Montgomery Chemicals
Sodium Borohydride and Related Chemicals

Product Information Bulletin
BoroMet 1240® Sodium Borohydride Solution for Caustic Nickel Suppression

BoroMet 1240 solution is a stable aqueous solution of sodium borohydride ($NaBH_4$) and caustic soda (sodium hydroxide, NaOH) used by many industries for metal reduction and recovery. $NaBH_4$ has proven to be very effective in reducing a variety of heavy metals including copper, nickel, iron, and precious metals like silver, gold, and palladium. It application is now found in caustic production to reduce nickel level in the final product. Primarily by forming a protective layer, $NaBH_4$ suppresses the corrosion and erosion effect in evaporators, greatly reducing nickel contamination in caustic production.

Application

While nickel is an excellent material of construction for corrosion resistance used in many different alloys, particularly for hot and corrosive environments such as caustic evaporators, it is still subject to leeching/corrosion at high temperatures. Coupled with high turbulence in the evaporators, erosion can further increase the nickel contamination in caustic production.

BoroMet 1240 solution (12% $NaBH_4$) inhibits the corrosion reactions prevalent in nickel based evaporator systems. Treatment with **BoroMet 1240 solution** can reduce nickel pickup across evaporators by 50 - 80%, thus extending equipment lifetime, reducing plant downtime for maintenance/equipment replacement, and increasing production throughput. All of these translate to significant cost savings to the caustic producers. Implementation of **BoroMet 1240 solution** is relatively simple and straight forward. The treatment system can be easily incorporated into existing caustic production processes without significant equipment expenses.

The sodium borohydride technology and its benefits are proven at many diaphragm cell caustic plants throughout North America. Its implementation is also seen in development projects in membrane cell caustic plants and around the world.

Physical Properties

Sodium Borohydride		12.0 ± 0.2%
Sodium Hydroxide		40 ± 2.0%
Freezing Point		13 °C (55 °F)
pH		14.0+
Density	@ 23 °C	1.4 gm/cc
	@ 73 °F	11.7 lbs/gal

Nickel Reduction Results at Diaphragm Caustic Plants			
Plant	BoroMet SBH Treatment Level	Nickel Level Before Treatment	Nickel Level After Treatment	Nickel Reduction
	(ppm)	(ppm)	(ppm)	%
A	7.0	3.3	0.75	77
B	5.0	2.0	1.00	50
C	8.0	2.7	0.50	81
D	10.0	3.0	0.55	82
E	8.0	2.5	1.00	60
F	35.0	1.5	0.25	83

Higher purity caustic can help expand its applications into higher quality end-use markets. For one example, cleaner caustic produces clearer and more stable sodium hypochloride bleach products.

Storage and Handling

BoroMet 1240 solution is extremely stable, undergoing minimal decomposition during long term storage, and should be stored and handled following standard procedures for caustic soda (sodium hydroxide) solution. Contact with Aluminum and other materials that react with sodium hydroxide solutions should be prevented. Contact with acids or acidic materials and extreme dilution should be prevented, as hydrogen gas may be released. Ventilate spill areas and flush with large quantities of water, per Material Safety Data Sheet instructions.

Shipping Information

BoroMet 1240 solution is available for shipment in 5 gal. pails, 55 gal. plastic drums, 275 gallon tote bins, and 4,000 gallon tank trucks. Other packaging is also available to meet specific customer requirements.

Technical Assistance

On-site customer technical support and assistance for all aspects of usage including jar tests, plant evaluations, product handling & storage and product safety are provided by Montgomery Chemicals.

Contact Montgomery Chemicals for complete product information, including suggested safety, handling, and storage procedures, transportation designations, and Material Safety Data Sheets. The material contained herein is believed to be accurate; however no warranty or guarantee is made as to accuracy or completeness. Nothing contained herein is to be construed as permission to infringe on any patent or license. Determination as to suitability of this product for a particular application is solely the responsibility of the user.

Montgomery Chemicals, LLC
901 Conshohocken Road, Conshohocken, PA 19428
Phone 706-467-9106   Fax 706-467-3197   Email: sales@montchem.com

Revised: Oct-2015