

## APPLICATION

Glass lining inside of ductile iron pipe has been used successfully for over 40 years. Most commonly used for it's "non stick" characteristics to convey fluids containing higher solids concentration such as sludge, scum, and grease in sewage service and wastewater treatment plant applications.

## CBGL911 LINING MATERIAL

Glass lined pipe shall conform to ASTM B1000-15. The standard of quality shall be CBGL911. The glass powder shall be specifically formulated and shall be vitreous and inorganic. The lining must be proven to be successful in conveying sludge, scum, and grease in sewage service and wastewater treatment plant applications.

Any request for substitution of material must be accompanied by a successful history of lining ductile iron pipe and fittings which are used in these applications. The lining Applicator must be an ISO 9001:2000 certified company and must be able to provide recent third party, independent test reports verifying the following results. The lining Applicator must have a minimum of 5 years proven experience in production of glass lined ductile iron piping.

These physical and chemical tests must have been performed on coupons from the applicators regular production lined ductile iron pipe and/or fittings.

1. ASTM D-792 test for density in the range of 2.5 to 3.0 grams per cubic centimeter.
2. Immersion testing using ASTM C-283-97 (2002) in a solution of 8% sulfuric acid at a temperature of 148 degrees F. ( 64 degrees C) for a period of 10 minutes minimum. The glass shall have a minimum loss of surface gloss and a weight loss of no more than 2 milligrams per square inch (.31 mg per square centimeter).
3. Glass shall have no observed evidence of corrosion when exposed to an HCl solution of 3 pH and separately to a Na OH solution of 1 OpH; both elevated in temperature to 125 degrees F. (52 degrees C) for 10 minutes minimum.
4. Glass shall be capable of withstanding an instantaneous thermal shock of 350 degrees F. (176 degrees C) without cracking, crazing, blistering or spalling.
5. Glass lining have a minimum hardness of 6 on the MOHS scale.



## WHY USE GLASS LINING?

Glass Lined ductile iron pipe assists in keeping your systems clean and free from clogging. Glass lining also helps protect the pipe from abrasion present in grit removal and other sewer process systems.

Glass lining is a porcelain material and common sewer materials resist sticking to it like they do with epoxy lining materials.

CBGL911 glass lining is also excellent for high temperature requirements where other protective linings cannot remain in service.

Did you know that you can get process valves with CBGL911 glass lining? Many valve manufacturers currently supply CBGL911 glass lined valves



Struvite buildup in sludge piping system

# CBGL911 GLASS LINING

## CBGL911 LINING APPLICATION

### A. Surface Preparation

The entire surface area to receive the glass compound shall be inspected for the presence of oil, grease, or any other soluble substances. Any areas found with contamination shall be solvent cleaned to completely remove these substances. After cleaning, all surface areas shall be mechanically ground so as to remove any casting imperfections leaving only a smooth surface with no raised projections. Finally, the entire surface area to be lined shall be struck with a blast media so that all remaining impurities from the cleaning operations are removed. Only tightly adhering cast-in oxides may be left on the surface.

### B. Lining

After surface preparation, the interior of the pipe or fitting shall receive an application of base glass compound which has been suspended in a water carrier. After the water has evaporated, the pipe or fitting shall be oven-fired at a temperature of 1375 degrees F. (746 degrees C) in order to fuse the glass to the metal surface. The subsequent finish coats are similarly processed with a resultant lining thickness of 10 mils (.25mm) minimum.



Surface grinding prep for a ductile iron casting

## INSPECTION

1. All ductile iron pipe and fittings shall be checked for thickness using a magnetic film thickness gage by the method outlined in SSPC-PA2 Film Thickness Rating.
2. The lining shall be in accordance with the Applicator's industry standard tolerance for coverage and continuity. All pipe and fittings shall be visually inspected after lining at the Applicator's facility. Each and every pipe or fitting shall be tested with a 67.5 volt Tinker Razor electronic device with a wetted sponge to determine the presence of pinholes or voids. Excessive pinholes shall be cause for rejection at the Applicator's facility.
3. Each and every pipe or fitting shall be marked on the interior glass surface using a permanent marker; the date of application and tests, the facility location and the number of acceptable pinholes detected. Quality Assurance reports will be maintained at the Applicator's facility evidencing all work performed and data recorded.
4. The Owner/or his Representative may witness at the Applicator's facility; the glass application process, review the Quality Assurance Reports and witness the actual tests conducted upon his product, all prior to the product leaving the facility. This may be done by written Specification or by sufficient notice to the Applicator to allow coordination of the visit.



CBGL911 Glass Lined Valve Components

## CERTIFICATION

The Applicator must be able to supply a notarized Certificate of Compliance attesting to the fact that the glass lining has met all of the requirements of this specification and that the material lined has met the applicable standards of AWWA and ANSI where noted.

# CBGL911 GLASS LINING

## HANDLING

Glass lined pipe and fittings must be handled only from the exterior surfaces; no forks, straps, hooks, etc; shall come into contact with the interior surface of glass. Pipe and fittings that have been altered after it left the Applicator's facility, such as field cuts or further fabrication, may not exhibit the same tested results as was documented at the Applicator's facility.

## FIELD REPAIR

CBGL911 Glass repair Epoxy shall be used for touch-up or repair in accordance with the Manufacturer's recommendation below.

1. Remove burrs caused by field cutting of ends or handling damage and smooth out the edge of the lining if rough.
2. Remove all traces of oil, grease, asphalt, dust, dirt, etc.
3. Remove any damaged lining caused by field cutting operations' or handling and clean any exposed metal by sanding or scraping. Sandblasting or power tool cleaning roughening is also acceptable. It is recommended that any loose lining be removed by chiseling, cutting, or scraping into well-adhered lined area before patching. Be sure to overlap at least 1" of lining in the area to be repaired.
4. With the area to be sealed or repaired absolutely clean and suitably roughened, apply a coat of CBGL Glass Repair Epoxy using the following procedure:
  - a. Mixing procedure - The Repair Kit for CBGL 911 Glass Lining contains two small cans of CBGL 911 Glass Repair Epoxy. CBGL 911 Glass Repair Epoxy is a two-component epoxy and the contents of the small container shall be mixed with the contents of the large container. If less than the full contents of each can is to be mixed, the material may be mixed using the mixing ratio printed on the labels. Add Q4-5311 Part B to A4-5311 Part A. Mix thoroughly with enclosed paddle. All activated material must be used within one hour of mixing.
  - b. Application of Material- After the material has been thoroughly mixed, it can be applied to the properly prepared surface by brush. Brushing is usually best due to the fact that the areas to be repaired are usually small.
5. It is important to coat the entire freshly cut exposed metal surface of the cut pipe end. To ensure proper sealing, overlap at least one inch of the lining with this repair material.



## TECHNICAL DATA CBGL 911 GLASS REPAIR EPOXY



- DESCRIPTION:** A brushable polyamidoamine epoxy designed for sealing cut ends and repairs when pipes are lined with CBGL 911 Glass Lining.
- LIMITATIONS:** CBGL911 Glass Repair Epoxy should be used over glass or bare metal for repairing cut ends of pipe or damaged areas in CBGL Glass Lining. The Glass Repair Epoxy must be used over properly prepared ductile iron surfaces or roughened glass lining.
- SURFACE PREPARATION:** The surface preparation shall be equal to the specifications for the project or as outlined in the touch-up procedure. Do not apply glass repair epoxy over wet or frozen surfaces, or over glass surfaces that have not been roughened.
- DRY FILM THICKNESS:** As outlined in specifications, usually 3.0 to 5.0 mils per coat in two coats for 6.0 to 10.0 mils dry film thickness.
- APPLICATION:** Brush
- THINNING:** Thin or cleanup with Methyl Ethyl Ketone.
- PHYSICAL DATA:** VOLATILE ORGANIC CONTENTS: 2.90 lbs. per gallon
- SAFETY DATA:** See individual product label for safety and health data information. Individual Material Safety Data Sheets are available upon request.