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Epoxy & fiberglass flooring, seamless fiberglass wall systems, sealers, high performance coating systems, and industrial cleaners

INDUSTRIAL FLOORING TECHNOLOGY SERIES- #6 SILICONE TYPE SEALERS

Silicone materials are inorganic chemicals which are non polymeric that enter into the concrete surface to “protect and seal” the surface. These roughly might be classified in order of “appropriateness”.

Non reactive penetrants:

Lipadiloth, Ashford formula and its potassium and lithium clones (ashford is sodium). The differences are angel numbers dancing on a pin head and the best thing I can say about these is they all have very well produced literature. They do from nearly nothing, to giving a modest shine after significant buffing. NONE pass the ASTM C309 cure and seal specifications and all stain quite readily. We frequently put a silicate of some sort over these to “finish” the job.

BENEFITS: LOW COST, GENERALLY EASY TO APPLY, WITH MULTIPLE APPLICATIONS YOU GET A “FILL” AND A “SHINE”, WILL DUSTPROOF, YOU CAN POLISH, LOW COLOR
DOWN SIDES: NEARLY NO STAIN PREVENTION, SOME ARE “FRANCHISED” AND HAVE TO BE DONE BY OTHERS

Hydroxol reacting Silicanates.

Euclid Diamond hard is one such and there are others. These need to be scrubbed in by a crew. They penetrate and “fill up” the top porosity of the concrete (depends on the finish actually) give a pretty good “seal” against dirt and do give a modest shine- see Home Depot.. Diamond Hard maybe applied from several days to a week after the concrete has been poured and does well curing at temperatures of 65F and above. Diamond Hard reacts with the unreacted hydroxol in the concrete matrix to harden and densify the surface and may be buffed or polished to a nice shine. They give ok water resistance and ok salt resistance but no significant resistance to grease or oil stains.

BENEFITS: GOOD “FILL” WITH 1-2 COATS, GOOD SHINE, OK WATER AND SALT RESISTANCE, LOW COLOR. YOU CAN POLISH
DOWN SIDES: NEEDS A COORDINATED CREW TO INSTALL, A BIT MESSY TO INSTALL, MODEST COST.

Fluorine reacting Silicanates

These react with the silicone atom in the concrete and form a bond. They may be used alone, such as the FLORIDYNE™ for superior hardening and densifying as well as water and salt resistance, or used in as a step up with the FLORIDYNE™ TOP BLOCKER for about the best oil and grease resistance possible with this general class of materials generally with a tight and filled surface 1-3 days stain resistance is normal but some detergent including oils- transmission fluid for example- will penetrate and do so fairly fast.

The FLORIDYNE™ does meet the ASTM C309 specification for a cure and seal and may be applied when the concrete is fresh. To polish it we need to wait a while for the concrete to harden sufficiently for it to take a polish. In all cases these may be buffed or polished depending on the shine you want. The DIAMOND HARD

gives a good shine without additional polishing and may be 'finished off' with the TOP BLOCKER to give better grease and oil resistance – G3 Industries – a machine shop-for example in Mosinee 83000 sqft. of this.
BENEFITS: EASY TO APPLY, GOOD SHINE WHEN FILLED, CAN BE POLISHED, CAN GIVE THE BEST OIL AND STAIN RESISTANCE OF THE GROUP, MODEST COLOR TO NO COLOR.
DOWNSIDES: HIGHER UNIT MATERIAL'S COST.

GOOD SPECIFICATIONS

In general it takes three coats of a 17%- 20% solids silicone type material applied at 700 sqft/gal to "fill up" the top surface of a well trowled concrete surface. If the surface contains fiber mesh, if it is not tightly troweled or if the surface is older and warn more material is necessary to "fill" it. These materials are either filing up interior of the concrete "pours" or reacting within the concrete forming a more complex structure to "seal and densify" the top of the concrete. They are not precisely "fill" materials in the sense that an epoxy or urethane coating is, so if the top surface is rough, these materials are unlikely to smooth it. A polishing step or perhaps several polishing steps are necessary to smooth the surface. If the surface is very rough these materials are not a good choice.

Non reactive materials

These are good choices when dustproofing is your goal. They need three coats to completely densify and fill the surface. These may be applied soon after the concrete is poured but to my knowledge NONE meet the ASTM C-309 cure and seal specifications. Some state they act "like a cure and seal". Using any of these as such is very risky. In a warm, dry and/or windy situation you likely to allow top of the concrete to be starved of hydration water necessary for a proper cure, resulting in a VERY weak, powdery top surface.

Hydroxyl reactive materials

These are good choices for dustproofing, hardening, and improving water and salt resistance of the concrete. Often these give a very attractive shine especially when burnished or polished. Many of the big box stores use this type of material for their floors. These, by the nature of the application, do fill the concrete porosity quite well on a smooth troweled surface, but need polishing if the surface is rough. These, like the non reactive materials, do not meet the ASTM-C309 cure and seal specifications, but can be applied soon after the concrete is poured. Typically these require 2 days at 60F to achieve their full reaction. At temperatures below 50F the reaction stops.

Fluorine reacting Silicanates

These are a more chemical protective variety of materials often used in harsh environments – concrete along seal walls- for more water or salt protection. These react with the silicate in the concrete and form a stronger barrier against salt, water or stain invasion. these can be used alone- 3 coats over a nicely troweled concrete surface- or over any of the above material as a "finish" layer to improve the chemical resistance and stain penetration resistance. Using the FLORIDYNE™ TOP BLOCKER over, Ashford formula, Lapidolith, and Diamond Hard have proven very useful as an upgrade. Burnishing or polishing gives a significantly better shine.

VS COATINGS

If a higher level of stain resistance or chemical resistance is needed you should consider an epoxy, urethane or polyester material. The silicate materials are NOT designed for their chemical resistance properties though some do provide these to a degree. Also to date these are clear materials, useful over stained concrete or colored overlays, but if you want a colored surface either specify colored concrete, stained concrete, or a colored coating or topping

Tom Hennessy ChE
I hope this helps.