



Designation: D 4260 – 88 (Reapproved 1999)

## Standard Practice for Acid Etching Concrete<sup>1</sup>

This standard is issued under the fixed designation D 4260; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice includes surface preparation of concrete to prepare the surface prior to the application of coatings.

1.2 This practice is intended to alter the surface profile of the concrete and to remove foreign materials and weak surface laitance.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements, see Section 5.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

D 4258 Practice for Surface Cleaning Concrete for Coating<sup>2</sup>

D 4259 Practice for Abrading Concrete<sup>2</sup>

D 4262 Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces<sup>2</sup>

D 4263 Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method<sup>2</sup>

D 4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers<sup>2</sup>

#### 2.2 Other Standard:

ACI-308 Recommended Practice for Curing Concrete<sup>3</sup>

### 3. Summary of Practice

3.1 This practice is intended to provide a clean, contamination-free, and roughened surface.

3.2 Acceptable surfaces shall be free of laitance, form release agents, curing agents, oil, grease, and other penetrating contaminants. The surface shall be free of fins, projections, and loosely adhering concrete, dirt, and dust particles.

3.3 For some applications, a minimum concrete surface strength may be required for proper coating performance.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D-33 on Protective Coating and Lining Work for Power Generating Facilities and is the direct responsibility of Subcommittee D33.05 on Surface Preparation.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 06.02.

<sup>3</sup> Available from American Concrete Institute, 22400 W. Seven Mile Rd., Detroit, MI 48219.

### 4. Significance and Use

4.1 This practice is used to prepare concrete for coatings where optimum bond is desired for service conditions such as continuous or intermittent immersion, temperature cycling, or mechanical loading.

### 5. Hazards

5.1 New concrete shall be cured in accordance with ACI-308.

5.2 Concrete cure compounds, form release materials, or concrete hardeners may require abrading, in accordance with Practice D 4259, as acid etching may not be effective.

5.3 All oil and grease shall be removed in accordance with Practice D 4258 prior to mechanical abrading, abrasive blast cleaning, water blasting, or acid etching.

5.4 Use and disposal of materials should conform to established federal, state, local, and project requirements.

### 6. Acid Etching Procedure

#### 6.1 Pre-Surface Preparation:

6.1.1 Remove grease, oil, and other penetrating contaminants (see Practice D 4258).

6.1.2 Remove fins and protruding surface irregularities by mechanical means.

6.1.3 Surfaces shall be free of standing water.

6.1.4 Some curing compounds may not be removed by acid etching and will require preparation by mechanical abrading, abrasive blasting, or water blasting in accordance with Practice D 4259.

#### 6.2 Suitable Surfaces:

6.2.1 This method is primarily suited for use on horizontal surfaces.

6.2.2 Other methods of preparation may be more suitable for rough concrete surfaces and walls or overhead surfaces.

#### 6.3 Acid Etching Solutions:

6.3.1 Typical solutions covered by this method are muriatic (hydrochloric), sulfamic, phosphoric and citric acids. Hydrochloric acid shall not be used where chlorides are prohibited.

6.3.2 The acid concentrations of etching solutions may vary, depending on the concrete texture and degree of etching required.