Aggregated Systems® Medium Wear Floor

Thin polymer concrete overlay system for medium wear floors

Description

Aggregated Systems® Medium Wear Floor is a proprietary flooring system consisting of layers and blends of selected synthetic aggregates (Part C) and polymer binders (Parts A & B and /or Parts D & E combined) that are firmly bonded to a properly prepared concrete slab.

Aggregated Systems® Medium Wear Floor is the end result of years of experience and development. The resulting floor system is a combination of a number of complex and specially designed polymer binders and synthetic aggregates which when integrated together create an exposed aggregated high wear surface that is armored, impermeable, non-slip, colourfast, chemical resistant that can be quickly and easily installed. This aggregated surface can be optionally ground and then coated to impart specific optional functionalities including resistance to many chemicals, disinfectants and cleaners.

Use

For use on new or existing commercial and industrial well drained interior concrete slabs in areas where light to moderate wear, abrasion, traffic (high foot, hard wheel cart, rubber tire forklift and traffic, etc.) can occur and/or where common chemicals, disinfectants and cleaners are used. May also be used in some exterior locations, see Restrictions below for this and other details.

Features

- Tough wear resistant armoured non-slip macro textured surface that can be optionally ground and/or coated with smooth or micro textured re-finishable wear surfaces.
- Hard, impermeable colorfast armoring aggregates integrally coloured
- Good impact energy and heat absorbing capability
- Exceptional bond to the concrete
- High resistance to osmotic delamination for wet service areas
- Good chemical resistance throughout the entire cross-section (See Chart A)
- Range of slip-resistant options including aggressive non-slip high wear surfacing

Benefits

- High return on investment due to very good durability and long potential service life
- Durable attractive colour stable non-slip poured in-place seamless flooring
- Long term performance of the anti-slip functionality
- Easy maintenance and repair of wear surfaces
- Easily customizable:
    - Overall colour, blends of colour and define coloured areas
    - Wear surface thickness to address special and/or specific needs
    - Surface aspect of the system
- A short installation time that reduces total schedule duration and the impact on other trades

Restrictions

General: For use by a professional applicator authorized by Aggregated Systems®' representative. All system components must be supplied by or approved by Aggregated Systems®' representative. Not for use on slabs on grade where the water vapor pressure exceeds the bond strength capacity of the polymer binder or the tensile strength of the concrete substrate to which it is bound. Radiant or direct heat from ovens, furnaces, and other heat surfaces must not exceed the transient heat capacity of the selected wear surface or the system in general. May be used on well drained outdoor flatwork upon approval of Aggregated Systems®' representative (See also Aggregated Systems® Traffic Deck).

Wear surfacing: The overall wear resistance of Aggregated Systems® Medium Wear Floor is a function of many factors beyond the control of Aggregated Systems®, as such no representation is made as to the overall service life of the system in a specific application.

Chemical Resistance: Chemical disinfectants and cleaners may contain blends of aggressive chemicals that are not listed on the chemical resistance chart A shown in the Appendix. Aggregated Systems®' representative recommends testing the interaction of these products and the associated cleaning processes and equipment with the selected wear surfacing prior to use.

Slip resistance: The slip resistance of any flooring system is affected by many factors beyond the micro and macro textures of the flooring as installed. These factors include but are not limited to the presence of surface contaminants, residues, particulates, water, ice, etc.. Aggregated Systems®' representative makes no representation as to the in-service slip resistance of their system when affected by extraneous factors and further does not recommend the use of their systems in lieu of an ongoing slipping hazard reduction plan. Optional slip resistance additives approved by Aggregated Systems® may be incorporated into Parts D & E.

Medium Wear Floor Parts A & B

Function: Self priming, rapid set, bonding and anchoring binder. Also, a vapor barrier.

Compliance: ASTM C881, Type III, Grade 1, Class B & C

Chemical Resistance: Please see Chart A

Typical physical properties and characteristics:

- Shelf life: 2 years
- Applied by squeegee or low-pressure plural component pump
- Mix ratio: 1:1
- Colour when mixed: clear grey / blue cast
- 100% solids, low odor
- Zero Volatile Organic Compounds (VOC's)
- Ultraviolet Stability: None claimed
- Viscosity: 1500 cps @ 77® F / 25®C
- Gel time: 20-25 min on 60 gm sample @ 68® F / 20° C
- Compressive Modulus: 760 MPa / 110,000 psi (ASTM D -695)
- Bond Strength: 19.3 MPa / 2800 psi @14 Day (ASTM C-882)
- Tensile Strength: 19.3 MPa / 2800 psi (ASTM D-638)
- Elongation at break: 40% (ASTM D-638)
- Flexural Strength: 20.9MPa / 3030 psi (ASTM D790)
- Thermal Compatibility with concrete: Pass (ASTM C884)
- Water Absorption: 0.20% (ASTM D-570)
- Chloride ion permeability: 0.0 coulombs (AASHTO T277)

Medium Wear Floor Part C

Function: Wear and abrasion resistance, heat and impact energy dissipation, system armoring and macro texturing when exposed, provides the color layers in the system matrix.

Chemical resistance: Very high. Non-reactive to common acids, alkalis and other chemicals

Typical physical properties and characteristics:

- Shelf life: 2 years
- Proprietary synthetic manufactured aggregates
- Mohs hardness: 7.4-7.8
- Aggregate size range: 1.0 - 2.0 mm + - 0.5mm (may vary)
- Colour: Integral, white, black, grey, red, blue, green, yellow or blends thereof.
- Shape: irregular, angular
- Ultra-violet resistance, colourfast
- Abrasion resistant, non-friable, dust free

Medium Wear Floor Parts D & E

Function: Ultra-violet resistant, anchoring and bonding binder, heat and impact energy dissipation. As a topcoat coat to reduce the macro texture of Part C. and/or to produce a finished surface resistant to staining, chemicals and cleaners.

Chemical Resistance: Please see Chart A

Typical physical properties and characteristics:

- Shelf life: 2 years
- Applied by squeegee or low pressure pump
- Mix Ratio – 2:1 by volume
- Colour when mixed – Clear
- 100% solids low odour
- Zero Volatile Organic Compounds
- Ultraviolet Stability – No significant yellowing after 500 hours continuous exposure
- Viscosity – 1500 cps (Brookfield Viscosity RV 3 @20 rpm, ASTM D2393)
- Gel Time – 30 minutes @ 23® C / 73®F
- Neat applied tack free time at 20®C / 68®F – 4 to 6 hours
- Maximum thickness of application – No restriction
- Compressive Modulus – 1720Mpa / 250,000 psi (ASTM D 695)
- Bond – 100% concrete failure (ASTM C 1583 / ACI 503R)
- Tensile strength – 27.5 MPa / 4000 psi (ASTM D 638)
- Elongation at break - 5% (ASTM D-638)

Concrete surface preparation

General: In all cases, the interfacial bond of any component Part of the **Aggregated Systems® Medium Wear Floor** to the concrete substrate shall be tested and/or approved for compatibility by **Aggregated Systems®'** representative or their applicator prior to commencement of the work.

Concrete Surface Profile CSP: Concrete shall be prepared to a minimum CSP of 3 - 4 as defined by the International Concrete Restoration Institute (ICRI) Technical Guideline 310.2R – 2013 or current addition. This criterion may be waived at the sole discretion of **Aggregated Systems®'** representative if testing confirms that adequate bond can be achieved by alternate methods.

Concrete slab on grade maturity: Prior to commencement of the work the concrete shall be surface dry and sufficiently cured (21 – 28 days depending on mix design) to provide a tensile strength sufficient to resist the force generated by the constraint of the in-situ vapor pressure.

Substrate Temperature and moisture: Concrete moisture levels must be less than 5% when measured using a multi-pen moisture meter. Substrate temperature must be higher than 10°C.

Mixing

General: The following liquid products are for professional use only. It is therefore assumed that the people mixing these products are reasonably familiar with the typical mixing processes involved with t plural component products, and the care and attention required to avoid excessive entrapment of air etc. Please refer to the attached MSDS for safe material handling recommendations.

Parts A & B:

Condition Parts A & B to a temperature between 65°F to 85°F / 18° to 29° C

Small batch mixing: Separately pre-mix Parts A & B to a uniform consistency just prior to use. Place one part by volume of Part A into a clean container. Add an equal volume of Part B. Mix at low speed (300 rpm) with an immersion mixer until uniformly blended (approximately three minutes). Combine only the volume of material that will be consumed within the pot life compensating for the ambient temperature conditions and batch size. Take care not to excessively aerate the mixture. Let set at least 1-2 minute before using when ambient and/or substrate temperature is on the cooler side.

Continuous batch mixing: Select a low-pressure plural component metering pump fitted with a static mixer. This equipment must have a demonstrated ability to produce a homogenous mixture that attains the Part A & B Typical Physical Properties shown above or is approved by Aggregated Systems®' representative. In all cases, the equipment must be maintained and monitored for proper and consistent performance.

Parts D & E:

Condition both parts to a temperature of 65° F to 85° F / 18°C to 29°C

Small batch mixing: Separately pre-mix Parts D & E to a uniform consistency just prior to use. Place two parts by volume of Part D into a clean container. Add one part per volume of Part E. Mix at low speed (300 rpm) with an immersion mixer until uniformly blended (approximately three minutes) Combine only the volume of material that will be consumed within the pot life compensating for the ambient temperature conditions and batch size. Take care not to excessively aerate the mixture.

Continuous batch mixing: Select a low-pressure plural component metering pump fitted with a static mixer. This equipment must have a demonstrated ability to produce a homogenous mixture that attains the part D & E Typical Physical Properties shown above or is approved by Aggregated Systems®' representative. In all cases, the equipment must be maintained and monitored for proper and consistent performance.

Typical coverage rates

Note: Coverage rates will vary to address design factors, Part C particle size, etc.

Parts A & B:
First layer: Apply at 1.05 to 1.50 L/ M^2

Part C:
Distribute aggregate uniformly to rejection
First layer target: Apply at 2.60 to 3.85 kg/ M^2

Parts D & E:
As topcoat: Apply at 0.75 to 1.3 L/ M^2 *
*depends on desired macro texture and/or if the Part C has been ground

Application

General: The working time of all of the liquid Parts (A&B, D&E, etc.) are highly affected by the ambient and surface temperature of the substrate. Ensure the substrate temperature and moisture are uniform. Concrete moisture levels must be less than 5% when measured using a multi-pen moisture meter. Substrate temperature must be higher than 10°C (50°F). Prevent spot exposure in sunlit areas adjacent doors, windows or skylights by providing shade or by applying after or before sunset when the surface temperature has stabilized. Use the personal protective equipment recommended in the MSDS document.

Parts A & B:
Batch Mixing: Discharge mixed products directly into the substrate and spread with a notched squeegee, avoid pooling in low areas, broadcast Part C immediately, record and monitor coverage rates and consumption of the component parts to document.

Low pressure pump application: Same as above. Monitor and record the on-going consumption of both Parts to ensure proportionate mixing and to document.

Part C:
Distribute aggregates uniformly to refusal. Excess material can be removed by suitable means after the substrate has set and used again. Care shall be taken to ensure that contamination of Part C is prevented. Can be applied at low pressure with equipment used for sandblasting.

Parts D & E:
Same procedure as Parts A & B shown above except when used as a wear surface or a flood coat to reduce macro texture. If so, depending on desired thickness, back-roll or use a spike roller or other suitable method if bubbles appear. Record and monitor coverage rates and consumption of the component parts to document.

Curing and application timing

Parts A & B with Part C seeded surface:
Excess broadcast materials may be removed by sweeping or vacuuming within four hours of installation in most cases, low or high temperatures will extend or compress the time required to firmly embed the Part C aggregates. Subsequent lifts of Parts A & B or Part D & E may commence immediately.

Parts D & E as flood coat surfacing:
Typical timing at 75°F Tack Free time is 4-6 hours, open to foot traffic in about 12 hours, open to vehicle traffic at 24 hours.

Total curing time examples

Parts (A & B & C): 4-8 hours to foot traffic

Parts (A & B & C) + (D & E): 8-16 hours to foot traffic

Tools clean-up

Parts A & B or D & E: Use a concentrated citrus cleaner or approved solvent

Disposal

All liquid Parts after reaction are innocuous. Unreacted empty containers must be disposed of in accordance with the local Governing Authority. Expired material can be mixed and reacted prior to disposal. Care should be taken to restrict the volume reacted to control excessive exothermic reaction.

Storage and transportation

Parts A & B and D & E: Must be stored and transported between 40°F to 95°F (5° C to 35°C) in a dry, shaded condition.

Part C: Must be kept dry in storage and transport prior to use.

Note: Accidental freezing in storage or transport can alter the chemistry and properties of the liquid parts. Contact Aggregated Systems®' representative prior to use if this occurs.

Handling precautions

Part C is innocuous. Consult the Material Safety Data sheets for the selected liquid parts (A&B, D&E) prior to use.

Limited Product Warranty

Our products are of good quality and free of defects under normal usage when the product purchased is used within its shelf life and according to the respective technical data sheets and other written material issued by **Aggregated Systems®'** representative for the products which are in effect at the time of purchase.

As the sole remedy, we will replace or, at our election, refund the purchase price of any products proved defective. This is subject to the contingent factors, terms and conditions described in the most recent document **Warranties Terms & Conditions** available upon request or on the company's website. Any claim regarding product defect must be received in writing within one (1) year from the date of purchase. No claim will be considered without such written notice or after the specified time interval.

Limited Performance Warranty

For **Aggregated Systems® Medium Wear Floor**, the standard limited performance warranty offered include the bond to concrete for three (3) years, the chloride ion impermeability of the resin binder for three (3) years and the chemical resistance of the surface for two (2) years (if Part D&E are used as topcoat).

This warranty would only be valid if the overlay system would be applied on a prepared surface and installed in accordance to this respective technical data sheet (TDS) by an **Aggregated Systems®** authorized applicator. Also, this warranty is subject to the contingent factors, terms and conditions described in the most recent document **Warranties Terms & Conditions** available upon request or on the company's website.

Warranty periods could range up to 5 - 10 years for specific projects at the sole discretion of **Aggregated Systems®'** representative. These would involve a premium added to the installed cost of the system and adherence to an approved inspection and maintenance plan.

The sole remedy of the basic limited performance warranty is the supply of the resin binders (Parts A&B, D&E) or, at our election, the refund of the purchase price of the products for the repair on pre-approved affected areas. Any claim regarding performance must be received in writing within the specific warranty period from the date of the overlay system installation. No claim will be considered without such written notice or after the specified time interval.

Aggregated Systems Parts are manufactured for and sold exclusively by:

Excellens Products Inc.

Date: March 1st 2020

Aggregated Systems® CHART A

CHART A AGGREGATED SYSTEMS CHEMICAL RESISTANCE	EXPOSURE IN DAYS	PART A & B						PART D & E					
		1	7	30	61	182	365	1	7	30	61	182	365
TEST MEDIA	TEMP DEGREES °F	PERFORMANCE RATING (SEE KEY AT BOTTOM OF CHART) COATING SAMPLES 20 MIL THICKNESS ON SHEET STEEL											
ACETIC ACID 20%	68	A	A	A	A	AD	C	A	A	A	A	A	AD
ACETIC ACID 20%	104	A	A	A	AD	C	--	A	A	A	A	AD	AD
ACETIC ESTER	68	A	B	C	--	--	--	A	A	A	AD	AD	AD
ACETONE	68	C	--	--	--	--	--	B	B	AD	C	--	--
ACRYLONITRLLE	68	A	A	A	A	A	A	A	A	A	A	A	A
AMMONIA 10%	68	A	A	A	A	A	A	A	A	A	A	A	A
AMMONIA 10%	104	A	A	A	A	A	AD	A	A	A	A	A	AD
CAUSTIC SODA 30%	68	A	A	A	A	A	A	A	A	A	A	A	A
CAUSTIC SODA 30%	104	A	A	A	A	A	A	A	A	A	A	A	A
CEMENT WATER SATURATED	68	A	A	A	A	A	AD	A	A	A	A	A	AD
CEMENT WATER SATURATED	104	A	A	A	A	A	BD	A	A	A	A	A	A
CITRIC ACID	68	A	A	A	A	AD	AD	A	A	A	A	A	AD
CITRIC ACID	104	A	A	A	AD	AD	AD	A	A	A	A	AD	AD
DETERGENTS (e.g. liquid ajax)	68	A	A	A	A	A	A	A	A	A	A	A	A
DETERGENTS (e.g. liquid ajax)	104	A	A	A	A	AD	AD	A	A	A	A	A	A
DISTILLED WATER	68	A	A	A	A	A	A	A	A	A	A	A	A
DISTILLED WATER	104	A	A	A	A	A	AD	A	A	A	A	A	A
DISTILLED WATER	140	A	A	A	BD	BD	BD	A	A	A	A	A	A
ETHANOL	68	A	B	B	B	C	--	A	A	A	A	B	C
ETHANOL	104	A	B	C	--	--	--	A	A	A	B	C	--
ETHANOL/WATER 60: 40	68	A	A	A	A	A	A	A	A	A	A	A	A
FORMIC ACID 10%	68	A	A	A	A	A	B	A	A	A	A	A	B
FUEL OIL (EMPA)	68	A	A	A	A	A	A	A	A	A	A	A	A
FUEL OIL (EMPA)	104	A	A	A	A	A	A	A	A	A	A	A	A
FUEL OIL (EMPA)	140	A	A	A	A	A	A	A	A	A	A	A	A
HYDRAULIC FLUIDS	68	A	A	A	A	A	A	A	A	A	A	A	A
HYDRAULIC FLUIDS	104	A	A	A	A	B	D	A	A	A	A	B	B
HYDROCHLORIC ACID. 10%	68	A	A	A	A	A	A	A	A	A	A	A	A
HYDROCHLORIC ACID CONC.	68	A	AD	AD	AD	AD	AD	A	A	A	AD	AD	AD
HYDROCHLORIC ACID CONC.	104	A	AD	AD	BD	C	--	A	A	AD	BD	C	
HYDROGEN PEROXIDE 5%	68	A	A	A	A	B	B	A	A	A	A	B	B
IRON (III) CHLORIDE 001.35%	68	A	A	AD	AD	AD	AD	A	A	A	A	A	A
IRON (III) CHLORIDE 001.35%	104	A	A	AD	AD	AD	AD	A	A	A	A	AD	AD
IRON (II) SULPHATE SOL. 35%	68	A	AD	AD	AD	AD	AD	A	A	A	A	A	AD
IRON (II) SULPHATE SOL. 35%	104	A	AD	AD	AD	AD	AD	A	A	A	A	AD	AD
JAVELLE WATER 14% CL	68	A	A	AD	BD	BD	C	A	A	A	A	AD	AD
KEROSENE	68	A	A	A	A	A	A	A	A	A	A	A	A
KEROSENE	104	A	A	A	A	A	A	A	A	A	A	A	A
LACTIC ACID 20%	68	A	A	A	AD	BD	C	A	A	A	A	AD	AD
LACTIC ACID 20%	104	A	A	AD	C	--	--	A	A	A	AD	AD	AD
LIQUID MANURE	68	A	A	A	A	A	AD	A	A	A	A	A	AD
LIQUID MANURE	104	A	A	A	AD	AD	AD	A	A	A	A	AD	AD
LIQUID SILAGE	68	A	A	A	AD	AD	AD	A	A	A	A	A	AD
LIQUID SILAGE	104	A	A	AC	BD	BD	BD	A	A	A	AD	AD	AD
METHYL ETHYL KETONE MEK	68	A	C	--	--	--	--	A	C	--	--	--	--
NITRIC ACID 20%	68	A	AD	AC	C	--	--	A	AD	AC	C	--	--
NITRIC ACID 20%	104	A	AD	C	--	--	--	AD	AC	C	--	--	--
OXALIC ACID 10%	68	A	A	AC	AD	BD	C	A	A	AC	AD	BD	C
OXALIC ACID 10%	104	A	AD	AC	C	--	--	A	AD	AC	C	--	--
PHOSPHORIC ACID 40%	68	A	AD	AC	BD	BD	C	A	A	AD	BD	BD	BD
PHOSPHORIC ACID 40%	104	A	AD	BC	C	--	--	A	AD	BD	C	--	--
POTASSIUM PERMANGANATE 10%	68	A	A	B	C	--	--	A	A	A	AD	C	--
RED WINE	68	A	A	A	A	A	A	A	A	A	A	A	A
SODA SOLUTION (SATURATED)	68	A	A	A	A	A	A	A	A	A	A	A	A
SODA SOLUTION (SATURATED)	104	A	A	A	A	A	A	A	A	A	A	A	A
SODIUM CHLORIDE SOLUTION	68	A	A	A	A	A	A	A	A	A	A	A	A
SODIUM CHLORIDE SOLUTION	104	A	A	A	A	A	A	A	A	A	A	A	A
SODIUM HYDROXIDE	68	A	AD	AD	AD	AD	---	A	A	AD	AD	AD	--
SODIUM SULPHITE SOLUTION	68	A	A	A	A	A	A	A	A	A	A	A	A
SODIUM SULPHITE SOLUTION	104	A	A	A	A	A	A	A	A	A	A	A	A
STYRENE	68	A	A	A	A	A	B	A	A	A	A	A	B
SULFURIC ACID 50%	68	A	AD	AD	AD	AD	AD	AD	AD	AD	AD	AD	AD
SULFURIC ACID 50%	104	A	AD	AD	AD	AD	AD	AD	AD	AD	AD	AD	AD
SULFUROUS ACID 5%	68	A	A	AD	AD	AD	BD	A	A	AD	AD	AD	BD
SULFUROUS ACID 5%	104	A	AD	AD	AD	AD	BD	A	AD	AD	AD	AD	BD
TARTARIC ACID 20%	68	A	A	A	A	A	A	A	A	A	A	A	A
TOLUENE	68	A	B	B	C	C	C	A	B	B	C	C	C
TOLUENE	104	A	B	C	C	C	C	A	B	C	C	C	C
TRICHLORO- ELTHYLENE	68	A	B	C	--	--	--	A	B	C	-	-	--
WATER	68	A	A	A	A	A	A	A	A	A	A	A	A
WATER	104	A	A	A	A	A	A	A	A	A	A	A	A
WATER	140	A	A	A	B	B	B	A	A	A	A	A	A
WHITE WINE	68	A	A	A	A	A	A	A	A	A	A	A	A

KEY TO RESISTANCE CODES

A = RESISTANT TO PROLOGED CONTACT B =TEMPORARILY RESISTANT C = BREAKDOWN OF COATING D = DISCOLORATION OF COATING