

Section 03 35 43 – Special Concrete Floor Finishes

This specification is provided by Curecrete Distribution, Inc. (dba Advanced Floor Products) as a service and is intended to be used as a guideline for preparing the appropriate project specification section. Every heading may not be needed. Delete unused sections and renumber remaining section headings to be numerically correct.

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes: this section specifies polished concrete
- B. Related sections:
 - 1. Section 079200 “Joint Sealants” for sealants in concrete floor surfaces

1.2 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. ACI 302.1R – Guide for Concrete Floor and Slab Construction
- B. ASTM International
 - 1. ASTM C309 – Standard Specification for Liquid Membrane Forming Compounds for Curing Concrete
 - 2. ASTM C171 – Standard Specification for Sheet Materials for Curing Concrete
 - 3. ASTM C779 – Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces
 - 4. ASTM C805 – Standard Test Method for Rebound Number of Hardened Concrete
 - 5. ASTM E1155 – Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers
- C. Reunion Internationale des Laboratoires D’Essais et de Recherches sur les Materiaux et les Constructions (RILEM)
 - 1. RILEM Test Method 11.4 Standard Measurement of Reduction of Moisture Penetration Through Horizontal Concrete Surfaces

1.3 PERFORMANCE REQUIREMENTS

- A. Performance Requirements: Provide polished flooring that has been selected, manufactured, and installed to achieve the following:
 - 1. Manufacturer shall provide a current Environmental Product Declaration, issued by an accredited Program Operator
 - 2. Health Product Declaration: v1.0 and v2.1
 - 3. Abrasion Resistance: ASTM C779; up to 400% increase in abrasion resistance
 - 4. Reflectivity: Increase of 35% as determined by gloss meter
 - 5. Waterproof Properties: RILEM Test Method 11.4; 70% or greater reduction in absorption
 - 6. Impact Strength: ASTM C805; up to 21% increased impact strength
 - 7. Must meet or exceed ADA/OSHA suggested 0.5 standard value for the Static Co-efficient of Friction
 - 8. Static Coefficient of Friction and Dynamic Coefficient of Friction: B101.1-2009 and B101.3-2012 NFSI Certified with Phase 1 and Phase 2 testing
 - 9. Health Product Declaration: v1.0 and v2.1

B. Design Requirements

1. Hardened Concrete Properties
 - a. Minimum Concrete Compressive Strength: 3500 psi
 - b. Normal Weight Concrete; no lightweight aggregates
 - c. Non-Air-Entrained Concrete
2. Placement Properties for New Concrete
 - a. Natural concrete slump of 4 ½"– 5"; admixtures may be used
 - b. Flatness Requirements
 - 1) Overall Ff 50
 - 2) Local Ff 35
 - 3) Flatness testing cost and scheduling is responsibility of General Contractor
3. Hard-Steel Troweled (3 passes) Concrete
 - a. No burn marks; Finish to ACI 302.1R; Class 5 floor
4. Curing Options
 - a. Membrane forming curing compounds (ASTM C309, Type 1, Class B, all resin [dissipating cure]); acrylic curing and sealing compounds not recommended
 - b. Sheet membrane (ASTM C171) polyethylene film not recommended
 - c. Damp curing: seven-day cure
 - d. Penetrating cure – Ashford Formula

1.4 PRE-INSTALLATION MEETINGS

- A. Pre-Installation Conference: Conduct conference at project site

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated
- B. LEED Submittals
1. Product Data for Credit IEQ 4.2; For liquid applied flooring components, documentation including printed statement of VOC content

1.6 INFORMATIONAL SUBMITTALS

- A. Test Reports: Certified test reports, from an Independent Testing Laboratory, showing compliance with specified performance criteria and physical properties as cited in "Performance Requirements"
- B. Certificates:
1. Product and installer certificates signed by the manufacturer certifying materials meet specified performance characteristics and criteria and physical requirements
 2. Current installation contractor's certificate signed by manufacturer declaring contractor as a certified installer of polishing system, prior to bidding of project

1.7 CLOSEOUT SUBMITTALS

- A. Warranty: Submit warranty documents specified
- B. Maintenance Data: For polished concrete finishing to include in maintenance manuals. Also include the following:
1. Manufacturer's instructions on maintenance renewal of applied treatments
 2. Protocols and product specifications for joint filling, crack repair and/or surface repair

1.8 QUALITY ASSURANCE

- A. Manufacturers Qualifications

1. Manufacturer has a minimum of 5 years' experience in manufacturing components similar to or exceeding requirements of project
 2. Manufacturer must be able to provide technically trained field representative during construction and approving application method
- B. Installer Qualifications
1. Installer experienced in performing work of this section who has specialized in installation work similar to that required for this project
 2. Installer trained and having current certification for RetroPlate Concrete Polishing System
- C. Mock-Ups
1. Mock-up size: 10'x10' floor area at job site, at location as directed under conditions similar to those which will exist during actual placement; divide mock-up area into 4 equal zones, allowing for sequential attempts to determine amount of aggregate exposure, and color (if required) and shine selection
 2. Mock-up will be used to judge workmanship, concrete substrate preparation, operation of equipment, material application, color selection and shine level
 3. Allow 24-hours for inspection of mock-up before proceeding with work
 4. When accepted, mock-up will demonstrate minimum standard of quality required for this project; **once mock-up approved by the authorized individual(s), the General Contractor is responsible for protecting the approved mock-up for the duration of the project**

SPECIFIER'S NOTE: Edit level of cut and shine from the following list as per needs of project. Delete unused items.

Aggregate Appearance Classes Per ASCC Concrete Polishing Council

Class A – Cement Fines

(Commonly called: Cream Finish) 85-95% fines; 5-15% fine aggregate

Class B – Fine Aggregate

(Commonly called: Salt/Pepper Finish) 85-95% fine aggregate; 5-15 % blend of fines and coarse aggregate

Class C – Coarse Aggregate

80-90% coarse aggregate; 10-20% cement fines and fine aggregates

Polished Concrete Appearance Levels Per ASCC Concrete Polishing Council

Level 1 – Flat [Ground]

Flat Appearance; up to 100-grit polish; a DOI reading of 0-9; Haze Reading <10; Reflective Sheen: None to very low

Level 2 – Satin [Honed]

Matte Appearance; up to 200-400 grit polish; a DOI reading of 10-39; Haze Reading <10; Reflective Sheen: Low to medium

Level 3 – Polished [Polished Gloss]

Images reflected and easily identified; not necessarily sharp and crisp; up to 400-800 grit polish; a DOI reading of 40-69; Haze Reading <10; Reflective Sheen: Medium to high

Level 4 – Highly Polished [Very High Gloss]

Sharp and crisp reflections; 800 and greater grit polish; a DOI reading 70-100; Haze Reading <10; Reflective Sheen: High to highest

- D. Sequence With Other Work: Comply with manufacturer's written recommendations for sequencing construction operations; it is the General Contractor's responsibility to ensure that all other trades are aware of necessary sequencing and protection required prior to, during and after the installation of the polished concrete floor finish

1.9 DELIVERY, STORAGE & HANDLING

- A. Ordering
 - 1. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays
- B. Delivery
 - 1. Deliver materials in manufacturer's original packaging with identification labels and seals intact
- C. Storage and Protection
 - 1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer
 - 2. Protect Concrete Slab
 - a. Protect from petroleum stains during construction
 - b. Diaper all hydraulic lifts and power equipment
 - c. Restrict vehicular parking; drop cloths will be placed under vehicles parked on slab
 - d. No pipe cutting machinery will be used on interior floor slab
 - e. Steel will not be placed on interior floor slab to avoid rust staining
 - f. No acids or acidic detergents will come into contact with slab

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install work until ambient temperature and humidity conditions are maintained at levels indicated in reference standards

1.11 WARRANTY

- A. Project Warranty: Refer to Contract Conditions for project warranty provisions
- B. Manufacturer's Warranty: Submit for owner's acceptance, manufacturer's standard warranty document executed by authorized company official; manufacturer's warranty is in addition to and does not limit, other rights owner may have under contract documents

PART 2 – PRODUCTS

2.1 PRODUCTS, GENERAL

- A. Ensure concrete finishing components and materials are from single source, from single manufacturer

2.2 POLISHED CONCRETE FINISHING PRODUCTS

- A. Basis of Design Product:
Curecrete Distribution, Inc. (dba Advanced Floor Products; RetroPlate System)
1203 Spring Creek Place, Springville, UT 84663
(801) 489-5663 | info@retroplatesystem.com
- B. Proprietary Products/Systems:
 - 1. Hardener, Sealer, Densifier: **RetroPlate 99** – penetrating, water based, odorless liquid, VOC compliant, environmentally safe chemical, leaves no film on surface
 - 2. Concrete Grinding Accelerant, Concrete Clarity Enhancer: **KickStart**
 - 3. Joint Filler: **CreteFill Pro 85 (Moisture Insensitive)** – semi-rigid, 2-component, self-leveling, 100% solids, rapid curing, polyurea control joint and crack filler with a choice of 65, 75 or 85 Shore-A hardness depending on project needs
 - 4. Oil Repellent Sealer: **RetroPel**
 - 5. Stain Protector: **RetroGuard**
 - 6. Cleaning Solution: **CreteClean Plus / CreteClean Plus - Single Dose**
 - 7. Topically Applied, Transparent Concrete Dye: **RetroPlate Concrete Dye Concentrate**; RetroGuard is recommended protection for polished surfaces that receive dye; contact Curecrete for color choices, samples and application instructions
- C. Polished Concrete Dye Color: Final dye color will be determined during mock-up review when specified for per project; Note: dye appearance is affected by the color of the concrete mix, along with the light source under which it will be viewed

No Substitutions Allowed

PART 3 – EXECUTION

3.1 MANUFACTURERS INSTRUCTIONS

- A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installations and Curecrete's (Advanced Floor Products') Spec-Data sheets

3.2 EXAMINATION

- A. Site Verification of Conditions
 - 1. Verify that concrete substrate conditions, which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions prior to installation of finishing materials
 - 2. Verify concrete is cured to 28 days or 3500 psi strength

3.3 PREPARATION

- A. Ensure surfaces are clean and free of dirt and other foreign matter harmful to performance of concrete finishing materials
- B. Examine surface to determine soundness of concrete for polishing

3.4 INSTALLATION

- A. Floor Surface Polishing and Treatment
 - 1. Provide densified and polished concrete floor treatment in entirety of slab as indicated by approved drawings; provide consistent finish in all contiguous areas
 - 2. Perform work prior to installation of fixtures and accessories

3. Deliver a consistent finish in all contiguous areas utilizing **KickStart** to achieve the approved and designated Concrete Polishing Council's Aggregate Exposure and Polished Concrete Appearance designations as specified (effective 12/2017)
4. Diamond-polish concrete floor surfaces utilizing KickStart in conjunction with proper grinding equipment as recommended by polishing system representative
 - a. Comply with manufacturer's recommended polishing grits for each sequence using KickStart to achieve desired finish level; level of shine shall match that of approved mock-up
 - b. Expose aggregate in concrete surface only as determined by approved mock-up
 - c. All concrete surfaces shall be as uniform in appearance as possible
5. Apply RetroPlate 99 hardener, densifier as follows:
 - a. Apply RetroPlate 99 at 200 ft² per gallon, according to manufacturer's directions
 - b. Apply RetroGuard or RetroPel according to manufacturer's directions
 1. Remove defects and re-polish defective areas
 2. Finish edges of floor and adjoining materials in a clean and sharp manner

3.6 FINAL CLEANING

- A. Mechanically scrub treated floors for seven days with soft to medium pads using approved cleaner CreteClean Plus / CreteClean Plus – Single Dose
- B. Upon completion, general contractor must remove surplus and excess materials, rubbish, tools, and equipment
- C. Leave one master case of CreteClean Plus Single Dose (12 oz) and instructions for initial cleanings

3.7 PROTECTION

- A. Protect installed product (polished floors) from damage during construction

End of Section 03 35 43

SPECIFYING - APPEARANCE

- Distinctness-of-Image (DOI) Gloss
 - DOI is the sharpness of images of objects produced by reflection at a polished surface, sometimes called image clarity.
- Haze
 - Haze is the cloudiness or milky appearance of images of objects produced by reflection in a polished surface.
- Measurements for Compliance
 - The Image Clarity Meter and Glossmeter must be calibrated and used in accordance with ASTM D5767 and ASTM D4039.
 - The minimum number of tests distributed across the polished surface should be three for areas up to 1000 ft² and one additional test for each 1000 ft² or fraction thereof. This applies to both the Image Clarity Value and Haze Index.
 - The mean (average) values of the test results should be used to evaluate compliance with this chart.



CONCRETE POLISHING COUNCIL POLISHED CONCRETE APPEARANCE CHART

REPLACES CPAA FINISHED GLOSS CHART

LEVEL	NAME	DISTINCTNESS-OF-IMAGE (DOI) GLOSS	IMAGE CLARITY VALUE, %	HAZE INDEX
1	Flat (Ground)	Images of objects being reflected have a flat appearance.	0 – 9	<10
2	Satin (Honed)	Images of objects being reflected have a matte appearance.	10 – 39	
3	Polished	Images of objects being reflected do not have a sharp and crisp appearance but can be easily identified.	40 – 69	
4	Highly Polished	Images of objects being reflected have a sharp and crisp appearance as would be seen in a near-mirror like reflection. May require grouting.	70 – 100	



CONCRETE POLISHING COUNCIL POLISHED CONCRETE AGGREGATE EXPOSURE CHART

REPLACES CPAA AGGREGATE EXPOSURE CHART

CLASS	NAME	SURFACE EXPOSURE, %
A	Cement Fines	85 – 95 % Cement Fines 5 – 15 % Fine Aggregate
B	Fine Aggregate	85 – 95 % Fine Aggregate 5 – 15 % Blend of Cement Fines and Coarse Aggregate
C	Coarse Aggregate	80 – 90 % Coarse Aggregate 10 – 20 % Blend of Cement Fines and Fine Aggregate



CONCRETE POLISHING COUNCIL POLISHED CONCRETE AGGREGATE EXPOSURE CHART

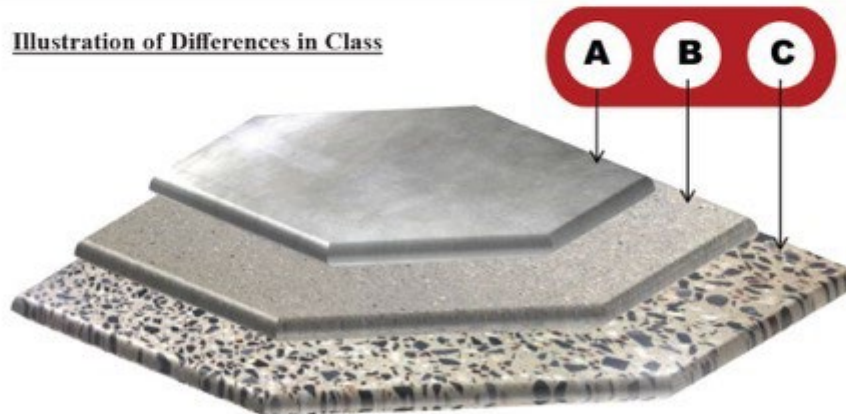
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Aggregate exposure class denotes the surface exposure after grinding and polishing operations. The density, size and distribution of the aggregates at the surface depends on the concrete mix design and placing and finishing operations. Floor flatness at the time of grinding and polishing operations is an important consideration in selecting the appropriate aggregate exposure class.

Surface exposure percentages are based on visual observation of the overall area of the polished floor.

Illustration of Differences in Class



Caution: This provides a visual representation of the differences in Class A, B and C. This may not represent the polished concrete in your area as it varies based on aggregate type, gradation, size and distribution. Consult with your CPC Polishing Contractor to see reference samples or mockups.

Contact your Concrete Polishing Council (CPC) contractor or the CPC Hotline at (844) 923-4678 or by email at cpchotline@ascconline.org with any questions.