AFFORDABLE TANK WASHING
Featuring Equipment, Chemicals and Cleaning Procedures

- Tank Wash Systems
- Passivation
- Presolve
- Waste Water Treatment
- Cleaners for MDI/TDI
- Resins & Latex
- Lube Oils
- Exterior Washing

Welcome to the JOHN-HENRY Interactive PDF Catalog. The following instructions will assist you in maneuvering through wealth of information you have in your hands.

Learn More 🤔
Learn more will take you to a “standard procedure” page, which defines how best to clean a particular product as well as the chemicals used.

Home 🏠
Home buttons are found all documents and will take you back to the home page.

Chemicals Home 🪑
On the categorical chemical selector page (page 3), clicking on product names, which are in blue type will take you to the technical data sheet for that product. You can either view MSDS or click on the Chemicals Homebutton to return to where you started.

From a Technical Data Sheet, It is possible to view the MSDS for that product. Click on [MSDS] to view it, and click [BACK] to return to the Technical Data Sheet.
**TANK WASH SYSTEMS**

**BY CATEGORY**

**LUBE OILS**
Even the thickest lube oils can be thinned out and washed without entering a dirty tank, using diesel and an air operated spinner system. **Learn More**

**RESINS**
With the right chemicals, resins may be cleaned with minimal effort utilizing the Start-Up Wash System. **Learn More**

**LATEX**
Natural rubber, all types of SBR, and even styrene acrylic polymers, all have one thing in common. They can be removed with the Hydra-Cell System and John-Henry Chemicals. **Learn More**

**TDI** (toluene diisocyanate)
This product must be treated with respect, but it is not difficult to clean with the Hydra-Cell Wash System. **Learn More**

**MDI** (methylene diphenyl diisocyanate)
Even set up, with the right chemical and boiler, MDI can be simple to clean. **Learn More**

**FOOD GRADE**
Requires a boiler, and an all stainless steel wash system, including vats, pump, spinner, and all lines. **Learn More**

**PASSIVATION**
Restore the chromium oxide passive film to stainless steel ISO tanks. Chemicals and the right equipment make this an effortless job. **Learn More**

**DEODORIZING**
Encapsulating odors can be accomplished with the right chemicals and John-Henry Simplicity Fogger. **Learn More**

**EXTERIOR WASH**
Degreasing, label removal, aluminum brightening, crash box cleaning. **Learn More**

**BY EQUIPMENT TYPE**

**PRE-SOLVE SYSTEM**
The John-Henry LoVol Recirc System is a ready-to-use set of components for recirculating solvents, such as diesel, for thinning out lube oils or other difficult materials. **Learn More**

**START-UP WASH SYSTEM**
A selection of components designed for start-up tank washes. Includes a method for generating steam, high pressure washes, as well as deodorizing and passivating. **Learn More**

**HYDRA-CELL WASH SYSTEM**
When paired with the right boiler, this is the ultimate tank wash on a budget. Clean Lube Oils, Resins, Latex, Isocyanates, 4-ADPA. **Learn More**

**FOOD GRADE SYSTEM**
Requires a high pressure boiler. Advanced design with optional shell and tube heat exchanger for maximum energy efficiency. Requires a segregated location from an industrial wash. **Learn More**

**SIMPLICITY FOGGER**
Utilizes compressed air. This all-stainless steel fogger dispenses passivation solutions, deodorizers, and “safe” solvents in just minutes. **Learn More**

**BOILER SYSTEMS**
Steam is required for tank washing. Inexpensive steam is no longer a luxury with the Fulton Boiler. These units create 6 bar steam in 30 minutes. **Learn More**

**WASTE WATER**
From Pre-Treatment chemicals, to complete automated systems, even where water must be re-used, John-Henry has the solution. **Learn More**
CATEGORICAL CHEMICAL SELECTOR

NOTE: Click on any product name to see technical data sheet

**LUBE OILS**
There are several methods for cleaning but the common denominator is diesel. When heated, it is even more effective. After the tank has been pre-solved with diesel, a detergent wash is required. Use John-Henry MAGNUM with up to 5% caustic soda at high temperature.

**RESINS**
Pre-solve with John-Henry LIQUI-FIRE RX at 52°C for ½ hour. Then Wash with John-Henry MAGNUM with up to 5% caustic soda at high temperature.

**LATEX**
There are several methods for removing latex effectively from tank containers. Assuming that there will be some set-up material, latex should be treated as two (2) distinctly different chemicals. The first is a water borne emulsion, the second is polymerized film, which should be treated as a polyurethane (not water soluble). Hence, the chemicals used are John-Henry CROSSLINK, EMULSI-FIRE SB, LIQUI-FIRE RX.

**TDI** (toluene diisocyanate)
This material is actually cleaned as a resin, with careful attention to personal safety, as it is an inhalation hazard. Use hot caustic and John-Henry MAGNUM.

**MDI** (methylene diphenyl diisocyanate)
Requires a high pressure boiler and 99% MONOETHANOLAMINE, which can be acquired from local chemical suppliers/importers.

**FOOD GRADE**
Use a 3% solution of John-Henry TANKMASTER FG.

**PASSIVATION**
ASTM 380 and 967 suggest the use of two different passivation solutions, which are popular and effective. John-Henry has both, which can be dispensed easily with the Simplicity Fogger. PASSIVE 8 (nitric acid based) and FORMULA 319 (citric acid based). For best results, use PASSIVE 8 for industrial chemicals, and FORMULA 319 for food grade passivations.

**DEODORIZING**
John-Henry GAMMA NEBULA odor encapsulant via Simplicity Fogger, or steam blast.

**EXTERIOR WASH**
John-Henry MAGNUM diluted at up to 25:1 with water, and ALUMINUM BRIGHTENER diluted up to 12:1 with water. LIQUI-FIRE RX for wiping excess adhesive.
ISO TANK  
LUBE OIL ADDITIVE CLEANING PROCEDURE

1. **DRAIN HEEL:** Do not add water to heel so as to create an emulsion. Segregate for disposal.

2. **PETRO WASH:** Re-circulate heated diesel (up to 140° F) for 10 minutes. *See Notes Below*

3. **DETERGENT WASH:** Wash (via spinner) tank with detergent or caustic for 10 minutes. Recover all wash fluids back to vat. Remove spinner.

4. **HOT WATER RINSE:** Immediately following rinse, place blower hose into tank, and dry.

5. **COOL TANK & INSPECT**

Notes for Petro Washes:
Any of several methods for introducing heated diesel into a tank will work well, because the temperature coupled with minimal impingement power is very effective. A pre-heated diesel vat is available

**Chemical Usages**

**DIESEL:** If the aforementioned procedure is followed, expended diesel can be as little as 2 gallons per tank.

**JOHN-HENRY MAGNUM®:** Minimal usage when re-circulated after a pre-solve, especially when all residues are removed from tank. One of the most cost-effective solutions in the industry. Magnum may be added to caustic soda to create a “Booster” caustic wash.
ISO TANK
RESIN CLEANING PROCEDURE

1. **HEAT TANK:** This procedure works best when tank is approximately 120° F. Do not apply live steam, but rather through steam coils for just a few minutes. Disconnect steam lines when 120° F is reached (usually 5-10 minutes in warm climates), then proceed to Step 2.

2. **PRE-SOLVE:** Apply 5 gallons Liqui-Fire RX® utilizing a diaphragm pump and wand (or spinner). Drain solvent and resin residues completely.

3. **DETERGENT WASH:** Spin tank for 30 minutes with a resin emulsifier solution or booster wash, such as John-Henry TC-202, MAGNUM, or TC-111.

4. **FLUSH/STEAM/DRY:**

   **Note: Chemical Usages**

   LIQUI-FIRE RX®: 5 gallons, which may be reused one or two more times, depending on the amount of residues picked up in the process.

   TC-202®: Minimal usage when re-circulated in a 10% (by volume) solution. Example: In a 500 gal. vat, use one full 55 gallon drum with water.

   In Recirculation vats: MAGNUM or TC-111 may be used.
ISO TANK & ROAD TANKER
LATEX CLEANING PROCEDURE

VERY IMPORTANT: If multiple latex tanks come to a facility at one time, make every effort to remove all heels, pressure wash, and fog one gallon of John-Henry Liqui-Fire RX into the tank, prior to sealing it up until it is washed.

1. **HEEL FLUSH:** Open dome lid. Remove bottom outlet assembly. If ammonia is present, flush out with garden hose until vapors are eliminated. Then pressure wash tank interior with cold water. Under no circumstances should warm or hot water be used.

2. **REMOVE BUILD-UP:** Enter tank. Manually remove any build-up of latex which accumulates in the vapor space. This will avoid contamination of vat solution. A high-pressure washer may be used to assist with particulate removal.

3. **DETERGENT WASH:** Spin tank for 30 minutes with a mixture of John-Henry Crosslink and Emulsi-Fire SB. Heavy build-up may require up to 2 hours of spin time.

4. **DRY:** Remove spinner, dry tank with blower hose. Visually inspect walls and as much vapor space as possible. If tank appears completely clean, skip Step 5.

5. **NOTE:** If latex remains after the wash, while tank is still hot, apply Liqui-Fire RX utilizing your choice of the following:
   - 15 gallons via low volume spinner system. Recover fluid for reuse.
   - One (1) gallon via John-Henry Simplicity Fogger.
   - Allow to stand for 30 minutes. Drain residues. Repeat Step 3 for 30 min.

6. **FLUSH – STEAM – DRY:**

**Typical Chemical Usages**

Vat Mixture:

Crosslink: 1 lb Crosslink every 4 gallons vat capacity.
Emulsi-Fire SB: 1 gallon per 10 gallons Crosslink solution.

Pre-Solve:
Liqui-Fire RX: average usage is 1 gallon per tank (fog method)

Note: Liqui-Fire RXE is identical to the RX, but with emulsifiers package.
ISO TANK
TDI CLEANING PROCEDURE

HAZARD SUMMARY:
TDI is a poison and an inhalation hazard. Read and understand MSDS. Treat with respect. When tank is charged with nitrogen there is a double health threat. Wear self-contained breathing apparatus while discharging nitrogen, collecting heel, or tooling up for a wash. When the following procedures are adhered to, tank washers should have no problems cleaning this product.

1. **PRESSURE CHECK:** Determine if tank is pressurized with nitrogen. If so, discharge via air-charge line and a long hose, away from the work area. This may take up to 30 minutes. Once tank is at zero pressure, open dome lid and discharge valve.

2. **INSPECT TANK:** Open dome lid and visually inspect tank from manway. If residues are fresh, skip to the next step. If tank appears set up, presolve with LIQUI-FIRE RX® through using a diaphragm pump/spinner combination.

3. **COLLECT HEEL:** Allow as much heel as possible to drain from tank. See note below.

4. **WASH:** Wash with Magnum/Caustic solution for 30 minutes; longer if circumstances permit, and preferable if tank was somewhat set-up.

5. **COLD WATER RINSE:** Enter and inspect tank after cool-down. Remove all gaskets and dip tube, if present. Pressure wash or pad out areas missed by spinner system.

6. **REMOVE VALVES:** Remove rear discharge valve/internal valve assembly for additional cleaning and/or testing. If not completely clean, dip components in Liqui-Fire RX for 30 minutes, then pressure wash. Reinstall components.

7. **STEAM & DRY:**

**Note: Chemical Usages**

LIQUI-FIRE RX®:
Use 2 gallons (8 L) through spraying device to thin out fresh TDI.
Use 10 gallons (38 L) through presolve device, so as to coat entire tank interior. Use only as needed, if tank is set up. May be diluted with diesel.

MAGNUM®: Use Stripper Vat dilution. 5% NaOH by weight, and 10% Magnum by volume.

* The amount of heel removal will play a role in the longevity of the vat solution, as well as how much residual polymer will remain in the vats. It is best to remove as much TDI as possible before the actual wash. One way to accomplish extra heel removal is to heat steam coils to 55- 60° C and maintain for about 30 minutes. Additionally, LiquiFire RX or a mixture of Liqui-Fire RX and diesel, may be sprayed into the tank from the manway, covering the walls uniformly. This will assist in thinning the residues further, thus keeping even more product out of the vats. These solutions will work even better when applied to a hot tank.
ISO TANK
MDI CLEANING PROCEDURE
WITH HIGH PRESSURE BOILER

Note: This Standard Procedure assumes that tank wash facility has 5 bar steam available.

1. **CAPTURE HEEL:** Open rear discharge valve. Capture any heel for proper disposal.

2. **DRY REMAINING RESIDUE:** The remaining residues will respond better if steamed to set-up. Apply live steam to tank for 10 minutes, then blow dry the tank.

3. **CHARGE WITH MEA:** With rear discharge valve closed, pour 60 liters of MEA (monoethanolamine, 99%) into tank. Close dome lid and tighten completely.

4. **STEAM COILS:** Apply steam to heating coils. Elevate temperature to 127°C, and maintain for 2 hours minimum. Then, turn off steam and allow tank to cool, usually overnight.

5. **OPEN TANK:** Carefully, and with Bronze hammer, open dome lid, open rear discharge valve and capture spent MEA for disposal. Perform a cold water rinse.

6. **WASH TANK:** Causric or Booster wash tank / Steam / Dry / Inspect

CHEMICAL USAGE: 15 Gallons of monoethanolamine usually removes MDI. The exception is when excessive heel remains, and more chemical is required.
ISO TANK
FOOD GRADE CLEANING PROCEDURE
VIRGIN WASH

Note: This Standard Procedure assumes that tank wash facility has steam available.

1. **CAPTURE HEEL:** Open rear discharge valve. Capture heel for proper disposal.

2. **FIRST RINSE:** Apply cold or hot water via dome lid for a first rinse. This may be accomplished with a garden hose, pressure washer, or actual sanitary 360° spinner, which will also be used for the wash.

3. **DETERGENT WASH:** Spin tank for 5 minutes with a 3% solution of John-Henry® TankMaster FG at 185° F.

4. **SANITIZE:** Spin tank with hot potable water, maintaining 185° F for fifteen minutes.

5. **DRY TANK:** Tank may be blown dry or steamed and dried.

Note: Hot potable water vats must be drained and refilled daily before use. Disassembly of some vent housings may be necessary to properly clean the load and other internal parts. The use of a 200 ppm solution of household bleach, such as Chlorox (5.1% active sodium hypochlorite) is an approved sanitizer for all equipment, including manway covers, vent assemblies, and gaskets, etc. Observe strict safety precautions when using bleach products.

200 ppm bleach = 1 pint Chlorox / 15 gallons water.
ISO TANK PASSIVATION PROCEDURE
WITH SIMPLICITY FOGGER

SAFETY & HANDLING

John-Henry Passive-8® is acidic and highly corrosive. Provide ample ventilation; avoid prolonged breathing of fumes and contact with skin, eyes, and clothing. Personal protective gear should include a face shield and/or goggles, plastic coated gloves, and protective clothing. Skin Contact: wash with soap and water, flush with copious amounts of water. Eyes Contact: flood with water for at least 15 minutes and seek medical attention. Refer to MSDS for more detailed information.

WARNING! Passive-8 is intended to be used at ambient temperatures of 55 to 90 degrees Fahrenheit (13 to 32 degrees Celsius). Check temperature of the tank and allow to cool down if necessary.

USAGE:

Use approximately 1-1/2 US gallons (5-3/4 liters) of Passive-8 passivating solution per 1000 US gallons (3785 liters) of tank capacity. Example: 10 US gallons (38 liters) of Passive-8 for a 6500-gallon (24,600 liters) tank.

NOTES: 1) The tank to be passivated must be absolutely clean. 2) It is recommended that the tank be left wet from final rinsing, but excess water should be drained. 3) The dip tube, pump, lines, and Simplicity Fogger must be flushed with clean water before use. De-ionized or distilled water is preferred if available.

FLUSHING:

1) Place the product dip tube in a clean pail or drum filled with clean water, de-ionized or distilled if available. (3 US gallons or 11-1/3 liters minimum)

2) Suspend the Simplicity Fogger in a suitable container for collecting any fluid that will be flushed from the product lines.

3) Open main air valve. Thoroughly flush the system, then close air valve.

NOTE: If the tank to be passivated is dry, the flushing procedure can be done in the tank. Be sure to drain the water from the tank prior to passivation.
PASSIVE-8:

1) The tank MUST be vented for the Simplicity Fogger to operate properly. In a well-ventilated area, the internal and/or drain valve may be opened to permit venting of the tank. However, in a work area with insufficient ventilation, close the drain valve and vent the tank through a hose run from a washout port to a suitable mist/vapor collector or to an open area away from the work space. Close all other tank ports securely.

2) Place a proper waste container under the drain outlet so that the used passivating solution can be collected for neutralization and disposal.

3) Securely attach the Simplicity Fogger to a 3” washout nipple on a modified lid.

4) Place the product dip tube in the container with the Passive-8 solution.

5) Open the Simplicity Fogger air valve.

6) When the correct amount of solution has been applied (see “USAGE”), close the Simplicity Fogger air valve.

7) Remove the Simplicity Fogger and seal the tank for the required saturation time. A total period of not less than 20 minutes, and not more than 45 minutes from the time fogging begins. DO NOT EXCEED THE MAXIMUM OF 45 MINUTES!!!

CAUTION: Do not allow Passive-8 solution to get on skin or clothing!!

11) Rinse the tank thoroughly with fresh water to remove all traces of the Passive-8 solution. The rinse water can be tested with litmus or pH paper for neutrality.

12) Perform the “FLUSHING” procedure described earlier.

TEST PROCEDURE:

After rinsing and drying the tank, the tank should be checked to be certain that it has been successfully passivated. The interior surfaces maybe checked by using an electronic tester, such as the Koslow 2026 Passivation Test Kit.

CLEAN-UP:

Rinse all parts of the passivation equipment with water. Store the Simplicity Fogger in an appropriate holder to prevent damage and/or clogging with dirt.
ISO TANK
EXTERIOR CLEANING PROCEDURE
WITH ACID ALUMINUM BRIGHTENER

1. **INSPECT TANK:** Wipe the side of the tank with a mild detergent to determine if streaks are already present from prior cleaning. Improperly acid-washed aluminum tanks will display unevenly etched areas, as a result of top-to-bottom chemical application. By determining if this damage occurred prior to the current wash, liability can be avoided.

2. **WET OPPOSITE SIDE** of tank with water before beginning acid treatment.

3. **APPLY ACID:** Use John-Henry Aluminum Brightener diluted 4:1 for non-aluminum tanks, and undiluted for aluminum tanks with heavy “powdery” build-up. Apply left to right, with long sweeping motion, working from bottom to top of tank.

4. **ALLOW TO STAND** until foaming has diminished dramatically. This will usually take between 2 and 4 minutes.

5. **RINSE:** With the same motion as the application method, always from bottom to top. Be sure to rinse opposite side of tank, as some chemical will run over. Use plenty of water. If conditions do not allow for large rinse events, apply an acid neutralizer after the wash, so as to stop acidic action on the surface, and then rinse.
Stainless Steel Passivation
For
Tankwagons, ISO Tanks, IBC’s

Presented by Henry Zeller

_Frequently Asked Questions_

**What is passivation?**

According to ASTM 380, there are several definitions for passivation, depending on the specific application. The following is most appropriate for the tank cleaning industry: “Passivation is the chemical treatment of a stainless steel with a mild oxidant, such as a nitric acid solution, for the purpose of enhancing the spontaneous formation of the protective passive film. Such chemical treatment is generally not necessary for the formation of the passive film.”

**Why is passivation necessary?**

The reason to re-passivate is that the chromic oxide film that should be present in austenitic steel gets compromised regularly, whether from materials being transported, or even the cleaning process itself. Stainless steel is stainless because of the protective chromium oxides on the surface. If those oxides are removed by scouring, buffing, or the presence of mineral acids, such as muriatic or hydrofluoric acids, or by reaction even with the loaded material, then the iron in the steel is exposed and can be rusted. Once rust has breached the chromium oxides, the iron in the stainless steel can also rust. Hence the need for re-passivation. An example of this is a tank whose prior cargo was a chlorinated solvent. The vapors from the solvent hydrolyze in the tank and become hydrochloric acid, thereby compromising the stainless steel surface. Simply cleaning the tank will not restore the tank’s chromium oxide passive film.

**When is it the right time to passivate?**

This is a proprietary decision made by the owner of the tank. There are many factors that can determine the need or time to passivate.

A strategy to systematically passivate an entire ISO tank fleet is sound. A single passivation per year has the potential to slow pitting by 25%, based on four turns per year. If subsequent loads into a passivated tank do not destroy the chromic oxide film, this yield could be even higher.
Tankwagons and IBC’s, on the other hand, must be evaluated by a different standard. These containers reload more often, and can sometimes be top-loaded or remain in a dedicated service. Their relatively low purchase price may allow for continued service without incurring preventive maintenance costs, such as for passivation, as the benefits may never be realized.

Should mechanical abrasion, buffing, grinding, or welding occur inside the tank, passivation must be performed, at least on the affected areas. This may be performed with a pickling paste for welds and small spots. For larger areas it is more effective to passivate the whole tank.

**What factors should be considered?**

Factors include, but are not limited to, the following criteria:

1. Replacement cost of tank. Is it more cost effective to replace the tank, than to try to prolong its life cycle with costly treatments?
2. Types of chemicals hauled. Will a passivated tank lose its chromic oxide film on the very next load?
3. Dedicated, or nondedicated. Will omitting passivation allow future loads of normally non-corrosive materials to further deteriorate the tank?
4. Return on Investment. Does the tank’s owner have modern tracking capabilities to plan, implement, and track passivated tanks, so as to maximize the effort?
5. Food. If there is any possibility that the tank will haul food - Passivate!

**How does one passivate successfully?**

Passivating stainless steel is normally accomplished in industry by dipping stainless steel components in a nitric acid solution, per ASTM A-967 and ASTM A-380. A nitric acid solution dissolves free iron and/or other contaminants from the surface, which cleans the metal and re-oxidizes the chromium. But for the tank cleaning industry, you don't need a nitric acid bath to passivate. No one could afford to pickle a tank, as the solution, upwards of 6000 gallons, becomes contaminated with each application. The key is to clean the stainless steel to bare metal, and then coat the tank with a nitric acid spray or fog. Allow to stand for the duration of a pickling event, and the same results can be achieved.

**Doesn’t stainless steel passivate itself with time?**

While metallurgists are far apart on their opinions regarding passivation methodology, they do agree on the following principle: If stainless steel is clean and dry, the oxygen in the atmosphere will form the protective chromium oxides needed. The steel will be every bit as passivated as that which was dipped in acid. But there are problems here. First, it takes longer - up to two weeks for a totally natural restoration to occur. And considering the nature of bulk chemical hauling, who is to say when a tank is truly clean, especially given their current pitted condition. By definition, “clean” denotes that all
contaminants, even in deepest part of pits, have been removed. Second, even if all contaminants and rust particles are removed in the cleaning process, if the tank loads before the cycle for natural passivation occurs, the mission will have failed. Now the current cargo, which may not normally exhibit deleterious effects on passivated steel, resumes pitting the tank, as the corrosion cycle was never interrupted.

**OK, what is the best way to passivate tanks?**

Regardless of the situation, it would be prudent to reference a proven procedure when requesting passivation. By referencing a specification, such as outlined by ASTM A-967 and ASTM A-380, you do not have to reinvent the wheel. By taking advantage of proven technologies, such as the John-Henry Brand® Passive-8 System you can eliminate much of the guesswork that would otherwise accompany a new process. This technology deploys air and sound to shatter a super-low surface tension nitric acid based solution into a 5-10 micron fog, which then covers the tank uniformly and penetrates even the smallest pits. It is much more effective than coarse sprays or bulk application, as any solution applied in liquid form is impeded by high surface tension, which allows for it to “sheet” right over the pits. If the passivation fails, the potential high cost of the alternative method can be the cost of the cargo. Ouch.

**How much passivation solution is used?**

Passive-8 is applied to a freshly washed and rinsed tank at the rate of 1 1/2 gal. per 1000 gal. of tank capacity. After it is dispensed through the Sonic Horn, a process that takes about 3 minutes per gallon, the product is allowed to stand for an additional 45 minutes, and then flushed out with water. In a multi compartment tank, the same formula applies per compartment.

Alternatively, the John-Henry Simplicity Fogger can be used where economy is a must. This device runs solely from compressed air and can deliver a fairly uniform fog from two nozzles, capable of projecting up to 25 feet in each direction.

**How can passivation be verified?**

One of the simplest verification tests is the copper sulfate test. Pour a copper sulfate solution onto the floor of the tank, and allow to stand for six minutes, rinse and visually examine. Any copper (pink) color indicates the presence of free iron and the test is considered unacceptable.

If a more scientific method is required (for quality assurance), after rinsing and drying tank interior, surfaces may be checked with the Koslow 2026 Passivation Test Kit.

Using any of the aforementioned methods, if the tank interior tests positive for free iron or still shows signs of discoloration or stains, another Passivation treatment will be necessary.
Low Volume Recirc System

Simple • Powerful • Air Operated

For effective presolving the following materials:

LUBE OILS • LATEX • RESINS • INKS & DYES • 4-ADPA

Air operated pump and spinner deliver a wide variety of chemical products into the tank. Simple design allows for deploying a powerful diaphragm pump mounted atop a 55 gallon drum, placed at the rear of the tank. As the pump delivers fluid to the spinner, it then drains into the drum where it is re-pumped. This creates a re-circulation loop, which allows extreme solutions to be used, while minimizing chemical usage and waste.

Unlike smaller fountain or “Spray Ball” systems, the Low Volume Recirc method doesn’t just wet the areas to be cleaned, but rather delivers chemical with substantial impingement power. Chemicals may be applied up to 200°F, as pump components are carefully chosen for this type of service. The pump is of Stainless steel/Teflon® construction. Chemicals are delivered to the spinner via Teflon®/SS wire braided hose, with quick couplers. Spinner is a Spraying Systems AA190AG-4 with Gast air motor, delivering up to 35 gpm at up to 125 psi.

Typically, from 20-50 gallons of solution or solvents are used to soften latexes, resins, inks, lube oils, etc. Diesel is often used, as it is inexpensive; however when a tank’s previous cargo is set-up or polymerized, more extreme chemicals may be used.

This packaged system come complete with oiler/regulator/filter kits for years of trouble free service. Includes pick-up tubing for the diaphragm pump, 3/4” x 40 ft Teflon chemical delivery hose, all quick couplers, air fittings, and even a rebuild kit for the spinner. Manway adapters are optional, but are available on request.

$8,495 (USD) F.O.B. Metairie, LA USA

For more information or assistance, please contact us at one of the numbers listed above.
**START-UP TANK WASH SYSTEM**

Generate steam to heat coils of ISO tank containers.

Pre-solve with diesel or more aggressive solvents.

Wash/Rinse tank interiors at 90°C

Passivate / Exterior Wash / 5 Minute Interior Dry

1) **Spinner, 4 Ft. Air Motor w/ SS Diaphragm Pump**
   This spinner is bundled with SS quick couplers, 3” flange adapter for easy mount on an adapter plate, nozzles, spare rebuild kit, lubricator/regulator/oiler combo for the air motor, as well as a 40 ft Teflon® SS Wire Braided delivery hose.

2) **Pump System, Hydra-Cell**
   Model D-10, configured with internal components capable of hot diesel pre-solve, and even hotter detergent wash. The pump delivers 30 LPM (8 gpm) @ 69 BAR (1000 psi). Adjustable by-pass for slowing flow to Hot-Box for steam generation. Electric motor drive, 220v. 1 phase, 60 Hz. (50 Hz option available)

3) **Hot Box**
   Capable of heating aqueous fluids at up to 195°F, for final detergent wash after diesel pre-solve. Generates steam with reduced water flow. It burns diesel, and requires 115v. 60Hz. (220v option available)

4) **High Pressure Blower**
   Generates 1500 cfm to quickly dry tanks, and requires 240v. 60Hz. (380v, 50 Hz option available)

3) **Stainless Steel Fogger**
   With available compressed air, this fogger is used for passivating, deodorizing, and application of non-flammable solvents. Comes with air coupler and pick-up hose/strainer.

**TOTAL EQUIPMENT COST: $22,490 USD**

Substitutions may be made due to estimated delivery times from manufacturers. However, specifications will remain the same or better. When bought as a complete system all connectors, fittings, etc. are included. 50 Hz option will add about $600 to total cost. Several small accessories should be fabricated locally.
Hydra-Cell Wash System

Standard Equipment
30 hp Motor / Hydra-Cell D-35 Pump, Belt Drive
Two 550 Gal. 304 SS Modified IBC’s With Platform
Header / Butterfly Supply Valves w/ Teflon Seats
Electric Control Box / Low Level Cut-Off Switches
Mercoid Steam Control / Solenoid Valves /Traps
3 Inch Bottom Clean-Outs w/ Butterfly Valves
Stainless Steel Manway Adapter
Gamajet V or Spraying Systems AA190AG Spinner

Optional Equipment:
Cam-Lock Fittings     Timer Run Control
Return Line Strainer 240 or 480v, 60 Hz

Overhead plumbing from pump to wash zone
responsibility of customer, as well as incidental
plumbing for steam lines. Electrician required for
tie-in to electrical Starter Box.

Basic 2 Tank System $59,800
Additional 2 Tank Skid & Header $23,400
Food Grade Wash System

Call For Custom Configuration Based on Your Individual Needs.

**Pump System**
Hydra-Cell Diaphragm Pump w/ Stainless Steel Liquid End, 10 - 35 GPM @ 1000 psi, Galvanized Base Plate Mounted, Unloader Valve. Motor Sizes 7.5 HP up to 30HP. 50-60 Hz Available.

**Boiler**
20 Hp, Vertical Tubeless Design, Gets Up To 135 psi Steam Very Quickly. Natural Gas or Oil Fired, up to 84% Efficiency.

**Spinner**
Spraying Systems AA190AG, 4 ft. This Spinner Utilizes a Gast Air Motor, and is Equipped With a 3 Inch Flange Adapter for Easy Mounting on an Adapter Plate or Spinner Cone. Comes Complete With 40 ft Teflon Delivery Hose, Stainless Steel Quick Couplers.

**Vats**
Two 304 Stainless Steel Vats, Completely Outfitted For Steam Use, Including Steam Controller, Temp Guage, Trap, Low Level Cut-Off, Stainless Steel / Teflon® Butterfly Valves, Stainless Steel Headers / Steam Coils / Return. Slight Assembly Required For Steam Lines (All Tubing/Unions/Valves Included)

**Optional Heat Exchanger**
Utilizing a Heat Exchanger Allows for Much Smaller Vats. Start-Up Time after Boiler Reaches Approx. 90 psi is 5 Minutes. Only One Set of Steam Controls is Needed for Multiple Vats.

**Blower**
High Pressure Blower Provides the Volume of Air Necessary for Quick Drying After a Hot Wash or Steam Process.

**Other Optional Accessories**
Chart Recorders or Data Loggers, Pressure Washer, Return Pump, Passivation Fogger, Air Compressor, Job Matched Chemicals
SIMPLICITY FOGGER

Powered solely by compressed air, the John-Henry Simplicity Fogger atomizes pre-diluted or non-diluted chemical. Depending on the solution, a wet, damp or dry fog is produced. The fog can be “fine tuned” by adjusting the air pressure and/or by regulating the solution/chemical flow with optional metering tips or needle valve. Used for deodorizing, passivating, super-charging a vapor space with water and/or pre-wash chemical.

- Stainless Steel Construction
- Fits into 3 inch clean-outs
- Dual Opposed Nozzle Design
- Projects fog up to 25 feet
- Includes Chemical Delivery Tubing

$895

WORKS BEST WITH:

PASSIVE 8
Stainless Steel Passivation Solution

GAMMA NEBULA
Odor-Encapsulating Deodorizer

LIQUI-FIRE LST
Resin Stripper Low VOC FP > 200°F

Call Today For Chemical Pricing:
800-992-7448

www.john-henry.com
Classic, Edge, VMP

A Complete Line of Vertical Tubeless Boilers

Classic - ICS 4-60 BHP
Edge - ICX 4-30 BHP
VMP - VMP 40-150 BHP
Fulton has remained an industry leader since it began in 1949. Our Classic, Edge, and VMP vertical tubeless boilers offer complete solutions for steam and hot water for every type of industrial application.

Fulton Designs & Builds to Your Needs

Custom Skid Mounted Boilers & Accessories

Fulton’s custom skid mounted systems are built with your specific application needs in mind. Our team of engineers, technicians and project managers can build a total system, ready to ship, saving you time and money. These skids range from simple to complete “turn-key” installations where you need only make the appropriate connections and flip a switch.
**Stainless Steel Jacket Option**

Our highly polished stainless steel jacket is an inexpensive, additional option that can be ordered to give your boiler that smart, clean, custom look. This option is standard on The Edge (ICX) boilers.

**ICS 4-60 BHP**

**TYPE:** Vertical tubeless, steam or hot water

**SIZE:** 4, 6, 9.5, 10, 15, 20, 30, 50, 60 BHP

**BURNER:** Top mounted, down fired power burner. Adjustable air gate, gas or oil fired and combination fuel fired. Low emissions burner optional.

**EFFICIENCY:** Up to 80%

**Key Design Features**

- Vertical tubeless design
- Top mounted burner
- Uniform heat distribution for maximum longevity
- Small footprint - compact design
- Single control panel box
- Built/Certified to ASME and other applicable codes
- Entire boiler is UL listed

**Simple • Durable • Reliable**

Our Classic (ICS) - Gas, Oil or Combination Fuel Fired Steam Boiler is offered in a wide range of sizes.
Fulton designed and manufactured power burner fires down the full length of the furnace for maximum and uniform heat transfer.

Surface Blow Down Outlet

Top castable flame retainer increases occupancy time of the flue gases to complete combustion process.

Flue Outlet

Flue passageways. Two pass operation for uniform heat distribution and maximum pressure vessel longevity.

Flue Outlet

Spinning Cyclonic Flame

Water vessel completely surrounds the furnace wall and the outer water jacket containing the convection fins.

Blow Down Outlet

Water vessel completely surrounds the furnace wall and the outer water jacket containing the convection fins.

Water Outlet

Large easily accessed hand holes are strategically located for inspection and clean out.

Extra thick, high temperature, packed insulation surrounds the entire boiler.

Entire boiler is UL listed and built to all applicable codes.

The Fulton Difference

“The Fulton Difference”

The top mounted burner sends a spinning, cyclonic flame down the center furnace chamber. The hot gases return upward in the secondary flue passage, traveling over the heat convection fins. These fins transmit the remaining heat onto the outer side of the water vessel. This results in the most uniform overall heating of the boiler, maximizing the pressure vessel’s longevity.
New • Efficient • Proven
For the most efficient vertical tubeless boiler, with some “cutting edge” features, get The Edge.

Key Design Features
- Vertical tubeless design
- Flue gas enhancing system for maximum efficiency, while maintaining pressure vessel longevity
- Top mounted burner
- Single control panel box
- Small footprint - compact design
- Built/Certified to ASME and other applicable codes
- Entire boiler is UL listed

Low Emissions Burner
An available option is Fulton’s NEW Low Emissions Burner. Our R&D Team has developed burners for each model to meet or exceed the most stringent emissions requirements. This option is available on the Classic, Edge, and VMP boilers.
The Fulton designed and manufactured power burner fires down the full length of the furnace for maximum and uniform heat transfer.

**Sight Glass**

**Flue Gas Enhancing System** - an expansion chamber at the top of the passageway equalizes the pressure distribution of the flue gas, ensuring even heat distribution.

**Large Steam Space**

**Single, complete control panel box** houses all controls for safe operation.

**Heat convection fins** surround the entire water jacket, transmitting additional heat into the outer side of the water vessel as the hot gases are pushed upward to exhaust.

**Stainless Steel Jacket** - standard with the Edge.

**Large easily accessible hand holes** are strategically located for inspection and clean out.

**Extra thick, high temperature, packed insulation** surrounds the entire boiler.

**Entire boiler is UL listed and built to all applicable codes.**

---

**The Fulton Difference**

**Most Efficient Boilers**

The Fulton engineered FGE (Flue Gas Enhancing) System, featured on The Edge (ICX), can cut your fuel bills in half. Using a massive heat transfer surface, high velocity flue gases travel over a cylindrical grid of heat convection fins. These fins radiate additional heat evenly to the outer side of the water vessel resulting in maximum efficiency while still maintaining the pressure vessel’s longevity.

---

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<td>Level of Efficiency</td>
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<td>45%</td>
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</tr>
</tbody>
</table>
Efficient • Reliable • Compact
Fulton’s VMP Steam Boilers feature a small footprint, overall even heating, and high efficiencies.

Key Design Features
- Heavy walled schedule 80 flue pipes - No tubes to replace
- Ribboned turbulators for maximum efficiency
- Insulation blanket surrounding the boiler results in lower outside jacket temperature
- Small footprint - compact design
- Built/Certified to ASME and other applicable codes

“Ribboned” Turbulators
These turbulators extend the full length inside each flue pipe and maximize the overall heat transfer. They can be removed quickly and easily for cleaning and maintenance of the flue pipes by unbolting the top plates on the boiler.
The Fulton Difference

Pipe vs. Tube

Fifty years after creating the vertical tubeless category of boilers, Fulton has introduced another innovation - the Pipetype Boiler. Constructed of Schedule 80, heavy wall pipes, tube replacement is a thing of the past. This simple design is proven by decades of experience, and is backed by our unmatched warranty. See the difference here or call us for a physical sample of our “Pipe vs. Tube”.

The Fulton Difference
No need to spend valuable time shopping for individual equipment or waiting for separate components. Fulton is your Single Source for custom and complete skid mounted boiler systems.

Whether your needs are single or multiple boilers, steam separators, condensate return systems, chemical treatment or water softeners, our engineering, drafting, and manufacturing capabilities can build to your exact specifications. Fulton does the shopping, buying and building, saving you and your contractors time, money and aggravation.
We want to ensure that your boiler is up and running with minimal effort.

All Fulton Boilers are delivered completely trimmed. Your contractor only needs to hook up the utilities - water, fuel, electrical, and process equipment. No additional fuel train items or electrical wiring is needed.

Complete industrial instruction manuals are supplied to assist in installation, operation, maintenance, and trouble shooting.

**Fulton Warranty: #1 In The Industry**

**Boilers purchased individually**
- 1 year (12 month) warranty on the entire boiler - all components, operating controls, and the pressure vessel.
- 5 year (60 month) warranty on the pressure vessel providing the customer subscribes to a proper boiler care and water treatment program specified by the authorized Fulton Distributor or Representative.
- A $1,000 labor allowance will be honored by Fulton should a pressure vessel fail during its warranty.

**Boilers purchased as a complete skid package**
- 1 year (12 month) warranty on the entire boiler - all components, operating controls, and the pressure vessel.
- 10 year (120 month) warranty on the pressure vessel providing the customer subscribes to a proper boiler care and water treatment program specified by the authorized Fulton Distributor or Representative.
- A $1,000 labor allowance will be honored by Fulton should a pressure vessel fail during its warranty.
Clear Flow
Automatic Clayfloc Waste Water Treatment Systems

- Fully Automated Process. PLC Controlled
- Batch Process up to 1200 Gallons Per Hour
- One Step Chemical Addition for Ease in Use
- All Stainless Steel Construction
- Unique Peristaltic Pump Dual Action Fill and Sludge Pump
- Flexible Auger Clay Dosing System
- Stainless Steel Filter Belt with Automatic Indexing
- Self Rinsing Process Tank
- Multiple Clayfloc Blends Ensures Proper Treatment
- PH Control Option Available
- Equalization/Pretreatment Systems Available
- Post Treatment System Available

Environmental Compliance Equipment
Palm City, Florida www.ecequip.com
ClearFlow Benefits

3-Way ball valves allow using the Peristaltic Pump to both fill the ClearFlow Process Tank and discharge to the filter belt.

Peristaltic Pump pumps large solids without clogging or breaking down generated floc.

3/8” Stainless Steel Filter Belt ensures superior solids support, corrosion resistance.

Heavy duty reduction gear belt drive assembly.

PLC automation with Touch Screen interface for ease in use timer programming and manual operation.

Variable frequency drives on Filter Belt, Dosing System and Feed Pump allow for multiple application adjustments for proper operation.
ClearFlow Benefits

Flexible Auger Dosing System provides consistent dosing of either powder or granular Clayfloc products using VFD control to provide precise dosing.

Stainless Steel hopper provides ample storage of Clayfloc and extreme slope angles to ensure continuous feed of Clayfloc. Auger system also uses RF Frequency switch to monitor Clayfloc level remaining.

Belt Level Sensors monitor the water level on the belt when the filter paper becomes blinded which initiates the Belt Advance to index new filter paper for continued de-watering.

Heavy duty pillow block bearings and Telescooper filter Belt adjustment system.
The following is a step by step description of the Clear Flow process. This will explain how the Clear Flow System operates to batch treat waste water. Read this document while using the CAD drawings to view the various components listed.

The Clear Flow units are batch treatment systems, meaning that they will treat a volume of water and then treat additional volumes one after another until the entire volume is treated. There are several unique technologies incorporated that provide value added service when using this equipment.

The system will sense that a “batch” volume has been accumulated in the storage tank or pre-tank via a level switch. The system will initiate by turning on the Peristaltic Feed/Sludge Pump and begin transferring waste water to the Process Tank. The unique feature of the pump is that it is a peristaltic sludge pump and can pass a large volume of solids. It is designed to pump human solid waste, slurries and sludge. These pumps have a 1 ½” ID tube in the pump head that is squeezed by a roller system creating suction through positive displacement. Other systems use air diaphragm pumps that can clog with sludge and typically have smaller suction and discharge orifices in comparable sizes. A/D pumps can be cumbersome to take apart and rebuild. Another unique feature is that the pump is a dual purpose pump. It is used to fill the Process Tank with untreated waste water and as well remove the treated water after the batch is complete. This is accomplished by using three-way motorized ball valves to direct suction and discharge of the pump. After the Process Tank is filled with waste water the Peristaltic Feed/Sludge Pump and associated piping is flushed with fresh water to remove excess waste water from the piping. The “flush” is directed to the Process Tank.

The system then begins to mix the waste water using the Mixer Motor to turn the paddle blades to mix the waste water. The system will have also determined if the solutions pH needs to be adjusted and if the Optional pH Controller was installed the pH of the waste water will be adjusted according to set parameters in the controller. Upon completion of the mix and pH control the system will then add Clayfloc to the Process Tank using the Flexible Auger Dosing System. This dosing system is made up of the Clayfloc Hopper, Flexible Auger enclosed in a rigid pipe, Dosing Motor that turns the auger and the Dosing Outlet that directs the discharge of the clayfloc to the Process Tank. The mixing then continues for a pre-determined time period to mix the Clayfloc with the waste water allowing the Clayfloc to encapsulate the components in the water that make it waste. An explanation on how the Clayfloc works is attached.
After the pre-determined mixing is complete the **Mixer Motor** will shut down and the system will allow the now encapsulated waste solids settle to the cone bottom of the **Process Tank**. Once the settling time is complete, the **Three-Way Motorized Ball Valves** will switch to the opposite position and the **Peristaltic Feed/Sludge Pump** will begin to pump the sludge and water out of the **Process Tank** and up to the **Deep Bed Filter**. The **Deep Bed Filter** incorporates a tray, stainless steel chain driven belt, motor and sprocket assembly, **Belt Water Level Probes** that sense water level on top of the **Filter Paper**, a the **Clear Water Discharge** pipe. The now clean water and sludge are pumped to the **Deep Bed Filter** where the sludge is separated from the clean water using the **Filter Paper**. The **Filter Paper** is 50 micron in size. The clean water is release from the system via the **Clean Water Discharge** pipe to either sanitary sewer or to a tank for further treatment or re-use. During the filtration the **Filter Paper** may become blinded. When this happens the water level on the belt will rise and eventually come in contact with the **Belt Level Probes** that initiate the **Belt Motor** to index fresh **Filter Paper** over the belt furthering filtration. This continues until the Process Tank is completely empty. A rinse is initiated using fresh water to flush the **Process Tank** of accumulated sludge and is pumped up to the **Deep Bed Filter**. The process now complete the system looks for the signal that there is more waste water to treat and initiates a new batch. The systems are designed to treat two batches per hour as long as waste stream characteristics allow for this 30 minute batch. This is a fully automated process.
CLEAR FLOW
1. AUTOMATIC
2. MANUAL
3.ALARMS
4. INPUT LEVELS

FLEXIBLE AUGER DOsing SYSTEM

CLAYFLOC HOPPER

DOSING MOTOR

DOSING OUTLET

FLEXIBLE AUGER DOsing SYSTEM

SLUDGE DISCHARGE TO BELT

MIXER MOTOR

DEEPBED FILTER TRAY

OPTIONAL PH CONTROL

CONTROL PANEL

DEEPBED FILTER TRAY

FILTER PAPER

MOTORIZED THREE-WAY BALL VALVE

PERIASTALTIC FEED/SLUDGE PUMP

CLAYFLOC HOPPER

PERIASTALTIC FEED/SLUDGE PUMP
THE ROLE OF ECE CLAY BASED PRODUCTS IN WASTE WATER TREATMENT

The topic of this article will center primarily on a specific type of clay and on its proven ability in wastewater treatment.

Typically, industrial wastewater may be contaminated with suspended solids, heavy metals, organic compounds and other potential pollutants. Various methods exist for removal of these contaminants, to include acidifying (to break oil emulsions) precipitating heavy metals, adding primary coagulants, coagulant aids, settling, filtration etc. In general, a series of steps is necessary, requiring the addition of various chemicals to several mixing tanks and equipment. The resulting sludge produced, depending upon the initial contaminants, may be classified as hazardous, entailing high disposal costs.

ECE Clay Floc Series lines of products are highly efficient waste water treatment formulations that are designed to be mixed in a dry state directly to a contaminated industrial waste stream. The products are dry powders comprising a blend of sodium montmorillonite clay, pH adjusting items and polymers (polyelectrolytes). The various ingredients act in a sequential fashion to break oil and water emulsions, precipitate heavy metals as hydroxides, promote flocculation, agglomeration and suspended solids removal.

ECE Clay Floc Series formulations are directly applied to a waste stream, clay particles flocculate, removing certain cationic metal contaminants from solution. Additionally, through the precise use of polyelectrolytes, the clay agglomerates, encapsulating any suspended hydrocarbons. The resulting mass is a complex mixture of encapsulated contaminants and waste held together by Van der Waals forces as well as electrostatic forces. The clay particles then begin to stick together entrapping the other components and surrounding them completely. The contaminants, once microencapsulated, are surrounded by a barrier of clay particles and are unavailable to external leaching fluids for as long as these fluids are kept from the interior of the clay “pocket”. Since the contaminants are evenly distributed throughout the particles, no great concentration is ever “open to the environment” when disposed of properly in a landfill situation.

What is sodium montromorillonite clay and why is it preferred over others? To develop a better understand of these clays we must first review their geologic history. Sodium bentonite can be traced back 90 to 110 million years, presumably associated with the emplacement of the Idaho batholith, when volcanic eruptions hurled micro-fine particles of volcanic ash into the atmosphere. Prevailing winds swept the fine ash eastward across the inland salt seas where the particles fell out and eventually settled to the seafloor in uniform horizontal layers. Through a process of devitrification (to change from a glass condition caused by heat to a crystalline condition) and chemical alteration, the amorphous ash (having no real or apparent crystalline form) reacted with the salt...
water to form the right composition of aluminum, silicon and magnesium ions. In the few thousand years that followed, the noncrystalline material organized itself into very small crystalline units that in time developed into a waxy claylike substance. Eventually a massive uplift of the seafloor occurred, forming what we know today as the Bighorn Mountains. As a result of millions of years of erosion, the bentonite deposits have outcropped on the surface and are recognized as narrow, light colored bands running parallel to the mountains. This unique product of nature’s forces called bentonite can be classified as sodium based montmorillonite clay. Nowhere else but in the confines of North West U.S. is this clay mineral found in such quantity and with such consistent properties.

Bentonite structurally is made up of billions of tiny plate-like particles, each averaging less than 1 micron in size (1 micron is about 1/25,000 inch) These particles are staked or layered one upon the other, much like sheets of paper in a tablet. If one could separate platelet from its neighbor and place them side by side, approximately one handful of bentonite (or one cubic inch) would more than completely cover a half acre of land. Bentonite’s unique molecular structure, which allows it to absorb nearly five times its weight in water and swell to a volume of 12 to 16 times its dry bulk are very significant factors to consider when we begin to assess its applications for industrial use.

As mentioned earlier, clays, and bentonite in particular, are hydrous aluminum silicates. The bentonites are composed of three layers of silicates compressed into a microscopic sized plate sandwich. Despite their small size however, the platelets have a relatively large surface area. The edges of the bentonite platelets are positively charged and the flat surface areas of the platelets are negatively charged. Because of their small size, electrostatic charges control the bentonite platelet behavior, and they are strongly attracted or repelled by each other and various other substances as well. Pure sodium bentonites are extremely hydrophilic, that is, they swell in water because of the electrically balanced water molecules, which are attracted to the plate surfaces and force them apart. It is for that reason, that pure sodium bentonite exhibits a propensity to adsorb heavy metals from solution. The electrically balanced dissolved metals insulation is attracted to the plate surface of the bentonite particles. Sodium bentonite will in effect draw any positively charged ion out of solutions and electrochemically absorbs them. It is important to note that these cations are absorbed into the interior surfaces of the bentonite and not adsorbed upon the exterior. It is for this reason that the resultant sludge from wastewater treatment reacts favorably to TCLP Testing criteria.

Let’s pause for a moment and consider why it is important for heavy metals and like species to be removed from water sources. Studies have proven that significant levels of lead in drinking water are known carcinogens. Increased levels of lead can also lead to kidney and central nervous systems effects. Barium is known to effect blood pressure, cadmium is known to effect kidney functions. Elevated levels of nickel are thought to have adverse effects on liver
functions, just to name a few. By eliminating these contaminants from treated waste streams, the risks associated with water re-use are proportionally decreased.

To summarize, the bentonite clay, based formulations by ECE, has the ability to separate oily contaminants from the water, precipitate metallic hydroxides, ironically react with non-precipitated heavy metal cations and encapsulate the materials forming a non-hazardous waste, thus lowering disposal costs. These conclusions can be verified by independent laboratory testing, as is suggested. The procedure is quite simple, just one step and can be accomplished by either manual or completely automatic mechanisms.

Recent cost analysis has shown that by using ECE Clay Floc Series clay-based products for wastewater treatment, users could expect to save 80-90% over conventional waste transport and disposal costs, making this alternative not only efficient, but also cost effective. Many variables are to be considered when weighing options for wastewater treatment such as volumes of water to be treated, waste constituents, and equipment necessities. However, clay-based products have proven to be a viable alternative to waste water treatment.
MAGNUM
Heavy Duty Butyl Degreaser

MAGNUM is a concentrated, premium quality, heavy duty aqueous cleaner and degreaser with a strong butyl base. Contains no soap or phosphates. Works equally well in soft or hard water. Ideal for removing excessive oily residues from painted or unpainted surfaces. In tank washing operations, the surfactant system is best suited for temperatures between 180°- 200° F. MAGNUM will not produce foam when used above 140° F. Special ingredients allow for excellent rinsability.

DEGREASING: heavy equipment, engines, metal prep for painting, oil field, fleet washing, building maintenance, floor stripping, kitchens, warehouse floors.
TANK WASHING: latex, resins, lube oils & additives, 4-ADPA, tank exteriors. Ask your sales representative for tried and proven procedures for some of these difficult cleans.

Degreasing: Can be diluted up to 1 to 25 with water. For extreme oil removal, use undiluted for quickest response. For marine engine cleaning, and under-hood auto and truck cleaning, dilute with up to 3 parts water. For chassis cleaning, general fleet washing dilute Magnum with up to 25 parts water.
Tank Wash - Virgin Wash System: Introduce Magnum at 4-5 % by volume into system for normal washes. Difficult cleans will require presolve, as required by each product.
Tank Wash - Recirculation System: use at 10% by weight. For extreme duty, such as set-up latex, resins, or dark lube oil additives, add 5% caustic soda to batch. Additional MAGNUM may be added, up to 20% total, with 10% caustic soda.

SPECIFICATIONS FOR MAGNUM

Appearance......................... Clear, pale amber
pH................................................ 13±.5
Specific Gravity..................... 1.03
Percent Active...................... 30-35%
Flash Point.......................... None
Dilution................................. Up to 25:1 with water
Foam....................................... Low-Moderate
Hardwater Tolerance............... Excellent
Ammonia.................................. None
Butyl....................................... Yes
Phosphate.............................. None
Storage Stability.................... Excellent, indefinite
USDA Registered................... Yes

MSDS

HMIS RATINGS

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<th>Flammability</th>
<th>Reactivity</th>
<th>Personal Protection</th>
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<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>C</td>
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PACKAGING

- 55 gallon, #5102-03P
- 30 gallon, #5102-05P
- 6 gallon pail, #5102-06P
LIQUI-FIRE RX
Latex & Resin Pre-Solve

LIQUI-FIRE RX is a specially formulated solvent stripper for the tank cleaning industry. Recommended to be used non-diluted or thinned out for consistent results and performance. LIQUI-FIRE RX penetrates latex, resins, isocyanates, and 4ADPA, thereby preparing the tank for a subsequent detergent or caustic wash.

Use LIQUI-FIRE RX to remove Latex, Resins, Isocyanates, from Stainless Steel tank wagons, IBC’s, and ISO tanks.

Do not dilute with any other solvents. Use as is. For best results apply with a Presolve system from dome lids and cleanout or vent caps, without entering the tank. Recirculate with a pump system. For best results, seal up tank and allow to stand for 30 minutes after application. Especially effective for latex removal from ISO containers with polymerized film in vapor space. Apply while tank is still hot from the wash for 30 minutes, then capture for reuse. Spin tank again for final film removal.

Keep container closed when not in use. Disposal of spent product should be in accordance with all state and federal regulations.

SPECIFICATIONS FOR LIQUI-FIRE RX

Appearance.............................. Clear, Colorless Liquid
pH.............................................. N/A
Specific Gravity.......................... 0.96
Percent Active............................ 100%
Flash Point................................. 132° F
Dilution........................................ None Must be used undiluted
Foam.......................................... N/A
Hardwater Tolerance...................... N/A
Chlorinated Solvents..................... None
Ammonia..................................... None
Phosphate................................... None
Storage Stability.......................... Indefinite

NOTE: MARITIME SHIPMENTS REQUIRE THIS PRODUCT TO SHIP AS:

Petroleum Products, n.o.s., 3, UN1268, III (Liqui-Fire RX)
CROSSLINK
Latex Detergent

CrossLink is a 100% active powdered detergent formulated with a balanced blend of premium-quality synthetic detergents, water softeners, emulsifiers, and alkaline builders. It is unscented and will not leave unwanted color in tanks. CrossLink removes latexes, resins, regular solvents, and lube oils. Maximum performance achieved when used with Emulsi-Fire SB Latex Skin Cutter.

Use CrossLink for liquifying latex, resins, lube oil additives, and as a builder for a latex & resin cleaner.

Charge vat with 1 lb. CrossLink for every 4 gallons vat capacity. Mix thoroughly and bring temperature to 200°F. Begin washing. Reuse solution until effectiveness is reduced, then replace with a fresh batch.

When using with Emulsi-Fire SB with CrossLink, add enough to achieve 10% by volume. Example for 500 gallon vat: 3 x 50# pails CrossLink, 55 gallon drum Emulsi-Fire SB.

SPECIFICATIONS FOR CROSSLINK

Appearance......................... Powder
pH........................................ 12.7
Flash Point.......................... N/A
Dilution................................. 4% of Total Solution
Foam...................................... None
Hardwater Tolerance............... Excellent
Ammonia............................... None
Butyl..................................... None
Phosphate Free...................... Yes
Biodegradable...................... Yes
Storage Stability.................. Excellent, 1 year under normal conditions
EMULSI-FIRE SB
Latex Skin Cutter

EMULSI-FIRE SB is an optimized latex skin cutter additive, containing no caustic soda, using the finest biodegradable surfactants. Completely safe on aluminum and other soft metals, as well as lined containers, tankwagons, and railcars. When used with CrossLink Latex Detergent, the blend becomes the most effective total latex remover, eliminating the need for manual scraping.

Tank Washing: latex, resins, paints & additives, lube oils & additives.

Begin with a 4% (by weight) solution of CrossLink Latex Detergent. Add Emulsi-Fire SB at the rate of 1 gallon for every 10 gallons of CrossLink solution. Mix thoroughly and then heat vat to approximately 200°F. Required solution strength will vary depending on actual operating temperature, water hardness, and soil load.

SPECIFICATIONS FOR EMULSI-FIRE SB

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
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</thead>
<tbody>
<tr>
<td>Appearance</td>
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<td>Butyl</td>
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<td>Phosphate</td>
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<tr>
<td>Storage Stability</td>
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</table>

HMIS RATINGS

- Health: 2
- Flammability: 0
- Reactivity: 0
- Personal Protection: C

PACKAGING

- 55 gallon, #5102-03P

John-Henry Enterprises, Inc.  2813 Richland Ave.  Metairie, LA  70002  Phone (504) 888-8989  Fax 504-888-0955
TANKMASTER FG

Food Grade Detergent

TANKMASTER FG is a powerful concentrated internal tank wash for food grade applications. Can be used safely on all metals. May be used in all water types. Contains a high concentration of wetting agents, alkaline builders, and water softening agents that break up, disperse, and saponify grease, grime, and dirt. Does not contain solvents, phosphates, perfumes, or thickeners. All surfactants are biodegradable. Non-corrosive, non-flammable.

Use TANKMASTER FG for internal tank washing operations as a "Virgin Wash." Food grade material, for ISO tanks, tank wagons, and IBC's.

For tank cleaning in a spinner type wash, apply TANKMASTER FG at 3% by volume. For best results, wash should be at 195° F.

For steam cleaning or pressure washing apply through downstream injector at 1-2% by volume.

SPECIFICATIONS FOR TANKMASTER FG

Appearance.................................. Clear, pale yellow liquid
pH................................................. 12.7-13.2
Specific Gravity............................ 1.08
Percent Active.............................. 100%
Flash Point.................................... None
Dilution........................................ 1-3% Usage Rate
Foam............................................ Low-Moderate
Hardwater Tolerance...................... Excellent
Ammonia...................................... None
Butyl.......................................... None
Phosphate..................................... None
Storage Stability.......................... Excellent, indefinite

HMIS RATINGS

Health 2 Flammability 0
Reactivity 0 Personal Protection B

PACKAGING

55 gallon, #5724-03P

NOT REGULATED
PASSIVE 8
Stainless Steel Passivation Solution

Use PASSIVE 8 for the restoration of the chromium oxide passive film in AISI 300 Series Stainless Steel Vessels (304, 304L, 316, 316L, 316T, 321). Prior to passivating with PASSIVE 8 solution, tank should be clean and free of all oil, grease, dirt, or any other residue. PASSIVE 8 will not work on soiled surfaces. After tank has been washed and rinsed it should remain wet. If tank to be passivated is dry, thoroughly re-wet with 2-4 gallons of water.

PASSIVE 8 is then applied through a presolve system and/or fogging device to the tank interior. Forty foot single compartment trailers as well as large IMO tanks require 10 gallons of PASSIVE 8. Two, three or four-compartment trailers require less per compartment, but the same ten gallons for the sum. After tank has been passivated, remove presolve equipment and seal tank. PASSIVE 8 should be allowed a saturation period of 45 minutes.

NOTE: PASSIVE 8 changes chemically upon contact with free iron in the tank, and therefore should not be re-used.

**SPECIFICATIONS FOR PASSIVE 8**

- **Appearance**: Clear, water white liquid, acid odor
- **pH**: <1
- **Specific Gravity**: 1.02
- **Flash Point**: None
- **Dilution**: None—must be used as is
- **Coverage**: 1.5 gal. per 1000 gallons of tank capacity
- **Recommended applicator**: Fogging system capable of producing a less than 10 micron fog
- **Storage Stability**: Excellent, 2 years under normal conditions.
- **Freeze-Thaw Stability**: Freezes at very low temperature. If frozen, thaw and stir before reuse

**HMIS RATINGS**

- **Health**: 3
- **Flammability**: 0
- **Reactivity**: 1
- **Personal Protection**: D

**PACKAGING**

55 gallon, #5408-03P
FORMULA 319 is a citric acid based passivation solution, specifically designed for maximum protection of austenitic steel. It performs fast removal of free iron from the surface in a very safe manner, as this product is non-corrosive, bio-degradable, and non-toxic. Works well at ambient temperatures, but may be heated up to 160 ° F (71°C) for faster results. Acceptable for immersion use in ultrasonic tanks, as well as fogging inside any stainless steel vessel, such as Food Grade tank containers, road tankers, and IBC’s.

Use for cleaning and passivating stainless steel tanks, vats, valves, bearings, pipe, and any other components where the restoration of chromium oxide passive film is desired.

Dilute one part FORMULA 319 with 7 parts water. Use with fogging device, or recirculate with portable spinner. If heated to 160 ° F (71°C), dilute with 14 parts water.

SPECIFICATIONS FOR FORMULA 319

Appearance................................. Clear, water white liquid
pH.................................................. 2 (at use dilution)
Specific Gravity.............................. 1.24
Flashpoint....................................... None
Viscosity........................................ Low
Dilution........................................... 7-14% in water
Operating Temperature.................... Ambient > 160°F (71°C)
Solubility in water........................... Excellent
Rinseability.................................... Excellent

HMIS RATINGS

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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</table>

PACKAGING

55 Gallon Drums Only

NOT REGULATED
GAMMA NEBULA
Tank Wash Deodorizer

GAMMA NEBULA is an extreme duty deodorizer and odor neutralizer. It works to encapsulate industrial malodors from the air and leave a fresh, clean fragrance. This product may be added to virtually any cleaning solution to add deodorizing power to it.

Extremely effective in tank wash applications on a wide variety of products, including acrylates, mercaptans, fish oils, H2S, etc. The better the atomization, the faster the performance. When applied with the John-Henry Sonic Horn System, total odor removal is accomplished in just seconds.

Tank Cleaning: Best Method: Mix one gallon of hot water with one gallon of GAMMA NEBULA. Apply via John-Henry Sonic Horn System. Alternate Method: Mix one pint or more with an equal amount of water (depending on nature of residue), and pour into tank via dome lid. Apply live steam for 1/2 hour.

Note: This product will not neutralize heels. If a large amount of heel is present, much more product will need to be introduced into tank. While not as cost effective, this method will neutralize the heel. Trial and error will be the only way to determine the amounts needed.

SPECIFICATIONS FOR GAMMA NEBULA

Appearance................................. Clear, water white liquid
Odor........................................... Gammalene fragrance
pH.................................................. 7 ± .5
Specific gravity.............................. 1.01
Solubility in water.......................... Complete
Biodegradable surfactants ............ Yes
Hard water tolerance ...................... Excellent
Phosphate ...................................... None
Butyl Cellosolve............................. None
Flash point ................................... None
Storage Stability ............................ Excellent, 1 year minimum

Use Dilutions:
Fogging - Sonic Horn System:..... 1Gal to 1 Gal. hot water
Steaming - Through Dome Lid..... 1 Pint to1 pint water
Wiping/Mopping/Padding.........Up to 64:1 with water

HMIS RATINGS

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
<td>A</td>
</tr>
</tbody>
</table>

PACKAGING

55 gallon, #8425-03P

John-Henry Enterprises, Inc. 2813 Richland Ave. Metairie, LA 70002 Phone (504) 888-8989 Fax 504-888-0955
ALUMINUM BRIGHTENER

Acid Aluminum Cleaner and Restorer

A concentrated, heavy duty, fast acting liquid aluminum trailer cleaner and brightener. Contains a potent blend of strong mineral acids, wetting agents, emulsifiers, and water soluble solvent for extra grease cutting action.

Cleans road film deposits and diesel smoke residues without brushing. Works in seconds, and will not streak when used as directed. Removes dulling oxide films, leaving the aluminum surface with a soft "satin" finish.

Aluminum Brightener is designed for cleaning over the road and unpainted trailers fabricated with unpainted aluminum. May also be used as a stainless steel trailer brightener before an alkaline wash is performed, thus simulating a two-step wash. May also be used as a "spot pickler" in tank wagons containing stains that are too hard to remove conventionally.

Aluminum Brightener may be diluted with up to 50 parts water and perform beautifully in continual wash applications. For light road film removal, dilute with 10 parts water. For heavy or smoke soil removal, dilute with 3 parts water. Always apply Aluminum Brightener from the bottom to the top of whatever surface is being cleaned so as to eliminate streaking. Also execute the first rinse from bottom to top, and after that, as desired. Use downstream chemical injectors, pump-up sprayer, or brush on. Only apply to as large an area that will not dry before rinsing.

SPECIFICATIONS FOR ALUMINUM BRIGHTENER

- Appearance: Clear, colorless liquid
- Odor: Pungent, acidic
- pH at 1/10 (H.D. MAC/water): <2
- Specific Gravity: 1.01
- Flashpoint: None
- Dilution: Up to 50 to 1 with water
- Foam: Moderate
- Hardwater Tolerance: Excellent
- Rinsability: Excellent
- Biodegradable: Yes
- Phosphate-Free: Yes
- Storage Stability: Excellent, 1 year under normal conditions
- Freeze-Thaw Stability: Will freeze-usable after thawing with no change in performance. Agitate after thawing and before use.

MSDS

HMIS RATINGS

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>1</td>
<td>H</td>
</tr>
</tbody>
</table>

PACKAGING

- 55 gallon, #5402-03P
- 30 gallon, #5402-05P
- 6 gallon pail, #5402-06P

John-Henry Enterprises, Inc.  2813 Richland Ave.  Metairie, LA  70002  Phone (504) 888-8989  Fax 504-888-0955
SECTION I: PRODUCT IDENTIFICATION

MANUFACTURER: John-Henry Enterprises, Inc.
2813 Richland Ave.
Metairie, LA 70002

PRODUCT NAME: MAGNUM
PRODUCT CODE: 5102

GENERIC DESCRIPTION: Heavy Duty Butyl Degreaser

DATE PREPARED: January 13, 1995

SECTION II: PHYSICAL DATA

APPEARANCE: clear, pale amber

ODOR: mild, ethereal

PH (CONC): >13.5

SPECIFIC GRAVITY: 1.02

% VOLATILE (WT - 1 HR. @ 105° C): 83-87%

SOLUBILITY IN WATER: complete

SECTION III: INGREDIENTS

<table>
<thead>
<tr>
<th>INGREDIENTS</th>
<th>CAS#</th>
<th>TLV</th>
<th>PEL</th>
<th>STEL</th>
</tr>
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<tbody>
<tr>
<td>Detergents</td>
<td>Mixture</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>Builders</td>
<td>6834-92-0</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>Chelates</td>
<td>5064-31-3</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>Glycol ether</td>
<td>111-76-2</td>
<td>25 ppm (skin)</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>Caustic alkali</td>
<td>1310-73-2</td>
<td>2 mg/m3(ceiling)</td>
<td>2 mg/m3(ceiling)</td>
<td>N/E</td>
</tr>
</tbody>
</table>

SECTION IV: HEALTH HAZARD DATA

HAZARD SUMMARY for PRODUCT
Severely irritating and may cause burns to eyes and skin. Mists, sprays, and vapors may irritate or burn eyes, nose, and throat.

HMIS RATINGS:
- HEALTH - 2
- FLAMMABILITY - 0
- REACTIVITY - 1
- PERSONAL PROTECTION - C

EFFECTS OF OVEREXPOSURE (ACUTE):
- EYE CONTACT.... May cause moderate to severe irritation and temporary blurring of vision.
- SKIN CONTACT... Prolonged exposure may cause redness, dryness, irritation, sensitization, etc.
- INHALATION....... No vapor hazard. Mists and spray may cause coughing, sneezing, choking, etc.
- INGESTION.......... May cause nausea, vomiting, diarrhea, and gastrointestinal distress.

PRIMARY ROUTES OF EXPOSURE: Skin

CHRONIC EFFECTS OF OVEREXPOSURE:
None known

FIRST AID PROCEDURES

- EYE CONTACT.... Immediately flush eyes with water for 15 minutes. Seek medical attention, especially for severe or persistent irritation.
- SKIN CONTACT... Wash off with soap and water. Remove and wash contaminated clothing.
- INHALATION....... Move to fresh air. Give Oxygen if breathing is difficult or artificial respiration if breathing has stopped (get medical attention). Seek medical attention if symptoms persist.
- INGESTION......... Give water, milk, dilute vinegar, or citrus juice unless unconscious or convulsing. Do not induce vomiting. Keep warm. Contact physician or poison control center immediately.

SECTION V: FIRE AND EXPLOSION DATA

FLASH POINT: >200° F
LEL: N/D

EXTINGUISHING MEDIA: Water, CO2, dry chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Plastic or steel drums may burst if exposed to flame or high heat. Cool drums with water fog or spray in case of fire.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear self-contained breathing apparatus when fighting chemical fires.
SECTION VI: REACTIVITY DATA

STABILITY: Stable  HAZARDOUS POLYMERIZATION: Will not Occur
CONDITIONS TO AVOID: None
INCOMPATIBILITY: Strong oxidizers
HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

Oxides of carbon, phosphorus, and sulfur, organophosphorus, organosulfur, and hydrocarbon residues.

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Contain spill. Collect into properly labeled containers disposal or reuse. Rinse spill area with water.

WASTE DISPOSAL
Biodegrade in accordance with applicable regulations.

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY: Wear NIOSH approved respirator if mists or spray becomes objectionable.
VENTILATION: Local exhaust for enclosed areas.
PROTECTIVE GLOVES: Wear latex, Neoprene, or other impermeable gloves.
EYE PROTECTION: Wear safety glasses, goggles, or face shield.

Other Protective Clothing or Equipment
Eyewash stations and safety showers should be located in or near all areas where chemicals are stored or handled.

SECTION IX: MISCELLANEOUS INFORMATION

SPECIAL PRECAUTIONS:
Wear recommended personal protective equipment when handling. Avoid contact with skin and eyes. Avoid breathing sprays or mists. Wash thoroughly after handling. Keep container closed when not in use. Keep from freezing. Keep all chemicals out of the reach of children.

D.O.T. SHIPPING NAME: Compounds, cleaning liquid (contains Sodium hydroxide), 8, NA 1760, II

SARA TITLE III SECTION 313 INFORMATION

This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372. However, the specific identity of the material(s) listed is proprietary and is withheld in accordance with Part 372.45(e):

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycol ether</td>
<td>8-16%</td>
</tr>
</tbody>
</table>

OTHER INFORMATION:
None

To the best of our knowledge, the information contained herein is accurate. However, no liability whatsoever is assumed for its accuracy and completeness. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Certain hazards are described herein, but no guarantee is made that these are the only hazards associated with this product that exist.
SECTION I: PRODUCT IDENTIFICATION

MANUFACTURER: John-Henry Enterprises, Inc.
2813 Richland Ave.
Metairie, LA 70002

PRODUCT NAME: LIQUI-FIRE RX

GENERIC DESCRIPTION: Resin & Latex Stripper

PRODUCT CODE: 5614

DATE PREPARED: August 6, 2001

SECTION II: PHYSICAL DATA

APPEARANCE: clear, colorless
ODOR: strong, ethereal
PH (CONC): N/A
SPECIFIC GRAVITY: 0.97
% VOLATILE (WT - 1 HR. @ 105° C): 100%
SOLUBILITY IN WATER: insoluble

SECTION III: INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>% Vol.</th>
<th>LEL</th>
<th>N/D</th>
<th>N/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum distillates</td>
<td>64742-94-5</td>
<td>100 ppm</td>
<td>100 ppm</td>
<td>N/E</td>
</tr>
<tr>
<td>Glycol ethers</td>
<td>Mixture</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
</tr>
</tbody>
</table>

The formulation of this product and the chemical name(s) of the ingredients are proprietary. However, more detailed information will be provided to qualified personnel in case of an emergency. All components are listed in the TSCA Registry.

(1) ACGIH  (2) OSHA  (3) Other (specify)  N/A = None or Not Applicable  N/D = Not Determined  N/E = Not Established

SECTION IV: HEALTH HAZARD DATA

HAZARD SUMMARY for PRODUCT

Warning! Flammable Liquid and Vapor. Harmful if inhaled and may cause delayed lung injury. Can cause nervous system depression. Aspiration hazard if swallowed. Can enter lungs and cause damage. Ingestion may cause blindness. Avoid breathing vapor. Use ventilation adequate to keep vapor below recommended exposure limits. Avoid contact with eyes, skin, and clothing.

HMIS RATINGS: HEALTH - 2  FLAMMABILITY - 3  REACTIVITY - 0  PERSONAL PROTECTION - C

EFFECTS OF OVEREXPOSURE (ACUTE):

EYE CONTACT..... May cause moderate to severe irritation and temporary blurring of vision.
SKIN CONTACT... Can cause dryness, irritation, and/or dermatitis. Sensitive individuals may develop rashes, sensitization, or other allergic reactions.
INHALATION....... Vapors can irritate nose and throat. Concentrated vapors may cause stupor and headaches.
INGESTION.......... May cause nausea, vomiting, and drowsiness. May cause blindness if swallowed.

PRIMARY ROUTES OF EXPOSURE: skin, inhalation

CHRONIC EFFECTS OF OVEREXPOSURE:

None known

FIRST AID PROCEDURES

EYE CONTACT..... Immediately flush eyes with water for 15 minutes. Seek medical attention, especially for severe irritation.
SKIN CONTACT... Wash off with soap and water. Remove and wash contaminated clothing. Avoid contact if rash or other allergic symptoms are experienced.
INHALATION....... Move to fresh air. Give O2 if breathing is difficult or artificial respiration if breathing has stopped (get medical attention). Seek medical attention if symptoms persist.
INGESTION.......... Induce vomiting of conscious patient immediately by giving two glasses of water and pressing finger down throat. Contact physician immediately.

SECTION V: FIRE AND EXPLOSION DATA

FLASH POINT: 132° F  LEL: N/D

EXTINGUISHING MEDIA: CO2, dry chemical, foam

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Plastic or steel drums may burst if exposed to flame or high heat. Cool drums with water fog or spray in case of fire. Product exposed to flames or red heat can produce toxic and highly irritating fumes. Flashpoint of product decreases as it evaporates or boils.

SPECIAL FIRE FIGHTING PROCEDURES:

Wear self-contained breathing apparatus when fighting chemical fires.
SECTION VI: REACTIVITY DATA

STABILITY: stable  HAZARDOUS POLYMERIZATION: will not occur
CONDITIONS TO AVOID: none
INCOMPATIBILITY: Will attack certain plastic materials
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: carbon monoxide and carbon dioxide

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Ventilate the area, extinguish sources of ignition, and remove uninvolved personnel. Contain spill and keep from entering sewers, drainage ditches, surface waterways, etc. Absorb spilled material with clay or paper absorbent, and collect into properly labeled containers for disposal. Allow spill area to dry thoroughly with good ventilation.

WASTE DISPOSAL METHOD:
Not for disposal by sewer or discharge to waterways. Waste solvents may be recovered by distillation. Utilize licensed waste disposal company.

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY: Wear NIOSH approved respirator if vapor concentrations exceed TLV's.
VENTILATION: Local exhaust in enclosed areas.
PROTECTIVE GLOVES: Wear Neoprene or rubber gloves.
EYE PROTECTION: Wear safety glasses or goggles.

Other Protective Clothing or Equipment:
Eyewash stations and safety showers should be located in or near all areas where chemicals are stored or handled.

SECTION IX: MISCELLANEOUS INFORMATION

SPECIAL PRECAUTIONS:
Wear recommended personal protective equipment when handling. Avoid contact with skin and eyes. Avoid prolonged exposure to vapors. Wash thoroughly after handling chemicals. Store below 100° F. Keep container closed when not in use. Keep out of reach of children. Do not use near open flames or sparks. Do not dispose of contaminated cloth or paper near sources of ignition.

D.O.T. SHIPPING NAME: Non-hazardous Cleaning Compound

SARA TITLE III SECTION 313 INFORMATION

This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372. However, the specific identity of the material(s) listed is proprietary and is withheld in accordance with Part 372.45(e):

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-butoxyethanol</td>
<td>20-30%</td>
</tr>
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</table>

OTHER INFORMATION:
None

To the best of our knowledge, the information contained herein is accurate. However, no liability whatsoever is assumed for its accuracy and completeness. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Certain hazards are described herein, but no guarantee is made that these are the only hazards associated with this product that exist.
MATERIAL SAFETY DATA SHEET

EMERGENCY TELEPHONE NUMBER: 800-992-7448
TELEPHONE NUMBER FOR INFORMATION: 504-888-8989
EMERGENCY NUMBER-TRANSPORTATION ONLY: 800-535-5053

SECTION I: PRODUCT IDENTIFICATION

MANUFACTURER:
John-Henry Enterprises, Inc.
2813 Richland Ave.
Metairie, LA 70002

PRODUCT NAME: CROSSLINK
PRODUCT CODE: 9105
GENERIC DESCRIPTION: Latex Detergent
DATE PREPARED: November 19, 1999

SECTION II: PHYSICAL DATA

APPEARANCE: white, granular
ODOR: none
PH (CONC): 12.7 ± 5
SPECIFIC GRAVITY: 0.79
% VOLATILE (WT - 1 HR. @ 105° C): N/A
SOLUBILITY IN WATER: complete

SECTION III: INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>TLV (mg/m3)</th>
<th>PEL (mg/m3)</th>
<th>STEL (mg/m3)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>6834-92-0</td>
<td>2 (ceiling)</td>
<td>2 (ceiling)</td>
<td>N/E</td>
<td>&gt;85</td>
</tr>
</tbody>
</table>

The formulation of this product and the chemical name(s) of the ingredients are proprietary. However, more detailed information will be provided to qualified personnel in case of an emergency. All components are listed in the TSCA Inventory.

(1) ACGIH  (2) OSHA  (3) Other (specify)  N/A = None or Not Applicable  N/D = Not Determined  N/E = Not Established

SECTION IV: HEALTH HAZARD DATA

HAZARD SUMMARY for PRODUCT
CORROSIVE. Severely irritating and may cause burns to eyes and skin. Mists and sprays may irritate or burn eyes, nose, and throat. Slight vapor hazard, minimized once solubilized per label instructions.

HMIS RATINGS:
HEALTH - 3  FLAMMABILITY - 0  REACTIVITY - 0  PERSONAL PROTECTION - B

EFFECTS OF OVEREXPOSURE (ACUTE):

EYE CONTACT..... Can cause severe irritation, burns, and loss of vision.
SKIN CONTACT... May cause redness, dryness, irritation, sensitization, and/or burns, especially after prolonged exposure.
INHALATION......... Mists, spray, and vapors may cause coughing, sneezing, choking, etc. Vapors may cause nausea, vomiting, dizziness, etc.
INGESTION........... May cause nausea, vomiting, diarrhea, and gastrointestinal distress. May also cause burns to and perforation of tissues in mouth, throat, esophagus, and stomach.

PRIMARY ROUTES OF EXPOSURE: skin, inhalation

CHRONIC EFFECTS OF OVEREXPOSURE: none known

FIRST AID PROCEDURES

EYE CONTACT..... Immediately flush eyes with water for 15 minutes. Seek medical attention, especially for severe or persistent irritation.
SKIN CONTACT... Wash off with soap and plenty of cool water. Remove and wash contaminated clothing. Treat as for thermal burns.
INHALATION......... Move to fresh air. Give O2 if breathing is difficult or artificial respiration if breathing has stopped (get medical attention). Seek medical attention if symptoms persist.
INGESTION........... Rinse mouth, then give 1 or 2 large glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person.

SECTION V: FIRE AND EXPLOSION DATA

FLASH POINT: None  LEL: N/D

EXTINGUISHING MEDIA: Water, CO2, dry chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Plastic or steel drums may burst if exposed to flame or high heat. Cool drums with water fog or spray in case of fire.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear self-contained breathing apparatus when fighting chemical fires.
SECTION VI: REACTIVITY DATA

STABILITY: stable  
HAZARDOUS POLYMERIZATION: will not occur

CONDITIONS TO AVOID: none

INCOMPATIBILITY: Strong oxidizers, strong acids, metals such as aluminum, zinc, etc.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Oxides of carbon and nitrogen, organonitrogen and hydrocarbon residues.

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Contain spill and do not allow to enter streams, drainage ditches, etc. Collect into properly labeled containers disposal or reuse.
Rinse spill area with diluted acid or water.

WASTE DISPOSAL
Biodegrade in accordance with applicable regulations. Unneutralized or undiluted product may constitute an RCRA regulated waste due to corrosivity (DOO2)

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY: Wear NIOSH approved respirator if mists or spray becomes objectionable or if vapor concentrations exceed exposure limits
VENTILATION: Local exhaust for enclosed areas.
PROTECTIVE GLOVES: Wear latex, Neoprene, or other impermeable gloves.
EYE PROTECTION: Wear safety glasses, goggles, or face shield.

Other Protective Clothing or Equipment: Eyewash stations and safety showers should be located in or near all areas where chemicals are stored or handled.

SECTION IX: MISCELLANEOUS INFORMATION

SPECIAL PRECAUTIONS:
Wear recommended personal protective equipment when handling. Avoid contact with skin and eyes. Avoid exposure to spray, mists, and vapors. Wash thoroughly after handling chemicals. Keep out of the reach of children. Keep container closed when not in use. Keep from freezing. Do not store in containers made of aluminum, zinc, etc (releases hydrogen, a flammable gas).
D.O.T. SHIPPING NAME: Corrosive solids, Basic, Inorganic, N.O.S., (Sodium metasilicate anhydrous), 8, UN 3262 II

SARA TITLE III SECTION 313 INFORMATION

This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right -to-Know Act of 1986 and of 40 CFR 372. However, the specific identity of the material(s) listed is proprietary and is withheld in accordance with Part 372.45(e):

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

OTHER INFORMATION:
none

To the best of our knowledge, the information contained herein is accurate. However, no liability whatsoever is assumed for its accuracy and completeness. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Certain hazards are described herein, but no guarantee is made that these are the only hazards associated with this product that exist.
SECTION I: PRODUCT IDENTIFICATION

MANUFACTURER:
John-Henry Enterprises, Inc.
2813 Richland Ave.
Metairie, LA 70002

PRODUCT NAME:
EMULSI-FIRE SB

PRODUCT CODE:
5118

GENERIC DESCRIPTION:
Latex Skin Cutter

DATE PREPARED:
November 6, 2009

SECTION II: PHYSICAL DATA

APPEARANCE: clear, water white

ODOR: mild

PH (CONC): 12 - 13

SPECIFIC GRAVITY: 1.01

% VOLATILE (WT - 1 HR. @ 105° C): 83-87%

MELTING / FREEZING POINT: <0° C

BOILING RANGE: 212° F

VAPOR PRESSURE: same as water

EVAPORATION RATE (N - BUOAC = 1): <1

VAPOR DENSITY (AIR = 1): >1

SECTION III: INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>TLV</th>
<th>PEL</th>
<th>STEL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium metasilicate 6834-92-0</td>
<td>2ppm</td>
<td>N/E</td>
<td>N/E</td>
<td>&gt;4</td>
</tr>
</tbody>
</table>

Proprietary blend of surfactants (trade secret)

The formulation of this product and the chemical name(s) of the ingredients are proprietary. However, more detailed information will be provided to qualified personnel in case of an emergency. All components are listed in the TSCA Inventory.

(1) ACGIH  (2) OSHA  (3) Other (specify)  N/A = None or Not Applicable  N/D = Not Determined  N/E = Not Established

SECTION IV: HEALTH HAZARD DATA

HAZARD SUMMARY for PRODUCT
Severely irritating and may cause burns to eyes and skin. Mists, sprays, and vapors may irritate or burn eyes, nose, and throat.

HMIS RATINGS:

EFFECTS OF OVEREXPOSURE (ACUTE):

EYE CONTACT..... May cause moderate to severe irritation and temporary blurring of vision.

SKIN CONTACT... Prolonged exposure may cause redness, dryness, irritation, sensitization, etc.

INHALATION......... No vapor hazard. Mists and spray may cause coughing, sneezing, choking, etc.

INGESTION......... May cause nausea, vomiting, diarrhea, and gastrointestinal distress.

PRIMARY ROUTES OF EXPOSURE: Skin

CHRONIC EFFECTS OF OVEREXPOSURE:
None known

FIRST AID PROCEDURES

EYE CONTACT..... Immediately flush eyes with water for 15 minutes. Seek medical attention, especially for severe or persistent irritation.

SKIN CONTACT... Wash off with soap and water. Remove and wash contaminated clothing.

INHALATION......... Move to fresh air. Give Oxygen if breathing is difficult or artificial respiration if breathing has stopped (get medical attention). Seek medical attention if symptoms persist.

INGESTION............ Give water, milk, dilute vinegar, or citrus juice unless unconscious or convulsing. Do not induce vomiting. Keep warm. Contact physician or poison control center immediately.

SECTION V: FIRE AND EXPLOSION DATA

FLASH POINT: None

LEL: N/D

EXTINGUISHING MEDIA: Water, CO2, dry chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Plastic or steel drums may burst if exposed to flame or high heat. Cool drums with water fog or spray in case of fire.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear self-contained breathing apparatus when fighting chemical fires.

Back to Emulsi-Fire SB
SECTION VI: REACTIVITY DATA

STABILITY: Stable
HAZARDOUS POLYMERIZATION: Will not Occur
CONDITIONS TO AVOID: None
INCOMPATIBILITY: Strong oxidizers
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Oxides of carbon, phosphorus, and sulfur, organophosphorus, organosulfur, and hydrocarbon residues.

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Contain spill. Collect into properly labeled containers disposal or reuse. Rinse spill area with water.

WASTE DISPOSAL
Biodegrade in accordance with applicable regulations.

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY: Wear NIOSH approved respirator if mists or spray becomes objectionable.
VENTILATION: Local exhaust for enclosed areas.
PROTECTIVE GLOVES: Wear latex, Neoprene, or other impermeable gloves.
EYE PROTECTION: Wear safety glasses, goggles, or face shield.

SECTION IX: MISCELLANEOUS INFORMATION

SPECIAL PRECAUTIONS:
Wear recommended personal protective equipment when handling. Avoid contact with skin and eyes. Avoid breathing sprays or mists. Wash thoroughly after handling. Keep container closed when not in use. Keep from freezing. Keep all chemicals out of the reach of children.

D.O.T. SHIPPING NAME: Corrosive liquids, n.o.s., (Sodium metasilicate), 8, UN 1760, III

SARA TITLE III SECTION 313 INFORMATION

This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372. However, the specific identity of the material(s) listed is proprietary and is withheld in accordance with Part 372.45(e):

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

OTHER INFORMATION:
None

To the best of our knowledge, the information contained herein is accurate. However, no liability whatsoever is assumed for its accuracy and completeness. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Certain hazards are described herein, but no guarantee is made that these are the only hazards associated with this product that exist.
SECTION I: PRODUCT IDENTIFICATION

MANUFACTURER:
John-Henry Enterprises, Inc.
2813 Richland Ave.
Metairie, LA 70002

PRODUCT NAME: TANKMASTER FG
PRODUCT CODE: 5724
GENERIC DESCRIPTION: Food Grade Detergent
DATE PREPARED: February 10, 1995

SECTION II: PHYSICAL DATA

APPEARANCE: clear, pale amber liquid
ODOR: trace
PH (CONC): 12.5-13.2
SPECIFIC GRAVITY: 1.06
% VOLATILE (WT - 1 HR. @ 105° C): 81-85%

SOLUBILITY IN WATER: complete

MEETING / FREEZING POINT: <0° C
BOILING RANGE: 215° F
VAPOR PRESSURE: same as water
EVAPORATION RATE (N - BUOAC = 1): <1
VAPOR DENSITY (AIR = 1): >1

SECTION III: INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>TLV</th>
<th>PEL</th>
<th>STEL</th>
<th>%</th>
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<tbody>
<tr>
<td>Detergents</td>
<td>Mixture</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>Alkaline builders</td>
<td>6834-92-0</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
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<td>5064-31-3</td>
<td>N/E</td>
<td>N/E</td>
<td>N/E</td>
</tr>
</tbody>
</table>

The formulation of this product and the chemical name(s) of the ingredients are proprietary. However, more detailed information will be provided to qualified personnel in case of an emergency. All components are listed in the TSCA Inventory.

(1) ACGIH (2) OSHA (3) Other (specify) N/A = None or Not Applicable N/D = Not Determined N/E = Not Established

HMIS RATINGS:
Health - 2 Flammability - 0 Reactivity - 0 Personal Protection - B

EFFECTS OF OVEREXPOSURE (ACUTE):
EYE CONTACT..... Can cause severe irritation, temporary blurring of vision, and burns.
SKIN CONTACT.... Prolonged exposure can cause redness, dryness, irritation, edema, sensitization, and/or burns.
INHALATION........ No vapor hazard. Mists and spray may cause coughing, sneezing, choking, etc.
INGESTION........... May cause nausea, vomiting, diarrhea, gastrointestinal distress, etc

PRIMARY ROUTES OF EXPOSURE: skin
CHRONIC EFFECTS OF OVEREXPOSURE:
none known

FIRST AID PROCEDURES
EYE CONTACT..... Immediately flush eyes with water for at least 15 minutes or until discomfort or pain eases. Seek medical attention for severe or persistent irritation if eyes are present or suspected.
SKIN CONTACT... Wash off with soap and water. Remove and wash contaminated clothing.
INHALATION........ Move to fresh air. Give O2 if breathing is difficult or artificial respiration if breathing has stopped (get medical attention). Seek medical attention if symptoms persist.
INGESTION............. Give water, milk, dilute vinegar, or citrus juice unless unconscious or convulsing. Induce vomiting. Keep warm. Contact physician or poison control center immediately.

SECTION IV: HEALTH HAZARD DATA
HAZARD SUMMARY for PRODUCT
Severely irritating and may cause burns to eyes. Prolonged exposure may irritate skin. Mists and sprays may irritate eyes, nose, and throat.

FLASH POINT: None
LEL: N/D

EXTINGUISHING MEDIA: Water, CO2, dry chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Plastic or steel drums may burst if exposed to flame or high heat. Cool drums with water fog or spray in case of fire.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear self-contained breathing apparatus when fighting chemical fires.

Back to Tankmaster FG
SECTION VI: REACTIVITY DATA

STABILITY: stable
HAZARDOUS POLYMERIZATION: will not occur

CONDITIONS TO AVOID: none

INCOMPATIBILITY: Strong oxidizers, strong acids

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Carbon Dioxide and Carbon Monoxide. When heated to decomposition, it emits toxic fumes (oxides of Phosphorous).

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Contain spill and do not allow to enter streams, drainage ditches, etc. Collect into properly labeled containers disposal or reuse. Rinse spill area with water.

WASTE DISPOSAL
Biodegrade in accordance with applicable regulations. Unneutralized or undiluted product may constitute an RCRA regulated waste due to pH > 12.5 (Corrosivity - DOO2).

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY: Wear NIOSH approved respirator if mists or spray becomes objectionable.
VENTILATION: Local exhaust for enclosed areas.
PROTECTIVE GLOVES: Wear latex, Neoprene, or other impermeable gloves.
EYE PROTECTION: Wear safety glasses, goggles, or face shield.
Other Protective Clothing or Equipment: Eyewash stations and safety showers should be located in or near all areas where chemicals are stored or handled.

SECTION IX: MISCELLANEOUS INFORMATION

SPECIAL PRECAUTIONS:
Wear recommended personal protective equipment when handling. Avoid contact with skin and eyes. Avoid breathing sprays or mists. Wash thoroughly after handling. Keep container closed when not in use. Keep from freezing. Keep all chemicals out of the reach of children.

D.O.T. SHIPPING NAME: Non-Hazardous Cleaning Compound

SARA TITLE III SECTION 313 INFORMATION

This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right -to-Know Act of 1986 and of 40 CFR 372. However, the specific identity of the material(s) listed is proprietary and is withheld in accordance with Part 372.45(e):

<table>
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<tr>
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<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

OTHER INFORMATION:
none

To the best of our knowledge, the information contained herein is accurate. However, no liability whatsoever is assumed for its accuracy and completeness. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Certain hazards are described herein, but no guarantee is made that these are the only hazards associated with this product that exist.
SECTION I: PRODUCT IDENTIFICATION

MANUFACTURER: John-Henry Enterprises, Inc.
2813 Richland Ave.
Metairie, LA 70002

PRODUCT NAME: PASSIVE 8
PRODUCT CODE: 5408

GENERIC DESCRIPTION: Stainless Steel Passivation Solution

DATE PREPARED: December 31, 1994

SECTION II: PHYSICAL DATA

APPEARANCE: clear
ODOR: faint, acidic
PH (CONC): <2
SPECIFIC GRAVITY: 1.08
% VOLATILE (WT - 1 HR. @ 105° C): not determined
SOLUBILITY IN WATER: complete

SECTION III: INGREDIENTS

The formulation of this product and the chemical name(s) of the ingredients are proprietary. However, more detailed information will be provided to qualified personnel in case of an emergency. All components are listed in the TSCA Registry.

(1) ACGIH   (2) OSHA   (3) Other (specify)    N/A = None or Not Applicable    N/D = Not Determined    N/E = Not Established

SECTIN IV: HEALTH HAZARD DATA

HAZARD SUMMARY for PRODUCT
Corrosive. Can cause severe irritation and burns to eyes. May cause irritation and burns to skin. Mists and sprays can irritate eyes, nose, and throat. Reacts vigorously with strong bases and metals such as zinc and magnesium.

HMIS RATINGS:
HEALTH - 3    FLAMMABILITY - 0    REACTIVITY - 1    PERSONAL PROTECTION - D

EFFECTS OF OVEREXPOSURE (ACUTE):
EYE CONTACT..... May cause severe irritation and burns
SKIN CONTACT... Exposure may cause moderate to severe irritation and burns.
INHALATION........ No vapor hazard. Inhalation of spray or mist can irritate nose and throat, causing sneezing, coughing, etc.
INGESTION......... May cause nausea, vomiting, diarrhea, and gastrointestinal distress. May also cause burns to and perforation of tissues in mouth, throat, esophagus, and stomach.

PRIMARY ROUTES OF EXPOSURE: skin

CHRONIC EFFECTS OF OVEREXPOSURE:
none known

FIRST AID PROCEDURES

EYE CONTACT..... Immediately flush eyes with water for at least 15 minutes. Cover eyes loosely with gauze and seek immediate medical attention, especially for severe or persistent irritation or if burns are suspected or present.
SKIN CONTACT... Wash off with soap and water. Soak affected area with an iced solution of benzethonium chloride for 15 - 30 minutes. Remove and wash contaminated clothing. Treat burns as if caused by exposure to heat.
INHALATION........ Move to fresh air. Give O2 if breathing is difficult or artificial respiration if breathing has stopped (get medical attention). Seek medical attention if symptoms persist.
INGESTION......... Give water, milk, or antaid unless unconscious or convulsing. Do not induce vomiting. Keep warm. Contact physician or poison control center.

SECTION V: FIRE AND EXPLOSION DATA

FLASH POINT: none   LEL: N/D
EXTINGUISHING MEDIA: not combustible
UNUSUAL FIRE AND EXPLOSION HAZARDS:
Plastic or steel drums may burst if exposed to flame or high heat. Cool drums with water fog or spray in case of fire. May release toxic acid fumes if heated to dryness.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear self-contained breathing apparatus when fighting chemical fires.

Back to Passive 8
SECTION VI: REACTIVITY DATA

STABILITY: stable
HAZARDOUS POLYMERIZATION: will not occur
CONDITIONS TO AVOID: none
INCOMPATIBILITY: Strong alkalies and white metals (releases hydrogen, a flammable gas).
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: none

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Contain spill and keep from entering sewers, drains, ditches, or surface waterways. Collect into properly labeled containers disposal or reuse. Rinse spill area with diluted alkali and water.

WASTE DISPOSAL METHOD:
Dilute, neutralize, and biodegrade in accordance with applicable regulations. Unused, undiluted, or unneutralized product will constitute an RCRA regulated hazardous waste due to corrosivity (D002).

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY: Wear NIOSH approved respirator if mists or sprays are objectionable.
VENTILATION: Local exhaust to prevent accumulation of mists.
PROTECTIVE GLOVES: Wear latex, Neoprene, or other impermeable gloves.
EYE PROTECTION: Wear face shield or chemical goggles.

Other Protective Clothing or Equipment: Eyewash stations and safety showers should be located in or near all areas where chemicals are stored or handled. Wear synthetic apron and boots while handling.

SECTION IX: MISCELLANEOUS INFORMATION

SPECIAL PRECAUTIONS:
Wear recommended personal protective equipment when handling. Avoid contact with skin and eyes. Avoid exposure to spray, mists, vapors, and fumes. Wash thoroughly after handling chemicals. Store and use in well ventilated areas and keep container closed when not in use. Keep out of the reach of children.

D.O.T. SHIPPING NAME: Compound, Cleaning Liquid, N.O.S. (contains nitric acid), 8, NA 1760, PG III
D.O.T. HAZARD CLASS: 8
D.O.T. UN/NA NUMBER: NA 1760
D.O.T. LABEL(S): Corrosive (White/Black)

SARA TITLE III SECTION 313 INFORMATION

This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372. However, the specific identity of the material(s) listed is proprietary and is withheld in accordance with Part 372.45(e):

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral Acid</td>
<td>&lt;30%</td>
</tr>
</tbody>
</table>

OTHER INFORMATION:
The reportable quantity for this material is 10,000 lbs based on the mineral acid content.

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MATERIAL SAFETY DATA SHEET

(SMPLIES with 29CFR 1910.1200)

EMERGENCY TELEPHONE NUMBER:  800-992-7448
TELEPHONE NUMBER FOR INFORMATION:  504-888-8989
EMERGENCY NUMBER-TRANSPORTATION ONLY:  800-535-5053

SECTION I:  PRODUCT IDENTIFICATION

MANUFACTURER:  John-Henry Enterprises, Inc.
2813 Richland Ave.
Metairie, LA  70002

PRODUCT NAME:  FORMULA 319
PRODUCT CODE:  5422
GENERIC DESCRIPTION:  Citric Acid Solution
DATE PREPARED:  November 19, 1999

SECTION II:  PHYSICAL DATA

APPEARANCE:  clear, colorless liquid
ODOR:  no data
PH (CONC):  <2
SPECIFIC GRAVITY:  1.22
% VOLATILE (WT - 1 HR. @ 105° C):  50%
SOLUBILITY IN WATER:  complete

MELTING / FREEZING POINT:  <0° C
BOILING RANGE:  215° F
VAPOR PRESSURE:  21.9 mmHg @ 77
EVAPORATION RATE (N - BUOAC = 1):  <1
VAPOR DENSITY (AIR = 1):  >1

SECTION III:  INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>TLV</th>
<th>PEL</th>
<th>STEL</th>
<th>%</th>
</tr>
</thead>
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<td>N/E</td>
<td>N/E</td>
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</tr>
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</table>

The formulation of this product and the chemical name(s) of the ingredients are proprietary. However, more detailed information will be provided to qualified personnel in case of an emergency. All components are listed in the TSCA Inventory.

(1) ACGIH  (2) OSHA  (3) Other (specify)    N/A = None or Not Applicable    N/D = Not Determined   N/E = Not Established

SECTION IV:  HEALTH HAZARD DATA

HAZARD SUMMARY for PRODUCT
Corrosive. Can cause severe irritation and burns to eyes. May cause irritation and burns to skin. Mists and sprays can irritate eyes, nose, and throat.

HMIS RATINGS:
- HEALTH - 1
- FLAMMABILITY - 0
- REACTIVITY - 0
- PERSONAL PROTECTION - C

EFFECTS OF OVEREXPOSURE (ACUTE):

EYE CONTACT..... May cause severe irritation and burns
SKIN CONTACT... Prolonged exposure may cause moderate to severe irritation and burns.
INHALATION....... No vapor hazard. Inhalation of spray or mist can irritate nose and throat, causing sneezing, coughing, etc.
INGESTION.......... May cause nausea, vomiting, diarrhea, and gastrointestinal distress. May also cause burns to and perforation of tissues in mouth, throat, esophagus, and stomach.

PRIMARY ROUTES OF EXPOSURE:  skin
CHRONIC EFFECTS OF OVEREXPOSURE:
none known

FIRST AID PROCEDURES

EYE CONTACT..... Immediately flush eyes with water for at least 15 minutes. Cover eyes loosely with gauze and seek immediate medical attention, especially for severe or persistent irritation or if burns are suspected or present.
SKIN CONTACT... Wash off with soap and water. Remove and wash contaminated clothing. Treat burns as if caused by exposure to heat.
INHALATION....... Move to fresh air. Give O2 if breathing is difficult or artificial respiration if breathing has stopped (get medical attention). Seek medical attention if symptoms persist.
INGESTION.......... Give water, milk, or antaid unless unconscious or convulsing. Do not induce vomiting. Keep warm. Contact physician or poison control center.

SECTION V:  FIRE AND EXPLOSION DATA

FLASH POINT:  None
LEL:  N/D
EXTINGUISHING MEDIA:  not combustible
UNUSUAL FIRE AND EXPLOSION HAZARDS:
Plastic or steel drums may burst if exposed to flame or high heat. Cool drums with water fog or spray in case of fire. May release acid fumes if heated to dryness.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear self-contained breathing apparatus when fighting chemical fires.

Back to Formula 319
SECTION VI: REACTIVITY DATA

STABILITY: stable
HAZARDOUS POLYMERIZATION: will not occur

CONDITIONS TO AVOID: none

INCOMPATIBILITY: Strong alkalies and white metals (releases hydrogen, a flammable gas).

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: none

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Contain spill and keep from entering sewers, drains, ditches, or surface waterways. Collect into properly labeled containers disposal or reuse. Rinse spill area with diluted alkali and water.

WASTE DISPOSAL:

Biodegrade in accordance with applicable regulations. Unused, undiluted, or unneutralized product will constitute an RCRA regulated hazardous waste due to corrosivity (D002).

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Wear NIOSH approved respirator if mists or sprays are objectionable.
VENTILATION: Local exhaust to prevent accumulation of mists.
PROTECTIVE GLOVES: Wear latex, Neoprene, or other impermeable gloves.
EYE PROTECTION: Wear face shield or chemical goggles.

Other Protective Clothing or Equipment:

Eyewash stations and safety showers should be located in or near all areas where chemicals are stored or handled. Wear synthetic apron and boots while handling.

SECTION IX: MISCELLANEOUS INFORMATION

SPECIAL PRECAUTIONS:

Wear recommended personal protective equipment when handling. Avoid contact with skin and eyes. Avoid breathing sprays or mists. Wash thoroughly after handling. Keep container closed when not in use. Keep from freezing. Keep all chemicals out of the reach of children.

D.O.T. SHIPPING NAME: NOT REGULATED

SARA TITLE III SECTION 313 INFORMATION

This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372. However, the specific identity of the material(s) listed is proprietary and is withheld in accordance with Part 372.45(e):

<table>
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<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

OTHER INFORMATION:

To the best of our knowledge, the information contained herein is accurate. However, no liability whatsoever is assumed for its accuracy and completeness. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Certain hazards are described herein, but no guarantee is made that these are the only hazards associated with this product that exist.
MATERIAL SAFETY DATA SHEET
(Complies with 29CFR 1910.1200)
EMERGENCY TELEPHONE NUMBER: 800-992-7448
TELEPHONE NUMBER FOR INFORMATION: 504-888-8989
EMERGENCY NUMBER-TRANSPORTATION ONLY: 800-535-5053

SECTION I: PRODUCT IDENTIFICATION

MANUFACTURER:
John-Henry Enterprises, Inc.
2813 Richland Ave.
Metairie, LA  70002

PRODUCT NAME: GAMMA NEBULA
PRODUCT CODE: 8425
GENERIC DESCRIPTION: Tank Wash Deodorizer
DATE PREPARED: January 2, 2002

SECTION II: PHYSICAL DATA

APPEARANCE: clear, water white
ODOR: pleasant, gammalene
PH (CONC): 7.5-8.5
SPECIFIC GRAVITY: 1.01
% VOLATILE (WT - 1 HR. @ 105° C): 93-95%

MELTING / FREEZING POINT: <0°C
BOILING RANGE: 215°F
VAPOR PRESSURE: same as water
EVAPORATION RATE (N - BUOAC = 1): <1
VAPOR DENSITY (AIR = 1): >1

SECTION III: INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>N/E</th>
<th>N/E</th>
<th>N/E</th>
<th>%</th>
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<tr>
<td>Emulsifiers</td>
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<td>5-10</td>
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<tr>
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<td>3-6</td>
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The formulation of this product and the chemical name(s) of the ingredients are proprietary. However, more detailed information will be provided to qualified personnel in case of an emergency. All components are listed in the TSCA Registry.

(1) ACGIH   (2) OSHA   (3) Other (specify)    N/A = None or Not Applicable    N/D = Not Determined   N/E = Not Established

HMIS RATINGS:
HEALTH - 2
FLAMMABILITY - 1
REACTIVITY - 0
PERSONAL PROTECTION - A

SECTION IV: HEALTH HAZARD DATA

HAZARD SUMMARY for PRODUCT
Irritating to eyes. Prolonged exposure may irritate skin.

EFFECTS OF OVEREXPOSURE (ACUTE):

EYE CONTACT..... May cause moderate irritation
SKIN CONTACT... Prolonged exposure may cause redness, dryness, or irritation.
INHALATION....... No vapor hazard
INGESTION......... May cause nausea, vomiting, diarrhea, and gastrointestinal distress.

PRIMARY ROUTES OF EXPOSURE: skin, eyes

CHRONIC EFFECTS OF OVEREXPOSURE: none known

FIRST AID PROCEDURES

EYE CONTACT..... Immediately flush eyes with water for 15 minutes. Seek medical attention, especially for severe or persistent irritation.
SKIN CONTACT... Wash off with soap and water. Remove and wash contaminated clothing.
INHALATION....... Move to fresh air. Give O2 if breathing is difficult or artificial respiration if breathing has stopped (get medical attention). Seek medical attention if symptoms persist.
INGESTION......... Give water or milk unless unconscious or convulsing. Induce vomiting. Keep warm. Contact physician or poison control center.

SECTION V: FIRE AND EXPLOSION DATA

FLASH POINT: None
LEL: N/D
EXTINGUISHING MEDIA: Water, CO2, dry chemical

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Plastic or steel drums may burst if exposed to flame or high heat. Cool drums with water fog or spray in case of fire.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear self-contained breathing apparatus when fighting chemical fires.

Back to Gamma Nebula
SECTION VI: REACTIVITY DATA

STABILITY: stable
HAZARDOUS POLYMERIZATION: will not occur
CONDITIONS TO AVOID: none
INCOMPATIBILITY: Strong oxidizers
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Oxides of carbon and sulfur, organosulfur and hydrocarbon residues.

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Contain spill. Collect into properly labeled containers disposal or reuse. Rinse spill area with water.

WASTE DISPOSAL METHOD:
Biodegrade in accordance with applicable regulations.

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY: None required
PROTECTION:
VENTILATION: No special measures necessary
PROTECTIVE GLOVES: Wear latex, Neoprene, or other impermeable gloves.
EYE PROTECTION: Wear safety glasses or goggles.
Other Protective Clothing or Equipment: Eyewash stations and safety showers should be located in or near all areas where chemicals are stored or handled.

SECTION IX: MISCELLANEOUS INFORMATION

SPECIAL PRECAUTIONS:
Wear recommended personal protective equipment when handling. Avoid contact with skin and eyes. Avoid breathing sprays or mists. Wash thoroughly after handling. Keep container closed when not in use. Keep from freezing. Keep all chemicals out of the reach of children.

D.O.T. SHIPPING NAME: Non-Hazardous Cleaning Compound

SARA TITLE III SECTION 313 INFORMATION

This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372. However, the specific identity of the material(s) listed is proprietary and is withheld in accordance with Part 372.45(e):

Component
None

Concentration

OTHER INFORMATION:
none
To the best of our knowledge, the information contained herein is accurate. However, no liability whatsoever is assumed for its accuracy and completeness. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Certain hazards are described herein, but no guarantee is made that these are the only hazards associated with this product that exist.

Back to Gamma Nebula
SECTION I: PRODUCT IDENTIFICATION

MANUFACTURER: John-Henry Enterprises, Inc.
2813 Richland Ave.
Metairie, LA 70002

PRODUCT NAME: ALUMINUM BRIGHTENER
PRODUCT CODE: 5402
GENERIC DESCRIPTION: Acid Aluminum Cleaner And Restorer
DATE PREPARED: January 23, 1995

SECTION II: PHYSICAL DATA

APPEARANCE: clear, colorless liquid
ODOR: sharp, acidic
PH (CONC): <2
SPECIFIC GRAVITY: 1.01
% VOLATILE (WT - 1 HR. @ 105° C): not determined
SOLUBILITY IN WATER: complete

SECTION III: INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>TLV - N/E</th>
<th>PEL - N/E</th>
<th>STEL - N/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detergents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrofluoric Acid</td>
<td>TLV - 3ppm</td>
<td>PEL - N/E</td>
<td>STEL - 6ppm</td>
</tr>
<tr>
<td>Phosphoric Acid</td>
<td>TLV - 1 mg/m3 (1,2)</td>
<td>PEL - 3 mg/m3 (1,2)</td>
<td>STEL - N/E</td>
</tr>
<tr>
<td>Glycol ether</td>
<td>TLV -25 ppm (1,2)(skin)</td>
<td>PEL - N/E</td>
<td>STEL - N/E</td>
</tr>
</tbody>
</table>

HMIS RATINGS:
- HEALTH - 3
- FLAMMABILITY - 0
- REACTIVITY - 1
- PERSONAL PROTECTION - H

EFFECTS OF OVEREXPOSURE (ACUTE):
EYE CONTACT.... Can cause severe irritation and burns, leading to permanent loss of vision.
SKIN CONTACT... Can cause both immediate and delayed burns which may lead to permanent scarring.
INHALATION....... Mists, sprays, and fumes can irritate eyes, nose, and throat.
INGESTION.......... May cause nausea, vomiting, diarrhea, gastrointestinal distress, and burns to mouth, throat, esophagus, and stomach.

PRIMARY ROUTES OF EXPOSURE: skin, inhalation

CHRONIC EFFECTS OF OVEREXPOSURE: none known

FIRST AID PROCEDURES

EYE CONTACT..... Immediately flush eyes with water for at least 15 minutes or until discomfort eases. Treat eye contact as a medical emergency. Cover eyes loosely with sterile gauze or dressing and seek immediate medical attention.
SKIN CONTACT... Flush off with soap and water. Treat exposed area with a cold solution of benzethonium chloride for at least 30 minutes. Remove and wash contaminated clothing. Discard contaminated footwear.
INHALATION....... Move to fresh air. Give O2 if breathing is difficult or artificial respiration if breathing has stopped (get medical attention). Seek medical attention if symptoms are acute and/or persistent
INGESTION.......... Give water or milk unless unconscious or convulsing. Do not induce vomiting. Keep warm. Contact physician or poison control center immediately.

NOTE TO PHYSICIAN: Contact with hydrofluoric acid can result in ulcerating burns that may appear days or weeks after the time of exposure.

SECTION IV: HEALTH HAZARD DATA

HAZARD SUMMARY for PRODUCT
Corrosive. Can cause severe and persistent burns. Mists and fumes can irritate eyes, nose, and throat.

FLASH POINT: none
LEL: N/D

EXTINGUISHING MEDIA: not combustible as supplied

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Plastic or steel drums may burst if exposed to flame or high heat. Cool drums with water fog or spray in case of fire. Exposure to heat or flame can cause the release of highly irritating acid fumes.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear self-contained breathing apparatus when fighting chemical fires. Cool drums exposed to flames and/or knock down fumes with water fog.
SECTION VI: REACTIVITY DATA

STABILITY: stable  HAZARDOUS POLYMERIZATION: will not occur

CONDITIONS TO AVOID: none

INCOMPATIBILITY: Strong alkalies, metals (releases hydrogen, a flammable gas)

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: none

SECTION VII: SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Ventilate the area and remove all nonessential personnel. Contain spill keep from entering sewers, drains, ditches, or surface waterways. Collect into properly labeled containers disposal or reuse. Rinse spill area with water or dilute alkaline solution.

WASTE DISPOSAL METHOD:
Biodegrade in accordance with applicable regulations. Unused, undiluted, or unneutralized product will constitute an RCRA regulated hazardous waste due to corrosivity (D002).

SECTION VIII: SPECIAL PROTECTION INFORMATION

RESPIRATORY: Wear a NIOSH approved acid vapor respirator in enclosed areas or if mists, vapors, or spray become excessive.

VENTILATION: Local exhaust for enclosed areas.

PROTECTIVE GLOVES: Wear latex, Neoprene, or other impermeable gauntlet type gloves.

EYE PROTECTION: Wear face shield or chemical goggles.

Other Protective Clothing or Equipment: Eyewash stations and safety showers should be located in or near all areas where chemicals are stored or handled. Wear synthetic apron and boots.

SECTION IX: MISCELLANEOUS INFORMATION

SPECIAL PRECAUTIONS:
Wear recommended personal protective equipment when handling. Avoid contact with skin and eyes. Avoid breathing sprays, mists, vapors, and fumes. Wash thoroughly after handling. Keep from freezing. Keep all chemicals out of the reach of children. Store in a well ventilated area and keep containers closed when not using or handling.

D.O.T. SHIPPING NAME: Compound, cleaning liquids, n.o.s. (contains Hydrofluoric and Phosphoric acids), 8, NA 1790, PG II Corrosive, Poison

D.O.T. HAZARD CLASS: 8

D.O.T. UN/NA NUMBER: NA 1790

D.O.T. LABEL(S): Corrosive (White/Black), Poison (White w/skull and crossbones)

SARA TITLE III SECTION 313 INFORMATION

This product contains the following chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372. However, the specific identity of the material(s) listed is proprietary and is withheld in accordance with Part 372.45(e):

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral Acid (conc.)</td>
<td>&lt;10%</td>
</tr>
</tbody>
</table>

OTHER INFORMATION:
The reportable quantity for this material is 1800 lbs, based on the mineral acid content.

To the best of our knowledge, the information contained herein is accurate. However, no liability whatsoever is assumed for its accuracy and completeness. Final determination of the suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Certain hazards are described herein, but no guarantee is made that these are the only hazards associated with this product that exist.