

Food & Beverage

System Guide

Wall and Equipment Coatings,
Flooring, and Linings



Dry Processing Areas

Floors (Concrete)

EXPOSURE LEVEL	PRIMER/SEALER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
Areas subject to foot and cart traffic with potential for some splash and spills and subsequent washdowns. May include some fork lift traffic in Heavy and Severe duty exposure levels.				
Light to Moderate	Carboguard™ 1340 WB	Sanitile 555 VOC	A water-based epoxy primer and finish system that provides a fast-turnaround option in a low odor application. Handles mild to moderate foot traffic and rubber-wheeled carts.	
Heavy	Carboseal™ 720	Carboseal 705 -or- Carboseal 705 PT	Self-leveling epoxy provides extra barrier protection and toughness for more aggressive conditions and frequent cleanings. Apply two coats or use optional topcoat. Clear epoxy with colored quartz for more decorative appearance. Seal with Carboseal 705 or use optional topcoat	Carboseal 816 -or- Carboseal 816 HAR
Severe	Carbocrete™ FC	Carbocrete MF	Medium duty self-leveling smooth cementitious urethane monolithic floor coating 3/16"-1/4" (0.48-0.64 cm) thick. May use Carbocrete SR if vapor transmission is a concern or Carbocrete SL if self-leveling is needed.	Carboeal 985

Walls (Concrete, CMU & Drywall)

EXPOSURE LEVEL	PRIMER/SEALER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
Areas subject to contamination from dry foodstuffs, powders, etc. Also subject to occasional cleaning using hot water, mild caustic cleaning agents, and sanitizing chemicals. Severe exposure level may be subject to high impact or abrasive conditions.				
Light to Moderate	Sanitile® 120	Sanitile 155 -or- Sanitile 255	A thin-film water-based acrylic -or- water-based acrylic-epoxy or moderate exposures and infrequent cleaning	
Heavy	Sanitile 500	Sanitile 555 VOC	A water-based epoxy surfacer and finish combination that provides smoother, tile-like appearance with additional chemical and cleaning resistance.	Carbothane® 134 WB -or- Sanitile 555 VOC
Severe		Sanitile 755 FR	This solvent-free, fiber reinforced epoxy is applied as a single-coat system and provides outstanding resistance to physical abuse and frequent cleanings. Replaces labor-intensive, fiberglass reinforced multi-coat systems.	Carbothane 134 WB -or- Sanitile 855

LEVELS

Light to Moderate: Suitable for occasional mild chemical exposure with semi-frequent washdowns

Heavy: Suitable for constant moisture, chemical, thermal shock exposure with more frequent washdowns

Severe: Highest level of performance with regard to physical abuse, moisture, chemical and thermal shock exposure with high washdown frequency.

Wet Processing Areas

Floors (Concrete)

EXPOSURE LEVEL	PRIMER/SEALER	FINISH	DESCRIPTION	TOPCOAT
<p>Areas are often constantly wet. Areas may be subjected to animal fats, oils, standing water making slip/fall hazards. Routine washdown with water and cleaning solutions approaching 180-200°F (82-93°C). Heavy and Severe duty exposures may include high impact or abrasion with heavy cart or fork lift traffic. Typical applications: cooking areas, commercial kitchens, dough proofers, extruders, fermentation rooms, bottling areas, slaughter rooms.</p>				
Light to Moderate	Carboseal 720	Carboseal 705 -or- Carboseal 705 PT	Self-leveling epoxy provides extra barrier protection and toughness for more aggressive conditions and frequent cleanings. Broadcast with quartz or sand then seal with topcoat.	Carboseal 816 -or- Carboseal 816 HAR
Heavy	Carboseal 720	Carboseal 710	Trowel applied epoxy mortar provides extra barrier protection and toughness for more aggressive conditions and frequent cleanings. Apply Carboseal 702 grout coat prior to topcoat.	Carboseal 705 -or- Carboseal 705 PT
Severe		Carbocrete HF	Highly functional trowel applied cementitious urethane mortar (1/4"-3/8" / 0.64-0.95cm). Depending on conditions, may use Carbocrete RT (rake & trowel applied) or Carbocrete SR (slurry) followed by Carbocrete FC topcoat.	Carbocrete FC (Optional)

LEVELS

Light to Moderate: Suitable for rubber-wheeled traffic and occasional mild chemical exposure with semi-frequent washdowns

Heavy: Suitable for high wear resistance and constant moisture, chemical, thermal shock exposure with more frequent washdowns

Severe: Highest level of performance with regard to physical abuse, moisture, chemical and thermal shock exposure with high washdown frequency.

Walls (Concrete or CMU)

EXPOSURE LEVEL	PRIMER/SEALER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
<p>Areas subject to contamination from wet foodstuffs, water, cleaning solutions, etc. Subject to occasional cleaning using hot water, mild caustic cleaning agents, and sanitizing chemicals. Severe exposure level may be subject to high impact or abrasive conditions and more aggressive cleaning procedures.</p>				
Light to Moderate	Sanitile 120	Sanitile 255	A water-based acrylic-epoxy for light to moderate exposures and infrequent cleaning	
Heavy	Sanitile 500	Sanitile 555 VOC	A water-based epoxy surfacer and finish combination that provides more tile-like appearance and additional chemical and cleaning resistance.	Carbothane 134 WB -or- Sanitile 555 VOC
Severe		Sanitile 755 FR	This solvent-free, fiber reinforced epoxy is applied as a single-coat system and provides outstanding resistance to physical abuse and frequent cleanings. Replaces labor-intensive, fiberglass reinforced multi-coat systems.	Carbothane 134 WB -or- Sanitile 855

LEVELS

Light to Moderate: Suitable for occasional mild chemical exposure with semi-frequent washdowns

Heavy: Suitable for constant moisture, chemical, thermal shock exposure with more frequent washdowns

Severe: Highest level of performance with regard to physical abuse, moisture, chemical and thermal shock exposure with high washdown frequency.

Warehouse & Dry Storage Areas

Floors (Concrete)

EXPOSURE LEVEL	PRIMER/SEALER	FINISH	DESCRIPTION	TOPCOAT
Exposures primarily limited to foot traffic, rubber wheeled cart traffic and fork lift traffic (heavy exposure level). Concrete is often “dustproofed” with a sealer or coated to provide a color or aisle markings and ease of cleaning. Heavy exposures may include more physical abuse or more frequent cleanings.				
Light to Moderate	Carboseal 720	Carboseal 705 -or- Carboseal 705 PT	Clear epoxy system performs a basic dustproofing function over bare concrete. -or- Self-leveling epoxy provides outstanding floor protection.	Carboseal 705 -or- Carboseal 705 PT
Heavy	Carboguard 1340 WB	Carboseal 985	A self-leveling, high solids polyaspartic with high chemical and impact resistance. May use clear with color quartz for more decorative appearance.	Carboseal 985
Severe	Carboseal 720	Carboseal 710 System	Trowel applied epoxy system provides the highest degree of physical abuse protection including frequent cleanings. Apply Carboseal 702 grout coat prior to topcoat.	Carboseal 985

LEVELS

Light to Moderate: Suitable for foot traffic and rubber wheeled carts (dustproofing or thin-film coating).

Heavy: Suitable for fork lift traffic with occasional cleaning.

Severe: Highest level of performance with regard to physical abuse with high washdown frequency.

Walls (Concrete, CMU & Drywall)

SUBSTRATE	PRIMER/SEALER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
Areas subject to limited exposure of chemicals but could have occasional cleaning. Surfaces are typically sealed to prevent dirt accumulation or a harborage for bacteria.				
Drywall or CMU	Sanitile 120 -or- Sanitile 100*	Sanitile 155 -or- Sanitile 255	A thin-film water-based acrylic for moderate exposures and infrequent cleaning -or- A water-based acrylic-epoxy for moderate exposures and infrequent cleaning	
Concrete or CMU	Sanitile 500	Sanitile 555 VOC	A water-based epoxy surfacer and finish combination that provides more tile-like appearance (mortar joints and CMU filling properties) with additional chemical and cleaning resistance.	

*Use Sanitile 100 direct to new CMU. Use Sanitile 120 over sealed CMU, concrete or drywall.

Equipment, Vessels, Piping & Structural Steel

Steel Surfaces

EXPOSURE LEVEL	PRIMER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
Areas include all steel surfaces including structural steel, exterior surfaces of vessels, piping and equipment operating at temperatures from ambient to 200°F (93°C).				
Light to Moderate (Water Based)	Carbocrylic® 3358	Carbocrylic 3359 -or- Carbocrylic 3359 DTM	A thin-film water-based acrylic for moderate exposures and infrequent cleaning -or- A durable, thin-film water-based acrylic terpolymer for moderate exposures and infrequent cleaning	
Heavy to Severe (Water Based)	Carboguard 553	Sanitile 555 VOC	High performance water-based epoxy system that provides excellent corrosion protection. Excellent choice where low odor coatings are needed use	Carbothane 134 WB
Heavy to Severe (Solvent Based)	Carboguard 890	Carboguard 890	Self-priming, workhorse epoxy that provides ultimate performance where chemical resistance and harsh chemical cleaning is required.	Carbothane 134 Series

LEVELS

Light to Moderate: Suitable for occasional mild chemical exposure with semi-frequent washdowns

Heavy to Severe: Suitable for constant moisture, chemical, thermal shock exposure with frequent washdowns

Corrosion Under Insulation - CUI Protection

TEMPERATURE LIMIT	PRIMER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
Insulated steel and stainless steel surfaces are susceptible to corrosion under insulation (CUI). Areas include all steel and stainless steel including structural steel, exterior surfaces of vessels, piping and equipment operating at temperatures to 1200°F (650°C).				
300°F (149°C)	Carbomastic® 15 Series	Carbomastic 15 Series	Surface tolerant aluminum epoxy	
300°F (149°C)	Carboguard 890 Series -or- Carboguard 690	Carboguard 890 Series -or- Carboguard 690	High chemical resistant epoxy -or- Moisture tolerant, low temp cure epoxy	
400°F (204°C)	Thermaline® 450 EP	Thermaline 450 EP	Epoxy phenolic	
450°F (232°C)	Thermaline 450	Thermaline 450 (Optional)	Glass flake reinforced, epoxy novolac	
1200°F (650°C)	Thermaline Heat Shield	Thermaline Heat Shield	Reinforced inorganic polymer	

Specialty Areas

High Heat Exposures

TEMPERATURE LIMIT	PRIMER	FINISH	DESCRIPTION	OPTIONAL THIRD COAT
Uninsulated Piping and Equipment. Areas include all steel surfaces including structural steel, exterior surfaces of vessels, piping and equipment operating at temperatures to 1000°F (538°C).				
525°F (260°C)	Carbozinc® 11 Series	Thermaline 4900 Series	High temperature resistant silicone	Thermaline 4900 Series
800°F (426°C)	Carbozinc 11 Series	Thermaline 4000 Series	Inorganic silicate; no heat cure requirement	
1000°F (538°C)	Carbozinc 11 Series	Thermaline 4700 Series	High temperature resistant silicone	Thermaline 4700

Personnel Protection from Hot Surfaces

EXPOSURE LEVEL	PRIMER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
Insulative coating system to protect workers from hot surfaces. May also be used to suppress solar heating of storage tanks, ceilings, ductwork, etc. Eliminates sweating surfaces on old tanks and piping.				
Light	Carbocrylic 3358	Carbotherm® 3300	A water-based acrylic insulative coating for light durability needs.	Carbocrylic 3359 Series
Moderate	Carboguard 553	Carbotherm 551	A water-based epoxy insulative coating with superior toughness.	Carbocrylic 3359 Series -or- Carbothane 134 WB

LEVELS

Light: Protection of surfaces with no chemical exposure and minimum abrasion

Moderate: Protection of surfaces where impact resistance and chemical resistance is needed.

Cold Storage Floors (Concrete)

MIN. SUBSTRATE TEMP.	PRIMER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
<p>Cold storage areas are generally always wet or damp from condensation. These areas are operated at around 40°F (4°C). Standing water presents a potential harborage for bacteria and a slip/fall hazard, so proper slope and pitch to drains is required. These areas are subjected to routine washdown with water and cleaning solutions approaching 180°F (82°C).</p>				
50°F (10°C)	Carboseal 720	Carboseal 705 or -or- Carboseal 705 PT	Self-levelling epoxy provides extra barrier protection and toughness for more aggressive conditions and frequent cleanings. Clear epoxy with colored quartz for more decorative appearance. Apply one coat broadcast then seal coat.	Carboseal 816 -or- Carbosela 816 HAR
50°F (10°C)		Carbocrete HF	Highly functional trowel applied cementitious urethane mortar (1/4"-3/8" / 0.64-0.95cm). Demonstrates excellent resistance to thermal shock, mechanical damage and chemical attack.	Carbocrete FC
40°F (4°C)	Carboseal 580	Carboseal 985	A self-leveling, high solids polyaspartic with high chemical and impact resistance. May use clear with color quartz for more decorative appearance. Apply one coat broadcast then seal coat.	

Battery Room Floors

EXPOSURE LEVEL	PRIMER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
<p>Battery acid is very aggressive to concrete and steel. Battery racks require protection along with the concrete. Always confirm the potential exposures before making a system recommendation.</p>				
Moderate to Heavy	Semstone 110	Semstone 145 Series*	High performance epoxy-novolac system handles concentrated acids, caustics and solvents.	
Heavy to Severe	Semstone 110	Semstone 245*	High performance novolac epoxy floor system with superior chemical resistance.	

LEVELS

Moderate to Heavy: Suitable for weak acids, caustics and solvent exposures.

Heavy to Severe: Highest level of performance with regard to aggressive solvents and chemicals including organic acids.

*All Series listed can be installed using an aggregate filled (AFC) or aggregate filled reinforced (AFRC) system designed to handle increased physical abuse (truck traffic).

Chemical Store Room Floors & Secondary Containment

EXPOSURE LEVEL	PRIMER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
<p>Chemical storage areas can hold a number of different materials including, acids, caustics, solvents or oxidizers. Protection of floor is needed to prevent attack from spills.</p> <p>Concrete floors and containment areas susceptible to spills. System design details available from Carboline upon request. Always confirm the potential exposures before making a system recommendation.</p>				
Moderate	Semstone 110	Semstone® 145 Series*	High performance epoxy-novolac system handles concentrated acids, caustics and solvents.	
Moderate		Carbocrete HF	Highly functional trowel applied cementitious urethane mortar (1/4"-3/8" / 0.64-0.95cm). Demonstrates excellent resistance to thermal shock, mechanical damage and chemical attack.	
Heavy	Semstone 110	Semstone 245*	High performance novolac epoxy floor system with superior chemical resistance.	
Severe	Semstone 800	Semstone 870 Series*	Vinyl-ester system handles the most aggressive of chemicals including organic acids.	

LEVELS

Moderate: Suitable for weak acids, caustics and solvent exposures.

Heavy: Suitable for concentrated acids, caustics and aliphatic and aromatic solvents.

Severe: Highest level of performance with regard to aggressive chemicals including organic acids.

*All Series listed can be installed using an aggregate filled (AFC) or aggregate filled reinforced (AFRC) system designed to handle increased physical abuse (truck traffic).

Loading Docks

EXPOSURE LEVEL	PRIMER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
<p>Loading and unloading areas where high traffic and impact occur. Always confirm the potential exposures before making a system recommendation.</p>				
Light to Moderate	Carboseal 720	Carboseal 705 -or- Carboseal 705 PT	Self-levelling epoxy provides extra barrier protection and toughness for more aggressive conditions and frequent cleanings. Clear epoxy with colored quartz for more decorative appearance. Apply one coat broadcast then seal coat.	Carboseal 816 -or- Carboseal 816 HAR -or- Carboseal 985
Heavy		Carbocrete HF	Highly functional trowel applied cementitious urethane mortar (1/4"-3/8" / 0.64-0.95cm). Demonstrates excellent resistance to thermal shock, mechanical damage and chemical attack.	Carbocrete FCUV
Severe		Carbocrete IF	Exceptionally heavy duty, trowel applied, iron-filled cementitious urethane mortar (3/8"-1/2" / 0.95-0.50cm). Demonstrates excellent resistance to mechanical damage, heavy machinery, thermal shock, and chemical attack.	Carbocrete FCUV

LEVELS

Light to Moderate: Loading docks and hot areas associated with dry process areas and dry goods area.

Heavy: Loading docks that are frequently washed down and exposed to moderate impact.

Severe: Loading docks that are frequently washed down and exposed to extreme impact.

Employee Welfare Areas

Floors

EXPOSURE LEVEL	PRIMER/SEALER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
Canteens, cafeterias, locker rooms, restrooms, dressing areas, lobby areas, walkways, etc. Exposures limited to foot traffic, rubber wheeled carts with occasional cleaning using milder chemical cleaners.				
Light	Carboguard 1340 WB	Sanitile 555 VOC	A water-based epoxy primer and finish system that provides a fast-turnaround option in a low odor application. Handles mild to moderate foot traffic and rubber-wheeled carts.	
Moderate	Carboseal 720	Carboseal 705 -or- Carboseal 705 PT	Self-leveling epoxy provides outstanding floor protection.	Carboseal 816 -or- Carboseal 816 HAR -or- Carboseal 985
Moderate	Carboguard 1340 WB	Carboseal 985	Quick cure, clear polyaspartic with colored quartz for more decorative appearance. Handles frequent cleanings if needed. (Double broadcast may be desired)	Carboseal 985
Moderate	Carboseal 720	Carboseal 705 -or- Carboseal 705 PT	Decorative mosaic floor utilizing colored paint chips and sealed with epoxy or urethane finishes.	Carboseal 725 -or- Carboseal 985

LEVELS

Light: Suitable for common areas such as hallways, office spaces and entry areas with occasional cleaning.

Moderate: Suitable for common areas with high physical abuse (impact or abrasion) such as locker rooms, restrooms, cafeterias, and canteens where more frequent cleaning occurs

Walls

EXPOSURE LEVEL	PRIMER/SEALER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
Canteens, cafeterias, locker rooms, restrooms, dressing areas, lobby areas, walkways, etc.				
Light	Sanitile 120	Sanitile 155 -or- Sanitile 255	A thin-film water-based acrylic for moderate exposures and infrequent cleaning -or- A water-based acrylic-epoxy for moderate exposures and infrequent cleaning.	
Moderate	Sanitile 500	Sanitile 555 VOC	A water-based epoxy surfacer and finish combination that provides smoother, tile-like appearance with additional chemical and cleaning resistance.	Sanitile 855 -or- Carbothane 134 WB

LEVELS

Light: Suitable for common areas such as hallways, office spaces and entry areas with occasional cleaning.

Moderate: Suitable for common areas with high physical abuse (impact or abrasion) such as locker rooms, restrooms, cafeterias, and canteens where more frequent cleaning occurs

Doors & Handrails

EXPOSURE LEVEL	PRIMER/SEALER	FINISH	DESCRIPTION	OPTIONAL TOPCOATS
Steel doors and handrails located throughout facility.				
Light	Carbocrylic 3359 DTM	Carbocrylic 3359 DTM	A durable, thin-film water-based acrylic terpolymer for moderate exposures and infrequent cleaning	
Moderate	Carboguard 553	Sanitile 555 VOC	A water-based epoxy surfacer and finish combination that provides smoother, tile-like appearance with additional chemical and cleaning resistance.	Carbothane 134 WB

LEVELS

Light: Suitable for doors and handrails in normal traffic areas.

Moderate: Suitable for doors and handrails in high traffic areas with frequent wash downs.

FDA Approved Linings

All lining recommendations must be reconfirmed through Carboline Technical Service Department

ACCEPTABLE SERVICE	LINING RECOMMENDATION	DESCRIPTION
Molasses, soy sauce, pepper mash	Plasite® 4100	Chemical and abrasion resistant vinyl ester to protect against inorganic and organic acids encountered in food processing. Handles dry heat to 380°F (193°C)
Molasses, soy sauce, pepper mash	Plasite 4110	Thick film vinyl ester combined with special curing system and inert flake pigments to provide excellent chemical and abrasion resistance against severe conditions encountered in food processing.
Corn syrup, vegetable oils	Plasite 4571	BPA-free, flexible, single-coat epoxy has superior resistance to corn syrup, vegetable oils or other taste sensitive cargoes
Sugars, glycols, alcohols	Plasite 3073	Single-package, high-bake phenolic with outstanding acid resistance (concentrated sulfuric acid) that can handle a wide variety of solvents.
Flour, syrups, honey	Plasite 7122 VTF	Epoxy-phenolic where special release (slip) properties are required to reduce or avoid product sticking, hang-up and bridging problems. Ideal for dry powder foodstuffs.
Corn syrup, vegetable oils, juices	Plasite 9133	High solids epoxy phenolic that can handle a wide variety of taste sensitive cargoes including corn syrup, vegetable oils or other aqueous-based cargoes.
Glycols, methanol, vegetable oils	Plasite 9573	A medium-bake epoxy with outstanding overall resistance to acids, caustics and solvents.
Beers, wine	Plasite 4555 S	Premium glass flake filled, epoxy novolac for taste sensitive products such as beer, wine, grape juice, orange juice and tomato products.
Corn syrup, vegetable oils, juices	Carboguard 891 VOC	An economical, 2-coat epoxy designed to handle most aqueous exposures up to 150°F (65°C). Certified to ANSI/NSF Standard 61 for potable water use
Sugar, flour	Reactamine® 760	Solvent-free, hybrid polyurethane that offers flexibility, extreme abrasion resistance in water or wastewater service with a fast return to service of a few hours. Certified to ANSI/NSF Standard 61 for potable water use.

*Many products are capable of wider use. Please contact Carboline for more information.

Specialty/Ancillary Products

Coving, Crack, Joint Fillers & Other Materials

USE	PRODUCT	DESCRIPTION
Coving material Urethane cement	Carbocrete Cove	Cementitious cove base mortar that provides a durable finish for use with Carbocrete flooring systems. Contains Polygiene® an antimicrobial additive based on silver ion nano technology.
Cement-based underlayment	Carbocrete 4000	A trowel-applied, fast cure cement base underlayment for sloping and patching floors. Can be overcoated with a variety of finishes including tiles, vinyl and polymer flooring. Protein-free formulation prevents the growth and spread of bacteria
Rapid setting, urethane-based underlayment	Carbocrete Fill	A rapid setting urethane cement underlayment mortar. Applied by trowel or screed bar from 0.5-2.0" (1.3-5.1 cm). Fast and efficient repair for damaged floor slabs.
Epoxy patching compound	Carboguard 501	Epoxy patching and surfacing compound that exhibits excellent bond strength to concrete. It is used to fill voids and bugholes in precast or poured-in-place concrete and other masonry surfaces.
Polyurea sealant	Carboseal Flex Joint	Semi-rigid polyurea sealant for crack filling.
Coving material Epoxy	Carboseal 702	A thixotropic epoxy primer for skirting and coving on cementitious substrates. May be used as a grout coat for epoxy mortar systems or for an orange peel effect floor coating.

NOTES:

1. This system guide often refers to a "series" of products (e.g. Carbozinc 11 Series) where you may select the specific product for your application within this equivalent family. This "series" typically includes product version that meet regional VOC regulations (e.g. Carbozinc 11 VOC) as well as product versions that offer faster cure (e.g. Carbozinc 11 FC). You can be assured that all the products within a "series" offer the same performance characteristics. Please consult your Carboline Sales Representative for specific recommendations.
2. Please consult your Carboline Sales Representative to meet regional environmental regulations. Carboline offers many products with reduced VOC and HAPs.



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