VORTEX

AluminaLiner®
BY VORTEX

CEMENT COATING SUBMITTAL

Featuring

ALUMINALINER®

QUADEX®
A VORTEX COMPANY
REPAIR MATERIALS

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REV. 09-25-2021

AluminaLiner®
Technical Data Sheet

TECHNICAL DATA SHEET

AluminaLiner®

TYPICAL PERFORMANCE CHARACTERISTICS

- **Compressive Strength psi (ASTM C39)**
  28-day >9000
- **Flexural Strength psi (ASTM C293)**
  28-day >1000
- **Bond Strength psi (ASTM C882)**
  >2000
- **Freeze-Thaw Durability (ASTM C666)**
  No visible damage after 300 cycles
- **Permeability (ASTM C 1202)**
  350 Coulombs
- **Shrinkage at 95% Humidity (ASTM C596)**
  28-day 0%
- **Sulfide Resistance (ASTM C267)**
  No attack
- **Density**
  135 +/- 5 PCF

RECOMMENDED FOR

Vertical and overhead repairs to concrete or masonry sewer structures such as **manholes, wetwells, pipe and treatment plant structures** where corrosion is a problem.

Calcium Aluminate Sewer Rehabilitation Mortar

DESCRIPTION

AluminaLiner® is a factory blended, one component, fiber reinforced, 100% calcium aluminate cement designed to provide excellent corrosion resistance against typical hydrogen sulfide gas (microbiologically induced) corrosion, add structural integrity and stop groundwater infiltration in sewer structures with a pH of 2 or greater. This unique formulation allows for a monolithic one-pass application up to three inches in thickness by low pressure spraying or centrifugally spinning.

FEATURES AND BENEFITS

- **Quality controlled, one-component blend for uniform results**
- **High early and ultimate compressive, flexural and bond strengths**
- **Resistant to sulfide attack**
- **Low permeability**

CURING

Cure in accordance with Quadex recommended curing agent.

PRECAUTIONS

Avoid eye contact or prolonged contact with skin. Wash thoroughly after use. Persons using AluminaLiner should wear necessary eye protection, dust mask and rubber gloves. Read all product labels and technical literature.

QUADEX® A VORTEX COMPANY REPAIR MATERIALS

WARRANTY

Quadex, LLC warrants its products to be free of defects in material and workmanship. Unless superseded by project specifications and terms agreed upon in writing between installer and Quadex prior to bid, if within one year from purchase, any Quadex, LLC product is proven defective, the company will replace said product or refund its purchase price at its sole discretion. The company's obligation shall be limited solely to such replacement or refund. There are no other warranties by Quadex, LLC, expressed or implied. There is no warranty if Quadex products are used contrary to Quadex, LLC's written directions.

PROCEDURE

Prepare surface to be patched by removing unsound concrete, dirt, dust, oil and other debris using high pressure (3500 psi) water blasting. Then rinse with potable water to remove all remaining dirt, sand and loose debris. This will provide a clean, damp surface to allow for a good bond.

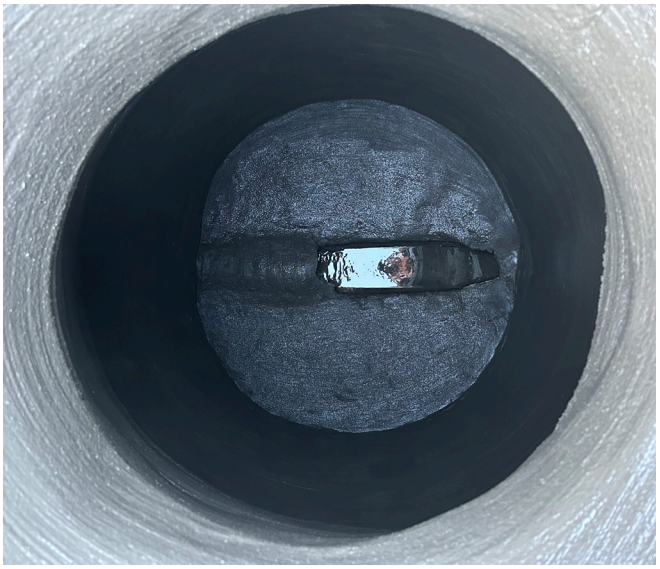
Apply AluminaLiner by low pressure spraying on vertical or overhead surfaces to a monolithic thickness of 1/2 to 3 inches in one pass, trowel to smooth surface.

PACKAGING/YIELD

North America

			1.0-INCH | 25.4MM THICKNESS		
BAG SIZES LBS | KG	BAG MATERIAL	YIELD PER BAG FT^3 | M^3	BAG COVERAGE FT^2 | M^2	MASS COVERAGE LBS/FT^2 | KG/M^2	WATER PER BAG* % BY WEIGHT
60 | 27.2	Multi-Wall Paper Bag	0.61 | 0.017	7.36 | 0.68	8.51 | 41.56	11.0 - 14.0

*Due to natural deviations in the constituent materials, additional water may be necessary on occasion. Applicators are trained to adjust as needed based upon field performance of the product.



Specification: Structure Protection & Rehabilitation Using Cementitious Lining Materials

Quadex® Sewer Structure Restoration Materials Installation Specification for Restoration Using Quadex Rehabilitation Materials

1.0 GENERAL

These specifications are intended to set a standard of quality and design for the application of cementitious used in the rehabilitation of sanitary sewer structures.

2.0 DEFINITIONS

The term “approved” shall mean that the proposed material shall meet or exceed each of the performance criteria set forth in this specification. Manufacturers and vendors of various name brand materials must submit proof that any proposed material will meet the guidelines and requirements of this specification. Material approvals shall be made by the engineer no less than two weeks prior to bid date.

3.0 APPROVED MATERIALS

When more than one product is used in composite with other(s), all materials shall be from the same manufacturer.

3.1 INFILTRATION CONTROL

All fast setting materials furnished shall be designed to be applied in dry powder form, with no prior mixing of water, directly to active leaks under hydrostatic pressure in manholes or related structures. Materials shall consist of rapid setting cements, monocrystalline quartz aggregates, and various accelerating agents. Material shall not contain chlorides, gypsum, or metallic particles. Approved infiltration control material shall be Quadex® Quad-Plug® as manufactured by Quadex LLC.

A. Specifications: Infiltration Control Materials
    A. Specifications: Infiltration Control Materials
        a. Compressive Strength (ASTM C39)
           30 mins: 1,500 psi
        b. Bond Strength (ASTM C882)
           28-Day: >500 psi
        c. Set Time 30 seconds

3.2 INVERT REPAIR AND PATCHING

All material furnished shall be designed to fill large voids in structure walls and to repair or reconstruct inverts where no hydrostatic pressure exists. Material shall consist of rapid setting cements, monocrystalline quartz aggregate, and various accelerating agents. Material shall not contain chlorides, gypsum, or metallic particles. Approved invert repair and patching material shall be Quadex Hyperform® as manufactured by Quadex LLC.

Approved material shall exhibit the following minimum physical properties:

a. Compressive Strength (ASTM C39)
   30 mins: >1200 psi
   1 hour: >2500 psi
   1 day: >4000 psi
b. Bond Strength (ASTM C882)
   28-Day: >3000 psi
c. Shrinkage (ASTM C666)
   0%

3.3 CEMENTITIOUS LINING MATERIALS

All cementitious lining materials shall be specifically designed for the rehabilitation of manholes and other related wastewater structures. Liner materials shall be cement based, poly-fiber reinforced, shrinkage compensated, and enhanced with chemical admixtures and monocrystalline quartz aggregates. Liner materials shall be mixed with water per manufacturer’s written specifications and applied using equipment specifically

designed for either low-pressure spray or centrifugal spin casting application of cement mortars. All cement liner materials must be capable of a placement thickness of ½" to 4" in a one pass monolithic application.

A. Portland cement Portland cement materials shall be manufactured from Type II Portland cement and enhanced with silica fume and monocrystalline quartz aggregates. Materials must resist corrosion when placed in an environment capable of producing a maximum substrate pH level of 3.0. Approved material shall be Quadex QM-1s Restore® as manufactured by Quadex LLC, or "pre-approved" equal.

Approved material shall exhibit the following 28-day minimum physical properties:

a. Compressive Strength (ASTM C39)
   >9,000 psi
b. Flexural Strength (ASTM C293)
   >1,000 psi
c. Bond Strength (ASTM C882)
   >1,500 psi
d. Permeability (ASTM C1202)
   Not to exceed 350 coulombs
e. Freeze-Thaw (ASTM C666)
   No visible damage after 300 cycles
f. Material Wet Density
   Minimum 132 +/-5 PCF

B. Calcium Aluminate
Calcium Aluminate materials shall be manufactured from 100% pure calcium-aluminate cement and enhanced with silica fume and monocrystalline quartz aggregates. Materials must resist corrosion when placed in an environment capable of producing a maximum substrate pH level of 2.0. Approved material shall be Quadex AluminaLiner® as manufactured by Quadex LLC, or "pre-approved" equal. Approved material shall exhibit the following 28-day minimum physical properties:

a. Compressive Strength (ASTM C39)
   >9,000 psi
b. Flexural Strength (ASTM C293)
   >1,000 psi
c. Bond Strength (ASTM C882)
   >2,000 psi
d. Permeability (ASTM C1202)
   Not to exceed 350 coulombs
e. Freeze-Thaw (ASTM C666)
   No visible damage after 300 cycles
f. Material Wet Density
   Minimum 135 +/-5 PC

C. Pure-Fused Calcium Aluminate
Calcium Aluminate materials shall be manufactured from 100% pure calcium-aluminate cement and enhanced with calcium aluminate aggregates. Materials must resist corrosion when placed in an environment capable of producing a maximum substrate pH level of 2.0. Approved material shall be Quadex AluminaLiner® PF as manufactured by Quadex LLC, or "pre-approved" equal. Approved material shall exhibit the following 28-day minimum physical properties:

a. Compressive Strength (ASTM C39)
   >9,000 psi
b. Flexural Strength (ASTM C293)
   >1,000 psi
c. Bond Strength (ASTM C882)
   >2,500 psi

d. Permeability (ASTM C1202)
   Not to exceed 350 coulombs
e. Freeze-Thaw (ASTM C666)
   No visible damage after 300 cycles
f. Material Wet Density
   Minimum 154 +/-5 PC

4.0 CEMENTITIOUS REHABILITATION

4.1 STRUCTURE CLEANING AND PREPARATION

The floor and interior walls of the structure shall be thoroughly cleaned and made free of all foreign materials including dirt, grit, roots, grease, sludge and all debris or material that may be attached to the wall or bottom of the manhole.

a. High pressure water blasting with a minimum of 3500psi shall be used to clean free all foreign material within the structure.
b. When grease and oil are present within the structure, an approved detergent or muriatic acid shall be used integrally with the high pressure cleaning water.
c. All materials resulting from the cleaning of the structure shall be removed prior to application of the cementitious liner.
d. All loose or defective brick, grout, ledges, steps and protruding ledges shall be removed to provide an even surface prior to application of cementitious liner.

4.2 SEALING ACTIVE LEAKS

The work consists of hand applying a dry quick-setting cementitious mix designed to instantly stop running water or seepage in all types of concrete and masonry structures. The applicator shall apply material in accordance with manufacturer's recommendations and following specifications.

a. The area to be repaired must be clean and free of all debris per the guidelines set forth.
b. Once cleaned, prepare crack or hole by chipping out loose material to a minimum depth and width of ¾".
c. With gloved hand, place a generous amount of the dry quick-setting cementitious material to the active leak, with a smooth fast motion, maintaining external pressure for 60 seconds, repeat until leak is stopped.
d. Proper application should not require any special mixing of product or special curing requirements after application.

4.3 INVERT REPAIR AND PATCHING

The work consists of hand mixing and applying a rapid setting, high early strength, non-shrink patching material to fill all large voids and repair inverts prior to spray lining of the structure. For manhole invert repairs, flow must be temporarily restricted by inflatable or mechanical plugs prior to cleaning.

a. The area to be repaired must be cleaned and free of all debris per the guidelines set forth.
b. Mix water shall be clean potable water and require no additives or admixtures for use with cementitious patching materials.
c. Cementitious material shall be mixed in a mortar tub or 5-gallon pail with water per manufacturer's specifications. Material should be mixed in small quantities, to avoid setting prior to placement in voids or inverts.
d. Once mixed to proper consistency, the materials shall be applied to the invert or void areas by hand or trowel. In invert, bench or void areas applications, care should be taken to not apply excessive material in the channel, which could restrict flow. Once applied, materials should be smoothed either by hand or trowel in order to facilitate flow.
e. Flows in inverts can be reestablished within 60 minutes of material placement.

4.4 APPLICATION OF CEMENTITIOUS LINER

The work consists of spray applying and/or centrifugally spin-casting a cementitious based liner to the inside of the existing structure. The necessary equipment and application methods to apply the cementitious based liner materials shall be only as approved by the material manufacturer.

a. Material shall be mixed with water in accordance with manufacturer's specifications. Once mixed to proper consistency, the materials shall be pumped via a rotor-stator style progressive cavity pump, or a swing tube style mortar pump through a material plaster hose for delivery to the appropriate and / or selected application device.
b. Spray application of the cementitious material.
    a. Material hose shall be coupled to a low-velocity spray application nozzle. Pumping of the material shall commence and the mortar shall be atomized by the introduction of air at the nozzle, creating a low-velocity spray pattern for material application.
    b. Spraying shall be performed by starting at the top of the structure and progressively working down the wall to the water line of the invert.
    c. Material shall be applied to a specified uniform minimum thickness no less than ½-inch. Material shall be applied to the bench area in such a manner as to provide for proper drainage without ponding.
c. Centrifugal application of the cementitious material. Spin-cast unit shall be approved by the material manufacturer and be sufficient enough to apply lining materials evenly within a minimum 6 foot diameter structure.
    a. Material hose shall be coupled to the spin-cast unit. The spin-cast unit shall then be positioned within the center of the manhole at either the top of the manhole chimney or the lowest point corresponding to the junction of the manhole bench and walls.
    b. The spin-cast unit shall then be initialized, and pumping of the material shall commence. As the mortar begins to be centrifugally cast evenly around the interior of the structure, the rotating applicator head shall be raised and/or lowered at a controlled retrieval speed conducive to providing a uniform material thickness on the structure walls.
    c. Controlled multiple passes are then made until the specified minimum finished thickness is attained. If the procedure is interrupted for any reason, simply arrest the retrieval of the applicator head until flows are recommenced.
    d. Material thickness may be verified at any point with a depth gauge and shall be no less than a uniform ½". If additional material is required at any level, the spin-cast unit shall be placed at that level and application shall recommence until that area is thickened.
d. Material shall be applied only when the structure is in a damp state, with no visible water dripping or running over the walls.
e. The low-velocity spray nozzle may be used in conjunction with the spin-cast unit to facilitate uniform application of the mortar material to irregularities in the contour of the structure walls and bench areas.
f. When applying materials to open air structures, special precautions shall be taken to ensure proper curing. When recommended by the manufacturer, the contractor shall perform the following:
    a. Prior to applying materials contractor shall subject the structure to a water spray for a minimum of 24 hours to ensure substrate is fully saturated.
    b. Contractor shall avoid spraying portions of the structure that are subjected to direct sunlight.
    c. When directed by the manufacturer, contractor shall apply calcium-aluminate curing agent to the surface of all applied and finished materials. (Calcium Aluminate cements only)
    d. Contractor shall cover place a sheet of 4-6 mil plastic sheeting between frame and cover to prevent any moisture loss.
g. Troweling of materials shall begin immediately following the spray application. Initial troweling shall be to compress the material into any voids within the structure walls. Precautions should be taken not to overtrowel.
h. Once troweling has been completed the applied liner shall be brushed or sponged to remove trowel marks and to break up the latent surface brought about by trowelling. Brushing should be in the horizontal plane and as with troweling do not over work the lining material.
i. Curing will take place once the structure cover has been replaced. It is important that the structure lid / cover is replaced no more than 10 minutes after troweling is complete to avoid moisture loss in the material due to sunlight and winds. When low flow conditions exist within the structure, additional measures may be required such as placing plastic sheeting between frame and cover.
j. Material shall not be applied during freezing weather conditions. Material shall not be placed when the ambient temperature is 37 degrees Fahrenheit and falling or when the temperature is anticipated to fall below 32 degrees Fahrenheit within 24 hours.

5.0 QUALITY CONTROL – CEMENT

The quality and performance of the material and the workmanship of the applicator shall be maintained by one or more of the following measures to be determined and specified by the engineer or owner.

5.1 VISUAL INSPECTION

All structures will be visually inspected for cracks, bug holes, and unfinished surfaces.

5.2 PERFORMANCE TESTING

A. Vacuum Testing

All pipes entering the manhole should be plugged, taking care to securely place the plug from being drawn into the manhole. A vacuum pump apparatus shall be placed onto the manhole ring and sealed to the structure in accordance with the pump manufacturers' recommendations. A vacuum pump of ten (10) inches of mercury shall be drawn and the vacuum pump shut off. With the pressure relief valves closed, the time shall be measured for the vacuum to drop to (9) inches. The following are minimum allowable test times for manhole acceptance at the specified vacuum drop.

Manhole Depth	Time (Seconds)		
(Feet)	48″ Diameter	60″ Diameter	72″ Diameter
4	10	13	16
8	20	26	32
12	30	39	48
16	40	52	64
20	50	65	80
24	60	78	96
For each additional 2 ft. depth add:	5	6.5	8

B. Material Testing

A single set of nine (9) samples should be obtained for each day's work. The use of cylinders is MANDATORY. The preferred sample mold size is a three (3) inch by six (6) inch tall cylinder. Samples can be collected at the discharge of the mixer, the discharge of the pump or near the end of the hose. An independent, third party laboratory shall be used to conduct the compressive strength testing per ASTM C-39, on three samples. The average of the three analyses will be used to determine the 7 day and 28 day strength with the remaining samples being held for retainage. The sample result shall meet the requirements set forth in Section 3.3.

6.0 WARRANTY

Product manufacturers shall warrant all materials to be free of defects, product design, and workmanship for a period of one year from date of purchase. Manufacturer will provide replacement materials for any product proven to be defective when applied in accordance with manufacturer's recommendations. Manufacturer's obligation shall be limited solely to product replacement.

AluminaLiner®
Safety Data Sheet

AluminaLiner® BY VORTEX

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	• AluminaLiner®
Trade Name	• AluminaLiner®
Company	• Quadex LLC, 564 W. 9320 S., Sandy, UT 84070
Company Contact	• Matthew Peterson
Company Phone	• 844-782-4832
Emergency	• Domestic Shipments and to Canada: 1-800-633-8253 • International Shipments: 1-801-629-0667

2. HAZARDS IDENTIFICATION

Emergency Overview: OSHA Hazards	• This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).	
GHS Classification		
	Skin Irritation	• Category 2
	Serious Eye Damage	• Category 1
	Specific Target Organ Toxicity: Single Exposure	• Category 3
GHS Label elements, including precautionary statements	*Pictogram* 	
Signal Word	• Danger	
Hazard Statement(s)		
	H315	• Causes skin irritation.
	H318	• Causes serious eye damage.
	H335	• May cause respiratory irritation.
Precautionary Statement(s)		
	P261	• Avoid breathing dust/fume/gas/mist/vapours/spray.
	P280	• Wear protective gloves/eye protection/face protection.
	P305 + P351 + P338	• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2. HAZARDS IDENTIFICATION (CONTINUED)

HMIS Classification		
	Health hazard	• 3
	Flammability	• 0
	Physical hazards	• 0
NFPA Rating		
	Health hazard: Fire	• 3
	Reactivity Hazard	• 0
Potential Health Effects		
	Inhalation	• May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
	Skin	• May be harmful if absorbed through skin. Causes skin burns.
	Eyes	• Causes eye burns.
	Ingestion	• May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	Cas #	Percent
Calcium Aluminate	• 65997-16-2	• 40-100
Admixtures		• 1-15
Monocrystalline Quartz	• 14808-60-7	• 40-70
Polypropylene	• 9003-07	• 0-5

4. FIRST AID MEASURE

First Aid Procedures	*Notes to physician: Symptoms may be delayed.* *General advice: Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.*
Eye Contact	• Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do so. Seek medical attention immediately.
Skin Contact	• Contact Wash off with plenty of soap and water. Get medical attention if irritation develops and persists.
Inhalation	• If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
Ingestion	• Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. If ingestion of a large amount does occur, call a poison control center immediately.

5. FIRE FIGHTING MEASURES

Flammable Properties	• The product is not flammable. No unusual fire or explosion hazards noted.
Suitable Extinguishing Media	• Dry chemical, C02, or water spray, Alcohol foam. In the event of fire, use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Specific Methods	• None available.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	• Keep unnecessary personnel away. Keep upwind.
Environmental Precautions	• Do not flush into surface water or sanitary sewer system.
Methods for Containment	• Stop the flow of material, if this is without risk. Dike the spilled material.
Methods for Cleaning Up	• Shovel into labled waste container for reuse or disposal. Wear adequate protective equipment. Area may be washed down with water.

7. HANDLING AND STORAGE

Handling	• Do not get this material in contact with eyes. Avoid contact with skin. Do not empty into drains.
Storage	• Store in dry place and keep sealed until ready to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits: US. ACGIH Threshold Limit Values	Type	Value
Calcium Aluminate	• TWA	• 10 mg/m3
Admixtures	• TWA	• 10 mg/m3
Monocrystalline	• TWA	• 10 mg/m3
Polypropylene	• TWA	• 10 mg/m3
US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)	Type	Value
N/A		
US. OSHA Table Z-3 (29 CFR 1910.1000)	Type	Value
N/A		
Engineering Controls	• Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.	

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION (CONTINUED)

Personal Protective Equipment	
Eye / Face Protection	• Do not get in eyes. Chemical goggles are recommended.
Skin Protection	• Avoid contact with the skin. Wear protective gloves. Wear suitable protective clothing as protection against splashing or contamination.
Respiratory Protection	• When workers are facing concentrations above the exposure limit they must use NIOSH/MESHA respirators.
General Hygiene Considerations	• Do not get in eyes. Avoid contact with skin.

9. PHYSICAL & CHEMICAL PROPERTIES

Appearance	• Not available.
Physical State	• Powder
Form Viscous	• Powder
Color	• Grey
Odor	• Odorless
Odor Threshold	• Not available.
pH	• Not available.
Vapor Pressure	• Not available.
Vapor Density	• Not available.
Boiling Point	• Not available.
Melting Point/ Freezing Point	• Not available.
Solubility (Water)	• Slight (0.01 – 1.0%)
Specific Gravity	• 3.15
Relative Density	• Not available.
Flash Point	• Not available.
Flammability limits in air upper, % by volume	• Not available.
Flammability limits in air lower, % by volume	• Not available.
Auto-Ignition Temperature	
Other Data	

10. CHEMICAL STABILITY & REACTIVITY INFORMATION

Chemical Stability	• Stable under normal conditions.
Conditions to Avoid	• Although no hazardous reactions will occur, product should be kept dry.
Incompatible Materials	• Not available.

10. CHEMICAL STABILITY & REACTIVITY INFORMATION (CONTINUED)

Hazardous Decomposition Products	• None

11. TOXICOLOGICAL INFORMATION

Toxicological Data	
Components	• Test Results / None
Local Effects	• Irritating to skin. Contact may irritate or burn eyes.
Chronic Effects	• Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.
Carcinogenicity	• None

12. ECOLOGICAL INFORMATION

Toxicological Data	
Components	• Test Results / None
Ecotoxicity	• Not available.
Environmental Effects	• An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Aquatic Toxicity	• No data available for this product.
Persistence and Degradability	• Not available.

13. DISPOSAL CONSIDERATIONS

Disposal Instructions	• Dispose in sanitary land fill in accordance with federal, state, and local regulations.
Waste from Residues / Unused Products	• Not applicable unused products.

14. TRANSPORT INFORMATION

DOT	• Not regulated as dangerous goods.

15. REGULATORY INFORMATION

US Federal Regulations	• This product is a non “Hazardous Chemical” as defined by theOSHA Hazard Communication Standard 29 CFR 1910.1200. CERCLA/SARA Hazardous Substances - Not applicable.
Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2)	• Not regulated.
DEA Essential Chemical Code Number	• Not regulated.

15. REGULATORY INFORMATION (CONTINUED)

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))	• Not regulated.
DEA Exempt Chemical Mixtures Code Number	• Not regulated.
CERCLA (Superfund) Reportable Qty	• None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard Categories		
	Immediate Hazard	• No
	Delayed Hazard	• No
	Fire Hazard	• No
	Pressure Hazard	• No
	Reactivity Hazard	• No
Section 302 Extremely Hazardous Substance	• No	
Section 311 Hazardous Chemical	• No	

16. OTHER INFORMATION

Further Information	• HMIS® is a registered trade and service mark of the NPCA.	
HMIS® Ratings		
	Health	• 2
	Flammability	• 0
	Physical hazard	• 0
NFPA Ratings		
	Health	• 2
	Flammability	• 0
	Instability	• 0
Disclaimer	• The information provided in this Safety Data Sheet is correct to the best of our knowledge information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification, The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.	
Issue Date	• Not available.	
This Data Sheet Contains	• Product and Company Identification: Synonyms changes from the previous Physical & Chemical Properties: Multiple Properties version in section(s): Transport Information: Material Transportation Information Regulatory Information: United States.	

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REPAIR MATERIALS