

## Product Information Bulletin

### BoroMet 1240<sup>®</sup>

### Sodium Borohydride Solution

**BoroMet 1240 solution** is a stable aqueous solution of sodium borohydride (NaBH<sub>4</sub>) and caustic soda (sodium hydroxide, NaOH) used by many industries for metal reduction and recovery. They include the printed circuit board, metal plating/finishing, and photo processing industries for wastewater treatment to reduce heavy metals to compliance levels, as well as the precious metal operations to recover copper, nickel, silver, gold, platinum, and palladium. NaBH<sub>4</sub> has proven to be very effective for metal reduction/recovery in various chelated aqueous process and wastewater streams for both environmental and economic reasons.

#### Application

The following reaction defines the typical reduction of metals with NaBH<sub>4</sub> solution, where M = Metal and X = Anion:



Theoretical levels of NaBH<sub>4</sub> solution can be calculated to reduce specific metals utilizing the above reaction, and are defined in the following table.

**Table 1**

<u>Metal</u>	(ml BoroMet/kg metal)	(lb metal/gal BoroMet)
	<u>Theoretical Treat Rate</u>	<u>Amount of Metal Recovered</u>
Copper	850	10
Nickel	1000	8
Silver	250	32
Gold	430	20
Platinum	600	14
Palladium	540	15

Theoretical levels should be used as a guideline. Actual **BoroMet 1240 solution** requirements may vary depending on the actual reduction conditions. While pH is a very important parameter, temperature, reaction time, and possible side reactions with other species present can affect the efficiency of the reaction. The side reaction hydrolysis can also increase the borohydride requirement. Montgomery Chemicals Technical Service Personnel can assist with optimizing the reaction condition for your specific applications.

## 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.

## 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, which 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 gallon pails, 55 gallon 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.*

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