

What to Look For When You Choose a Sodium Hypochlorite Filter System

Sodium Hypochlorite producers will ship 800 million gallons of sodium hypochlorite for a variety of applications - as the main ingredient in laundry bleach... as a bleaching agent in textiles, detergents, and paper and pulp... as an oxidizing agent for organic products... in petroleum products refining... as a disinfectant in water and wastewater treatment and sanitary equipment... in fruit and vegetable processing, mushroom production, hog, beef and poultry production, maple syrup production, and fish processing.

For most if not these applications, the product of choice is sodium hypochlorite that is filtered to remove the transition metals and suspended solids that occur as an inherent part of any sodium hypochlorite production process. The presence of these contaminants will affect the quality of the sodium hypochlorite and shorten its shelf life. It also limits the markets you can sell into and affects the selling price of your sodium hypochlorite.

The obvious response to these market demands for high-quality product is to filter your sodium hypochlorite - but the choice of an appropriate filtering system isn't so obvious. There are several technologies available to filter sodium hypochlorite, from bag and cartridge filters, to vacuum filters, to pressure filters. There are low end and high end options, varying performance standards, and significant differences in pricing. The key is to select the system that offers the best combination of benefit and cost.

Make An Informed Selection

Regardless of the method and equipment you use to make your sodium hypochlorite, whether or not you filter - and the filter system you use - has a greater impact on the quality of your final product than any other factor.

When you consider purchasing a sodium hypochlorite filter system, you should thoroughly investigate the following areas before making a selection.

System Design

The design of the sodium hypochlorite filter system is a key factor and ultimately impacts all other considerations. Some of the items to consider include the following:

Designed for Use with Sodium Hypochlorite

A filter is not always a sodium hypochlorite filter. They are designed for a variety of liquids such as water, oils, chemicals, and many other fluids, and are not interchangeable. The sodium hypochlorite filter system you select should be designed specifically to filter sodium hypochlorite.

Incorporates an Enclosed Process

Sodium Hypochlorite can cause respiratory irritation if inhaled; likewise, contact with eyes or skin can cause severe irritation. To eliminate the potential for worker exposure to sodium hypochlorite or sodium hypochlorite fumes - and accompanying OSHA, EPA, etc. issues - a designed sodium hypochlorite filter system should accommodate an enclosed pre-coat cycle, filtering cycle, and backwash cycle.

Ventilation & Dust Control Options

Typically, the filter aid is a dust that can become airborne when handled. The optimal filter process will include a ventilation system designed for appropriate dust removal, collection, and disposal.

Materials of Construction

Materials that come in contact with sodium hypochlorite must be able to withstand its strong corrosive and oxidizing tendencies on a long-term basis. To ensure you receive the maximum value from your filter investment, consider only equipment with high-level materials of construction that can stand up to the long-term demands of sodium hypochlorite service.

Bleach Pumps

For long-term service life, only titanium & seal-less ECTFE lined pumps are able to stand up to the abrasive tendencies of the filter aid, as well as the demanding service requirements of sodium hypochlorite. Pumps should allow for high throughput rates with high differential pressures and long cycle times. High quality titanium pumps will also have low rpm and high-quality seals for extended service life.

Filtration Vessels

In order to maintain useful service life for 30 years or longer, pressure vessel should be of titanium and ASME coded. Other non-metallic materials of construction may be considered if a shorter filtration vessel life is acceptable. Filter vessels other than titanium will have a higher maintenance costs and need to be put on a cyclical replacement schedule.

Performance

The name of the game is “Performance” and it’s one of the most important considerations when selecting a sodium hypochlorite filter system. Some indicators to look for are listed below:

Guaranteed Performance

Prior to filtration, sodium hypochlorite produced in any production facility can typically have metal contamination in the range of 1 ppm iron, 400 ppb nickel, and 60 ppb copper. Also, significant amounts of suspended solids will be in the solution. The manufacturer of any system you consider should be able to guarantee the sodium hypochlorite can pass the Suspended Solids Test - which is often included in industrial and municipal specifications - in 3 minutes or less. The filter system should also be able to achieve a specified level of performance in terms of transition metals elimination. Typically these levels should be less than 0.2 to 0.3 ppm iron, less than 10 ppb nickel, and less than 10 ppb copper.

Repeatable Results

Good performance intermittently is not good enough. The filter system’s performance should be consistent, repeatable and verifiable by any reputable laboratory in the US.

Can be Used with Any Quality of Caustic to Yield a High Quality Sodium Hypochlorite

Superior filtration capabilities means it’s possible to use a lower quality, less expensive grade of caustic to produce bleach of an equivalent or higher quality than sodium hypochlorite made with expensive rayon grade caustic. This ability can significantly impact the economics of sodium hypochlorite filter selection.

Upgradeable

Over the service lifetime of a sodium hypochlorite filter system, control systems and components will become technologically obsolete. If the system cannot accommodate key upgrades, the entire system will have to be replaced. The longer the anticipated service life of the equipment, the more critical the ability to keep pace with current technology becomes.

Ability to Automate Filtration Process

Automated processes offer more than just convenience. The automated process produces a more consistent and reliable product, runs faster than a manual process, requires less personnel to run, and is - because of these factors - more cost-efficient.

Disposal of Wastes

Wastes are difficult and costly to dispose of safely and legally, making disposal a significant and expensive issue. The solution is a sodium hypochlorite filtration system that can minimize or eliminate disposal issues.

Zero Discharge of Process Liquids

To avoid disposal expenses, consider a sodium hypochlorite filter system that offers the ability to reclaim backwash water. When the wastewater, including the backwash water with spent filter aid, is processed further, the spent filter aid separates from the backwash water, and you can use the resulting liquids in sodium hypochlorite production, eliminating liquid disposal costs.

Non-Hazardous Waste

It discharges the filter aid from the process equipment as a dry cake. You must analyze the dry cake for hazardous wastes, but it is considered as a non-hazardous waste and is disposed of.

Cost

In the equipment selection process overlooking the cost benefit relationship often happens. A more expensive piece of equipment, offering superior performance, minimal maintenance cost and 5, or even 10 times the useful service life, is a much better investment than a shorter term, less expensive piece of equipment. With a sodium hypochlorite filter system, it’s a situation when more is more.

It’s the Same Old Story

The Powell Sodium Hypochlorite Filter System can outperform any other system available in terms of design, performance, ease of operation and maintenance, and expected length of service life. However, as is always the case with quality, superior performance costs more up front, but is far more cost efficient in the long run. An objective evaluation of your filtering options against the above criteria, coupled with an analysis of cost versus value, will show that the Powell Sodium Hypochlorite Filter System is your best filtering investment.

Minimal Financial Impact

Many accountants maintain that flexible payment terms can do more to improve your cash flow situation than a bargain-basement price. Depending on circumstances and your situational preferences, we can offer financing in the form of a capital lease or an operating lease. Capital or operating leases do not require you to disburse cash until we deliver the equipment or the equipment is operating and generating cash flow. Payments can accommodate a variety of financial conditions and even be on a skip, graduated or seasonal basis to align more with incoming cash flow. For more information on a Sodium Hypochlorite Filter or like to discuss leasing options, contact us.