EPOXY COATING SUBMITTAL FEATURING STRUCTURE GUARD®
# TABLE OF CONTENTS

1. Company History
2. Structure Guard® Technical Data Sheet
   Epoxy Materials Installation
4. Safety Data Sheet  
   > Structure Guard®
5. Ancillary Water Stop Products  
   > Quad-Plug® (TDS and SDS)  
   > Hyperform® (TDS and SDS)
6. Before & After Installations Photos
COMPANY HISTORY
<table>
<thead>
<tr>
<th>CORPORATE PROFILE</th>
<th>Quadex® LLC</th>
</tr>
</thead>
</table>
| ADDRESS           | 18150 Imperial Valley Dr.  
Houston, TX 77060  
O: 713-750-9081  
F: 884-804-7996 |
| WEBSITE           | vortexcompanies.com |
| EXPERIENCE        | Over 20 years in the sewer and pipe rehabilitation business with over 125,000,000 lbs. of material installed. |
| CUSTOMERS         | Washington Suburban Sanitary Commission (WSSC)  
Metropolitan Sewer District of St. Louis  
City of Austin  
City of Hot Springs  
City of Melbourne  
City of Pinellas Park  
Little Rock Wastewater Utility  
City of Memphis  
City of Boston  
City of Fort Worth  
City of Huntsville  
Miami-Dade Water & Sewer  
National Forest Service  
US Navy, WA DC Navy Yard  
City of St. George, UT  
Town of Breckenridge, CO |
Quadex®, LLC was founded in 1991 and is one of the most respected names in the protective coatings and linings sector of the raw, potable, storm and wastewater rehabilitation industry. We began by manufacturing a complete line of cementitious products and continue to refine our existing products as well as developing new products that keep Quadex at the forefront of the infrastructure protection and restoration industry.

Our staff and team of “Licensed Applicators” are dedicated to providing only the highest quality products and equipment utilized to rehabilitate aging, damaged, or structurally compromised infrastructure. Quadex products and equipment, as well as our network of “Licensed Applicators” that use them, work to protect and restore the structural integrity of water related infrastructure including large diameter pipe, manholes, wetwells, pump stations, junction structures, headworks and other severe duty underground utility infrastructure.

Quadex products are formulated and designed with the most advanced technology and are proven with over 25 years of successful installations. Our products offer an unmatched combination of corrosion resistance, structural compressive and flexural strengths, impermeability, bonding, workability, application thickness and quick return-to-service. Our specialized lining products provide a permanent seal against corrosion, infiltration, and exfiltration, and support a service life of 50-100 years. To ensure the performance of each product, we verify the results of our in-house studies through independent third party laboratory testing following American Society for Testing and Materials (ASTM) and other applicable procedures.

**Commitment to Delivering World Class Epoxies**

In an effort to deliver proven, high performance epoxy coatings, Quadex has expanded our offerings beyond cements and mortars into a broad range of polymer coatings and products.
CORROSION RESISTANT EPOXY PROTECTIVE COATING

DESCRIPTION
Structure Guard® is a 100% solids, high-build epoxy coating formulated to provide long-term corrosion protection and structural enhancement for manholes, pump stations, treatment plants or any wastewater infrastructure subject to high levels of corrosion and/or abrasion to include both municipal and industrial applications. Structure Guard sets fast for a quick return-to-service in the most aggressive and turbulent environments. It finishes smooth to enhance flow and is utilized as an interior or exterior pipe lining.

FEATURES AND BENEFITS
• 100% Solids, No VOCs
• Spray applied at 250 mils in a single pass
• Excellent corrosion and abrasion resistance

APPLICATION SYSTEMS
• Heated Plural Airless Spray Units
• Minimum Output 5000 psi
• Product Hose: Min. - Optimum I.D. 0.375 - 0.5 inch

CURE TIME
(at 70°F or 21°C)
• Re-coat — 2 hours
• Light Loading — 1 hour
• Immersion — 4 hours
• Full Chemical Cure — 24 hours

POT LIFE
• 40°F (4°C) 20 minutes
• 70°F (24°C) 10 minutes
• 92°F (33°C) 5 minutes

PACKAGING
Structure Guard is available in 5 gallon pails and 55 gallon drums.
TYPICAL COATING REQUIREMENTS
With Structure Guard®, only 1 coat is needed to attain finished thickness. If additional coats are called for they must be applied before the previous coat has completely cross-linked, typically for 2 hours @ 70°F (higher temperatures/humidity will shorten this window). If re-coating is needed, brush blast before applying the next coat. Before re-coating, clean and dry surface thoroughly to remove all contamination, including amine blush or condensation. Small areas may be abraded by sanding or wire brushing.

The same requirements apply when overlapping seams of adjacent coating sections to create a continuous protective film. If the coating surface to be overlapped at the seam cannot be brush blasted, use a non-impact means, such as power brushing or sanding, to create adequate mechanical profile.

YIELD
Structure Guard will yield theoretical coverage of 20 sq. ft per gallon @ 80 mils thickness. Actual surface coverage will depend on substrate porosity and roughness. A wet film thickness gauge may be used to determine actual coating thickness.

SURFACE PREPARATION
Coating performance is largely determined by the degree of surface preparation. MORE IS BETTER.

EXISTING CONCRETE AND MASONRY substrates must be prepared in a manner that provides a uniform, sound, clean, neutralized surface with sufficient profile suitable for the specified coating. The substrate must be free of all contaminants, such as oil, grease, rust, scale or deposits and have a surface profile equivalent to a CSP3 to CSP5 in accordance with ICRI Technical Guideline No. 03732. This can generally be achieved by abrasive blasting, shot blasting, high pressure water cleaning, water jetting, acid etch, hot water/steam cleaning or a combination of methods.

NEW CONCRETE AND MASONRY SUBSTRATES must be profiled to achieve a CSP4.

STEEL surfaces may require “Solvent Cleaning” (SSPC-SP 1) to remove oil, grease and other soluble contaminants. Chemical contaminants may be removed according to SSPC-SP 12/NACE No. 5. Identification of the contaminants, along with their concentrations, may be obtained from laboratory and field tests as described in SSPC-TU 4 “Field Methods for Retrieval and Analysis of Soluble Salts on Substrates”. Surfaces to be coated should then be prepared according to SSPC-SP 5/NACE No. 1 “White Blast Cleaning” for immersion service or SSPC-SP 10/NACE No. 2. “Near White Blast Cleaning” for all other service. In certain situations, an alternate procedure may be to used such as high (>5,000 psi) or ultrahigh (>10,000 psi) pressure water cleaning or water cleaning with sand injection. The resulting anchor profile shall be 2.5-5.0 mils and be relative to the coating thickness specified.

WARRANTY
Quadex® warrants its products to be free of defects in material and workmanship. Within one year from purchase, if any Quadex product is proven defective, Quadex will replace said product or refund its purchase price, at Quadex’s sole discretion. Quadex’s obligation shall be limited solely to such replacement or refund. There are no other warranties by Quadex, expressed or implied.

Physical properties were evaluated on compounds cured for 5 days at 25°C / 50% relative humidity.
CORRODED STRUCTURE RESTORATION & PROTECTIVE MATERIALS INSTALLATION SPECIFICATION

1.0 General

These specifications set standards of quality and design for rehabilitating deteriorated masonry, concrete or metal structures using high build 100% solids epoxy; and the use of said epoxy for the protection of new structures.

1.1 References
A. ASTM D638 - Tensile Properties of Plastics
B. ASTM D790 - Flexural Properties of Unreinforced and Reinforced Plastics
C. ASTM D695 - Compressive Properties of Rigid Plastics
D. ASTM D4541 - Pull-off Strength of Coatings Using a Portable Adhesion Tester
E. ASTM D2584 - Volatile Matter Content
F. ASTM D543 - Resistance of Plastics to Chemical Reagents
H. ASTM C109 - Compressive Strength Hydraulic Cement Mortars
I. ACI 506.2-77 - Specifications for Materials, Proportioning, and Application of Shotcrete
J. ASTM C579 - Compressive Strength of Chemically Setting Silicate and Silica Chemical Resistant Mortars
K. SSPC SP-13/NACE No. 6 – Surface Preparation of Concrete
L. ASTM - The published standards of the American Society for Testing and Materials, West Conshohocken, PA
M. NACE - The published standards of National Association of Corrosion Engineers (NACE International), Houston, TX
N. NASSCO - National Association of Sewer Service Companies, Marriottsville, MD – Manhole Assessment Condition Program (MACP) and Pipeline Assessment Condition Program (PACP)
O. SSPC - The published standards of the Society of Protective Coatings, Pittsburgh, PA

1.2 Submittals
A. Product Data
   A. Technical data sheet on each product used.
   B. Safety Data Sheet (SDS) for each product used.
   C. Copies of contractor’s certification of good standing letter from the manufacturer of the submitted coating.

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
Epoxy coating submittal featuring Structure Guard®

Materials shall consist of rapid setting cements, siliceous 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.

A. Specifications: Infiltration Control Materials
   1. Compressive Strength (ASTM C109)
      30 mins: 1850 psi
   2. Bond Strength (ASTM C321)
      28-Day: >80 psi
   3. 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, NSG aggregates, and various accelerating agents. Material shall not contain chlorides, gypsum, or metallic particles. Approved invert repair and patching material shall be Quadex Hyperform or Structure Guard RS Patch as manufactured by Stag Technologies.

Approved material shall exhibit the following minimum physical properties:
   1. Compressive Strength (ASTM C109)
      30 mins: >1200 psi
      1 hour: >2500 psi
      1 day: >4000 psi
   2. Bond Strength (ASTM C882)
      28-Day: >3000 psi
   3. Shrinkage (ASTM C666)
      0%

3.3 Protective Coating
Polymer protective coating and lining materials shall be specifically designed for protecting manholes and other related wastewater structures from severe hydrogen sulfide environments. Liner materials shall be 100% solids epoxy containing no VOC’s or isocyanates and capable of building 200 mils in a single application. All epoxy lining materials must be applied using plural component spray equipment approved by the manufacturer. Approved material shall be Quadex Structure Guard or preapproved equal. Epoxy materials shall meet the following minimum physical properties:
   1. Tensile Strength ASTM D638
      8,700 psi
   2. Flexural Strength ASTM D790
      15,400 psi
   3. Compressive Strength ASTM D695
      13,300 psi
   4. Shore D Hardness ASTM D2240
      75
   5. Elongation 2.2%
   6. Taber Abrasion ASTM 4060
      < 100 mg loss (1kg load @1000 cycles)

4.0 Surface Preparation for Mortars or Cementitious Underlayment

4.1 Structure Cleaning and Preparation
Surfaces to be coated shall be cleaned sufficiently to provide a sound, clean, uniform and pH neutralized surface suitable for the specified coating product(s).

   1. Excessive debris, sediment, root intrusion or other foreign materials which may impact the effectiveness of the surface preparation process shall be removed prior to the commencement thereof.
   2. Oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants which may affect the
performance and adhesion of the coating to the substrate shall be removed in accordance with SSPC-SP 1 – Solvent Cleaning or other suitable method.

3. Choice of surface preparation method(s) should be based upon the condition of the structure and concrete or masonry surface, potential contaminants present, access to perform work, and the required cleanliness and profile of the prepared surface to receive the repair and/or coating product(s).

4. Surface preparation method, or combination of methods, that may be used include high-pressure water cleaning, water jetting, abrasive blasting, shot blasting, grinding, scarifying, detergent water cleaning, steam or hot water cleaning and others as referenced in industry accepted standards such as:

A. SSPC SP-13/NACE No. 6 Surface Preparation of Concrete,
B. ASTM D-4258 Standard Practice for Surface Cleaning Concrete for Coating and ASTM-D-4259 Standard Practice for Abrading Concrete,
C. ICRI Technical Guideline No. 03732 Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.
D. NACE/SSPC Standards for the surface preparation of steel.
E. Resulting surface profile of the prepared concrete substrate shall be (as described in ICRI Technical Guideline No. 03732):
   i. For application of cementitious materials; at least a CSP2.
   ii. For application of coating products: at least a CSP4.
F. All loose debris materials resulting from the cleaning of the structure shall be removed prior to application of the cement based coating.

5.0 Epoxy Rehabilitation

5.1 Coating Application Equipment

Manufacturer approved heated plural component spray equipment.

5.2 Pre-Application Inspections

A. Unless prior approval has been received from the manufacturer, new Portland cement concrete structures shall have a minimum cure of 28 days. Should earlier coating be required, coating product manufacturer shall recommend specifications including appropriate cure assessment testing and use of specialty primers and sealers.

B. All active infiltration must be stopped prior to surface coating.

C. Temperature of the surface to be coated should be maintained between 40° and 120°F.

D. Specified surfaces should be shielded to avoid exposure of direct sunlight or other intense heat source. Where varying surface temperatures do exist, coating installation should be scheduled when the temperature is falling versus rising.

E. Prior to commencing surface preparation, Contractor shall inspect all surfaces specified to receive the coating and notify Owner, in writing, of any noticeable disparity in the site, structure or surfaces which may interfere with the work, use of materials or procedures as specified herein.

5.3 Surface Preparation

A. Concrete and/or mortar damaged by corrosion, chemical attack or other means of degradation shall be removed so that only sound substrate remains.

B. Oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other
contaminants which may affect the performance and adhesion of the coating to the substrate shall be removed.

C. Choice of surface preparation method(s) should be based upon the condition of the structure and concrete or masonry surface, potential contaminants present, access to perform work, and required cleanliness and profile of the prepared surface to receive the coating product(s).

D. Surface preparation method, or combination of methods, that may be used include high pressure water cleaning, water jetting, abrasive blasting, shot blasting, grinding, scarifying, hot water blasting and others as referenced in NACE No. 6/SSPC SP-13 Surface Preparation of Concrete. Whichever method(s) are used, the work shall be performed in a manner that provides a uniform, sound, clean neutralized surface suitable for the specified coating product(s).

E. Resulting surface profile shall be at least a CSP 4 in accordance with ICRI Technical Guideline No. 03732.

F. Prior to the application of the coating product, all infiltration shall be eliminated by use of appropriate repair material(s), such as hydraulic cements and/or repair mortars. Consult with manufacturer when compatibility issues arise.

G. When all loose, contaminated, and unsound debris has been removed, the surface shall be etched with a solution of 20% muriatic acid to clean and open the pores of the substrate.
   • The surface shall be washed again with a dilute solution of chlorine to remove microbiological growth residing on the substrate surface.
   • The surface shall be tested with litmus paper at various points throughout the structure to ensure that the pH is within acceptable limits (not to exceed 8.5). If the surface does not meet the pH requirements, the above steps shall be repeated until the surface pH is within acceptable limits. All tests results will be retained for review by the engineer.

5.4 Application of Repair and Resurfacing Products

A. Approved repair products may be used to fill voids, bug holes, and other surface defects which may affect the performance or adhesion of the coating product(s).

B. Resurfacing products shall be used to repair or rebuild surfaces to provide a concrete or masonry substrate suitable for the coating product(s) to be applied. These products shall be installed to minimum thickness as recommended within manufacturer’s published guidelines. Should structural rebuild be necessary, these products shall be installed to a thickness as specified by the Project Engineer.

C. Repair and resurfacing products shall be handled, mixed, installed and cured in accordance with manufacturer guidelines.

D. All repaired or resurfaced surfaces shall be inspected for cleanliness and suitability to receive the coating product(s).

5.5 Application of Epoxy Coating Product(s)

A. Application procedures shall conform to the recommendations of the coating product(s) manufacturer, including environmental controls, product handling, mixing, application equipment and methods.

B. Spray equipment shall be specifically designed to accurately ratio and apply the coating product(s) and shall be in proper working order.

C. Prepared surfaces shall be coated via spray application of the coating product(s)
D. Coating thickness shall be in relation to the profile of the surface to be coated as recommended by the coating product manufacturer.

E. In all new concrete and masonry structures, the coating product(s) shall be applied to a minimum dry film thickness of 80 mils to surface profiles of CSP-4 to CSP-6 or 125 mils minimum dry film thickness to surface profiles of CSP-7 or greater.

F. Subsequent topcoating or additional coats of the coating product(s) shall occur within the product’s recoat window or 4 hours. Additional surface preparation procedures will be required if this recoat window is exceeded.

G. Coating product(s) shall interface with adjoining construction materials / components throughout the structure to effectively seal and protect substrates from attack by corrosive elements and to ensure the effective elimination of infiltration into the sewer system.

H. Procedures and materials necessary to affect the interface between dissimilar materials and the coating product shall be as recommended by the coating product(s) manufacturer.

I. Flow shall be stopped, bypassed or diverted as necessary for application of the coating product(s) to the invert/flowline.

6.0 Quality Control - Epoxy

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.

6.1 Visual Inspection

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

1. During application, a wet film thickness gauge, meeting ASTM D4414 - Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, shall be used. Measurements shall be taken, documented and attested to by Contractor for submission to Owner.

2. High voltage holiday detection for coating systems installed in corrosive environments, when it can be safely and effectively employed, shall be performed to ensure monolithic protection of the substrate. After the coating product(s) have cured in accordance with manufacturer recommendations, all surfaces shall be inspected for holidays in accordance with NACE RP0274 High-Voltage Electrical Inspection of Pipeline Coatings or ASTM D4787 Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates. All detected holidays shall be marked and repaired according to the coating product(s) manufacturer’s recommendations.

A. Test voltage shall typically be 100 volts per mil of coating system thickness, but may require calibration in the field.

B. Detection of a known or induced holiday in the coating product shall be confirmed to ensure proper operation of the test unit.

C. In instances where high voltage holiday detection is not feasible a close visual inspection shall be conducted and all possible holidays shall be marked and repaired as described above.
D. Documentation of areas tested, equipment employed, results and repairs made shall be submitted to the Owner/Engineer by Contractor.

3. Optional – Adhesion Testing is a destructive test method and should be used in moderation as an evaluation tool. Testing shall be conducted in accordance with ASTM D7234 Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.

A. For each test manhole a minimum of three 20 mm dollies shall be affixed to the coated surface; one at the cone area, one at the mid section and one near the bottom of the structure.

B. For larger structures a minimum of three 20 mm dollies shall be affixed to the coated surface at random locations within each 1000 square foot area or as otherwise agreed upon.

C. The adhesive used to attach the dollies to the coating shall be rapid setting with tensile strengths in excess of at least twice the anticipated failure point (generally at least 1000 psi) and permitted to cure in accordance with manufacturer recommendations. The coating and dollies shall be adequately cleaned and prepared to receive the adhesive. Failure of the dolly adhesive shall be deemed a non-test and require retesting.

D. Prior to performing the pull test, the coating shall be scored to the substrate, or within 10 mils of the substrate surface, by mechanical means without disturbing the dolly or coating system bond within the test area.

E. Any areas detected to have inadequate bond strength shall be evaluated by the Project Engineer. Further bond tests may be performed in that area to determine the extent of potentially deficient bonded area and repairs shall be made by Contractor.

F. All adhesion testing shall be performed by qualified personnel using calibrated equipment as specified by the applicable ASTM standard(s).

G. All adhesion testing shall be documented and submitted in a consistent format detailing location, test values, description of the failure point/mode, scoring method employed, adhesive used, cure time of coating and adhesive and other data as deemed necessary by the owner/engineer.

H. All adhesion test locations shall be repaired by the Contractor at no cost to the Owner.

7.0 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.
1. PRODUCT AND COMPANY IDENTIFICATION
   - Product Name: Structure Guard® 100% Solids Epoxy - Part A
   - Revision Date: 08-2019
   - Product Code: SE1000 A
   - Trade Name: RD 1000
   - Company: Stag Technologies, 564 W. 9320 S., Sandy, UT 84070
   - Company Contact: Matthew Peterson
   - Company Phone: 844-STAGTEC
   - Emergency: 800-535-5053

2. HAZARDS IDENTIFICATION
   - GHS Ratings:
     - Carcinogen
     - H351
   - GHS Precautions:
     - P201
     - P202
     - P281
     - P308+P313
     - P405
     - P501
   - Signal Word: Warning
   - 2 - Limited evidence of human or animal carcinogenicity
   - Suspected of causing cancer
   - Obtain special instructions before use
   - Do not handle until all safety precautions have been read and understood
   - Use personal protective equipment as required
   - If exposed or concerned: Get medical advice/attention
   - Store locked up
   - Dispose of contents/container to ...
   - Warning
3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Cass #</th>
<th>Weight Concentration %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy Resin</td>
<td>25085-99-8</td>
<td>73.40%</td>
</tr>
<tr>
<td>Barium Sulfate</td>
<td>7727-43-7</td>
<td>10.00% – 20.00%</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>13463-67-7</td>
<td>5.00% - 10.00%</td>
</tr>
<tr>
<td>Silica</td>
<td>67762-90-7</td>
<td>1.00% - 5.00%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

If inhaled remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are symptoms. Rinse immediately with plenty of water for at least 15 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Remove contacts if present and easy to do. Continue Rinsing. Get medical attention, if irritation or symptoms of overexposure persists. Immediately wash skin with soap and plenty of water. If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Flash Point</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEL</td>
<td>N/A</td>
</tr>
<tr>
<td>UEL</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Not applicable

Foam, Carbon dioxide (CO2) or dry chemical or water spray (water stream may be ineffective).
No information available
Not available

Firefighters, and others exposed, wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Stop leak. Dike or contain spill. Pump into slavage tanks and/or absorb with suitable material. Use sparkless shovel to remove material. Evacuate area and keep unnecessary and unprotected personnel from entering the spill area. Use appropriate containment and clean up immediately. Stop leak, Dike and contain spill. Prevent spilled material from entering the ground, water and/or air by using appropriate containment methods.

7. HANDLING AND STORAGE

Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Keep away from heat and flame. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Avoid exposure to heat, light, and air for prolonged periods of time. Store in a cool, dry well ventilated area away from sources of heat and incompatible materials. Eliminate all ignition materials and incompatible materials. Collect spill with non spark tools. No information available.
8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Chemical Name / CAS No.</th>
<th>OSHA Exposure Limits</th>
<th>ACGIH Exposure Limits</th>
<th>Other Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy Resin 25085-99-8</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
<tr>
<td>Barium Sulfate 7727-43-7</td>
<td>15 mg/m³ TWA (total dust)</td>
<td>5 mg/m³ TWA (respirable fraction)</td>
<td>NIOSH: 10 mg/m³ TWA (total dust); 5 mg/m³ TWA (respirable dust)</td>
</tr>
<tr>
<td>Titanium Dioxide 13463-67-7</td>
<td>15 mg/m³ TWA (total dust)</td>
<td>10 mg/m³ TWA</td>
<td>Not Established</td>
</tr>
<tr>
<td>Silica 67762-90-7</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
</tbody>
</table>

Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Good general ventilation should be sufficient to control airborne levels. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactory and meets OSHA or other recognized standards. Consult with local procedures for selection, training, and maintenance of the personal protective equipment. Always use adequate ventilation that comply with local regulations.

Eye/face Protection:
Wear appropriate protective glasses or splash goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation, or the European standard EN 166.

Skin Protection:
Chemical-resistant gloves and chemical goggles, face-shield and synthetic apron or coveralls should be used to prevent contact with eyes, skin or clothing.

Respiratory Protection:
A NIOSH approved respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release. Exposure levels are not known or any other circumstance where air purifying respirator may not provide adequate protection.
9. PHYSICAL & CHEMICAL PROPERTIES
   Boiling Range 2500 to 3000 °C
   Specific Gravity (SG) 1.426
   Lbs VOC/Gallon Less Water 0.00
   Lbs VOC/Gallon Less Exempt 0.00
   % VOL by Volume 0.00

10. CHEMICAL STABILITY & REACTIVITY INFORMATION
    Stable. Hazardous polymerization will not occur. STABLE. Strong acids, caustics, oxidizers, Avoid uncontrolled exposure to Epoxy Resin, Amine.
    No Data Found
    None known, other than Sec. #2 and Sec. #5
    No Data Found
    Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION
    Mixture Toxicity
    Component Toxicity
    Respiratory System
    Eyes
    Effects of Overexposure
    CAS Number 13463-67-7
    Description Titanium Dioxide
    % Weight 5 to 10%
    Carcinogen Rating Titanium Dioxide: NIOSH: potential occupational carcinogen
    IARC: Possible human carcinogen
    OSHA: listed

    Avoid breathing vapors
    Oral N.D.A.
    Dermal N.D.A.
    Inhalation N.D.A.

12. ECOLOGICAL INFORMATION
    No ecotoxicity data was found for the product

    Component Ecotoxicity

13. DISPOSAL CONSIDERATIONS
    Dispose of in accordance with applicable local/municipal, state/provincial and federal regulations.

14. TRANSPORT INFORMATION
    UN3082 Environmentally Hazardous Substance, Liquid N.O.S. (Epoxy Resin)
    Packaging Group III Hazardous Class 9

15. REGULATORY INFORMATION
    OSHA:29 CFR
    1910.1200 Hazardous
    Chemical “Irritant”, Sensitizer
This product contains the following chemicals which are listed by the State of California as carcinogenic or a reproductive toxin:

<table>
<thead>
<tr>
<th>Chemical Number</th>
<th>Chemical Name</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>13463-67-7</td>
<td>Titanium Dioxide</td>
<td>5 to 10% Carcinogen</td>
</tr>
</tbody>
</table>

The following chemicals are classified under SARA 313 Toxic Release Inventory (TRI):
- None

Country
- EU

Regulation
- REACH (EU) SUBSTANCES OF VERY HIGH CONCERN
- Toxic Substance Control Act (TSCA)

All Components Listed
- EU - No
- TSCA - Yes

Safety Phrase
- None

16. OTHER INFORMATION

Further information

HMIS® is a registered trade and service mark of the NPCA.

Health: 1
Flammability: 1
Physical hazard: 2
Personal Protection: B

NFPA ratings

Health: 0
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 design 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 changes from the previous version in section(s)

Product and Company Identification: Synonyms
Physical & Chemical Properties: Multiple Properties
Transport Information: Material Transportation Information
Regulatory Information: United States.
## 1. PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Material Name</th>
<th>Structure Guard® Catalyst – Part B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision Date</td>
<td>08-2019</td>
</tr>
<tr>
<td>Product Code</td>
<td>SE1000 B</td>
</tr>
<tr>
<td>Trade Name</td>
<td>RD 1000</td>
</tr>
<tr>
<td>Company</td>
<td>Stag Technologies, 564 W. 9320 S., Sandy, UT 84070</td>
</tr>
<tr>
<td>Company Contact</td>
<td>Matthew Peterson</td>
</tr>
<tr>
<td>Company Phone</td>
<td>844-STAGTEC</td>
</tr>
<tr>
<td>Emergency</td>
<td>800-535-5053</td>
</tr>
</tbody>
</table>

## 2. HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>GHS Ratings:</th>
<th>Acute Tox. 2</th>
<th>Oral 5±=50mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Toxicity</td>
<td>2</td>
<td>Reversible adverse effects in dermal tissue, Draiże score &gt;= 2.3 &lt; 4.0 or persistent inflammation</td>
</tr>
<tr>
<td>Skin corrosive</td>
<td></td>
<td>Serious eye damage: Irreversible damage 21 days after exposure, Draiże score: Corneal opacity &gt;= 3, Iritis &gt; 1.5</td>
</tr>
<tr>
<td>Eye corrosive</td>
<td>1</td>
<td>Skin sensitizer</td>
</tr>
<tr>
<td>Skin sensitizer</td>
<td>1</td>
<td>Human or animal evidence possibly with other information</td>
</tr>
<tr>
<td>Reproductive toxin</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GHS Hazards:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H300</td>
<td>Fatal if swallowed</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage</td>
</tr>
<tr>
<td>H361</td>
<td>Suspected of damaging fertility or the unborn child</td>
</tr>
</tbody>
</table>
EPOXY COATING SUBMITTAL FEATURING STRUCTURE GUARD®

GHS Precautions:
- P201 Obtain special instructions before use
- P202 Do not handle until all safety precautions have been read and understood
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray
- P264 Wash thoroughly after handling
- P270 Do not eat, drink or smoke when using this product
- P272 Contaminated work clothing should not be allowed out of the workplace
- P280 Wear protective gloves/protective clothing/eye protection/face protection
- P281 Use personal protective equipment as required
- P301+P310 Immediately call a POISON CENTER or doctor/physician
- P321 Specific treatment (see ... on this label)
- P330 Rinse mouth
- P332+P331 If skin irritation occurs: Get medical advice/attention
- P333+P331 If skin irritation or a rash occurs: Get medical advice/attention
- P350 Store locked up
- P501 Dispose of contents/container to ...

Signal Word: Danger

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS number</th>
<th>Weight Concentration %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paratertiarybutylphenol</td>
<td>98-54-4</td>
<td>30.00% - 40.00%</td>
</tr>
<tr>
<td>Amine</td>
<td>1477-55-0</td>
<td>20.00% - 30.00%</td>
</tr>
<tr>
<td>1,5-Pentanedi, 2 methyl</td>
<td>15520-10-2</td>
<td>20.00% - 30.00%</td>
</tr>
<tr>
<td>Silica</td>
<td>67762-90-7</td>
<td>10.00% - 20.00%</td>
</tr>
<tr>
<td>nonyl phenol</td>
<td>84852-15-3</td>
<td>1.00% - 5.00%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

If inhaled remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms. Rinse immediately with plenty of water for at least 15 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Remove contacts if present and easy to do. Continue rinsing. Get medical attention, if irritation or symptoms of overexposure persists. Immediately wash skin with soap and plenty of water. If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
5. FIRE FIGHTING MEASURES
   Flash Point: 134°C (273°F)
   LEL: N/A
   UEL: N/A
   Not applicable
   Foam: Carbon dioxide (CO2) or dry chemical or water spray (water stream may be ineffective).
   No information available
   Not available
   Firefighters, and others exposed, wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES
   Stop leak. Dike or contain spill. Pump into salvage tanks and/or absorb with suitable material. Use sparkless shovel to remove material. Evacuate area and keep unnecessary and unprotected personnel from entering the spill area. Use appropriate containment and clean up immediately. Corrosive. Avoid personal contact and breathing vapor or mist. Stop leak. Dike and contain spill. Prevent spilled material from entering the ground, water and/or air by using appropriate containment methods.

7. HANDLING AND STORAGE
   Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Keep away from heat and flame. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Avoid exposure to heat, light, and air for prolonged periods of time. Store in a cool, dry well ventilated area away from sources of heat and incompatible materials. Eliminate all ignition materials and incompatible materials. Collect spill with non spark tools.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Chemical Name / CAS No.</th>
<th>OSHA Exposure Limits</th>
<th>ACGIH Exposure Limits</th>
<th>Other Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paratertiarybutylphenol 98-54-4</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
<tr>
<td>Amine 1477-55-0</td>
<td>Not Established</td>
<td>0.1 mg/m³ Ceiling</td>
<td>NIOSH: 0.1 mg/m³ Ceiling</td>
</tr>
<tr>
<td>1,5-Pentanediol, 2 methyl 15520-10-2</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
<tr>
<td>Silica 67762-90-7</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
<tr>
<td>Nonyl phenol 94652-15-3</td>
<td>Not Established</td>
<td>Not Established</td>
<td>Not Established</td>
</tr>
</tbody>
</table>

Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Good general ventilation should be sufficient to control airborne levels. Where such systems are not effective wear suitable personal protective equipment, which preforms satisfactory and meets OSHA or other recognized standards. Consult with local procedures for selection, training, and maintenance of the personal protective equipment. Always use adequate ventilation that comply with local regulations.
Eye/face Protection:
Wear appropriate protective glasses or splash goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation, or the European standard EN 166.

Skin Protection:
Chemical-resistant gloves and chemical goggles, face-shield and synthetic apron or coveralls should be used to prevent contact with eyes, skin or clothing.

Respiratory Protection:
A NIOSH air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known or any other circumstance where air purifying respirator may not provide adequate protection.

9. PHYSICAL & CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
<td>247 °C</td>
</tr>
<tr>
<td>Specific Gravity (SG)</td>
<td>0.970</td>
</tr>
<tr>
<td>Lbs VOC/Gallon Less Water</td>
<td>0.00</td>
</tr>
<tr>
<td>Lbs VOC/Gallon Less Exempt</td>
<td>0.00</td>
</tr>
<tr>
<td>% VOL by Volume</td>
<td>0.00</td>
</tr>
</tbody>
</table>

10. CHEMICAL STABILITY & REACTIVITY INFORMATION
Stable. Hazardous polymerization will not occur. Will react with Epoxy Resins especially at elevated temperatures. STABLE. Epoxy Resins under uncontrolled conditions. Mineral acids, Organic acid, oxidizers, Reacts with metals until reacted with epoxy. None known. Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Mixture Toxicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Toxicity LD50</td>
</tr>
<tr>
<td>Dermal Toxicity LD50</td>
</tr>
<tr>
<td>Inhalation Toxicity LC50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Toxicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>98-54-4</td>
</tr>
<tr>
<td>1477-55-0</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>84852-15-3</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

| Eyes                            | Irritant to the eyes. Corrosive to Eyes |
| Skin                            | Irritant to the skin. Corrosive to Skin |
| Inhalation                      | Irritant to respiratory tract. Prolonged or excessive inhalation may cause respiratory tract irritation. |
| Sensitization                   | Skin sensitization in humans. Avoid breathing vapors. |
| Oral                            | N.D.A.                                    |
| Dermal                          | N.D.A.                                    |
| Inhalation                      | N.D.A.                                    |
12. ECOLOGICAL INFORMATION
No ecotoxicity data was found for the product.

Component Ecotoxicity:
Parateriarybutylphenol
96 Hr LC50 Pimephales promelas: 4.71 - 5.62 mg/L [flow-through];
96 Hr LC50 Cyprinus carpio: 6.9 mg/L [static]
48 Hr EC50 Daphnia magna: 3.9 mg/L; 48 Hr EC50 Daphnia magna: 3.4 - 4.5 mg/L [Static]
72 Hr EC50 Desmodesmus subspicatus: 11.2 mg/L
96 Hr LC50 Pimephales promelas: 0.135 mg/L [flow-through];
96 Hr LC50 Lepomis macrochirus: 0.1351 mg/L [flow-through]
48 Hr EC50 Daphnia magna: 0.14 mg/L
96 Hr EC50 Pseudokirchneriella subcapitata: 0.36 - 0.48 mg/L [static]; 72 Hr
EC50 Pseudokirchneriella subcapitata: 0.16 - 0.72 mg/L [static]; 72 Hr EC50
Desmodesmus subspicatus: 1.3 mg/L.

13. DISPOSAL CONSIDERATIONS
Dispose of in accordance with applicable local/municipal, state/provincial and federal regulations.

14. TRANSPORT INFORMATION
UN2735 Amines, Liquid, corrosive, n.o.s. (Benzene-1,3-Dimethanamine,1,5-Pentanediamine, 2-Methyl),
DOT Hazard Class 8
DOT Packaging Class II

15. REGULATORY INFORMATION
(40 CFR 372.65)
TSCA
SARA III
CA PROP. 65 NOTICE WARNING

Hazardous Chemical “Irritant”, Sensitizer
Supplier Notification Required
Ingredients listed
Sec311 & 312 Immediate Health Hazard; Sec313 Chemicals above de
minimus level: None

WHMIS; Hazard Classification: D2B Skin Sensitizer. Refer to SDS for
specific warnings
Stylized T.

CANADIAN REGULATORY INFO
WHMIS Symbols
WHMIS Trade Secret Registry Numbers
Hazardous Products Act Information
None
This product SDS contains ingredients which are Controlled and/or
on the Ingredient Disclosure List (HPA sections 13 and 14).

The following chemicals are classified under SARA 313 Toxic Release Inventory (TRI):
84852-15-3 nonyl phenol 1 to 5 %

Country
Regulation
EU
REACH (EU) SUBSTANCES OF VERY HIGH CONCERN
Toxic Substance Control Act (TSCA)
## 16. OTHER INFORMATION

### Further information
HMIS® is a registered trade and service mark of the NPCA.
- **Health:** 3
- **Flammability:** 1
- **Physical hazard:** 0
- **Personal Protection:** H
- **NFPA ratings**
  - Health: 3
  - Flammability: 1
  - 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 changes from the previous version in section(s)
- Product and Company Identification: Synonyms
- Physical & Chemical Properties: Multiple Properties
- Transport Information: Material Transportation Information
- Regulatory Information: United States.
BEFORE & AFTER INSTALLATION PHOTOS