

Sodium Hypochlorite Testing Methods Sampling Procedures

As a bleach producer, the cost of bleach production is an important market factor. A proven way to cut the cost of bleach production is to improve bleach production “efficiency”. With the escalating cost of raw materials, savings can be found by controlling the caustic dilution, good end point control of excess caustic, and reduced sodium chlorate formation.

To accurately assess the quality of bleach being produced, the bleach product needs to be analyzed by qualified laboratory personnel who understand how to apply the available chlorine analytical methods. Powell Fabrication recommends that bleach producers use NovaChem Laboratories for their testing needs (see address below).

Essential Analysis: (Tier 1)
Wt% NaOCl
g/L available Cl_2
Specific gravity
Wt% NaOH (excess caustic)
Wt% Na_2CO_3
Wt% Sodium Chloride
mg/L chlorate

Optional Analysis I: (Tier 2)
mg/L bromate
mg/L perchlorate
mg/L iron, copper, nickel

Optional Analysis II: (Tier 3)
Filter test
Dissolved Solids
Suspended Solids

Note: Once the testing is complete, other units of measure of any result can be supplied upon request. For example, Wt% NaOH (excess caustic) can be converted to gpl NaOH.

Taking a Sample

A representative sample for testing is essential for accurate results. Typically, two 100 ml samples of the same bleach are required for testing purposes: a full-strength sample (for the measurement of specific gravity and the metals) and a 1/10 diluted sample (for the measurement of sodium hypochlorite and the various ion analysis).

By diluting the bleach, the less concentrated sodium hypochlorite solution will not significantly decompose during shipping and storage. This results in more accurate measurement with typically larger bleach strengths and lower chlorate ion concentrations.

A third sample can be taken if the filter test is required. The filter test is helpful on the operations side of bleach distribution. Faster bleach filter times indicate less filterable material in the bleach leading to reduced incidences of pump, instrumentation, and piping systems failure. The minimum volume for a meaningful filter test analysis is 1 liter of full-strength bleach.

Sample 1 100 ml - Full Strength Bleach

Using proper safety procedures, fill a 100 ml sample bottle with bleach at full strength. Chill the sample.

Sample 2 100 ml - 1/10 Diluted Bleach

The dilution of full-strength bleach requires that proper safety procedures be followed. With a pipette, take a 25 ml sample of the same full strength bleach and dispense it into a 250 ml volumetric flask. Fill to the 250 ml mark with distilled water. Mix the diluted solution. When the solution is adequately mixed, fill a 100 ml sample bottle. Chill the sample.



Sample 3 1 liter - Full strength Bleach

Using proper safety procedures, fill a 1000 ml (optionally 2 - 500 ml) sample bottle with bleach at full strength. Chill the sample. The sample should be stored in a chilled environment to be ready for shipment. Uline or equal cold packs #S-18256 can then be frozen for use during shipment. The shipment should be sent using a next day service (if available) such as UPS or Federal Express. DHL is also available for international service.

The size of the shipment and shipping method will determine the type of shipping container, sample bottles and vermiculite used. It is strongly suggested to utilize a knowledgeable shipping container company such as LabelMaster to assist in supply of the correct shipping products. Please refer to the UPS, FedEx or DHL guides for shipping ground and air hazardous materials. These guides will assist in correct labeling for the shipment and shipper's responsibilities.

Each sample container should include Chain-of-Custody documentation including the sample designation, company, address, contact person, phone, e-mail address, and if available the in-house analysis results for the wt% sodium hypochlorite and excess caustic.

Due to the cost of sampling, shipping and handling, it may be desirable to prepare multiple samples for testing. If two or more representative samples are prepared, please send two 100 ml samples (full strength and diluted) for each additional sample.

Send the samples to

NovaChem Laboratories, Inc.
Attn: Dr. Bernie Bubnis
5172 College Corner Pike
Oxford, OH 45056
United States

Ph: 513-523-3605
email: bbubnis@novachemlabs.com
website: www.novachemlabs.com

Contact NovaChem for firm pricing. Credit card vis Paypal is accepted.

Results

Once the results have been obtained, please contact Powell for a detailed review of the current production efficiencies. Powell can recommend cost effective methods for production improvements based on your current plant design.



Chain of Custody

Company Name: _____

Address: _____

Telephone Number: _____ Fax Number: _____ Email Address: _____

Contact: _____ Purchase Order Number: _____

Check the Analyses Required
(Please include any in-house analysis results on a separate page)

No.	Date/Time	Sample Description	Tier 1	Tier 2	Tier 3
1			Wt% NaOCl _____ g/L Ave. Cl ₂ _____ Specific Gravity _____ Wt% NaOH _____ Wt% Na ₂ CO ₃ _____ Wt% NaCl _____ mg/L Chlorate _____	mg/L bromate _____ mg/L perchlorate _____ mg/L Fe, Cu, Ni _____	Filter Test _____ Dissolved Solids _____ Suspended Solids _____
2			Wt% NaOCl _____ g/L Ave. Cl ₂ _____ Specific Gravity _____ Wt% NaOH _____ Wt% Na ₂ CO ₃ _____ Wt% NaCl _____ mg/L Chlorate _____	mg/L bromate _____ mg/L perchlorate _____ mg/L Fe, Cu, Ni _____	Filter Test _____ Dissolved Solids _____ Suspended Solids _____
3			Wt% NaOCl _____ g/L Ave. Cl ₂ _____ Specific Gravity _____ Wt% NaOH _____ Wt% Na ₂ CO ₃ _____ Wt% NaCl _____ mg/L Chlorate _____	mg/L bromate _____ mg/L perchlorate _____ mg/L Fe, Cu, Ni _____	Filter Test _____ Dissolved Solids _____ Suspended Solids _____



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