



Designation: D 4259 – 88 (Reapproved 1999)

Standard Practice for Abrading Concrete¹

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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 Coating²

D 4285 Test Method for Indicating Oil or Water in Compressed Air²

D 4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers²

2.2 *Other Standard:*

ACI-308 Recommended Practice for Curing Concrete³

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.

3.4 Acceptable methods of preparation include abrasive blasting (wet or dry), mechanical abrading, water blasting, and other similar procedures that will alter the surface profile of the concrete.

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**.

6. Mechanical Abrading Procedure

6.1 *Suitable Surfaces*—Mechanical abrading is suitable for use on formed surfaces and floors and for the removal of fins and projections.

6.2 *Pre-Surface Preparation:*

6.2.1 Remove grease, oil, and other penetrating contaminants. (See Practice **D 4258**.)

6.2.2 Concrete surfaces may be wet or dry as appropriate to the type of equipment to be used.

6.3 *Apparatus:*

6.3.1 Typical apparatus covered by this method are rotary impact, vertical impact, and circular grinding equipment.

6.3.2 Use the equipment in accordance with the manufacturer's instructions in an organized manner in order to thoroughly cover the entire surface to be prepared.

6.4 *Appearance of Prepared Surface:*

6.4.1 The intent is to remove sufficient material in order to achieve a sound concrete surface free of laitance, glaze, efflorescence and incompatible concrete curing compounds or form release agents.

6.4.2 The surface shall have a roughened, textured appearance. Aggregate may be exposed. A roughness standard may be established by mutual agreement.

6.4.3 The appearance will vary depending upon the equipment used and type of concrete.

6.5 *Post-Surface Preparation Cleaning*—Clean in accordance with Practice **D 4258** to remove loose material.

7. Water Blast Cleaning

7.1 *Suitable Surfaces*—This method is suitable for use on formed surfaces and floors.

7.2 *Pre-Surface Preparation:*

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

¹ 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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² *Annual Book of ASTM Standards*, Vol 06.02.

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