Hubbard-Hall
SINCE 1849

"Hubbard-Hall identified our water treatment problem and worked until they fixed it. Today, we use their Aquapure chemicals for our process water and we haven't had any issues in over two years."

**John Z. HSE Specialist**
**Hampton, Virginia**

## **Treating** the Hard to Treat

# AquaPure™

Aquapure is Hubbard-Hall's line of high-quality industrial wastewater treatment chemistry.

Our technical team is continually working on new products to help our customers meet their treatment needs. Often times, the best way to solve a downstream wastewater treatment challenge is to review upstream processes.

Our experts will work with you to review the processes and equipment you use upstream and determine precisely the chemistry you need down stream. In addition we can work with and train your team on proper implementation, as well as process maintenance and testing.

**With a variety of formulations designed to address specific contaminant challenges, Hubbard-Hall's AquaPure line is a cost-effective means of treating wastewater problems and achieving compliance objectives.**

## About AquaPure

Hubbard-Hall's AquaPure line includes chemistry to remove metals, oils, fluoride and nutrients as well as deliver BOC/COD reduction.

In this catalog you'll find products including:

- Coagulants
- Metal Precipitants
- Flocculants – anionic and cationic
- Odor controllers
- Defoamers
- Other formulas such as oxidizers and chrome reducers

# Cationic Coagulants - Inorganic and Organic Blends

Coagulants are added to wastewater to facilitate the charge neutralization needed to allow the suspended particles to settle and co-precipitate. These are usually blends of inorganic salts and organic polymers to allow for co-precipitation of metals.

| PRODUCT | FUNCTION | FEATURES & BENEFITS |
|---|---|---|
| Aquapure™ I-300 | • Ferrous based cationic polymer blend<br>• GMF and metal processing WWT<br>• All-purpose coagulant for WWT | • Versatile<br>• Co-precipitation with other divalent metals<br>• Chrome reduction to Cr+3<br>• Offers excellent clarity and settling<br>• Produces heavy floc |
| Aquapure™ AP 100 | • For use in general metal finishing and food processing to lower TSS and fog | • Concentrated liquid<br>• Easy to use<br>• Excellent results for IWC clarity |
| Aquapure™ ACP | • Aluminum based solution with calcium and organic components<br>• General wastewater solutions coagulant | • For collection tanks<br>• Multiple action-based formulation<br>• Works well on Zn and Cu removal |
| Aquapure™ I-107 | • Liquid<br>• Iron based with higher pH | • Helps to co-precipitate other metals<br>• Adds weight to pull floc down |
| Aquapure™ CAL 40 | • Liquid<br>• Calcium chloride blend | • Easy to work with pH 5 – 6<br>• A replacement for lime<br>• Used for phosphate reduction<br>• Eliminates haze |
| Aquapure Cal 50 Plus | • Blended inorganic coagulant<br>• Removes ortho and pyrophosphates | • Concentrated coagulant<br>• Blended liquid<br>• Easy metering, will not affect pH<br>• Versatility |
| Aquapure Cal 225 | • Blended inorganic coagulant<br>• Removes pyrophosphates and fluoride | • Concentrated liquid is fast and effective<br>• Custom proprietary blend<br>• Aids in coagulation and clarification<br>• Charge neutralization |
| Aquapure I-200 Plus | • Sulfated liquid<br>• Ferrous/aluminum cationic coagulant | • Combines two metal salts<br>• Produces low limits on metals, especially zinc sulfate<br>• Produces quick, heavy settling<br>• Liquid concentrate can be metered in for ease of use<br>• Can work without use of a flocculate |
| Aquapure AP 99 | • Concentrated coagulant<br>• Enhanced liquid/solid separation | • Works well on chelated wastewater<br>• Destabilizes suspended solids<br>• Reduces FOG<br>• Liquid can be metered in for ease of use |

## Metal Precipitants

Precipitation of metals in wastewater can be accomplished with caustic soda at the pH that corresponds to the lowest solubility of the that metal. When chelators or complexors are present it is difficult to precipitate all the metals without the use of a metal precipitant. These are blends of carbonates, sulfides and/or carbamates that chemically react to break the bonds of the chelates allowing the metals to precipitate as an insoluble solid that can be removed from the water.

| PRODUCT | FUNCTION | FEATURES & BENEFITS |
|---|---|---|
| Aquapure™ P 601 | • 40% DTC based liquid, used to assist in ppt of complexed metals<br>• Apply at 7-12 pH range | • Workhorse metal precipitant<br>• Low dosing<br>• Used on the alkaline side<br>• Works well on divalent metals |
| Aquapure™ T-500 | • Liquid -trithiocarbonate blended sulfide<br>• Lowers metals to <0.5 ppm range<br>• Apply at 8-12 pH for best results | • Can be sewer or direct discharge<br>• Offers lower residual metals<br>• Controlled by ORP<br>• Used on the alkaline side |
| Aquapure™ T-1000 | • Liquid blend of sulfides and DTC<br>• Will open chelation bonds allowing metals to precipitate out<br>• For use in systems on the alkaline side 7-12 pH | • Easy to use<br>• Lower odor than sulfides<br>• Blended to break more chelation bonds |
| Aquapure™ BA | • For precipitation of Barium | • Compliance |
| Aquapure™ Ox-C | • Liquid oxidizer for breaking chelators<br>• Also works on cyanide destruction | • Ready to use<br>• Versatile<br>• Easy to use |
| Aquapure T-900 | • Metal precipitant<br>• ORP based dosing | • Ready to use<br>• Versatile<br>• Easy to use |

## Cationic Flocculants

Cationic Flocculants are typically polyacrylamides that are cationic in nature and have been reacted to give properties of specific charge density and molecular weight. Certain equipment like centrifuges require very high mole weight, low charge density to give a good firm sludge that dewaters nicely. These are either powders or liquid emulsions. Work best with organic contamination.

| PRODUCT | FUNCTION | FEATURES & BENEFITS |
|---|---|---|
| Aquapure™ B-Cat | • Cationic liquid concentrate emulsion<br>• Designed for organic contaminate removal | • High charge, high molecular weight emulsion polymer<br>• Works well with metal coagulants<br>• Low dosing for easily settable mass |
| Aquapure™ Low Cat | • Low charge cationic powder<br>• Works well to mass organic solids | • Low charge, high molecular weight powder<br>• Works well on organics and metals<br>• Powder form for long shelf life |
| Aquapure™ TK CAT | • Liquid ready to use cationic flocculate<br>• Designed for use with centrifuge | • Ready to use<br>• Excellent dewaters capabilities<br>• Longer than average shelf life (3 months compared to 7 days) |
| Aquapure™ TVP | • Powdered cationic flocculate | • Mid-weight/mid-charge cationic<br>• Powder form for long shelf life<br>• Easy to make down to 0.2%<br>• De-water biological sludges |

## Anionic Flocculants

This series of flocculants are anionic in nature and work well on metal removal. Flocculants help bind pin floc (small floc) together into a large mass for easy settle-ability. Like cationics, they are also polyacrylamides that come in powders or liquids. A favorite product (like our Aquapure AN Clear) is one where the polymer has already been prediluted and only requires a feed line into the drum – no tank is necessary.

| PRODUCT | FUNCTION | FEATURES & BENEFITS |
|---|---|---|
| Aquapure™ AS Plus | • Anionic high charge, high mole wt, powder<br>• 100% active<br>• Use is 0.1-0.3%/ wt. | • Hardworking anionic flocculant powder<br>• Low dosing<br>• Versatile for mixed metal applications<br>• Available in bags |
| Aquapure™ AN CLEAR | • Anionic flocculant<br>• Settles suspended precipitates in wastewater treatment | • Ready to use<br>• Versatile<br>• Easy to use |
| Aquapure™ AS LOW | • Anionic low charge, mid mole weight, emulsion | • Used for phosphorus removal<br>• Easy to use emulsion<br>• Can be used in centrifuge |

## Defoamers

Foam production can be chemical, mechanical, bacterial or a combination of the three. Where foam is occurring, what the foam looks like, and the equipment you are using will all help determine the correct product to use. We have defoamers for evaporators, process chemistry, and wastewater. Foam can be air induced under the surface or surface occurring. We also have membrane friendly defoamers and defoamers for bio systems where *nocardia* is present.

| PRODUCT | FUNCTION | FEATURES & BENEFITS |
|---|---|---|
| Aquapure™ DF-SI | • 10% silicone emulsion<br>• Can be used as is or diluted tank side | • Hardworking silicone defoamer<br>• For use in all applications<br>• Quick knockdown and persistence<br>• Injection or sprayed<br>• Can be metered in<br>• Versatile<br>• Kosher |
| Aquapure™ DF-MB | • Non-silicone, surface active<br>• Non-hydrocarbon<br>• Organic formulation | • Works well in membranes<br>• Apply at full strength<br>• 100% active, low dose .05% - .1% |
| Aquapure™ DF-P | • Defoamer concentrate<br>• For tank side additions as is or diluted | • Versatile defoamer |
| Aquapure™ DF-68 | • Synthetic with wax | • Applications include fabric, PC, veg. washing<br>• For use in developers and strippers |
| Aquapure™ DF | • Oil based emulsion | • For general metal finishing and WWT |
| Aquapure™ DF-Bio | • Synthetic defoamer<br>• Quickly knocks down foam from bacteria growth<br>• Excellent on activated sludge | • Ready to use<br>• For use in bio systems<br>• Good knockdown and persistence<br>• Eliminates *nocardia* foam in activated sludge |
| Aquapure™ Bubble Breaker | • 40% modified silicone defoamer concentrate | • Good in evaporators<br>• Ready to use<br>• Oilfield, down hole drilling |
| Aquapure™ Foam Drop | • Enhanced veg. esters<br>• Works well on firefighting foam for tank transfer | • Membrane friendly<br>• For use in primary and secondary WWT<br>• Can be metered in |
| Aquapure™ Defoamer BB3 | • For evaporators<br>• Modified silicone | • Works on surfactant foam<br>• Excellent for evaporators |
| Aquapure™ NO FOAM | • Specialized defoamer<br>• Acidic waste streams | • No problem with subsequent rinsing<br>• Works very well on zinc pickling baths<br>• No black rolling foam<br>• Versatile |

## Odor Control

Whether in your sludge, water or head space, we have a product that will eliminate or reduce odor. These products can be used in misting applications (green products) or in the head space above the sludge press (or drier). Tank side additions of pucks, blocks or liquid products are all viable for production odor control. Ask our technical sales representatives about what will work for you.

| PRODUCT | FUNCTION | FEATURES & BENEFITS |
|---|---|---|
| Aquapure™ Odor Lock | • For use as a mist in air<br>• Use diluted in misting unit in area of odor<br>• Green ingredients | • Neutralizes odor in the air<br>• Use diluted – long lasting<br>• Eliminates odor<br>• Can be sprayed on sludge in area of production |
| Aquapure™ Bio 52L | • Liquid concentrate for use in water<br>• Can be used in tandem with Bio 20<br>• Use at 4:1 to 20:1 dilution | • Eliminates slime odor in pipes<br>• For use in wet wells, traps, lift stations, and sewers<br>• Formulated to work in all environmental areas |
| Aquapure™ Aqua Pucks | • For use in wastewater<br>• Easy to use tablets to reduce H2S<br>• Placement should be under wastewater | • Can be used in: lift stations, car washes, pits, and traps<br>• Easy to use tablets – no measuring<br>• Is sold in 30 lb. pails |
| Aquapure™ Odor Zap | • Liquid concentrate, to be applied upstream | • Liquid – easy measuring |

**Bio Augmentation Line:**
Our full line of bioaugmentation products include microbes and nutrients to build a healthy biological colony for trickling filters, SBRs, MBBRs or any type of biological system. The microbes are designed to handle high strength wastes that are generated from industrial manufacturing processes. They are tailor made for removal of BOD, COD, FOG, TKN, and TP. Microbes will also help reduce TSS in biological systems. An Aquapure Specialist can assist in determining the correct bio-blend for your needs.

## Membrane Friendly Products

| PRODUCT | FUNCTION | FEATURES & BENEFITS |
|---|---|---|
| Aquapure™ ACM | • For collection tanks<br>• For use in systems with membranes<br>• General wastewater solutions coagulant | • Aluminum based solution with calcium and organic components<br>• Multiple action-based formulation<br>• Works well for Zn and Cu removal |
| Aquapure™ MFT | • Works well in systems with or without membranes<br>• Use in collection and neutralization tanks<br>• GMF and metal processing wastewater | • Aluminum solution with added organic components<br>• Highly effective for both metal and organic removal |

Also available:

Aquapure™ DF-MB: economical, non-ionic defoamer for process chemistry and high shear pumping

Aquapure™ DF-Bio: 100% active, works well to control nocardia foam in bio systems as well as surfactant-laden foam

# Glossary of Terms

**Bleed and Feed**
A method of treating concentrated baths by adding small amounts of the concentrates, continually to the whole system to treat the contaminants.

**Coagulation**
The destabilization of solids by charge neutralization using chemical additions. These coagulation chemicals are usually blends of safe metal salts along with organic components to aid in the clarification of the water.

**Equalization Tank**
A tank (usually with a mixer) to mix wastewater from various source and properties to make the water homogeneous before treatment.

**Flocculation**
The agglomeration of particles by the addition of a polymer to mass the solids together through gentle stirring thus allowing them to fall to the bottom because of their increased weight.

**Heavy Metals**,
Heavy metals, when in significant concentrations in water, may pose detrimental health effects. Heavy metals include: lead, silver, mercury, copper, nickel, chromium, zinc, cadmium, tin and selenium that must be removed to certain levels to meet discharge requirements. Heavy metal precipitants that can be used are dimethyldithiocarbamate, sodium trithiocarbonate, and sodium sulfide blends.

**Ion Exchange Unit**
A reversible chemical reaction where an ion (either negative or positive) is exchanged for a similarly charged particle in a column packed with polyelectrolytes. These electrolytes are either zeolites or resins packed in a large column. These columns are used to remove metal salts, acid and bases not oil. The water from this unit is pure water. Columns haves a regeneration cycle where by it is flushed with caustic soda to regenerate the particles.

**Mercaptans**
Compounds containing sulfur which have an extremely offensive skunk-like odor. Also described as smelling like garlic or onions.

**ORP**
Oxidation Reduction Potential (mV) - most commonly used to measure the effectiveness of water disinfection systems using sanitizers such as chlorine, bromine, ozone, peroxy-acetic acid, Hydrogen Peroxide etc. It is also commonly used in wastewater treatment for oxidation of cyanide waste, chrome reduction etc. ORP standards have been long established for water sanitation, and are recommended over ppm measurements with traditional test kits.

**Oxidation**
Combining elemental compounds with oxygen to form a new compound. When used with a catalyst (Aquapure OE) can be used to precipitate out sulfide from H2S and reduce odor.

**Peristaltic pump**
A type of positive displacement pump. Preferred for use in waste treatment systems.

**pH**
A term used to describe the acid-base characteristics of water, typically measured by a pH meter. Specifically, the concentration of H+ ions in water. Formally, pH is the negative logarithm of the H+ concentration of a water:
pH < 7 refers to acid solutions
pH > 7 refers to basic solutions
pH = 7 refers to neutral solutions

**Pin Floc**
Excessive solids carryover. Pin floc may occur from time to time as small suspended sludge particles in the supernate.

**Potable Water**
Water that does not contain objectionable pollution, contamination, minerals, or infective agents and is considered satisfactory for drinking.

**POTW**
Publicly Owned Treatment Works, as opposed to an industrially owned facility or pipe system.

**PPM**
Parts per million. One PPM is equivalent to 1mg per liter. It is used in measuring the level at which metals are contaminating water.

**Reducing Agent**
Any substance, such as the base metal (iron) or the sulfide ion that will readily donate (give up) electrons. The opposite of an oxidizing agent.

**RO Unit**
Reverse Osmosis Unit for water purification. RO Units utilizes a membrane under pressure to filter dissolved solids and pollutants from the water. Often used for organic contaminants such as oil, and chelates

**Sewage**
The used water and water-carried solids from homes that flow in sewers to a wastewater treatment plant. The preferred term is wastewater.

**Sludge**
The settable solids separated from liquids during processing. Also the deposits of foreign materials on the bottom of streams or bodies of water.

**Supernate**
Liquid removed from a tank once the solids have settled. This liquid is usually returned to the influent tank or to the primary clarifier.

**TSS**
Total suspended solids

**TDS**
Total dissolved solids

**Turbidity**
The amount of suspended matter in wastewater, obtained by measuring its light scattering ability.

**Upset**
A term used to describe a change in a wastewater system whereby normal chemical additions will not work well to remove contaminants. This may happen when a concentrated tank is dumped without the knowledge of the operator and the water becomes higher in metals, surfactants or chelators. Chemical feeds have to be turned up to help clear this problem. Usually waste water is somewhat dilute with rinses. Spent baths, if treated and not hauled away, are bled into the system so as not to “upset” the balance of treatment.

**Waste Treatment**
A treatment to remove contamination of oils, metals, and solids in water. This treatment employs the use of various equipment and chemicals for removal.

**Weir**
A wall or plate placed in an open channel or tank and is used to measure flow of water or to allow for oil to be skimmed off the surface.

## Our people.
## Your problem solvers.

Expertise you can trust. 32% of Hubbard-Hall associates are in tech support, customer service or sales. This means that you get answers fast while the rest of our team gets your order delivered on time and in spec.

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