REMOVE DUST
- GRIND / POLISH WITH #100 GRIT TRANSITIONAL / CERAMIC / FLAT BLOCK RESIN-BONDED DIAMOND
- GRIND / HONE WITH #200 GRIT RESIN-BONDED DIAMOND
- APPLY DENSIFICATION / ALLOW TO DRY FOR ONE HOUR
- GRIND / POLISH WITH #400 RESIN-BONDED DIAMOND
TOOLING FOR OVERLAY PROCESSING
EDGECWORK

- Polished edgework of the overlay shall be done with a **hand held or walk behind tool**
- The edge polishing process will **match the corresponding steps** described for the desired gloss level
- Edgework **ALWAYS precedes** the corresponding polish steps
STEPS FOR POLISHING THE OVERLAY

- APPLY GUARD MATERIAL AT APPROXIMATE RATE OF 2,500 SQ. FT. / GALLON
- MICROPOLISH / BURNISH WITH # 400-1500 GRIT PAD
- DRY MICRO-FIBER MOP THE SURFACE AND ALLOW TO COOL TO ROOM TEMPERATURE BEFORE APPLYING SECOND COAT
- APPLY SECOND COAT OF GUARD MATERIAL AND ALLOW TO DRY FOR ONE HOUR
- MICROPOLISH / BURNISH WITH #1500-3000 GRIT PAD
- DRY MOP THE FLOOR TO REMOVE ALL DEBRIS

- These polishing steps will result in a typical gloss reading range of 40-65 (ASTM E 430)
MICRO-BURNISHER
PROTECTION

- Protect the new polished overlay from **spills and contamination** by petroleum, oil, hydraulic fluid, acid and acid detergents, paint and other liquid dripping from trades and equipment working over the substrate.

- Protect the new surface by installing a **temporary breathable** protective floor covering.

- **Avoid moisture for 72 hours** after installation, don’t permit standing water or place any plastic, rubber matt, rugs or furniture that can prevent the system from drying by trapping moisture, resulting in cloudy finish.

- Light **pedestrian traffic** only in the **24 hours** after installation / **normal traffic** in 7 days.
THANK YOU!!

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