

## Value Versus Price - What to Look For When You Choose a Bleach Filter System

This year, US bleach producers will ship nearly 800 million gallons of sodium hypochlorite for use in 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 all - of these applications, the product of choice is bleach that has been filtered to remove the heavy metals and suspended solids that occur as an inherent part of any bleach production process. The presence of these contaminants - which adversely affect the quality of the bleach and significantly shorten its shelf life - severely limit the markets you can sell into as well as appreciably affect the selling price of your bleach.

The obvious response to these market demands for high quality product is to filter your bleach - but the choice of an appropriate filtering system isn't so obvious. There are several technologies available to filter bleach, from bag and cartridge filters, to vacuum filters, to pressure filters. There are low end and high end options, widely 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 bleach, 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 bleach filter system, the following are areas you should thoroughly investigate before making a final selection.

### System Design

The design of the bleach 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 Bleach**

A filter is not always a bleach filter. Filter systems are designed for a variety of liquids



such as water, oils, chemicals, and many other fluids, and are not typically interchangeable. The bleach filter system you select should be designed specifically to filter bleach.

- **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 bleach or bleach fumes - and accompanying OSHA, EPA, etc. issues - an appropriately designed bleach filter system should accommodate a totally enclosed pre-coat cycle, filtering cycle, and backwash cycle.

- **Accommodates Ventilation and Dust Control Options**

Typically, the filter aid is a dust that can become airborne when handled during the filtering process. The optimal filter process will accommodate major components of a ventilation system designed for appropriate dust removal or 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.

- **Titanium Pumps**

For long-term service life, only titanium 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.

- **Titanium Pressure Vessels**

In order to maintain useful service life for 30 years or longer, pressure vessel should be of titanium and ASME coded. Other materials of construction may seem appropriate for use with sodium hypochlorite, however, only titanium vessels will stand up over time to the demands required of sodium hypochlorite production and filtration process equipment.

### Performance

The name of the game is "Performance" and it's one of the most important considerations when selecting a bleach 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 bleach 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 heavy 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 on an intermittent basis 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 Bleach**

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 bleach made with expensive rayon grade caustic. This ability can significantly impact the economics of bleach filter selection.

#### ■ **Upgradeable**

Over the service lifetime of a bleach 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 Filter Aid and Backwash Material**

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

#### ■ **Zero Discharge of Process Liquids**

To avoid disposal expenses, consider a bleach 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 is separated from the backwash water, and the resulting liquids can be used in sodium hypochlorite production, eliminating liquid disposal costs entirely.

#### ■ **Non-Hazardous Waste**

The filter aid is discharged from the process equipment as a dry cake. The dry cake must be analyzed for hazardous wastes, but is typically considered as a non-hazardous waste and can be disposed of accordingly.

#### **Cost**

The cost-benefit relationship is frequently overlooked in the equipment selection process. A more expensive piece of equipment, offering superior performance, minimal maintenance cost and 5, or even 10 times the useful service life, is usually a much better investment than a shorter term, less expensive piece of equipment. In the case of a bleach filter system, it's a situation when more really is more.

#### **It's the Same Old Story - You Get What You Pay For**

The Powell Bleach 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 when it comes to quality, superior performance costs more up front, but is usually 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 demonstrate clearly that the Powell Bleach Filter System is your best filtering investment.

#### **Put a Powell Bleach Filter System on Your Site with 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, Powell can offer financing in the form of a capital lease or an operating lease. Typically, capital or operating leases can be structured so you are not required to disburse cash until the equipment is delivered or - even more advantageous - the equipment is operating and generating cash flow. Payments can be designed to accommodate a variety of financial conditions and can even be structured on a skip, graduated or seasonal basis to more closely align with incoming cash flow. If you would like more information on leasing options Powell can provide, contact us at 989.681.2158 or email [info@powellfab.com](mailto:info@powellfab.com).

#### **For More Information**

If you would like to discuss a Powell Bleach Filter for your location, contact us at 989.681.2158 or email [info@powellfab.com](mailto:info@powellfab.com). You can also find information and interactive tools on our website at [www.powellfab.com](http://www.powellfab.com).



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