

Sample Specification for High Quality Sodium Hypochlorite for Municipalities

The Requirement

Under this schedule, the Contractor must furnish liquid sodium hypochlorite FOB destination in accordance with the American Water Works Association's Standard B300-92 for hypochlorite, except as modified or supplemented herein.

Delivery Requirements

Contractor must be capable of making deliveries within (3) three working days after receipt of order.

The Contractor shall be responsible for any spills resulting from the failure of its or its subcontractor's delivery equipment or from failure of attendant delivery personnel in the proper performance of their duties. Proper performance shall require attendant delivery personnel's constant inspection and observation of unloading operations and knowledgeable response to problems or emergencies, which would most commonly be expected to occur. The Purchaser reserves the right to refuse any and all deliveries made with equipment that is poorly maintained.

The tanks or trailers shall be clean and free of residue that may contaminate the Contractor's product or impede the unloading process. It is the Contractor's responsibility to verify the cleanliness of the transporting equipment before loading. All appurtenant valves, pumps, and discharge hoses used for the delivery of sodium hypochlorite shall be supplied by the Contractor and shall be clean and free from contaminating material. The Purchaser may reject a load if the equipment is not properly cleaned. The Contractor shall furnish a Purchaser approved, leak-free connection device between the trailer and the Purchaser's intake receptacle. The Contractor shall observe the entire filling operation at each delivery site and shall immediately report any spills caused during the filling operations. The Contractor shall take immediate and appropriate actions to clean up any spilled liquid sodium hypochlorite. If the spill is not cleaned up, the Purchaser will hire a certified hazardous material handling company to clean up the spill, and the cost of such service will be charge to the Contractor and deducted from the amount due to the Contractor. If the purchaser's unloading equipment such as pipe, valves or level indication and alarms should fail and the spillage is not the fault of the Contractor or it's subcontractor, the Contractor shall be relieved of cleanup of the spill.

Delivery Locations

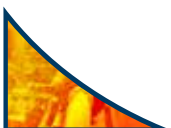
Delivery shall be made to (example): Acme Water Treatment Plant, 1000 Smith Blvd., Acme, CA

Two (2) 10,000 gallon storage tanks. Approximate delivery requirement: 5,000 gallons every 4 days.

Sampling and Testing Prior to Unloading

Sampling and testing shall be in accordance with EPA and AWWA B300-92 standards and in accordance with the documents titled "*The Weight Percent Determination of Sodium Hypochlorite, Sodium Hydroxide, Sodium Carbonate, and Sodium Chlorate in Liquid Bleach*" and "*Suspended Solids Quality Test for Bleach Using Vacuum Filtration*", distributed by Powell Fabrication & Manufacturing, Inc. and available at www.powellfab.com.

At the sole option of the Purchaser, the Contractor's delivery personnel (driver) may be asked to collect a sample of hypochlorite before the shipment is unloaded. In this case, the Purchaser will supply the sample container and the driver shall collect the sample from the tank truck and turn it over to the Purchaser. The sample shall be considered representative of the lot.



The Purchaser reserves the right to subject samples of the hypochlorite to quick analyses to ensure that it meets basic conditions of the specification with respect to specific gravity, weight percent of sodium hypochlorite, sodium hydroxide, and suspended solids. Any lot tested by the Purchaser that fails to comply with the specifications shall constitute grounds for rejection of that lot. No payment shall be made for hypochlorite that is rejected. The contractor or its subcontractors shall allow 45 minutes for this testing to be completed. If testing can not be completed within the 45 minute period, the Purchaser shall allow the Contractor to unload the shipment.

Sampling and Test of Shipment after Unloading

The Purchaser reserves the right to subject samples of the hypochlorite to complete analyses to ensure that it meets EPA specifications, AWWA B300-92 specifications, and the supplemental specifications included with this document. Repeat failures to comply with the specifications shall constitute grounds for cancellation of the contract.

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Specifications of Material

Hypochlorite supplied under this contract shall be tested and certified as meeting these specifications and those of the American National Standards Institute/National Sanitation Foundation Standard 60 (ANSI/NSF Standard 60), Drinking Water Treatment Chemicals Health Effects.

It is the responsibility of the supplier to inform the Purchaser that NSF certification has been revoked or lapsed within 24 hours of the time the supplier receives verbal or written notification. Loss of certification shall constitute sufficient ground for immediate termination of the contract.

Hypochlorite delivered under this contract shall have a minimum of 9.2 weight percent sodium hypochlorite equivalent to 100 gpl available chlorine and a maximum of 16.5 weight percent sodium hypochlorite equivalent to 200 gpl available chlorine.

Specifying Personnel: The minimum and maximum strength of sodium hypochlorite shall be specified with consideration given to length of storage and decomposition, ambient temperatures, type of storage and other factors. Consult plant operations personnel to achieve the proper delivered strength for best plant operation.

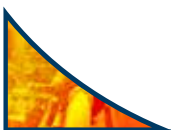
Hypochlorite delivered under this contract shall have a minimum of 0.1 percent by weight sodium hydroxide and a maximum of 0.4 weight percent sodium hydroxide.

Hypochlorite delivered under this contract shall meet the following containment concentration limits:

Iron	<0.5 mg/L
Copper	<0.05 mg/L
Nickel	<0.05 mg/L
Chlorate	<1,500 mg/L

The delivery time of the shipment shall not exceed 72 hours from the time of manufacture of the produce.

The suspended solids in the sodium hypochlorite delivered under this contract shall be minimized and the shipments delivered shall achieve a filtration time of less than 3 minutes for 1,000 ml when applying the “*Suspended Solids Quality Test for Bleach Using the Vacuum Filtration*” method previously reference in this specification.



Manufacturer's Laboratory Reports

A certified report from the manufacturer shall be submitted for each sodium hypochlorite delivery to the Purchaser.

The report shall contain the following data:

- Date and Time of Manufacture
- Percent by Weight
 - Sodium Hypochlorite
 - Excess Sodium Hydroxide
 - Excess Sodium Carbonate
- Specific Gravity
- Suspended Solids Test Time

No deliveries will be accepted by the Purchaser unless accompanied by said certified laboratory report for the specific batch of sodium hypochlorite delivered showing the above data and that it conforms to the required specifications.

At the start of the contract and every 90 days, the Contractor shall utilize an outside testing agency acceptable to both the Purchaser and the Contractor to analyze a sample of the sodium hypochlorite delivered to the Purchaser. The Contractor shall supply the sample container and the driver shall collect the sample from the tank truck. This sample will be given to the Purchaser at the time of the sample and the Purchaser forward the sample to the approved authorized testing agency. Any failure to comply with the specifications shall constitute grounds for cancellation of the contract.

Charges for the manufacturers certified report and all quarterly reports by outside testing agencies should be included in the bid price.

Approved Testing Agency

Novachem, 5172 College Corner Pike, (P.O. Box 608), Oxford, OH
Ph: 513.523.3605 Fax: 513.523.4025

Specifying Personnel: The testing agency shall have documented performance in the testing of sodium hypochlorite and should be recognized in the industry for the following:

- Comparison of Methods for determining the concentration of transition metal ions in sodium hypochlorite.
- Research and development of chemical modeling for rates of decomposition of Liquid Bleach.
- Contributing research and development for the use of sodium hypochlorite in drinking water for the AWWA.
- Contributing research and development of the use of sodium hypochlorite in drinking water for The Chlorine Institute, Inc.

Concentration testing for iron and transition metal ions for nickel and copper in sodium hypochlorite is a difficult test and requires high levels of knowledge and experience for accurate and repetitive test results.



740 East Monroe Road
St. Louis MI 48880
Phone: 888.800.2310 (Toll Free)
989.681.2158 (Local)
Fax: 989.681.5013
email: info@powellfab.com
website: www.powellfab.com
www.valveclosures.com

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