

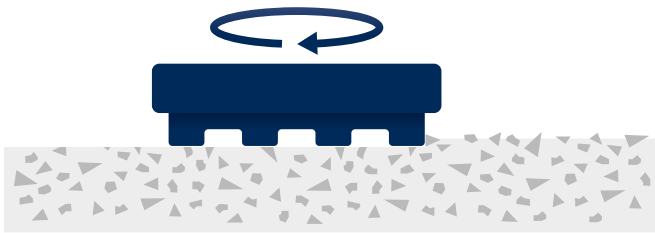
Concrete Floors – Surface Preparation Methods

Surface preparation prior to the application of a protective coating is critical for improved durability and aesthetic finish of the concrete floor. There are several preparation methods that can be utilised including:

- Diamond grinding
- Shot Blasting
- Acid Etching

Diamond Grinding

Diamond grinding is a thorough and efficient method of preparing your concrete floor and is preferred for Dulux Protective Coatings' range of floor coatings. Diamond grinders use horizontally rotating discs to clean, level and abrade the concrete surface. Most diamond grinders have full vacuum extraction that will significantly reduce the level of dust produced by the grinding process.



Benefits of Diamond Grinding

A well-executed diamond grind completely removes laitance and levels of imperfections on the concrete surface, producing a flat, profiled surface ready for application of the floor coating. Diamond grinding avoids the risk of leaving residues on the surface of the concrete.

Floor Preparation Procedure Using Diamond Grinding

Concrete must be at least 28 days old before coating. The surface must be free from all contaminants including grease, dirt and oil.

1. Check condition of floor joints. If joint sealant is significantly degraded, it should be removed and an appropriate joint sealant reinstalled.
2. Remove any oily deposits using high-pressure water wash at 2,000 – 3,000 p.s.i. using Gamlen CA No. 1 (a free-rinsing alkaline detergent). Mix and use strictly in accordance with the Manufacturer's written instructions and heed all safety warnings. For stubborn greases and oils, heated pressure washing may be required. Ensure this step is repeated until the surface is clean.
3. Fill large cracks, voids, blowholes or other surface imperfections in the concrete with a suitable epoxy mortar filler/resurfacer as recommended by your Dulux Protective Coatings Representative.
4. Diamond grind to remove laitance and create a surface profile to match to the visual standard CSP 2-3 (refer Figure 1).
5. Use a hand-held sander to grind around the perimeter of the floor, to ensure that the profile and cleanliness of the entire floor is consistent.

For treatment of floor joints, please refer to Dulux® Protective Coatings Tech Note 1.3.3 Concrete Floors – Treatment of Floor Joints.

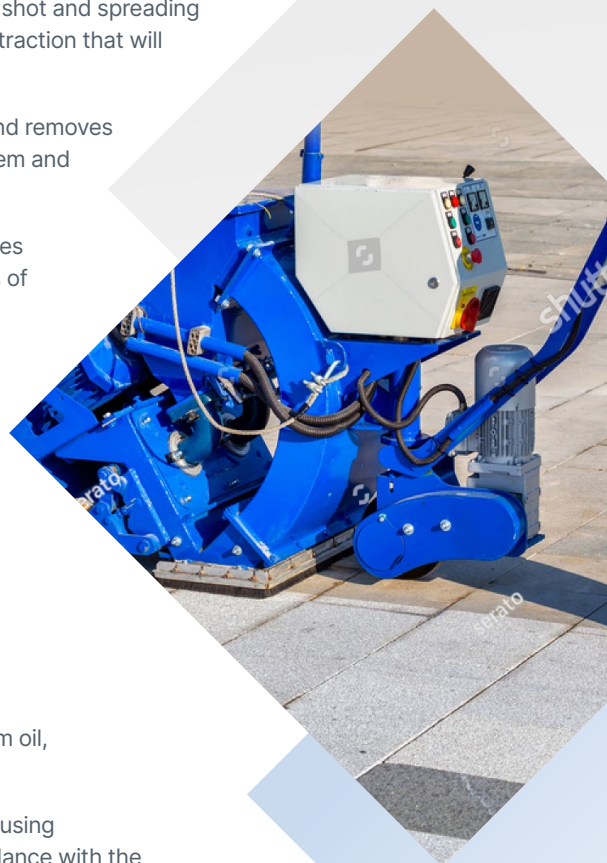
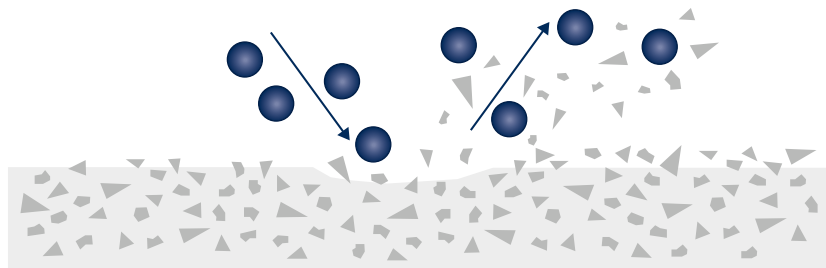


Shot Blasting

Shot blasting is an efficient preparation technique that is capable of removing laitance, paint, old coatings and dirt whilst also profiling the concrete surface all at once. It will not however remove oil-ingress and water, and therefore it is essential that cleaning of the concrete is completed prior to shot blasting, otherwise you run the risk of driving contamination into the substrate, or potentially contaminating the shot and spreading the contamination across the floor. Most common shot blasters have full vacuum extraction that will significantly reduce the level of dust produced by the blasting process.

Tiny steel shot is directed at high velocity to the concrete surface. This breaks up and removes the top layer, including loosely bound laitance. The shot bounces back into the system and is recycled while the dust is removed by vacuum.

The use of fine shot will produce a concrete profile suitable for nearly all coating types applied at around 400 microns DFT, for thicker film coatings, more aggressive levels of shot blast preparation are required.



Floor Preparation Procedure using Shot Blasting

Concrete must be at least 28 days old before coating. All surfaces must be free from oil, grease, dirt or any other existing contaminants.

1. Remove any oily deposits using high-pressure water wash at 2,000 – 3,000 p.s.i. using Gamlen CA No. 1 (a free-rinsing alkaline detergent). Mix and use strictly in accordance with the Manufacturer's written instructions and heed all safety warnings. For stubborn greases and oils, heated pressure washing may be required. Ensure this step is repeated until the surface is clean.
2. Create a surface profile by using propriety shot blast equipment on all surfaces to remove laitance and create a sound, profiled substrate. Our typical Luxafloor system calls for a CSP 2-3 concrete surface profile (refer Figure 1). In order to achieve a specific CSP, ensure appropriately sized shot/shot blend is used.
3. Fill large cracks, voids, blowholes or other surface imperfections in the concrete with a suitable epoxy filler/surfacer as recommended by your Dulux Protective Coatings Representative.

All surfaces must be clean and dry before application of the specified floor coating system.

After the coating system has fully cured, seal joints with a high-performance, non-lumping polyurethane floor joint sealant. For more information, please refer to Dulux Protective Coatings Tech Note 1.3.3 Concrete Floors – Treatment of Floor Joints.

Acid Etching

Acid etching involves allowing the reaction of a dilute hydrochloric acid solution with the concrete surface, then rinsing off with water. The acid chemically reacts with surface laitance¹, dissolving it and allowing it and other water-soluble contaminants to be washed away. In order to ensure all acid has been removed, the floor should be neutralized.

Caution

Acid etching removes loosely bound laitance and slightly etches the surface. It does not remove contaminants such as water insoluble solids, oily deposits or curing compounds, and there are many challenges involved with using this method. All acid must be completely removed. Failure to complete this step effectively may compromise coating adhesion. Even when executed correctly, acid etching is adequate for light duty floor coatings only, but given the difficulty in achieving a satisfactorily uniform profiled result, **DULUX PROTECTIVE COATINGS DOES NOT ENDORSE ACID ETCHING WHEN USING COATINGS FROM THE PROTECTIVE COATINGS RANGE.**



Figure 1: Concrete Standard Profiles from left to right. CSP 1, CSP 2, CSP 3, and CSP 5.

Conclusion

Correct surface preparation will result in a more reliable, durable, and aesthetically pleasing floor coating. This technical note outlined three commonly used concrete surface preparation methods, where Dulux Protective Coatings recommends the using of diamond grinding for best floor coating performance.

1. Laitance is the weak, layer of cement dust, lime and sand fines that rise to the surface with over-wet concrete, poor curing or over-trowelling. If a coating is applied over laitance, impact from trolleys, forklifts, etc. will cause the laitance layer to delaminate, along with the coating.

This Tech Note is a guide only. Any advice, recommendation, information, assistance or service is provided without liability or responsibility, in good faith and is believed by Dulux to be appropriate and reliable. Notwithstanding, you should consult the services of an appropriate industry professional before addressing any specific coating or substrate issues or using any particular product for your specific project requirements.

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