A Brief Guide to Cleaning and Sterilisation for the Craft Brewer

I'm aiming here to cover briefly some of the common (and not so common) cleaners and sterilisers that are suitable for use on brewing equipment, bottles and kegs whilst explaining the advantages and drawbacks of particular products.

Household Bleach Availability as Domestos, can be used diluted 1 part to 19 with water to clean and sterilise plastic equipment and glass bottles. Advantages are cost, readily obtainable and highly effective against the gram negative bacteria found in the early brewing stages such as O proteus. (common wort bacteria) Drawbacks; Corrosive to stainless steel if left for any length of time and will also blacken and corrode brass and copper. Not effective against some gram positive bacteria which may be encountered in the later stages of brewing. (*i.e. Pediococcus damnosis)* Needs thorough rinsing of cleaned items with hot water to remove any taints. Precautions needed when handling are goggles and rubber gloves.

Washing Soda Also known as Sodium Carbonate, this useful cleaner is readily available from supermarkets and all hardware stores. The crystals are dissolved in hot water at a rate of approximately 2 tablespoons per litre and the equipment left to soak for about 20 minutes. Rinse equipment thoroughly after use. Advantages are low cost, wide availabilty, easy and safe to use. Drawbacks; Not as effective as Caustic Soda and no sterilising power.

Caustic Soda Also known as Sodium Hydroxide, this cheap and powerful cleaner is readily available from nearly all hardware stores in crystal form and may be used for normal cleaning and sterilisation purposes by making up 125g with 5L of cold water, or for heavily soiled items and stubborn deposits at 50g per 1L of water. The advantages are a very effective cleaner whilst also providing some degree of sterilising power. The drawbacks are that very thorough rinsing with hot water is necessary after use and this cleaner is strongly corrosive to aluminium, also will leave deposits on vessels when used in areas with very hard water. Precautions needed when handling are goggles and heavy duty rubber gloves, as this product can cause severe burns to skin.

Antiformin S This product is available via Murphy's in bulk quantity and Brupaks in smaller packs and is a caustic based cleaner with an added chlorine donor. It comes supplied in liquid form and is diluted to make up a 1 – 2% solution with cold water and will thoroughly clean equipment whilst being effective against most bacteria. Advantages are convenience, economical to use and not corrosive to stainless steel when used at the recommended dilution and rinsed with hot water. The drawbacks include a tendency to precipitate carbonates when used with very hard water with some

gram positive bacteria being resistant to this product. Needs thorough rinsing after use. Precautions needed when handing are goggles and rubber gloves.

Murphy's / Brupaks Cleaner and Steriliser This product is available via home brew dealers at a very reasonable cost. (best prices; Barley Bottom & The Malt Miller) It is a non caustic, alkaline based cleaner with an added chlorine donor and is safe to use in a wide range of brewing equipment. It comes as a powder and is dissolved in hot or cold water at a rate of 10-15g per litre and the item must be rinsed with water after use. Advantages include cost and ease of use, wide availability and will not cause a precipitate when used with hard water. Disadvantages; as with all chlorine based sterilisers, ineffective against some gram positive bacteria.

Murphy's Kilamic / Brupaks Stayclean These disinfectants are also known as *Quaternery Ammonium Compounds (or Quats)* and are a very effective against a large range of bacteria and especially against gram positive organisms. The solution is diluted to 5ml per litre with cold water and can be sprayed on pre-cleaned items if desired. This product must be very thoroughly rinsed off vessels after use as it is highly toxic to yeast and will destroy beer foam if not properly removed. Advantages include safe and easy to use, non toxic, non corrosive to all brewing vessels including stainless steel. Drawbacks; no cleaning power, fairly expensive and very thorough rinsing required after use.

Peracetic Acid This product is available from Murphy's in bulk quantities and The Malt Miller in smaller quantities convenient for the craft brewer. It has in recent years become the standard disinfectant for the brewing industry and is a blend of hydrogen peroxide and acetic acid which is extremely effective against a wide range of bacteria. It's supplied as a 5% solution of which 3-5ml is diluted with 250ml cold water and may be conveniently sprayed on pre-cleaned items. Advantages; Peracetic Acid may be used as a “terminal disinfectant” immediately prior to use and does not require rinsing. Economical, effective and will not corrode stainless steel. Drawbacks; extremely harmful to skin. No cleaning power. Precautions needed are goggles and heavy duty rubber gloves.

Star San Another “terminal disinfectant” based on phosphoric acid with suitable additives which again doesn't need rinsing, this product is diluted 1.5ml – 2ml per litre of water and may be sprayed on items or just used as a rinse. Advantages include ease of use and economical, as the solution may be re-used as long as the pH stays below about 3.0. Drawbacks; not suitable for dilution with hard water as the alkalinity will partly neutralise the acid causing it to be ineffective, although additional phosphoric acid may be added to correct this. Precautions; use goggles and rubber gloves when handling the concentrated product.

My own preference now is to use the non caustic alkaline chlorine cleaner & steriliser for nearly all my equipment and bottles. (which are filled and soaked for 20 minutes) For heavy duty cleaning such as my copper C/F wort chiller I circulate a caustic soda solution followed by rinsing with hot water followed by a weak solution of phosphoric acid then a final rinse with hot water immediately before use. However this is only occasionally necessary and if only sterilisation is needed, the chiller is baked for an hour at 175C in the oven (or if in a hurry boiling water is simply passed through) Plastic tubing is immersed in Star San solution after use and hung up to dry without further rinsing.

A few points to note:

- Deposits on equipment and bottles are best removed immediately after use.
- Stainless steel items should be rinsed with hot water after cleaning with chlorine based compounds to avoid corrosion.
- Never mix chlorine based products (such as Antiformin) with acidic sterilisers such as Star San or Peracetic Acid as toxic fumes may be released.
- Make sure your items of equipment are thoroughly drained when cleaned as wet items left around can acquire mould and bacteria.
- If you suspect your beer has become infected and you are already using a chlorine based cleaner / disinfectant, consider using Peracetic Acid or Star San additionally as a terminal rinse following your usual procedure. Kilamic / Stayclean may also be used but please be aware that this product requires very thorough rinsing after use.

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