



Soap Uses for Dow Chelating Agents



The ability of Dow chelating agents to control metal ions in aqueous solutions has great value in many areas of the soap industry.

The addition of Dow chelating agent to soap formulations can result in these advantages:

- Built-in water hardness protection
- Improved rinsability
- Solubility of insoluble metal soaps, salts, and oxides
- Improved clarity of liquid products
- Reduced rancidity, discoloration, and chalking catalyzed by metal ions
- Stability of peroxygen bleach-containing products.

Laundry Detergents

When Dow chelating agents are used in laundry soaps, moderately hard water can be used without formation of undesirable soap curd. Stability of the fragrance of the laundry soap, as well as stain removal, may be enhanced as well.

VERSENEX™ 80 Chelating Agent is recommended for stabilization of

peroxide- and perborate-containing laundry products. Control of trace metals such as iron, manganese, and copper help improve bleach stability and bleaching efficiency.

Dow chelating agents may be used in commercial laundering operations. They may be incorporated into the soap, or because Dow chelating agents possess high stability in the presence of heat and alkali, they may be added during the boil or break periods. When the commercial system operates on softened water, Dow chelating agents assist in the removal of metal salts and oxides in the soils on the fabrics, and inactivates hardness ions contained in the soil.

Commercial processing of various fabrics, including stonewashing of denim, often imparts a level of residual metal ion on the fabric. This may lead to discoloration of the fabric. A final rinse with 0.2-1.0% Dow chelating agent may eliminate this problem.

Liquid Soaps

Dow chelating agent imparts clarity, improved detergency, foaming characteristics, and extended shelf life in these liquid products. The chelating agent is preferably added at the soap saponification stage before finishing off to the desired pH. Both the filtration step for removing higher titer fatty acids and unsaponifiables, and the chilling step may be unnecessary.

If addition at this preparation stage is not practical, chelating agent may be added at other points. To minimize possible pH effects, the pH of the solution of Dow chelating agent should be adjusted to that of the liquid soap before addition. Compatibility may be improved if potassium, or amine salts of VERSENE™ Acid are used instead of VERSENE 100, VERSENE 200 Crystals or VERSENE Na₂ Crystals.

The chelating agent requirement depends on the water hardness and metal ion contamination in the soap. Figure 1 will help determine the amount of VERSENE™ 100 Chelating Agent required; a slight excess should control the metal content. When cloudiness forms in liquid soaps, it may be cleared by adding a VERSENE product; the reaction is quite rapid when the soap is warmed.

Dow chelating agents also reduce the adverse effects of metal ions on foaming properties of liquid soaps. By knowing the water hardness, the amount required can be calculated. See Figure 2.

Shampoos

It is recommended that all shampoo products include 0.1% Dow chelating agents for control of deleterious spoilage. In addition, Dow chelating agent may be used to soften the water with which the liquid shampoo is diluted during

manufacture. Recommended products are VERSENE Na₂ Crystals, VERSENE 220 Crystals or VERSENE 100XL Chelating Agent.

Bar and Solid Soaps

A concentration of 0.1% VERSENE Chelating Agent is recommended for most bar and solid soaps. This is to prevent deleterious spoilage. VERSENE Chelating Agents will also prevent chalking, rancidity, and metal catalyzed discoloration, in the soap noodle or in the final bar form. Iron-based spotting of soap bars can be reduced by incorporation of VERSENE or VERSENE X Chelating Agent at 0.1-0.2%.

Bath Preparations

A 3-10% concentration of VERSENE 100XL or 1.2-4% VERSENE Na₂ Crystals (based on weight of detergent-based bubble bath formulations) counteracts the defoaming action of hardness ions on toilet soaps.

Germicidal and Antibacterial Cleansing Preparations

Addition of Dow chelating agents to soaps or cleaners containing phenolic or quaternary amine germicides reduces the harmful effects of hard water. In hard surface bathroom cleaners, Dow chelating agents also contribute the added benefit of excellent soap scum removal properties.

Rosin Soaps

An amine salt of VERSENE Acid, in 1-3% concentrations, improves product clarity and increases foaming, detergency, and rinsing characteristics.

Scrub Soaps

Dow chelating agents at concentrations of 0.1-0.5% increase detergency in preparations containing less than 2% pine oil.

Figure 1: Formulation Guide for Using VERSENE Chelating Agents in Cleaning Applications

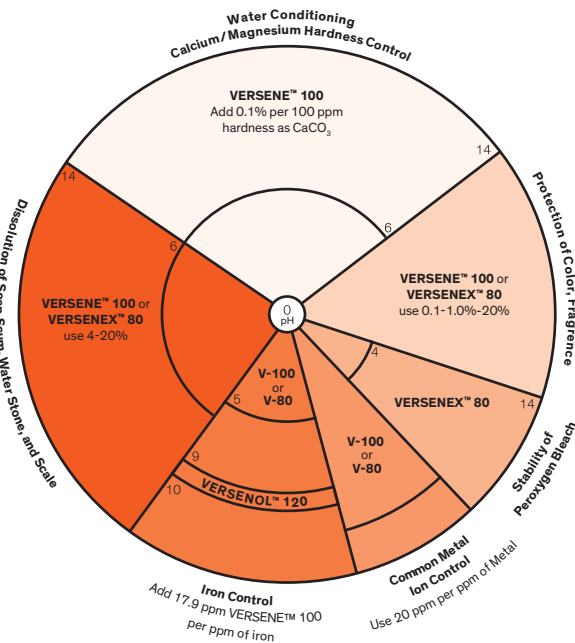
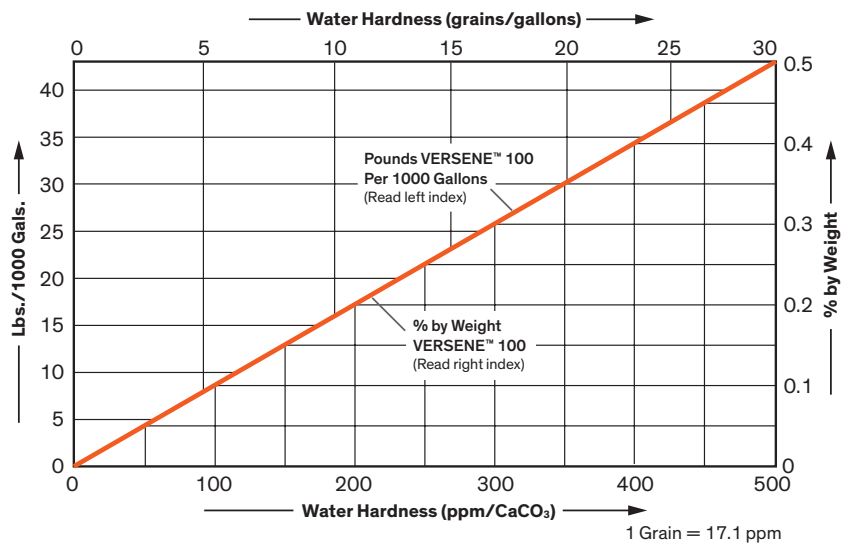


Figure 2: Hardness Ion Control Chart



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