

# An Opinion on the Performance of Cleaning Agents Used in Preparing Winemaking Equipment

Daniel Pambianchi<sup>1</sup>

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**Introduction.** Poor sanitation of winemaking equipment can lead to wine flaws or outright spoilage if microorganisms take a foothold in the wine, on equipment or in the cellar.

An effective sanitation program requires a thorough cleaning and water-rinse of all equipment that will come into contact with juice and wine, followed by effective sanitization. Poorly cleaned equipment can never be sanitary, and that will compromise wine quality.

Cleaning and sanitization are accomplished using specialized chemical or enzymatic agents. Various products making use of different “active ingredients” are available on the market. Additional information on cleaning and sanitization agents, procedures and contraindications is available in Pambianchi (2012, 2008) and Gibbs (2012). The references provide important material compatibility information and other important safe-use information.

The objective of this non-scientific “study” was to assess the performance of cleaning agents used in preparing equipment for winemaking. This study was conducted with uncontrolled parameters and therefore only provides a subjective opinion. The study was performed on glass material only and was therefore not intended to be comprehensive.

The tests were performed on stained glass bottles that previously held heavily pigmented, tannin-rich red wine and which were left to dry for one year to let the pigmented complexes solidify on the glass. The level of staining cannot be scientifically categorized as uniform, however, these bottles all came from the same batch of wine; therefore, the level of staining was fairly uniform for the purpose of this study. Several bottles with much heavier staining and kept for much longer were also available to assess how these agents could handle “tough” stains.

The following assessments list disclosed ingredients on product labels or in MSDS, each product’s manufacturer or distributor (in parenthesis), recommended dilution rate, which was used for these tests, and the author’s opinion on performance with an overall grade as A+, A, A–, B+, B, etc. in bold in parenthesis. Ratings are strictly for the tests performed

on glass, as outlined, and do not consider other materials. These ratings are relative to the other agent ratings and are therefore not absolute. The dilution rate for all agents is 1 tsp per liter (L) or roughly 1 tbsp per gallon of water, unless specified otherwise.

The assessment of each agent’s ability to lift stains from glass was limited to a 20-minute (min) duration. Some of these agents require a longer soaking period, particularly those based on enzymes, and which may also be recommended to be done with some scrubbing.

## Test Results

**Sodium carbonate.** (Generic chemical obtained from Winemaster) Also known as soda ash, sodium carbonate makes a strongly alkaline solution (also known as an alkalinity builder) when dissolved in water. It does not dissolve as easily as other agents; warm water is recommended. Its mode of action is to break down dirt and other foreign solids that can then be rinsed off.

The solution lifted stains immediately, and the stained bottle was spotless after a 5-min soak period and water rinse. No scrubbing or shaking was required. It can lift tough stains but requires some scrubbing. (A+)

**Sodium percarbonate.** (Generic chemical obtained from Barrel Builders) Also known as sodium carbonate peroxide and sodium carbonate peroxyhydrate, it is produced from sodium carbonate through chemical bonding with hydrogen peroxide, a powerful oxidizer, hence why it is often described as containing “active oxygen.” It is found in many other manufacturers’ formulations as well as in household cleaning products and laundry detergents.

The solution lifted stains immediately, and the stained bottle was spotless after a 5-min soak period and water rinse. No scrubbing or shaking was required. It can lift tough stains but requires some scrubbing. (A)

**Sodium hydroxide.** (Generic chemical obtained from Prolab Scientific) Also known by its chemical formula NaOH, sodium hydroxide can be very caustic at high concentrations.

A mild 1% solution was used in these tests to keep dilution ratios more consistent with other agents. There was no visible lifting of stains, however, a shaking partially dislodged the stains. Scrubbing was required to completely remove all the stains after the 20-min soak period. It handled tough stains well but also required some scrubbing. Sodium hydroxide at

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<sup>1</sup> Corresponding author (email: Daniel@TechniquesInHomeWinemaking.com)

higher concentrations, 10% or more, is known to be much more effective. (C)

**Sodium hypochlorite.** (Sani-Brew/RJSpagnols) Also known as bleach and “the pink powder,” sodium hypochlorite is a strong oxidizing agent once dissolved in water; it is a very effective cleaning and disinfecting agent, especially at high concentrations. Its major drawback is its high risk of inducing TCA, or what is known as cork taint. A single airborne speck of powder can contaminate and taint an entire winery. It should be used as far away from any wine processing facility, ideally in an open area.

The bleach solution lifted stains immediately, and the stained bottle was spotless after a 5-min soak period and water rinse. No scrubbing or shaking was required. At the test dilution rate, tough stains needed a longer soak period and some scrubbing. (A)

**AmBrew Cleanser.** (Logic) AmBrew contains carbonates and alkaline silicates. The solution lifted stains immediately, and the stained bottle was spotless after a 5-min soak period and water rinse. No scrubbing or shaking was required. It can lift tough stains but requires some scrubbing. It performed exceptionally well. (A+)

**Straight A.** (Logic) Straight A contains sodium percarbonate, sodium carbonate and sodium polysilicate used as a buffering agent.

The solution (1 tbsp/L) lifted stains immediately, and the stained bottle was spotless after a 5-min soak period and water rinse. No scrubbing or shaking was required. It can lift tough stains but requires some scrubbing. (A)

**One Step No-Rinse Cleanser.** (Logic) One Step, known as Aseptox in Canada, contains sodium percarbonate, sodium carbonate, sodium chloride used for buffering, and sodium citrate for buffering and as a sequestrant (chelating agent).

The solution (1 tbsp/L) started lifting stains immediately but not with the same vigor as its AmBrew and Straight A brethren. It could not lift all the stains in the 20-min period; it required scrubbing. (B-)

**P.B.W (Powdered Brewery Wash).** (Five Star Chemicals and Supply) PBW contains silicates, phosphates and surfactants. Surfactants lower the surface tension between water and solids, and may act as detergents, wetting agents, emulsifiers and foaming agents.

The solution (1 tbsp/L) lifted stains immediately, and the stained bottle was spotless after a 5-min soak period and water rinse. No scrubbing or shaking was required. It can lift tough stains with minimal scrubbing. It performed exceptionally well. (A+)

**B-Brite.** (Crosby & Baker) B-Brite contains sodium percarbonate, sodium carbonate, and silicic acid and sodium salt used for buffering and flocculating solids. The solution (1 tbsp/L) started lifting stains immediately but required scrubbing after the 20-min soak period to remove all stains. It handled tough stains with some shaking and scrubbing. (B-)

**OxiClean Versatile Stain Remover.** (Church & Dwight) OxiClean is a household cleaning product used as a laundry booster, carpet spot remover and hard surface cleaner. It contains sodium percarbonate, sodium carbonate, ethoxylated

alcohol used as a surfactant, sodium polycarboxylate used as a sequestrant, sodium metasilicate used for buffering, and “blue specks” used for dispersing soil.

The solution (1 tbsp/L) lifted stains immediately, and the stained bottle was spotless after a 5-min soak period and water rinse. No scrubbing or shaking was required. It can lift tough stains but requires some scrubbing. It performed exceptionally well although the foaming might be a nuisance or a problem in CIP winemaking applications. (A)

**Seventh Generation Natural 2X Concentrated Laundry Detergent.** (Seventh Generation) Seventh Generation is an aqueous solution containing, according to the product label, sodium lauryl sulfate, coceth-7 and glycerin (plant-derived cleaning agents), sodium citrate (water softener), oleic acid (plant-derived anti-foaming agent), sodium hydroxide (alkalinity builder), sodium chloride (thickener), boric acid and calcium chloride (enzyme stabilizers), protease and amylase (enzyme soil removers), methylisothiazolinone and benzisothiazolinone (preservatives).

The dilution rate was 1 tbsp/L. The instructions recommended a cold-water wash, however, there was very little lifting of stains after 5 minutes. Performance was slightly better with hot water. There was not much more lifting in the 20-min period, and scrubbing was required to remove all the stains. The abundant foaming is a problem to rinse and will be a problem in CIP applications. Given the enzymatic nature of the active ingredients, this cleaning agent requires more time to work and was therefore not graded.

**Super Pro-Zyme Low Foam Enzymatic Detergent.** (Health Lab Products) Super Pro-Zyme is an enzymatic detergent used in the health care industry to remove heavy bioburden from surgical instruments. Its formulation is proprietary but no hazardous ingredients are reports in the MSDS.

A dilute 0.4% (4 mL/L) solution was used for these tests. There was no stain lifting in the 20-min soak period. Stains required scrubbing for removal. The foaming might be a nuisance or a problem in CIP winemaking applications. Given the enzymatic nature of the active ingredients, this cleaning agent requires more time to work and was therefore not graded.

## Literature Cited

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