Introduction

1.0 Scope

This guide has been prepared both for our new and also for our existing applicators in order to assist the proper installation of Acrydur™-resin based floor coatings. The following pages contain a selection of coating systems, estimates, equipment, surface preparation, application, cleanup, maintenance, and safety aspects.

1.1. Selecting the Right coating system for the job

Acrydur™ resins are available in a variety of grades, each intended for certain applications. Before a Acrydur™ or another protective coating system is selected for a particular job, the exact requirements of the end user should be found out and reviewed. The following needs may be required, either alone or in combination with each other.

1.1.1. Chemical resistance/corrosion Protection

Whether to protect the concrete floor from an electroplating line or the back area of a restaurant's bar, chemical resistance is often one of the principal reasons a coating system may be required. Harsh chemicals can easily attack concrete and the underlying steel reinforcement. If steel plates are used as flooring, corrosion due to rust and other chemical attack dictates the need for a protective coating.

1.1.2. Non Skid Requirements

One of the main concerns in the food industry is, that non skid floors are important in areas which are frequently slippery and wet. Protective coatings are a means of either creating or restoring a non skid finish in food processing facilities ranging from meat packing plants to restaurant kitchens.

1.1.3. Impact resistance

Impact is wide spread in many industrial environments. Whether due to heavy forklift traffic or repeated blows from falling objects, impact results in damage to concrete and other floors, causing unsafe working conditions. In situations like these, a Acrydur™ coating performs best due to its resilient characteristics.

1.1.4. Dusting/New Construction

Dusting can often create problems in a new concrete slab flooring, especially in warehouses or cooler/freezer environments which must conform to USFDA or IFS requirements.

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1.1.5. Waterproofing

Waterproofing is of primary concern in the sealing of concrete floors and protection of underlying operations, such as works under a loading dock, process rooms in multi-storey plants, or levels in a parking garage. Once again, protection of the concrete from corrosion via the installation of an impermeable coating is in the object. Cove base coatings may also be desirable for these applications.

1.1.6. Repair of Freeze/ Thaw Damage

This type of concrete damage, caused by spalling, is prevalent in exterior structures such as parking garage, bridge decks, loading docks, and other areas which are exposed to the effects of repeated contraction/expansion of the substrate. This can also be of concern in freezers, where the lowering/raising of operating temperatures can weaken the slab.

1.1.7 Concrete Rehabilitation

Concrete rehabilitation is in order when the preceding problems have not been properly addressed. Spall repair, patching, even full depth slab repair may become necessary when corrosion and deterioration have gone too far. Polymer mortars and concretes provide a solution in terms of short down-time and rapid return to service.

1.1.7. Pitching

Pitching, or sloping areas of a floor close to drainage areas, is often required during the redesign of the existing plant space. Once again, fast - setting Acrydur™t polymer concretes support a quick execution of such plans.

1.1.9. USFDA and IFS Conformity

As a result of some/all of the above-mentioned factors, USFDA and ISF conformance may force the plant owner to install a protective coating to rectify existing floor/wall problems in food processing areas.

1.2. Acrydur™Selection Guide

Based on these various needs, the following chart may be used as a general guide to match the requirements of floor coating jobs to the proper Acrydur™ System. Selection is not necessarily limited to the suggestion made in the chart. Please consult the chemical resistance chart and/or properties chart in our properties & fields of Application bulletin for specifics regarding the use of any Acrydur™ system or call/mail us to get tech. support.

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Chart Legend:

332/SL = 1/8" -1/4" (3-6mm) flexible Acrydur™ self-levelling coating
332/BD = ¼" (5-6 mm) flexible Acrydur™ troweled and broadcasted top coating
418/SL = 1/16" – 3/16" Acrydur™ self-levelling coating
418/TO = 1/8" – ¼" Acrydur™ trowel-on coating
510/PC = Acrydur™ 510 polymer mortar/concrete
540/H = Acrydur™ 540 cove base material
522/526/528/ = Acrydur™ sealing resins
800 = Acrydur™ PUMMA resins for waterproofing and bridge deck overlays

1.2.1. Placing Acrydur™ on "Different Substrates"

While Acrydur™ is recommended for application on concrete, metal, wood, chipboard, quarry tile and interior or exterior asphalt, other types of substrates such as old floorings must also considered. The following is a brief overview on these alternative substrates along with our recommendations for preparation and priming. See also our work sheet: Substrate Preparation and System guide!

Epoxy Flooring

Typical epoxy floorings are usually two component resin / base materials combined with sands to produce trowel-on coatings with a porous, profiled texture. Acrydur™ relies primarily on a mechanical bond to such substrates, and so scarification or shot blasting is required in order to enhance the surface profile. Acrydur™ Primer 112 and 118 is recommended for these coatings which may range from fully intact installations to remnants that are still bonded well to the existing substrate.

The simplest way to evaluate how well Acrydur™ will adhere to an epoxy coating is with a bond test using Primer 112 or 118. See Section 4.3.1 for test method if bond test fails!

If this flooring is not suitable for coating with Acrydur™ and must be removed down to the concrete substrate follow prep guide 4.1 . Smooth epoxy floor coatings, such as terrazzo, may require the use of other primer Systems in order to enhance adhesion. That applies also to epoxy self-leveling formulations.

Vinyl/Asbestos Tile Flooring

Vinyl/Asbestos (VA) tile is common in many non-industrial flooring applications, such as schools, etc. If the tile is clean, dry, in good condition and firmly adhered to the subfloor, Acrydur™ may be used as a coating-e.g. a Acrydur™ self leveling formulation. The methyl methacrylate (MMA) in the primer 112 will dissolve and soften the tile resulting in a strong bond when the primer cures and the tile hardens. Since some shrinkage will occur upon cure, especially during the application of the 1/8" Acrydur™ 418 basecoate, it is essential

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for the tile to be bond well or delamination/bubble will occur. The tile can be secured to the floor with nails or staples if required.

This type of application is only appropriate for smaller areas but may be an option when considering the removal of tile and the under laying mastic adhesive which can be tedious. Please note, however, that mastic has the tendency to cause movement of the tiles which may result in the subsequent reflection of outlines through the Acrydur™ coating either immediately or after extended periods.

Rapid-Setting Mortars

Magnesium phosphate or polymer-modified cementitious materials may be encountered when coating concrete floors. Such systems are often used for spall repairs or for filling drains – i.e., when rooms are remodeled.

These materials tend to have closed surfaces which are difficult to bond. Acrydur™ relies on mechanical adhesion. In these cases, proper surface preparation is required – e.g. shot blasting. The above-mentioned bond tests can ensure that the surface has been sufficiently prepared and has an adequate profile. These applications may require a second layer of Acrydur™ 112, if the substrate sucked the first primer layer. Note that You should not be able to remove the broadcasted sand from the primer after curing!

Polyester and Vinyl Ester Floor Coatings

This type of flooring resins is formulated with styrene monomer which acts as a diluent for easy workability and reacts with the polyester or vinyl ester chains, cross linking them into a three dimensional network. Floor Coatings produced from these resins combined with suitable hardeners, sands, etc. tend to be extremely brittle with borderline adhesion, so it has to be considered to remove or coat such surfaces with Acrydur™.

The advantage of MMA in Acrydur™ 112 is once again that it dissolves the surface of such floor coatings, ensuring a strong bond. These surfaces only need to be clean and dry for coating. Depending on their conditions, however, additional surface preparation may be required.

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Wood

Wood flooring comprises many types of application from block floors in older heavy industrial plants to plywood floor and wall panels in commercial kitchens, on decks, etc.
Acrydur™ 112 normally bonds well to those materials with exception occurring in the presence of residual (a) phenol in plywood adhesive or (b) creosote used to impregnate floor blocks. These will act in the same manner in inhibiting the cure of the primer.
The problems to focus on when considering these applications in the mechanical/thermal movement of the composite formed by the floor coating, the wood substrate and other subfloors -e.g. when ¾ exterior grade plywood is used to rebuild a floor over debilitated one. In this case, the coating system and application method must be chosen carefully. Floor anchoring, priming, joint treatment, fiberglass reinforcement, basecoat installation, etc., requires special techniques to ensure the success of these projects. Ask us for system recommendations.

In summary, a Acrydur™ or any other coating is only as good as the substrate to which it is bonded. Therefore, proper evaluation and surface preparation is mandatory for successful applications. Please consult us for additional recommendations regarding these or any other substrates you may encounter; we will be glad to provide you with lab or on-site technical assistance.

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General Application by Area	332 SL/BD	418 RO	418 SL	418 TO	510 PC	522
Bridge Decks	x					
Chemical Storage		x	x			
Concrete Rehabilitation					x	
Coolers	x					
Dust Proofing						x
Freezers	x					
Joint Repair	x				x	
Kitchens			x	x		
Laboraties		x	x	x		
Loading Docks	x					
Machine shops	x		x			
Parking Garage	x				x	x
Ramps	x				x	
Restrooms			x	x		
Ship decks	x					
Staircases					x	x
Walls		x				
Warehouse						
Light Traffic			x			
Heavy Traffic	x				x	
Wet Areas		x	x	x		x
General Applications by Industry						
Automotive	x		x	x		
Bakeries	x	x	x	x		
Bottling	x		x	x		
Breweries	x		x	x		
Cheese factories	x	x	x	x		
Chemical Process		x	x			
Civil Engineering	x				x	x
Dairies	x		x	x		
Electoplating	x		x	x		
Food Processing		x	x	x		
Fruit & Produce			x	x		
Hospitals		x	x	x		
Marine	x	x				
Meat Packing		x	x	x		
Photographic			x	x		
Poultry		x	x	x		
Printing			x	x		
cellulose & paper	x		x	x		
Schools		x	x	x		
Supermarkets			x	x		
Textile	x		x	x		
Wineries			x	x		

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Section 2- Materials / Estimating

2.1. Materials

2.1.1. Fillers

In general, fillers used with Acrydur™ resins largely determine the performance of the finished coating. Both flow properties of liquid Acrydur™ mixtures and the final characteristics when set can be influenced by the choice of fillers (e.g. flexibility, abrasion resistance, non skid properties and chemical resistance).

The most widely-used fillers are washed and dried silica sands and flours. The following sizes, referred to in our guide formulations, have been considered to perform effectively with Acrydur™ resins:

Type	Typical Range
Silicia Fleur	No. 200 (<75 um)
Silicia Sand, X fine	No. 70-140 (63-250 um)
Silicia Sand, Fine	No. 50-70 (0,1-,6 mm)
Silicia Sand, Medium	No 30-50 (0,3-0,8 mm)
Silicia Sand, Corse	No. 16-25 (0,7-1,2 mm)
Acrydur™ s/l filler	ready for use pack for s/l coatings

All of these sands or fleur are available direct from the Plasti Chemie factory in Germany. If You start installing Acrydur™ coatings we strongly recommend to order the original components to make sure the system will perform well! For example our color quartz mixtures are developed to reduce the resin consumption and they flow better than other products. All Silica products are also available with low dust performance.

Our **Recommended Fillers used with Acrydur™ Resins** bulletin provides an initial source of silica flours and sands which are compatible with Acrydur™ resins in various coating formulations. These filler sources are used when the system will be formulated on site from scratch using the guide formulation listed in the binder under the formulations tab. Due to normal variations inherent in raw material supplies, these recommendations must be treated as such; it is therefore the responsibility of the user to perform tests prior to any field application!

The **Prepackaged Systems for Use with Acrydur™ Resins** bulletin provides a list of prebagged filler systems which have been formulated using pre sourced aggregate available at these companies. These mixes have been optimized to offer resin savings as well as ease of use. Mix sizes are usually 1.5 gal. (6l) resin batches to facilitate the use of 5 gal. (20 l) buckets for mixing. Acrydur™ 050/051 PC is usually in 0,6 gal. (2,5 l) resin and 50 lbs (25 kg) dry pack mortar batches. These prepacked systems are only available at the warehouse in our headquarter in Falkenstein/Germany. If this is not convenient for your location and you know another supplier, please let us know. We will be happy to

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assist applicators and blending operations in developing specific formulations for different types of sands and fillers.

2.1.2. Pigments

Whenever possible, it is recommended to use synthetic metal oxide pigments in micronized form. These products disperse easily, are relatively inexpensive and are widely available.

Organic Pigments may be used in special cases, but it should be noted that some organic may still decompose after hardening with benzoyl peroxide. it is recommended to use only lightfast pigments. Carbon blacks are not suitable for coloring Acrydur™ resins.

Paste pigments have been known to cause whitening of Acrydur™ coatings over long term exposure to water. If this is not applicable, please use pastes based on 100 % polyester resin, containing synthetic iron oxide or other inorganic pigments.

Never use pigments containing solvents or organics, namely carbon black. Please consult our Recommended Pigments for Use with Acrydur™ Resins bulletin for suppliers of various products which are compatible with Acrydur™ resins – or order the original Acrydur™ color paste witch is ready for use on site and prepacked.

2.1.3 Auxilliaries

Items such as Aerosil 200, HP Bond Promoter, Accelerator 101 and 404, additive 113, 523 527 and Hardener 50 W as well Hardener/m are available at Plasti-Chemie Vertriebs GmbH in Germany and will be shipped via Plasti Chemie North America, LLC. In Naples, FL to our US clients.

2.2. Acrydur™ Estimating Guide

The Estimating Guide / Worksheet bulletin has been developed to assist the applicator in preparing a complete estimate for quoting on coating jobs.

2.2.1 Bill of Materials

Upon the completion of the job walk, consultation with the plant owner, and selection of the appropriate Acrydur™ – based system, a list of materials can be prepared, including resins, hardener, fillers, pigments and auxiliaries, by working through the calculation based on the area of the job.

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2.2.2 . Price / ft² (m²)

Once the bill of materials has been established, the cost/fl² (m²) can be calculated. After including costs for surface preparation, labor and traveling, a complete quotation can be created. We can hand over Excel calculation sheets that will help You for each system and guide You to the right installment price.

3.1. Section 3- Equipment Required for Installing Acrydur™-Based Coatings

3.1. There are various tools and equipment which are required in order to properly install Acrydur™ based coatings. While many of them normally are not in the possession of a flooring contractor, we have provided a list of the commonly used items. All special tools can be provided by Plasti Chemie GmbH.

3.2. Brooms

Brooms are necessary for general clean-up as well as for removing excess aggregate from broadcasted basecoats. (street brooms)

3.3. Brushes

Disposable bristle brushes are used for applying primer and sealer to confined areas, wall edges, etc. Brushes of higher quality may be used provided that solvent is available for cleaning after use.

3.4. Buckets

Polyethylene (PE) pails in 1 gal (4l), 2 gal (8l), and 5 gal(20l) sizes are very practical for measuring / pre-batching fillers and mixing Acrydur™ formulations. Cured materials release easily from PE pails, which can be reused during the course of the job. It is preferred to have several dozens of each size on site. Metal pails are not recommended for mixing purposes.

Shallow buckets are preferred when broadcasting wearing course aggregates into basecoats or sealers, since they are easy to hold. They are usually fabricated from plastic pails or small fiber drums, which are cut to size. Mechanized aggregate blowers derived from sandblasting pots or otherwise may also be considered for this purpose.

3.5. Bung Wrenches

Non sparking types are useful for removing both 2” (50 mm) and ½” (12mm) bungs from drums and pails of resin.

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3.6 Chipping Hammers

Air or electric chipping hammers are required when removing deteriorated sections of concrete prior to the coating installation. They are also excellent for edge preparation. When using these tools, care must be taken against microcracking and rebar damage to concrete.

3.7 Clothing

Applications in freezers are generally performed at temperatures ranging from –5 F (21-°C) to 0°F (-18°C) Adequate clothing is mandatory, especially for larger freezers which may involve several hours of installation time. Ask for Acrydur™ T-shirts and sweaters with Your next resin delivery!

3.8 Compressors

Air compressors with moisture separators are required when removing dust and loose debris from substrates. Air must be free of oils or other contaminants. Electric or gas powered leaf blowers are also effective for this purpose.

3.9 Drill / Mixing Paddles

Explosion- proof or air driven drills (500 +rpm, ½ HP) are used with mixing paddles for the blending of Acrydur™ formulations in buckets. Jiffy-Type paddles perform well and easily disperse all types of mixes, including cove base and mortars. Bung-entering mixing blades are essential for re-dispersing contents of Acrydur™ resin drums when cold temperature installation are performed. Please stir up all drums/pails with clear or prefilled/colored resins for at least 5 min.

3.10 Drum Racks

Drum racks of 55 gal. (190-200 kg) capacity of wheels are very convenient when setting up a mixing station which must be moved during the course of the job.

3.11 Duct Work

Flexible hoses may be necessary together with exhaust fans and plastic tarps for work in areas where the odor of methyl methacrylate (MMA) is considered problematic -e.g. supermarkets in operation, freezers containing food products, etc. Exhaust air should be vented outside away from pedestrians.

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3.12 Extension cords

Heavy duty (e.g.12 gauge) cords of 50-100 ft. (15-30 m) length with multi-receptable three prong boxes.

3.13 Fans

Explosion-proof fans are necessary for applications in constricted areas with poor ventilation. Air flow is required in order to allow for the proper formation of paraffin when the resin cures. Banks of fans may also be used when drying out wet floors after acid etching. etc.

3.14 Gage Rakes

These tools are very effective for the fast and efficient application of self leveling coatings. Steel pins, attached to an adjustable crossbar, dictate the thickness of the coating. Rakes must be held square to the surface of the floor in order to maintain proper thickness; pre-set alternates should always be on hand, as the pins tend to wear with use. Contact us for rakes and/ or other suppliers – we have it in stock.

3.15. Generators

Portable generators of 10,000 watt+ capacity are mandatory when working in remote areas. Generators used in interior work must be kept away from the mixing station and application area!

3.16. Gloves

Neoprene gloves are excellent for handling resins and accelerator, conventional cloth / leather workman´s gloves offer general protection for other crew members. Disposable latex gloves are also useful.

3.17. Goggles

Splash-proof goggles are preferred for crew members, especially for those wearing contact lenses and others who may be irritated by the MMA vapors of the resin.

3.18. Grounding Wires

Grounding Wires are required to prevent the generation of static electricity when transferring resin between containers.

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3.19. Hammers/ Chisels

These tools are required to remove the patties of Acrydur™ from the prepared substrate in a bond test evaluation. (see Section 4.3.1.)

3.20 Hand Trucks

Hand trucks can be used for moving drums of resin, carting batches of coating material to the point of application, etc.

3.21. Knee Pads

Knee pads are essential during trowel finishing coating.

3.22. Masks

Organic vapor respirators may be required for indoor application. Paper dust/mist face mask are mandatory when handling Aerosil® and other types of fine materials. The mixing crew members handling silica sands should also use these masks to prevent inhalation of silica dust.

3.23. Measuring Cups

Plastic mixing cups, 8 vol. oz. (250 ml) or larger, are useful for hardener powder, accelerator and pigment dosing.

3.24 Moisture meters –See section 4.3.3.2

3.25 Mortar Mixers

Rotating 5 gal. (20l) epoxy mixers or larger mortar/concrete mixers are often used to prepare Acrydur™ 510 or 050/051 PC mortars for polymer concretes. These units blend efficiently and do not entrap air. For larger repairs or pitching jobs, mortar mixers are a must.

3.26. Porcupine Rollers/spike rollers

Porcupine rollers and spike rollers are essential for deairing self-leveling coatings. They can also correct minor irregularities in the freshly applied coating, producing an exceptionally even surface finish.

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3.27 Putty Knives

Various widths are handy for filling cracks and working in tight areas.

3.28. Rollers / Sleeves

While most applicators prefer 9" (23 cm) rollers, 18 " (46 cm) frames are more efficient for large areas. Regarding rollers sleeves, the rougher the surface, the heavier the nap required. These may range from ¼ - ¾" (7-21 mm) in size. Finer rollers may be required for sealers on smooth basecoats. Langer lasting, plastic core sleeves are recommended. Use thick rollers to apply the primer to achieve a poor tight primer layer on milled substrates!

3.29 Saws

Power saws are often required for chase cuts in order to properly anchor leading edges of an overlay or to remove sections of existing flooring. Diamond tip blades are recommended for cutting concrete.

3.30 Scales

Fishing scales – e.g. 25 lb. (11 kg) 100 lb. (45 kg) capacity- are excellent for calibrating buckets for fillers, resin, etc.

3.31. Scoops

Scoops can be used for bagged fillers, etc. They also make a unique application tool for coving, producing a neat, rounded edge.

3.32. Solvent

For cleaning tools, etc. organic solvent such as ethyl acetate or methyl ketone may be used. Due to the low flash point, volatile solvents such as acetone should be avoided. You can also use MMA Monomer to clean trowels during installation.

3.33 Spigots

Self-closing brass or zinc safety spigots are preferred for Acrydur™ drums and pails.

3.34. Spiked Shoes

Golf, gardening or other spiked shoes are useful for walking on wet coatings for the broadcasting of aggregates or other purposes.

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3.35 Squeegees

Neoprene squeegees may be used for the application of self-leveling skim coats, or for when heavy topcoats are necessary. Use white blades for clear sealers!

3.36. Surface Preparation Equipment - See section 4

3.37. Tape

Duct tape is particularly necessary for creating border areas. Acrydur™ does not affect the tape; in addition, perfect seams can be formed when it is pulled away from the edge of the coating prior to gelation. This is an acquired skill and allows the division of larger jobs into smaller ones with no concerns regarding cold joints, etc. The resulting edge of the coating formed from this technique provides for a good thickness guide to butt against later on.

For freezer applications, tape does not adhere well to walls and floors. Terrazzo strips may be required as a solution for easier cove installations or check out our Acrydur™ cove profile system.

3.38. Thermometers

Surface type of thermocouple-type Thermometers are required on site to measure the temperature of the substrate and materials; amounts of hardener and accelerator can then be accurately determined.

3.39. Torches

Small propane torches or larger, “weed burner “ types may be required when attempting to dry out wet concrete after etching, rainfall, etc. Care must be taken to keep this equipment away from resin, hardener and solvents! Concrete should not be overheated when using torches, which may result in the formation of stress cracks and other damage.

3.40 Trowels

Shell fishing trowels may be used for trowel-on (TO) and self – leveling membranes. Notched trowels may be used for self leveling coatings. Margin trowels are handy for repairs and minor finishing work. At last, specialized coving trowels are essential for neat , efficient cove base installation.

3.41 Vacuum Cleaner

Industrial vacuum cleaners are mandatory for wet/dry jobs.

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3.45. Wheelbarrow

Among other uses, wheelbarrows can hold broadcast aggregates, which can be easily scooped into buckets or seeded directly.

Section 4-Surface Preparation

4.1 General

Surface Preparation is the most important aspect of any coating installation, as it often determines the successful performance of the product being installed. Any coating is only as good as the substrate it is being placed on. To ensure proper adhesion, not only should the appropriate method of surface preparation be chosen, but it should be performed correctly. The following is a brief discussion of the commonly used methods of preparation with their advantages and disadvantages. It is suggested that the American Concrete Institute and the Int. Association of Concrete Repair Specialists (IACRS) be consulted for further recommendations.

4.2. Types of Preparation

4.2.1 Wet Methods

4.2.1.1 Acid Etching

According to the procedures in ASTM D 4263 etching can be used to clean the laitance from concrete and mill scale/surface rust from metal substrate. Oils and other contaminants cannot be removed by this method.

The surface should be dampened first, followed by application of 15-20 % hydrochloric or phosphoric acid solution. Power scrubbers, rather than scrub brushes/stiff brooms, should be used, which are more effective in loosening debris. Neutralization should be performed with copious amounts of water and chemicals such as ammonia or baking soda. It is critical to completely rinse off the acid; for concrete residues will form salts witch are difficult to remove. The pH of the surface must be monitored using ASTM D 4263 throughout the process as an indicator of solutions remaining on the surface.

Etching is becoming less popular due to the many restrictions in various localities regarding disposal of waste liquids from the process. As wet process, it is also questionable for Acrydur™ installations, time must be allowed for the proper drying of the surface. In the case of metal, this must be done immediately, followed by application of the primer in order to avoid oxidation; for concrete, the drying process can take 6-12 hours to completion. Etching is recommended, therefore, only for very small or constricted areas where mechanical equipment cannot be brought in.

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4.2.1.2 Power Scrubbing/ Detergent Washing

Washing with detergent solutions is often required to leach oils, fats and other contaminants from concrete substrate in food facilities, auto garages, etc. Once again , as a wet process, care must be taken to properly dry the concrete before applying any coating. Since detergent washing does not remove laitance or weak concrete from the surface, shot blasting is usually the perfect complement for this type of preparation.

4.2.2 Dry Methods

4.2.2.1 Abrasive Blasting

Blasting using silica sands or other abrasive media can be used for both horizontal and vertical surfaces, but environmental regulations once again restrict its use. Wet blasting is an alternative. In general, blasting does not remove enough laitance to be effective for all applications, especially those in which thermal cycling or heavy traffic occur. It is recommended, however, for walls whenever roll-on coating are to be applied.

4.2.2.2 Chiseling / Jack Hammering

These methods are reserved for removing badly damaged concrete-e.g. from spalled areas, potholes ect. Chiseling or sawing is also required when keying/chase cutting the perimeter of thin patches or overlay sections. IACRS Surface Preparation Guidelines 0370.03731 and 03734 should be consulted for additional information on preparing deteriorated concrete for repairs.

4.2.2.3 Sanding

Sanding matches –e.g. 16 “(40 cm) circular-often produce satisfactory results when substrates such as wood or tile require minor preparation. Coarse-grit sandpaper sheets used with a floor polisher are common, as well as handheld units.

4.2.2.4 Scarifying

Scarifying often removes enough concrete for adequate adhesion of Acrydur™-based coatings. Hand-held units are especially useful for areas next to walls, odd shaped substrates, smaller jobs, etc. The dust generated by scarifies may be a problem for certain applications- e.g. food areas. etc.

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4.2.2.5 Scabbling

Scabbling is another method which generates dust during use. The impacting action of the scabbler hits the top surface of concrete with generally good results.

4.2.2.6 Shot Blasting

This is the preferred method for all surfaces. A fully enclosed, dust free process, shot blasting can be controlled to produce light to extremely heavy surface profiles. Concrete can often be removed down to expose aggregate, mandatory for new, laitance-rich surface and an ideal condition for Acrydur™. Condition and speed of the blast machine, along with shot size, dictate the effectiveness of this method. As an example, a removal rate of ½ lb. of debris/ft² of surface (2.5 kg/m²) has been found to be adequate for quantifying the amount of shot blasting required for bridge deck overlays.

4.3. Evaluation of the Surface

Substrates that have been prepared by one of the above methods must be evaluated for adhesion of the coating prior to start any installation. The effectiveness of the method can be judged by a variety of bond test.

4.3.1 Patty Test

This is a quick evaluation method for concrete using Primer Acrydur™ 112. The primer is mixed to sand to a grout like consistency (approximately 1:2, respectively), producing perhaps one quart of mix at a time. An excess of hardener is added (typically 5-6% by weight of resin) and mixed well. This grout is placed onto the concrete in 4-5“ (10-13 cm) diameter patties and allowed to cure. The additional hardener will reduce the cure time creating a fast, “worst case” situation for the test.

After approximately 15-30 min. , or when the patties are cool to the touch, a hammer and chisel are used to remove them. If the substrate is sound and properly prepared, the patty will have concrete and broken aggregates bonded to it, demonstrating, that the adhesion of the primer to the concrete is stronger than the concrete itself. If the patty requires little force to remove or has only laitance adhering, then additional surface preparation will be required before a judgment can be made. If the patty is tacky underneath and fully cured, then this may indicate that residual amine curing agent of phenol is still present in the epoxy floor or equal coating, or that contaminants of some kind are present in the concrete and might be leaching out.

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4.3.2 Tensile Bond Test

The tensile bond of the primer or the complete coating to any substrate can be measured by several devices described as follows.

4.3.2.1 Elcometer

When used in accordance with ASTM D 4541, The Elcometer provides a direct reading of the tensile bond strength in pounds per square inch (psi) or N/mm (kg/cm².) An aluminum 1" (25 mm) diameter dolly is glued to the primed substrate with a fast setting adhesive. When set, the coating is scored along the perimeter of the dolly in order to provide a true measure of tensile bond without any cohesive contributions by the coating itself. The Elcometer is then attached to the dolly, which is removed in direct tension, resulting in failure of the substrate or at the bond line of the primer/substrate. For concrete substrates, a tensile bond in the range of 250 psi (1,7 N/mm²) is suitable, which is lighter than the tensile strength of concrete itself. An Elcometer will cost approx. 3,000 €, if You are interesting to purchase one pls. let us know.

4.3.2.2 ACI 503 R Tensile Tester

While the Elcometer is useful for measuring the bond of primers and thin mil coatings to various substrate, the ACI 503R tester is designed for the evaluation of heavier coatings-e.g.1/4 (6mm) overlays for concrete bridge decks. Operating in a similar principle to the Elcometer, the ACI 503R Tester incorporates a 2" (50 mm) pipe cap which is adhered to the surface of the coating. Then, a core drill is used to drill through the overlay into the substrate for the same reasons described previously. The mechanism of the ACI 503R tester also allows the evaluation of direct tensile bond in psi (N/mm²).

4.3.3. Moisture

In general , 3 % is an acceptable level of moisture in concrete which is to be coated with a Acrydur™ system. Since this is not easily measured, some techniques are described below. Use Acrydur™ 113 additive (5%) into Acrydur™ 112 primer for wet spots and Acrydur™ 118 primer for wet substrate if the relative humidity of the substrate is higher than 10%.

4.3.3.1 Polyethylene Sheet (ASTM D4263)

The *presence* of moisture can be determined using this test, which involves the securing of a PE sheet to the concrete with tape and observing the condensation of water during a period of time. The accumulation of water may either be due to the curing process in case of new concrete, residual moisture from wet processing operations or rising water/ vapor due to ground water effects.

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4.3.3.2 Moisture Meters

Many types of meters are available on the market today, unfortunately, none are entirely accurate for measuring the absolute moisture content of questionable substrates. They can be used, however, to monitor the relative change in moisture when a cooler is being dried out, for example, or the change which occurs to a bridge deck surface as the sun warms the concrete. We recommend to use the CM-tester provided by Plasti-Chemie to measure the relative moisture content in the substrate exactly.

4.3.4 Porosity

A relatively simple method of determining the degree of porosity of the prepared substrate can be performed by dampening the surface, for example, with a wet mop. The beading or absorption of the water by concrete gives a quick, visual indication of the porosity. A similar test can be used to check the presence of sealers on unfamiliar concrete surfaces prior to preparation.

SECTION 5- STAGING

5.1. Storage of Materials

In general, materials should be stored inside at the same temperature at which the area to be coated is kept. All items must be kept completely dry with resin, hardener, accelerator and filler stored separately from each other. For freezers and coolers, materials should be left in the area approximately 6-12 hours before application. For high temperature applications, shipment of materials and subsequent storage at the jobsite in refrigerated trucks may be considered. An exact match in temperature is not required prior to installation. These recommendations are given in order to facilitate the dosage of hardener and accelerator, which depend on temperature. A large temperature difference between the materials and the substrate should be avoided.

5.2 Mixing Station

A section of the coating area can be used to stage materials and set up the mixing station, which can be moved as the application proceeds. This arrangement is recommended for freezers and coolers. Other applications might make use of a mixing station that is not in the area to be coated.

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Resins, fillers and other additives should be set in an orderly fashion while respecting the mixing process. Pallets of sands, etc. should be kept to one side and resin to the other. Resin containers should be grounded; hardener should be kept away from accelerator. Plastic sheeting should be used to protect the primed surface of the substrate. Buckets can be calibrated by weight with a scale for the various fillers that are used in the coating. This enables the crew **only in volume measurements**, which are faster and more efficient to use. The temperature of the substrate and air should also be measured to determined the correct amounts of accelerator and / or hardener to be added to the resin. Temperatures should be checked for variation during the course of the application. Lastly, for the optimum efficiency of the mixing crew, specific tasks should be assigned to each worker – e.g. resin decanting, filler preparation, hardener dosage, blending etc.

5.3 Ignition Sources

All ignition sources must be extinguished prior to the application of Acrydur™- based coatings. That includes cigarettes, propane torches, and overhead heaters with exposed flames. etc. All Acrydur™ resins are classified as flammable liquid by the U.S. D.O.T. and should be handled accordingly. The hardener powder is classified as an organic peroxide and should be kept away from ignition sources, since it is a combustible material. Precautions described in this guide and on the following Material Safety data Sheets (MSDS) should be followed.

5.4 Tenting / Food Removal

Portions or entire areas of a floor installation may need to be isolated when working in order to protect food products from the odor of MMA/PUMMA. Temporary enclosures constructed of PE, sheeting and wood frames are very effective for this purpose. All draft must be properly sealed, and a negative air flow must be included by using exhaust fans and duct work. The tent should be airtight and tested prior to applying the floor coating. If required, food products are to be removed from the work area during the installation of the Acrydur™ coating.

5.5 Specific Low Temperature Considerations

5.5.1 Accelerator

Applications below 40 ° F (4 °C) require accelerator B 101 in addition to hardener in order to maintain a twenty minutes pot life and one hour cure time of the Acrydur™ resins. Please consult the dosing tables in our GUIDE FORMULATIONS for specific information.
The accelerator is classified as a Poison B (liquid), and should be handled only by protected personnel wearing goggles and gloves. Accelerator and hardener containers and measuring cups should be kept apart from each other at the mixing station.

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5.5.2 Paraffin Separation

As mentioned in Section 3.9, bung-entering mixers are required for cold temperature applications. The paraffin contained in the Acrydur™ resin can separate and clump at low temperatures, and so it is important to re-disperse the resin before use. Approximately 5 full minutes is sufficient time to product a homogeneous mixture in a 55 gal. (190 – 200 kg) drum.

SECTION 6 – PRIMING

6.1 Concrete

After proper evaluation of the surface has been by using the techniques described in Section 4.3, the concrete is ready to be primed. There is one Acrydur™ primer which can be used to prime concrete: Acrydur™ 112. Acrydur™ 112 is designed especially for concrete surfaces, has excellent adhesive capabilities and cures fully at low temperatures. Acrydur™ 112 is low-viscous, penetrating primer which is used to prime concrete. It relies on penetration for its excellent bond. (up to 3,3 N/mm²) It is thus not recommended on hard, nonporous concrete. Acrydur™ 418 with Acrydur™ HP Bond Enhancer, this combination creates a primer which has an improved bond on tiles. On damp concrete, concrete with certain contaminants (i.e. acrylic and latex modifiers) add Acrydur™ 113 additive to the Acrydur™ 112 primer resin (5%) before mix in the hardener, if there is a wet surface like on bridges after the rain remove the water with brooms, avoid poodles and use Acrydur™ 118 primer. For Asphalt substrate use Acrydur™ 116.

In general , 1-2 gal of primer should be mixed at a time. The hardener 50 W can be easily dispersed into the resin and blended with a mixer for approximately 1 min. Upon mixing, the primer should be poured entirely onto the floor surface and applied with rollers and brushes to allow for the full 20 min. pot life. Material kept in buckets will accumulate heat and gel prematurely; primer showing any sign of gelation, either by physically changing consistency, should no longer be used. Ideal coverage rates for primers are near 100 ft²/gal. (0,5 kg/m²), which ensures an average film thickness of 10-15 mils.(0,3 -0,4 mm). If desired, silica sand may be broadcast into the fresh primer at rate of 4-5 lb/100ft² (300-400 g/m²) in order to (a) provide a non-skid finish for the cured coating, if the basecoat is not immediately, and (b) prevent basecoat from sliding and rolling during applications. Once the primer is applied, it should not be overworked in any way so as not to disturb the formation of the paraffin layer. Typical cure times are within 1 hour, the primer must be fully cured prior to basecoat application. Tack coats are not required; upon application the basecoat will dissolve the surface of the primer, resulting in a welded bond upon cure. This process applies to all layers within any Acrydur™ coating system. Take care that the primer will create a completely cured, glossy layer of resin on the substrate. After curing You should not be able to remove the sprinkled sand. If so prime again!

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6.2 Wood

Acrydur™ Primer 112 is also used for interior wood surfaces. For new construction where ¾" (19 mm), A/C grade, exterior grade plywood is recommended, the panels must be well-anchored to the subfloor-e.g. with screws or underlayment nails (ring nails) on 4 " (10 cm) centers. A closer, 3 " (7,5 cm) stitch pattern should be used along the seams, joints should be 1/8"-1/4" (3-6 mm) wide. Care should be taken to ensure that the plywood used does not have an excess pf phenol, contained in the ply adhesive, which inhibits the cure of Acrydur™.

It is recommended to treat the seams after priming. This can be performed by reinforcement with chopped fiberglass mat laid up with a flexible resin-e.g. Acrydur™ 332. Such applications must be performed carefully in order to prevent the entrapment of air and allow for the resin to cure properly.

Acrydur™ 332 can also be used in neat form as a joint filler material.

6.3 Metal

Metal substrates of all types require Acrydur™ 418 HP (see Acrydur™ adhesive agent) as a primer system. The metal may be prepared by shot blasting, sandblasting, grinding, or in some cases, acid etching. In general, Acrydur™ adhesive agent is added to 1-2 gal. (4-8 l) of Acrydur™ 418 and dispersed. The prepared primer is then mixed with hardener powder 50 W as described above and applied onto the metal substrate. The application rates and pot life are identical to those of Acrydur™ Primer 112. The advantage of using Acrydur™ 418 / HP as a primer on metal is its flexibility and excellent tensile bond strength, often in excess of 700 psi. (4,8 N/mm²) Acrydur™ 418/HP is not a rust-proofing primer, however, for this feature compatible, anti-corrosive pigments should be used. On stainless steel use same ratio of adhesive agent with Acrydur™ 332 membrane resin.

6.4 Tile

New or old tile substrates require Acrydur™ 112 HP as a primer system, Acrydur™ adhesive agent and hardener are all components which are added as described for Acrydur™ 112/HP. Application rates are identical, although smooth tile may permit a better coverage. Acrydur™ 112 HP not only has excellent adhesion to quarry, ceramic other mineral tile, but also to the grout. Surface preparation of a new tile is minimal, clean and dry conditions are all that is necessary. Older tiles must also meet these conditions, which generally require detergent washing and either sanding, scarifying or shot blasting in order to clean and remove contaminants from both the grout and tile surfaces. Loose tile must be removed and the area grouted with Acrydur™ 510 based mortar or Acrydur™ 050/051 Polymer concrete.

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6.5 Other Substrates/asphalt

other substrates such as old epoxy flooring, vinyl asbestos tile and miscellaneous patching materials may be suitable as substrates after proper evaluation. Please contact Plasti Chemie Int. GmbH for recommendations regarding these or other unusual substrates. Use Acrydur™ 116 primer for asphalt substrate. Because of the porosity if asphalt substrate we recommend to prime it twice.

Section 7 – Miscellaneous Repairs

7.1. General

Once concrete surfaces have been primed, other repairs can be evaluated prior to the installation of a Acrydur™ coating system. A description of these repairs with recommended procedures follows.

7.2 Crack Treatment

7.2.1 Control Joints

When self – levelling or trowel-on Acrydur™ coatings are installed in constant temperature environments, control joints are usually coated directly over in order to form a truly seamless floor. If it requested to maintain the joint, Acrydur™ 430 or 332 resins may be utilized as caulking materials after the coating has been installed. These can be used either in (a) neat from or (b) in combination with silica flour and pigment.

7.2.2 Fine Cracks

Fine, immobile cracks are often taken care of during the priming operation. However, these or other imperfections may tend to show through self-levelling coating applications. It is recommended to make a scratch work filler using Acrydur™ 510 and Acrydur™ s/l filler in a grout-like consistency (approximately 1:1 by volume, 1:1,5 by weight) for such minor repairs. On bridges use Acrydur™ 114 crack sealer before priming the substrate to close fine cracks.

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7.2.3 Moving Cracks

Active, moving cracks must first be designated as such by the resident engineer or during prior evaluation. Several techniques are available to treat this condition. Firstly, Acrydur™ 430 or 332 can be used in neat form to fill cracks which have been routed and properly primed. The resin must be allowed to cure prior to application of the basecoat. Secondly, chopped fiberglass mat can be laid up with a flexible resin, usually Acrydur™ 332, forming a bridge which distributes the stresses from the crack over a wider area under the basecoat. Such applications must be performed carefully in order to allow the Acrydur™ 332 to cure properly. For joints in freezers use Acrydur™ 800 PUMMA resin.

7.3 Small repairs

Small repairs can be carried out using Acrydur™ 510 polymer mortar prepared in small batches. There are 2 different filler mixtures available: B2 with a particle size up to 1,5 mm (12 mesh) or C2 with a particle size up to 3,5 mm (6 mesh)

These mixes can be made in 10 gal (40 l) buckets.

7.4 Pitching / Large Repair

Large applications of Acrydur™ 510 mortar or polymer concrete mixes may be required when pitching floors toward drains or when partial / full depth slab replacement becomes necessary. It is recommended to mix polymer concretes in conventional mortar mixes which do not entrap air. When executing repairs deeper than ½" (13 mm), additional aggregate should be added to the polymer mortar in order to extend the yield, reduce shrinkage and produce a mix which is more compatible with the parent concrete. A general rule of thumb is that the aggregate size should not exceed 1/3 the dept of the repair - e.g. a 2" (50 mm) repair can make use of aggregate up to 5/8" (16 mm) in size.

Our **Guide Formulations** bulletin provides complete information suggested polymer concrete mixed based on Acrydur™ 510, including aggregate sizes and corresponding yields. It is crucial for low resin content mixes such as these that fillers be of the proper size and proportion in order to prevent air inhibition and poor cure. Once the applicator has found a combination of sands, etc. that perform effectively in a polymer concrete formulation, it is highly recommended that this becomes the standard for future work.

Improvised polymer concrete mixes designed on-site often result in problems and should be avoided!

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SECTION 8 – COVING

8.1 General

Coving with Acrydur™- based materials is a matter of technique, since the twenty min. pot life and one hour cure time apply to these applications as well.

To create the consistency required for coving, fumed silica- e.g Aerosil 200 is required as part of the mixture. Aerosil allows the coving mix to thicken to the proper consistency for hanging purposes. It must be understood, however, that Aerosil, with a tremendous surface area compared to the other fillers used with Acrydur™, must be dispersed and moistened properly in order to avoid air inhibition and ensure a successful application. For example, the consistency of Batch A of coving using the proper amount of Aerosil dispersed for a given amount of time may appear similar to Batch B using twice as much Aerosil mixed for one half the time. The Aerosil in Batch A has been moistened down properly and has no dry surfaces entrapping air within the mix. As a result, the mix will perform as needed and cure correctly. Batch B, which appears to be acceptable, actually has a “false” consistency, and the entrapped air will result in air inhibition, improper cure and a lot of wasted time. A very similar condition occurs when improperly formulated polymer concrete mixes, also with entrapped air and dry surfaces, are encountered. The concept of air inhibition does not apply to epoxies and polyurethanes, but it must be understood when working with methyl methacrylate based and other similar materials. It is recommended to mix the materials, allow the gel to stand for several hours and mix a second time for optimum moistening of the Aerosil.

8.2. Gel/cove paste Acrydur™ 540/h

To prevent problems in dispersing Aerosil 200 into Acrydur™ 540 resin, the resin used for coving, it is suggested to order Acrydur™ 540/h cove paste. The Acrydur™ 540/h cove paste is a ready for use coving paste no additional mixing of thickener on site is required

8.3. Mixing

The cove-base coating should be mixed in small batches based on a maximum of 1 gal. of Acrydur™ 540/h gel at a time for efficiency. The hardener can be dispersed into the gel with a mixer and some effort; subsequently, the fillers can be added. No. 16-25 (0.7-1.2 mm) and No. 50-70 (0.1-0.6 mm) sands are both required for coving based on Acrydur™ 540 and can be either conventional silica sands or colored sands for decorative applications. Please consult our **Guide Formulations** bulletin for details on formulations and coverage rates. To avoid yellowing of the cove do not use too much hardener 50W!

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8.4. Application

8.4.1. Tools

Conventional coving tools can be used for installing Acrydur™ 540 coves. Due to the time constrictions of a twenty min. pot life, application must be quick and efficient for best results. Overworking the material will cause problems in finishing and curing. Tools may be brushed with MMA Monomer if required for workability. In addition up to 5% by weight No. 70-140 (63-250 my) silica sand can be added to the mix in order to reduce sticking of coving on tool. Also 5% glass - beads can be added to the mix to achieve better smoothing properties of the coving mix.

8.4.2 Methods

There are several methods in which to hand coving. The easiest way involves the use of coving strips placed on the base of the wall. Finishing is relatively easy by using the strips as preset guides. For effective waterproofing, silicone caulking may be required at the vertical edge of the cove, which will seal it properly to the wall.

Duct tape placed along the wall at the desired height enables the coving to the feathered directly against the wall for a watertight seal. Pulling the tape and producing a neat edge is a technique which is acquired over time.

Chamfer covering is quite easy to install and in many applications is sufficient to prevent a buildup of dirt along the wall edge.

A perfect way to install a permanently waterproof and physically decoupled cove with extraordinary properties is the use of Acrydur™ cove profile system. Its built with a 100° edges AL profile and a stainless steel profile that will protect the top edge of the cove against hits and its glued completely tight with PU sealant to the wall. Only the AL profile is screwed down to the concrete/substrate. Pls. see the Acrydur™ cove profile detail sheet.

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SECTION 9- BASECOATS

9.1. Self –Levelling

Self-levelling is the easiest and most labor-efficient method of installing Acrydur™-based coatings whether using Acrydur™ 332 or 418. Production rates of up to 1700 ft.² / hr. (158 m²/hr.) are possible in open areas free of obstructions with a team of 3 installers. The flat, even floors which are created are often ideally suited for the customer's working environment.

Basecoat mixes are commonly based on 1 gal. (4l), 1.5 gal (6l)or 2 gal (8l) of Acrydur™ resin at a time, to which the appropriate fillers are added, as described below. Ideal mixing containers are 5 gal. (20 l) buckets.

9.1.1 Hardener

For self-levelling mixes which are basically high in resin, hardener may be added first. A measuring cup is ideal for batching the hardener powder, which may require adjustments during the course of the job due to temperature variations encountered. Once again, approximately one min. of mixing is sufficient, although this depends on the overall batch size.

9.1.2. Pigment

Pigment is generally added first for proper dispersion. A dosage of 10 vol. oz/gal. (100 ml/l) of Acrydur™ resin is normally sufficient, this amount can be reduced in subsequent batches once material builds up in the mixing buckets. A measuring cup or container with a known volume is necessary for uniformity of pigment among batches.

9.1.3 Fillers

Fillers are the next ingredients to be added; in general, silica flour should be added first followed by the appropriate sand which helps to keep dust down. The materials do not require a long mixing time; approximately one min. is sufficient. Please consult our **Guide Formulations** bulletin for details on recipes for Acrydur™ 332 and 418 self-levelling mixes. You can find mixing ratios on each single product data sheet. If preblended, bagged aggregates are used, gradually add mix to ease blending. The easiest way to prepare a self levelling blend is to use the Acrydur™ s/l filler. Mix 1:1 at 73°F by volume or 1:1,5 by weight. For further details read the product data sheets available here:

www. acrydur.net

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9.1.4. Application

9.1.4.1 Gage Rake

Gage rakes allow the above-mentioned production rates. Although set to a required thickness- e.g. 1/8” (3 mm) or 3/16” (5 mm), the pins of the rake tend to wear, especially when used on rough substrates. It is recommended to keep several preset rakes on hand for substitution throughout the course of the basecoat application. This also permits cleanup of the rakes at regular intervals.

When applying the basecoat, the rake should be held squarely with respect to the floor in order to ensure the correct thickness of the coating. By varying this angle, large differences in coverage rates may be encountered. In combination with the rake, a margin trowel or other small hand trowel is recommended for touch up of inaccessible areas.

9.1.4.2 Trowel

Trowel application of self-levelling basecoats can also be accomplished with little effort. With this technique, the material is merely moved about the floor in an even manner. The coating will often flow to the thickness of 3/16” (5mm) for Acrydur™ 332 and 1/8” (3mm) for Acrydur™ 418 mixes. Excessive finishing should be avoided to allow even formation of the paraffin layer on the coating-surface and proper cure. Use only the large grade of color quartz mixtures for trowel on coatings!

9.1.4.3 Ramped Areas

Ramps in parking garages, sloped floors toward drains in food processing plants and other areas can be coated with self-levelling coatings via the addition of Aerosil 200 to the mixture to reduce or stop flow of the material. A general rule of thumbs is ½-1qt. of Aerosil 200/gal (125-250 ml/l). of Acrydur™. For these mixes, a gage rake is normally required in order to regulate the thickness of the basecoat. Aerosil 200 should be added to the mix prior to addition of hardener. Under certain circumstances, two thin applications may be easier than a single, heavier one. Its also possible to use the Acrydur™ 540/h cove paste to thicken the resin at site.

9.1.4.4 Deaeration

Deairating with a porcupine roller or a spike roller is required for Acrydur™ 418 basecoats only. After raking into place, the basecoat should be treated with the porcupine/spike roller in order to release any air which has been trapped within the material, allowing the creation of an even surface. Excessive or late rolling will result in improper formation of the paraffin layer and air inhibition as described previously.

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9.1.4.5 Broadcasting

Broadcasting of non-skid aggregates into the fresh basecoat is required for Acrydur™ 332 coatings and optional for Acrydur™ 418 coatings. A variety of materials may be used depending on the profile and degree of required abrasion resistance. In general, aluminum oxide, basalt, bauxite, emery, garnet, silica sand and silicon carbide are used for this purpose. No. 30 (0.8 mm) or larger particle size is recommended for effective broadcasting. A blend of colored sands may also be used for tweed effects. Broadcast to excess is recommended with final adjustment of the surface profile by the sealer application. Vinyl or acrylic chips may be used as well. Please see Fillers Section For Suppliers. All fillers, sand, color quartz and flakes mixtures are available from Plasti-Chemie also. The color quartz mixtures are available in 2 grades: fine= 0,4 -0,8 mm and large 0,4 -2,0 mm.

9.1.4.5.1 Hand Broadcasting

Broadcasting of wearing course aggregates by hand is a conventional technique. Distribution should be in a manner similar to “chicken feeding” where the aggregate rains upon the basecoat rather than being thrown down. This will provide for a uniform appearance free of wrinkles.

9.1.4.5.2 Automatic Methods

Broadcasting can be accomplished with mechanized equipment such as modified sandblasting pots, etc. Plasti Chemie has no standard recommendations for the use of this equipment other than that it should be free of contaminants and tested prior to use. A good tool for broadcasting is also a broadcasting machine that You can order only from:

http://broadcastcoating.tools/product/broadcastpro6.html

9.1.5 Broom Off

Once the basecoat has cured, often in one hour or less the excess broadcast aggregate should be removed by brooming or for larger areas, by powder brooms or sweeping equipment. The collected material can be used as broadcast for subsequent applications if free of contaminants gathered during the brooming operation.

9.2. Trowel-On

Trowel-on coatings require slightly different installation techniques as described below. Once again, batches based on 1 gal. (4l) of resin are recommended.

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9.2.1 Blending sands

A minimum of two size of sands is required for trowel-on basecoats using Acrydur™ 418 No. 16-25 (0.7-1.2 mm and No. 50-70 (0.1-0.6 mm). As with the cove base mixes, these can either be conventional or colored sands. For special decorative coatings, it is recommended to blend the combination of sands prior to use on site. Please consult our **Guide Formulations** bulletin for recommended recipes. We recommend to use the ready for use mixtures provided by Plasti-Chemie GmbH we offer 13 different color mixes and 2 sizes: fine 0,4 – 0,8 mm (20-40 mesh) and large 0,4- 2,0 mm (10-40 mesh) For troweled floors use only the large sand mix size!

9.2.2 Adding Hardener

For trowel- on mixes with a higher filler content, it is necessary to add and disperse the hardener into the resin before adding any of the fillers. This will ensure proper cure of the coating .

9.2.3 Fillers

The fillers, in this case silica sands or color quartz, are subsequently added and dispersed for approximately one minute.

9.2.4 Applications

Troweling is preferred by many experienced epoxy contractors who are comfortable with this technique and are skillful at it. An easier method involves the use of a gage rake to distribute the basecoat at a controlled thickness – e.g. 1/8” (3 mm) - followed by finishing with a trowel to remove the rake marks.

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SECTION 10-SEALERS

10.1. Selection

The selection of the appropriate Acrydur™ sealer depends on the following three parameters:

Acrydur™ 332 basecoats are extremely resilient and require a flexible sealer. Acrydur™ 526 or 528 are recommended for these applications. For all other types of basecoats, Acrydur™ 522 or 526 can be used. These sealers permit easier cleaning of the installed coating.

10.1.2. Chemical Resistance

Acrydur™ 522 provides the highest degree of chemical resistance of all the resins in the Acrydur™ product line. This resin cannot be used on Acrydur™ 332 basecoats due to its hard and brittle nature. In some Acrydur™ 332 applications, however, where increased chemical resistance is desired. Acrydur™ 526 can be used, add Acrydur™ 523 additive to increase the solvent resistance of the sealer and use Acrydur™ 527 additive to increase the heat resistance of the sealer. These combinations produces a more resistant sealers than plain resins used alone, yet provides the extra chemical resistance.

10.1.3 Appearance

Where aesthetics are of major importance -e. g in direct lighting or when light colored coatings are installed- Acrydur™ 526 helps to reduce roller marks and provides a more uniform appearance over coatings based on Acrydur™ 332/418. However, Acrydur™ 522 used alone provides the highest clarity of all sealer systems.

If a mat and more scratch resistant sealcoat is necessary add Acrydur™ hardener/m into the final sealcoat. See mixing ratios in the hardener/m data sheet!

10.2. Mixing

Acrydur™ sealers are applied to Acrydur™ basecoats which have fully cured. They are generally mixed in 1-2 gal. (4-8 l) batches at a time in 5 gal (20 l) buckets.

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10.2.1 Additives

10.2.1.1 Pigment

Micronized powder pigments based on synthetic metal oxides are once again the material of choice for Acrydur™ sealers which can be applied clear if desired. Paste pigments can also be used following the recommendations given in Section 2.1.2. In general, 10 vol. oz. of pigment/gal. (100 ml/l) of Acrydur™ resin are recommended.

10.2.1.2 Aerosil 200

Aerosil 200 is required when using powder pigments in order to suspend them in the resin and produce optimum color uniformity in the sealer. One half qt. of Aerosil 200 / gal. (125 ml/l) of Acrydur™ resin is sufficient for this purpose. Paste pigments do not require Aerosil 200.

10.2.1.3 Hardener

Hardener is added only after the pigment and Aerosil is sufficiently dispersed. This can be checked to its consistency by dipping a mixing paddle into the sealer. If desired, the sealer may be poured through fine mesh screening, thereby ensuring the removal of lumps, etc., and then catalyzed. If the sealer is to be broadcast with aggregate and back rolled, slightly less hardener should be added to allow for a longer working time.

10.3. Application

Acrydur™ sealers can be applied by brush or roller. Squeegees may be used for the more flexible sealers such as Acrydur™ 526. Professional rollers (18” – [46 cm]) are recommended, although any size can be used. In open areas, application rates of 1000 ft. m²/hr./man (93 m²/man/hr.) are easily attainable. For smooth basecoats or those with a minor profile, the sealer should be poured out of the buckets and spread. For heavy non-skid surfaces, 1 gal. (4 l) or 2 gal. (8 l) batches of sealer should be prepared and applied in a dip-and-roll fashion to control the thickness. A coverage rate of 100 ft.²/gal. (2.5 m²/l) at 10-15 mils (0.3-0.4 mm) is recommended for sealer applications. Better seal two times thin than one time thick to avoid poodles!

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SECTION 11 - CLEAN UP

11.1. General

Tools and other items with cured resin and coating materials can be cleaned with organic solvents as described. If necessary, skin can easily be cleaned with pumice-containing, hand cleaners. Debris accumulated from the mixing station should be disposed of as the job progresses.

11.2. Drum Disposal

We recognize the problems associated with the proper disposal of empty Acrydur™ resin pails and drums. Under normal circumstance, waste resin and / or coating mixtures may be polymerized with hardener into inert solids for disposal. In the case of empty containers lined with unpolymerized residue, however, local drums should be handled with the same safety precautions as full drums; lit cigarettes, propane torches and other sources of ignition must be avoided.

We would ask that you comply with state and local disposal laws; if you require additional information on these regulations, please contact us for assistance.

SECTION 12-MAINTENANCE

12.1 Cleansing

Acrydur™ based coatings can be easily cleaned depending on the surface profile and the type of cleaning product selected. In most cases, warm soapy water is excellent.

We have tested many industrial cleaners to their compatibility with Acrydur™ and have found problems with those products containing butyl cello solve and monomethylamine, which will soften the coatings after prolonged use. Please consult our **Recommended Cleaners** bulletin for further recommendations on specific cleaning products.

12.2. Tire Marks

Tire marks may be the result of rubber build up or actual burning of the sealer on Acrydur™ –based floor coatings. Acrydur™ is a thermoplastic material and will soften upon exposure to excessive heat, which may result from wheel spinning of overloaded and abused forklifts.

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The extent of damage to a Acrydur™ floor can first be evaluated by a proper cleaning with a product from our recommended list. Residual build up can then be removed with small amounts of solvent. In some cases, a new sealer application may be required.

To reduce tire marks use Acrydur™ 522 hard sealer on top of a smooth Acrydur™ 418 base coat. Use Acrydur™ hardener/m for the final Acrydur™ 522 sealcoat.

12.3. Repairs

12.3.1 Restoring Non-Skid

Restoring non-skid characteristics to an older Acrydur™ floor can easily be accomplished. The existing coating should be cleaned of contaminants and allowed to dry. Scarification or chemical stripping is not required under normal circumstances. A new Acrydur™ sealer can then be applied, seeded with aggregate and back rolled to produce a new non-skid finish. The fresh sealer will dissolve the surface of the existing Acrydur™ coating upon contact resulting in a welded bond and a monolithic floor.

12.3.2 Cracks

Cracks in control joints or unforeseen reflective cracking can also be easily treated. The crack should be routed and filled with a flexible resin as described in Section 7.2.1.

SECTION 13 – SAFETY

13.1. General

As an overview of the safety aspects covered throughout this guide, the following checklist is provided. We ask, however, that you consult the product data sheets and the MSDS for each single product prior to use in order to determine specific safety hazards. Additional safety information including toxicology reports on MMA is available from Plasti Chemie Vertriebs GmbH/Plasti Chemie North America, LLC. www.plasti-chemie.de

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Recommended Cleaners

This guide has been prepared to assist in the selection of floor cleaners for use on Acrydur™ coatings and of general cleaning products which may be used in the vicinity of Acrydur™ coatings. The cleaning products will be divided into two sections: 1. Cleaners which can be used on all Acrydur™ coatings and 2. Cleaners which can be used only on Acrydur™ coatings sealed with Acrydur™ 522. All cleaners were tested at *manufacturer recommended concentrations and are approved for these concentrations only:*

1. For Use on all Acrydur™ Floors

Company		***Products***
Ecolabs, Inc. *Ecolab Center, St. Paul, MN 55102* *(800)352-5326 or* *Contact your local rep.*		
Envirosafe Manufacturing Corp. *1011 N. Causeway Blvd.Ste.17* *Mandeville, LA 70471* *(504)626-9053*	*Floor:* *Other:*	*Solid Regain, Maxiclean, Greasecutter* *Laundri Permabrite, Solid Powder, Super Trump, Soilax Bathroom Cleaner, Bar Dandy, Ecosan, Lime-A-Way*
TAC Cleaning Products Group *2643 Brenner Drive,* *Dallas TX 75220* *(214)436-9566*	*Floor :*	*Sure Clean, NU Look Concentrated Cleaner*
IVAX / Masury-Columbia *8800 N.W.36th Street* *Miami, FL 33178* *(800)262-7879*	*Floor:* *Other:*	*Red Floor Liquid Sanitizer* *Yellow-Dishwash Concentrate*
Procter & Gamble *6060 Center Hill Road* *Cincinnati, OH 45224* *(513) 983-1100*	*Floor:*	*CA- Concentrate*
SSDC *2151 Hutton Street, Suite 150* *Carrolton, TX 75006* *(214)241-2700*	*Other:*	*Comet Cleaner with Bleach, Proff. Line Cascade, Spic & Span Spray and Glass Cleaner, Comet Non .-Abrasive Bathroom Cleaner*
Sunshine Makers *15922 Pacific Coast Highway* *Huntington Harbor, CA 92649* *(213) 592-2844*	*Floor:*	*Power Foam*
ZEP Manufacturing *1310 Seaboard Industrial N.W.* *P.O. Box 2015* *Atlanta GA 30301* *(040) 352-1680*	*Floor:*	*Simple Green Cleaner*
	Floor:	*Waffle hause Presoak 2* *Waffle House Machine Dishwash*

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2. *For Use on Floors with Acrydur™ 522 Sealer Only:*

Company		***Products***
1st Ayd Corporation *2424 Pan American* *Elk Grove Village, IL 60007* *(312) 860-9111*		
American Cyanamid Company *Household Products* *Wayne, NJ 07470* *(201) 831-2000*	*Floor:*	*225 Heavy Duty Butyl Greaser*
Boyle.Midway Inc. *New York, NY 10017* *(212) 878-5600*	*Floor :*	*Pine-Sol*
C.M. Laboratories, Inc. *PO Box 8002* *Portland, ME 04101* *(207)883-8395*	*Other:*	*Easy-Off Oven Cleaner*
Chemland 1289 S.Walnut *Turlock, CA 95380* *(209) 668-4405*	*Floor:*	*Rad-Out*
Ecolabs, Inc. *Ecolab Center, St. Paul, MN 55102* *(800)352-5326 or* *Contact your local rep.*	*Floor:* *Other:*	*Slide 100, Grip* *Metabrite, Nu Core*
Malone chemical, Inc. *130 Marion Avenue* *Linden, NJ 07036* *(201)862-8593*	*Floor:*	*Ammoniated Regain, Top Quartile* *Absorbit*
Noxell Corporation *Household Products Division* *Baltimore MD 21203* *(301)785-7300*	*Other:*	*34 Fryer, Oven & Griddle Cleaner*
ZEP Manufacturing *1310 Seaboard Industrial N.W.* *P.O. Box 2015* *Atlanta GA 30301* *(040) 352-1680*	*Floor :*	*Lestoil*
	Floor: *Other:*	*Waffle House Floor Scrub* *ZEP Spree*

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This list of Cleaners is not intended to be all inclusive. It only includes those cleaners submitted to Plasti Chemie GmbH for testing. In general, we have found that the cleaners containing organic solvents can be detrimental to Acrydur™ flooring.

If other suspicious cleaners are encountered, please contact us, and we will arrange for them to be tested.

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