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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM), including *MasterFormat*™, *SectionFormat*™ and *PageFormat*™. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate product model numbers, styles and types are used in Specifier Notes and in the specification text Article titled "Acceptable Material." Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies colored acid stain and acid gel stain for existing concrete surfaces as manufactured by Direct Colors, Inc. This MANU-SPEC section is specifically related to colored stain for existing concrete surfaces. However, the same colored acid stain and acid gel stain materials can be used to color other existing materials such as stucco, cement plaster, marble, cultured stone and limestone. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

SECTION 03 35 19
COLORED CONCRETE FINISHING

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: This Section specifies colored acid stain and acid gel stain materials for existing concrete surfaces.

Specifier Note: Include in this Article only those documents and sections that directly affect the work of this section. Do not include Division 00 documents or Division 01 sections since it is assumed that all technical sections are related to all project Division 00 documents and Division 01 sections to some degree. Make reference to other documents with caution since referencing them may cause them to be considered part of the Contract.

1.02 RELATED REQUIREMENTS

- A. Section [02 81 00 - Transportation and Disposal of Hazardous Materials].
- B. Section [03 30 00 - Cast-in-Place Concrete].

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Contract Conditions or Section 01 42 19 - Reference Standards may establish the edition date of standards. This Article does not require compliance with standards, but is merely a listing of references used. Retain only those reference standards to be used within the text of this Section. Add and delete as required for specific project.

1.03 REFERENCE STANDARDS

- A. National Fire Protection Association (NFPA):
 - 1. NFPA, Hazard Index, Health.
- B. Occupational Safety and Health Administration (OSHA):
 - 1. OSHA Hazard Communication Standard, 29 CFR 1910.1200.
- C. U.S. Green Building Council (USGBC):

1. Leadership in Energy and Environmental Design (LEED).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate colored acid stain for concrete work with work of other sections.
- B. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with [Section 01 31 19 - Project Meetings].
- C. Sequence with Other Work: Comply with colored acid stain for concrete manufacturer's written recommendations for sequencing construction operations.

Specifier Note: Use the following Paragraph when schedule of work to be performed is unique or unusual. Coordinate Paragraph with Section 01 32 13 - Scheduling of Work.

- D. Schedule work in accordance with Section [01 32 13 - Scheduling of Work].

Specifier Note: Coordinate Article below with Contract Conditions and with [01 78 36 - Warranties].

1.05 ACTION SUBMITTALS

- A. General: Submit listed action submittals in accordance with Contract Conditions and Section [01 33 00 - Submittal Procedures].

Specifier Note: Samples are full-size actual products intended to illustrate the products to be incorporated into the project. Sample submittals are commonly necessary for such characteristics as colors, textures and other appearance issues.

- B. Samples: Submit as follows:
 1. Two [16 fluid oz (470 ml)] samples of each type of:

Specifier Note: Edit the following Subparagraphs to meet project requirements.

- a. Colored acid stain.
 - b. Colored acid gel stain.
 - c. Concrete sealer.
 - d. Floor wax.
- C. Product Data: Submit as follows:
 1. Product data, including manufacturer's SPEC-DATA product sheet, for specified products.
 2. Material Safety Data Sheets (MSDS).

1.06 INFORMATION SUBMITTALS

- A. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
- B. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.
- C. Manufacturer's Instructions: Manufacturer's application and mixing instructions.
- D. Manufacturer's Qualifications: Letter verifying Manufacturer's qualifications.
- E. Installer's Qualifications: Letter verifying Installer's qualifications.

1.07 CLOSEOUT SUBMITTALS

- A. Warranty: Submit warranty documents specified.
- B. Operation and Maintenance Data: Submit operation and maintenance data for installed products in accordance with Section [01 78 00 - Closeout Submittals].
 1. Include: Manufacturer's instructions identifying maintenance requirements and material batch numbers.

1.08 QUALITY ASSURANCE

- A. Qualifications:

1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
2. Manufacturer capable of providing field service representation during construction and approving application method.

1.09 DELIVERY, STORAGE & HANDLING

- A. General: Comply with [01 61 00 - Common Product Requirements].
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery:
 1. Deliver materials in manufacturer's original containers, with identification labels intact and in sizes to suit project.
 2. Deliver colored [acid stain] [and] [acid gel stain] materials to project site in labeled, acid resistant containers, each bearing name and address of manufacturer, production codes or batch numbers, and formula identification.
- D. Storage and Protection:
 1. Store colored [acid stain] [and] [acid gel stain] containers tightly closed, upright and protected from exposure to dampness, freezing and other harmful weather conditions and at temperature conditions recommended by manufacturer.
 2. Keep colored [acid stain] [and] [acid gel stain] materials protected against traffic and contamination by foreign materials.
 3. Store [acid stain] [and] [acid gel stain] away from incompatible materials and populated work areas.
- E. Waste Management and Disposal:

Specifier Note: The disposal of packaging waste into landfill sites demonstrates an inefficient use of natural resources and consumes valuable landfill space. Specifying appropriate packaging and construction waste management and disposal procedures may contribute to points required for USGBC's LEED® construction project certification.

1. Separate waste packaging materials for [reuse] [and] [recycling] in accordance with [Section 01 74 19 - Construction Waste Management and Disposal].

Specifier Note: USGBC's LEED® certification includes credits for the diversion of construction waste from landfill. Diversion can be tracked by either weight or volume, but must be consistent for all materials. Retain or delete Subparagraphs below according to project requirements.

- a. Collect and separate [paper] [plastic] [corrugated cardboard] packaging material [in appropriate onsite bins] for recycling.
- b. Remove packaging materials from site and dispose of at appropriate recycling facilities.
2. Collect [acid stain] [and] [acid gel stain] containers in suitable acid resistant onsite bins.
 - a. Dispose of [acid stain] [and] [acid gel stain] containers in accordance with Section [02 81 00 - Transportation and Disposal of Hazardous Materials].

1.010 SITE CONDITIONS

- A. Project Ambient Conditions: Maintain materials, substrates and surrounding air temperature between [41 degrees F (5 degrees C)] [50 degrees F (10 degrees C)] and [90 degrees F (32 degrees C)] prior to, during and 48 hours after completion of colored acid stain materials work.
- B. Site Safety Conditions: Ensure workers wear eye protection, as well as protective acid resistant gear, gloves and boots.

Specifier Note: Fumes from these acidic materials may have a detrimental impact on contact lens eyewear. Workers should be made aware of this concern in advance.

1. Ensure that workers who wear corrective lenses are made aware of acidic fume impact on contact lenses.
2. Provide adequate ventilation during application and for [48] hours minimum after completion of work.

1.011 WARRANTY

- A. Project Warranty: Refer to Contract Conditions for project warranty provisions.

Specifier Note: Manufacturer's warranty does not cover the finished product since the manufacturer has no control over how the finish

is mixed or applied.

- 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.

Specifier Note: Coordinate Paragraph below with manufacturer's warranty requirements.

- C. Warranty: Commencing on date of acceptance by [Owner] [Architect] [Consultant].

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Ensure manufacturer has minimum [5] years experience in manufacturing colored acid stain materials similar to or exceeding requirements of project.

Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.02 PROPRIETARY SYSTEMS

- A. Manufacturer: Direct Colors, Inc., 430 East 10th Street, Shawnee, OK 74804; Telephone: (877) 255-2656, (405) 275-6657; Fax: (405) 275-2815; E-mail: info@directcolors.com; website: www.directcolors.com.

2.03 MATERIALS

- A. Acidic Stain: Water soluble, hydrochloric acid based metallic salt stain.
 - 1. Nonflammable to NFPA Hazard Index.
- B. Color: [Azure Blue] [Avocado] [Black] [Coffee Brown] [Cola] [English Red] [Malayan Buff].

Specifier Note: The different colors noted previously are determined by adding different blended metallic salts in a solution of water and 2% - 3% w/w of hydrochloric acid. Check the manufacturer's SPEC-DATA® sheet to determine the correct combination of salts and the correct percentage concentrations to achieve the colors needed to meet project requirements.

- C. Composition: [Hydrochloric acid 2 - 3% w/w], [cupric acid [22 - 25% w/w] [14 - 16 % w/w]], [ferrous sulphate [11 - 13% w/w] [13 - 15% w/w] [21 - 25% w/w] [22 - 25 % w/w]] [manganese nitrate [25 - 28% w/w] [12 - 14% w/w] [8 - 10% w/w]] [sodium dichromate [4 - 5% w/w] [2 - 3% w/w] [1 - 2% w/w]].
- D. Relative Density: [1.18] [1.22].
- E. Use colored acid stains that comply with OSHA Hazard Communication Standard, 29 CFR 1910.1200 for concrete.
- F. Acceptable Material for Horizontal Surfaces: Direct Colors, Inc., Patina Stain System, Concrete Acid Stain.

Specifier Note: Use the following Paragraph only if vertical surfaces or statuary are to be stained.

- G. Acceptable Material for Horizontal Surfaces: Direct Colors, Inc., Patina Stain System, Deco Gel Patina Stain.

2.04 ACCESSORIES

- A. Coating and Adhesive Stripping Material: In accordance with acid stain manufacturer's written recommendations.
- B. Degreaser: In accordance with acid stain manufacturer's written recommendations.
- C. Ammonia Water Solution: Ammonia concentration in accordance with acid stain manufacturer's written recommendations.
- D. Surface Sealer: High gloss, water based, cross-linking, flexible acrylic compound.
 - 1. Acceptable Material: Direct Color, Inc., Krystal Kote High Performance Cross-Linking Water Based Concrete Sealer.
- E. Floor Wax: Acrylic floor wax in accordance with acid stain manufacturer's written recommendations.

Specifier Note: Choose the material that best suits the project requirements.

1. Acceptable Material: Direct Colors, Inc., [Commercial Multi-Purpose Acrylic Wax] [Residential Multi-Purpose Acrylic Wax].

2.05 SOURCE QUALITY CONTROL

- A. Ensure colored acid stain materials are from single manufacturer.

Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Section 01 25 13 - Product Substitution Procedures.

2.06 PRODUCT SUBSTITUTIONS

- A. Substitutions: [In accordance with Section [01 25 13 - Product Substitution Procedures]] [No substitutions permitted].

PART 3 EXECUTION

3.01 INSTALLERS

- A. Provide experienced and qualified workers to apply colored acid stain materials.

3.02 MANUFACTURERS INSTRUCTIONS

Specifier Note: Paragraph below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise Article below to suit project requirements and specifier's practice.

- A. Compliance: Comply with [acid stain] [and] [acid gel stain] manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions and Direct Colors, Inc., SPEC-DATA sheets.

3.03 EXAMINATION

- A. Site Verification of Conditions:
 1. Prior to installation of colored acid stain materials, verify that conditions of substrates previously installed under other sections or contracts are acceptable for product installation in accordance with manufacturer's instructions.
 2. Inform [Owner] [Architect] [Consultant] of unacceptable conditions immediately upon discovery.
 3. Proceed with installation only after unacceptable conditions have been remedied.
 4. Verify that fresh concrete is dry and has cured [28] days minimum.

3.04 PREPARATION

Specifier Note: Use the following Paragraph when substrate has been previously coated.

- A. Using stripping material, remove previous coating, adhesive or other substrate treatments in accordance with acid stain manufacturer's written recommendations.

Specifier Note: Use the following Paragraph when oil or grease is present on substrate.

- B. Remove oil or grease stains using degreasing material in accordance with acid stain manufacturer's written recommendations.
- C. Lightly sand substrate.
- D. Wash substrate with water and soap solution in accordance with acid stain manufacturer's written instructions.
 1. Squeegee or vacuum excess water and soap solution from substrate.
 2. Rinse substrate with water and ammonia solution.
- E. Allow substrate to dry completely.
- F. Vacuum excess dust from substrate prior to applying stain.

3.05 INSTALLATION

Specifier Note: To achieve different effects and designs, acid stain can be applied using various methods including spraying, brushing, rolling and applying with fabrics such as lambs wool and sponges. Insert the appropriate application method in the following two Paragraphs.

- A. Apply acid stain to horizontal surfaces using [pump sprayer] [backpack sprayer with cone nozzle] [paint brush] [sponge] [roller] to achieve effect that meets project requirements.

Specifier Note: Use the following Paragraph when the substrate is vertical or when statuary is to be stained.

- B. Apply acid gel stain to [vertical surfaces] [statuary] using [pump sprayer] [backpack sprayer with cone nozzle] [paint brush] [sponge] [roller] to achieve effect that meets project requirements.

Specifier Note: Use the following Paragraph if deeper stain colors are required.

- C. Apply second coat of [acid stain] [and] [acid gel stain] using same methodology as original coat.
 1. Allow [acid stain] [and] [acid gel stain] to dry for [2] [4] [8] hours minimum prior to applying second coat.
 2. Allow [acid stain] [and] [acid gel stain] second coat to dry for [2] [4] [8] hours minimum prior to removing residue.
- D. Residue Removal: Rinse substrate with sodium bicarbonate and water solution using nylon scrub brush.
 1. Ensure concentration of sodium bicarbonate solution is in accordance with [acid stain] [and] [acid gel stain] manufacturer's written recommendations.
 2. Vacuum residue from substrate while wet.
 3. Perform second rinse with clean water.
 4. Damp mop away remaining residue.
- E. Allow [24] hours minimum without foot or vehicular traffic before finishing horizontal surfaces with sealer or wax.

Specifier Note: Use the following Paragraph if substrate is to be sealed. Edit to suit project requirements.

- F. Seal concrete substrate using acrylic surface sealer in accordance with [Section [03 30 00 - Cast-in-Place Concrete]] [and] [manufacturer's written recommendations].

Specifier Note: Use the following Paragraph if substrate is to be waxed.

- G. Wax concrete substrate using acrylic floor wax in accordance with manufacturer's written recommendations.

3.06 FIELD QUALITY CONTROL

Specifier Note: When manufacturer's field services are desired to verify the quality of the installed components, use the following Paragraphs and Subparagraphs. Establish the number and duration of periodic site visits required by the manufacturer and specify below. Consult with the manufacturer for services required. Delete if field services are not required.

- A. Manufacturer's Field Services: Have manufacturer's technical representative schedule site visits to review work as follows:
 1. After delivery and storage of products.
 2. When preparatory work for which work of this Section depends is complete, but before installation begins.
 3. [Weekly] [2 times] during progress of work [at [25%] and [60%]] of completion.
 4. Upon completion of work, after cleaning is carried out.

3.07 CLEANING

- A. Perform final cleanup in accordance with Section [01 74 23 - Final Cleaning].
- B. Upon completion, remove surplus materials, rubbish, tools and equipment.

Specifier Note: USGBC's LEED certification includes credits for the diversion of construction waste from landfill. Diversion can be tracked by either weight or volume but must be consistent for all materials.

1. Divert damaged, unused or leftover colored [acid stain] [and] [acid gel stain] materials from landfill to [recycling] [hazardous waste storage] facilities.

3.08 PROTECTION

Specifier Note: Coordinate the following Paragraph with Section 01 76 00 - Protecting Installed Construction.

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- A. Protect installed concrete in accordance with Section [03 30 00 - Cast-in-Place Concrete] [01 76 00 - Protecting Installed Construction].
 - B. Repair damage to adjacent materials caused by work related to colored [acid stain] [and] [acid gel stain] materials.

END OF SECTION