

THEIR DESIRE.  
YOUR PROMISE.  
OUR PURPOSE.

# refreshing cleansing.

Carbopol® Aqua SF-2  
polymer

Novethix™ L-10 polymer

Glucamate™ VLT  
thickener



## EMERGING TRENDS ARE CHANGING THE WAY FORMULATORS THINK ABOUT, AND FORMULATE, SURFACTANT CLEANSING PRODUCTS

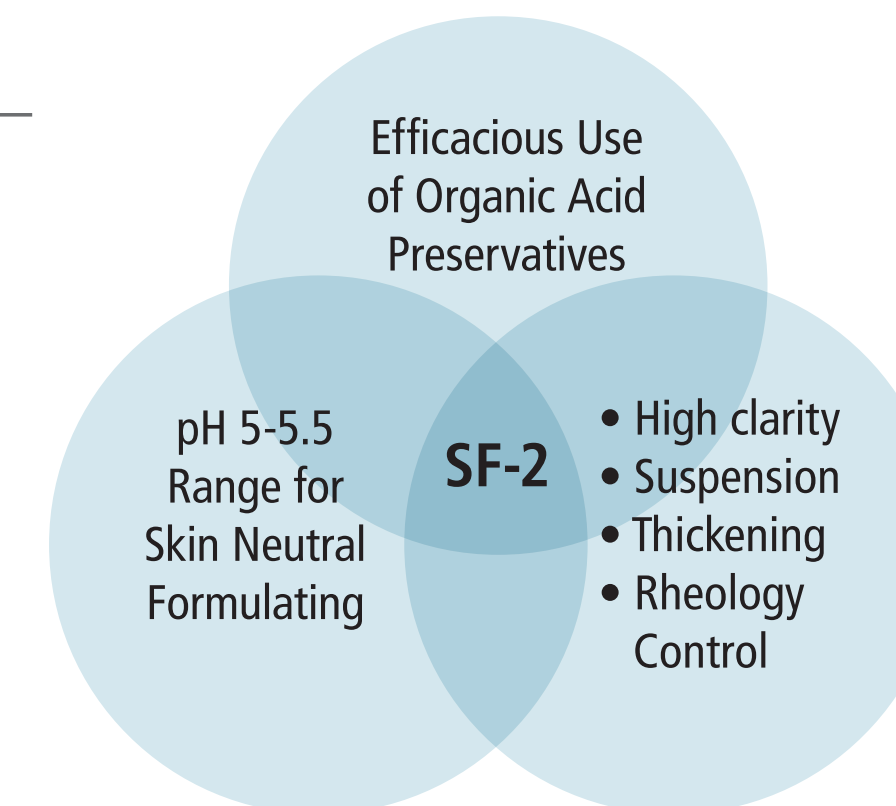
Today's consumers are more cognizant than ever of the health and safety aspects of the personal care products they buy. At the same time, changes in the world economy have made these consumers more value-conscious. Thus, formulators find themselves challenged to change the way they formulate surfactant cleansing systems.

### CARBOPOL® AQUA SF-2 POLYMER

INCI Name: Acrylates Crosspolymer-4

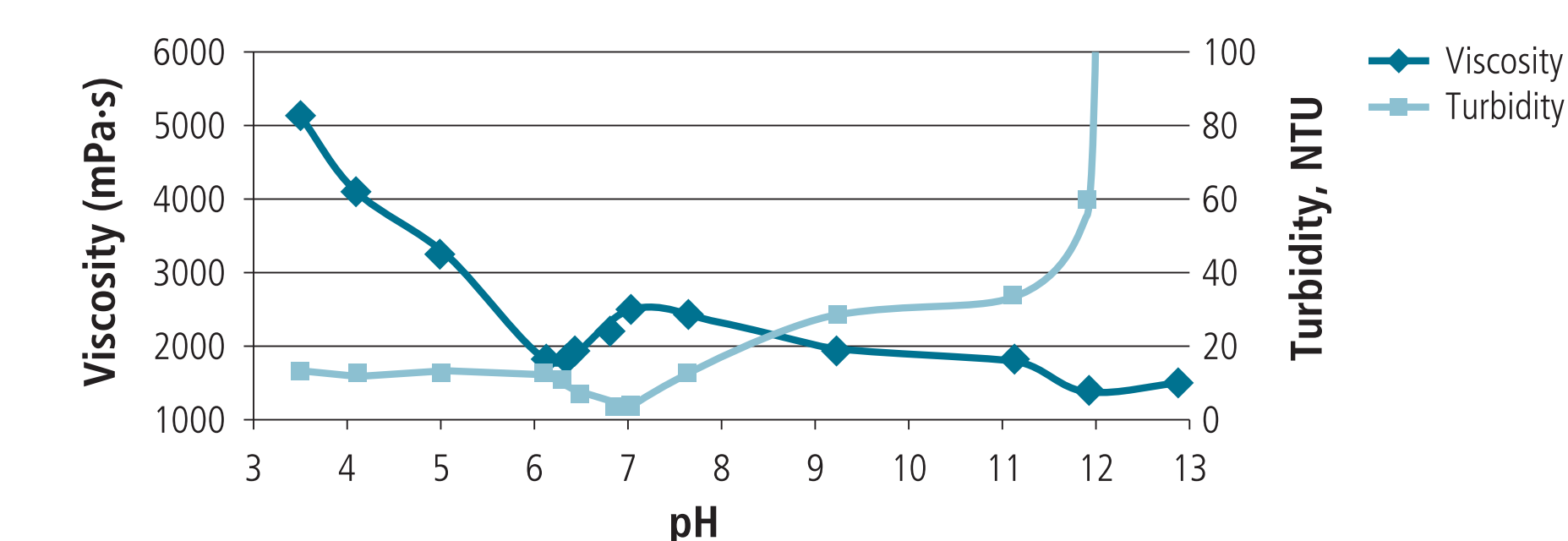
Many traditional preservatives used in surfactant cleansing products have come under scrutiny as they have been linked to potential health issues. As a result, formulators have begun using food-grade preservatives, such as sodium benzoate, to preserve cleansing formulations. However, sodium benzoate reduces the pH of surfactant cleansing systems to below 5, which necessitates a change in the way the rest of the formula is built in order to maintain the visual and rheological aesthetics that the consumer desires. Carbopol® Aqua SF-2 polymer enables formulators to build attractive surfactant cleansing systems at low pH (Figure 1).

FIGURE 1: Carbopol® Aqua SF-2 polymer is a perfect fit as a rheology modifier and appearance enhancing polymer for low pH surfactant cleansing systems.



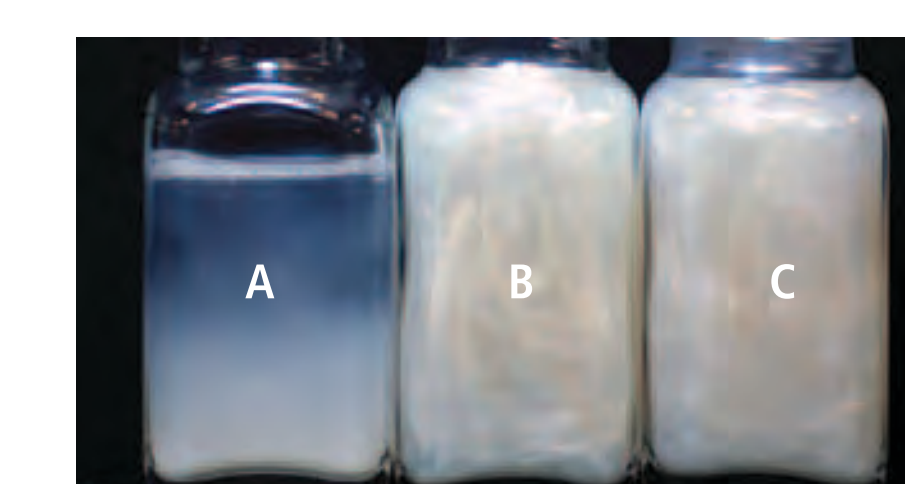
Carbopol Aqua SF-2 polymer was designed specifically as a rheology modifier and suspension aid in formations with pH below 6.0. Figure 2 shows the performance of Carbopol Aqua SF-2 polymer in a SLES/CAPB surfactant system (13.5 wt% TS surfactant, 2.5 wt% TS polymer). Carbopol Aqua SF-2 polymer efficiently builds viscosity while maintaining clarity at low pH.

FIGURE 2: Carbopol® Aqua SF-2 polymer performance in a 11.2 wt% TS SLES / 2.3 wt% TS CAPB surfactant system.



Another benefit of Carbopol Aqua SF-2 polymer is its ability to suspend insoluble particles, allowing the formulator to make visually appealing pearlescent cleansing formulations (Figure 3).

FIGURE 3: Pearlescent Cleansing formulations thickened with Carbopol® Aqua polymers and NaCl.



- A. No Polymer
- B. Carbopol® Aqua SF-1 Polymer
- C. Carbopol® Aqua SF-2 Polymer

Aged 3 months @ 45°C

### Key Benefits of Carbopol® Aqua SF-2 Polymer

- Excellent clarity and suspension in low pH surfactant systems
- Elegant rheology with a smooth, honey-like flow
- Highly compatible with most common surfactants and sodium benzoate
- Good salt synergy
- Can be post-added to batches, increasing processing flexibility and decreasing likelihood of out-of-spec batches

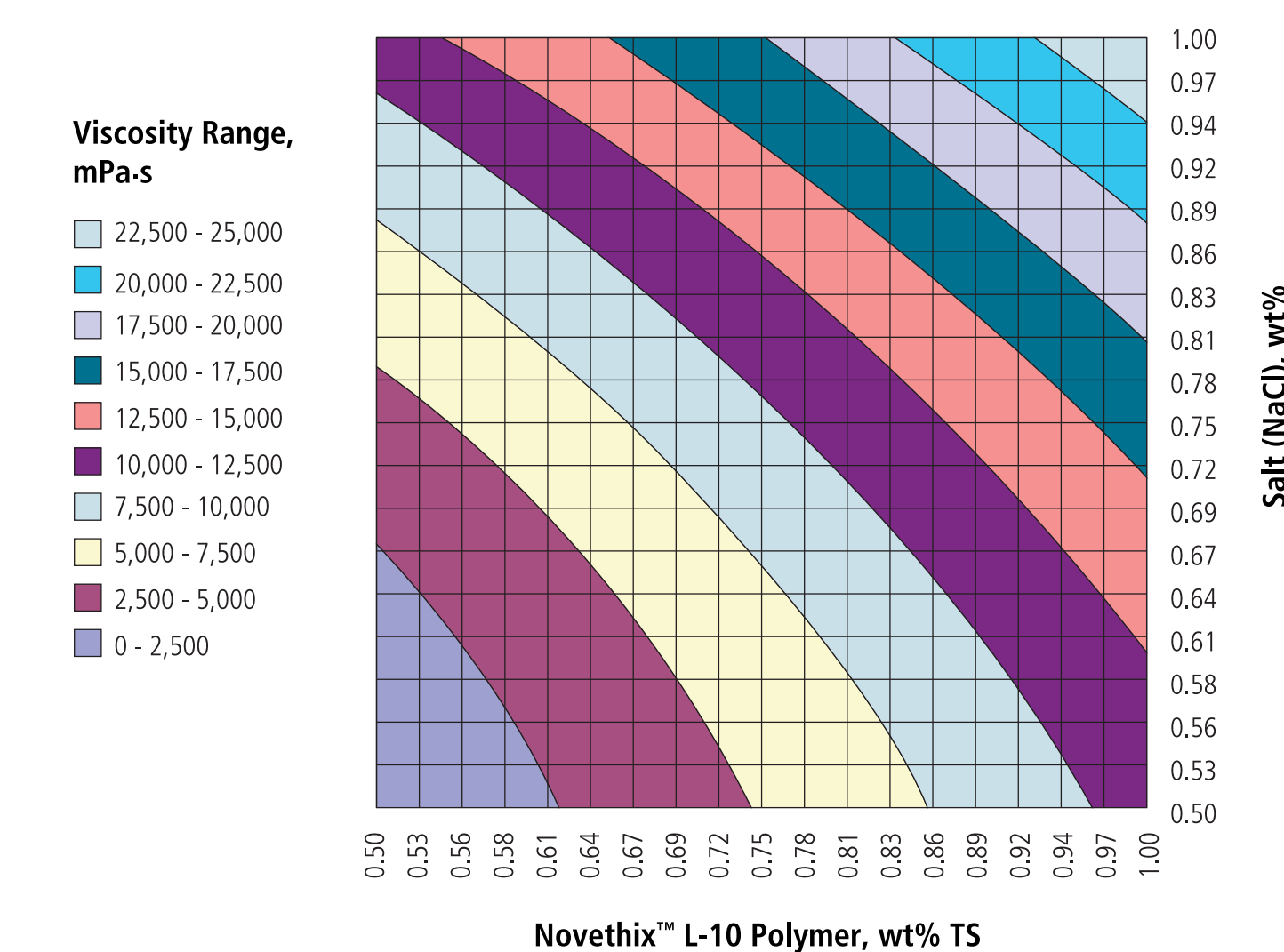
### NOVETHIX™ L-10 POLYMER

INCI Name: Acrylates/Beheneth-25 Methacrylate Copolymer

Many formulators are struggling to find ways to reduce product costs by decreasing certain ingredient levels in formulations. However, formulating at reduced surfactant levels can make it difficult to thicken the formulation with salt while maintaining clarity.

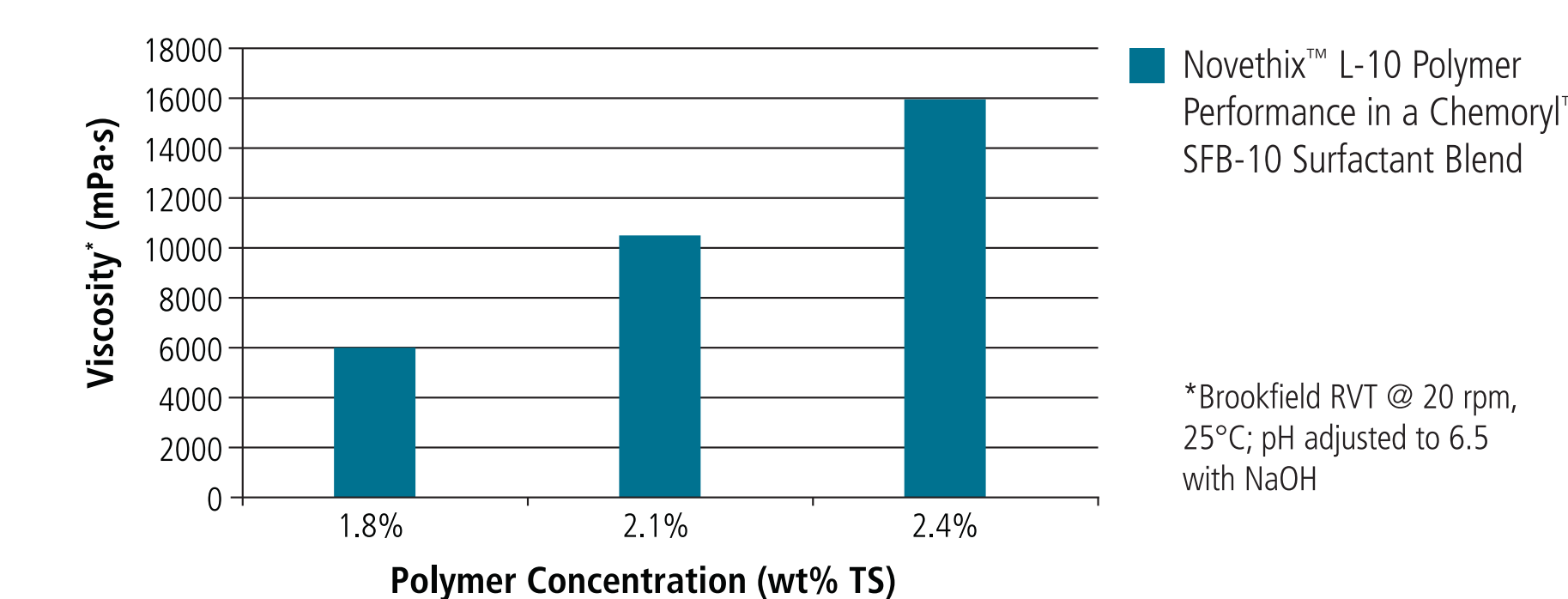
In low surfactant systems, Novethix™ L-10 polymer offers formulation flexibility and works synergistically with salt to obtain desired viscosity (Figure 4).

FIGURE 4: Synergy Between Novethix™ L-10 polymer and NaCl in a 12 wt% TS SLES-2/CAPB surfactant formulation.



Another trend in the market is the move toward sulfate-free surfactants, which deliver a desirable blend of mildness and pleasant sensory to formulations, but can be very difficult to thicken using salt. Novethix L-10 polymer has been shown to thicken sulfate-free surfactant formulations efficiently, producing elegant cleansing formulations (Figure 5).

FIGURE 5: Viscosity performance of Novethix™ L-10 polymer in a sulfate-free, non-ethoxylated surfactant system.



### Key Benefits of Novethix™ L-10 Polymer

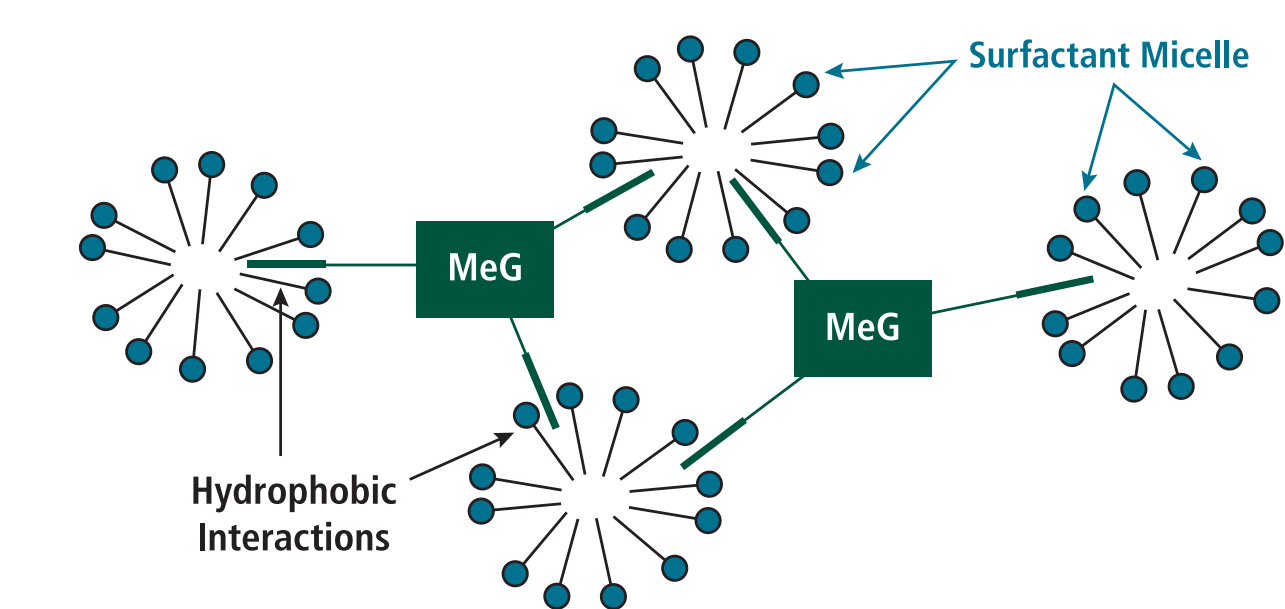
- Delivers efficient thickening in low surfactant, economy formulations
- Depending on the surfactant system, 0.5 to 1.0 wt% TS of Novethix L-10 polymer is sufficient to obtain elegant rheology
- The synergy of Novethix L-10 polymer and salt provides formulation flexibility and excellent viscosity control
- Is a liquid emulsion polymer; no heating is required and allows for easy addition to the formulation
- Maintains stable viscosity, even at elevated temperatures

### NEW GLUCAMATE™ VLT THICKENER

INCI Name: PEG-120 Methyl Glucose Trioleate (and) Propanediol

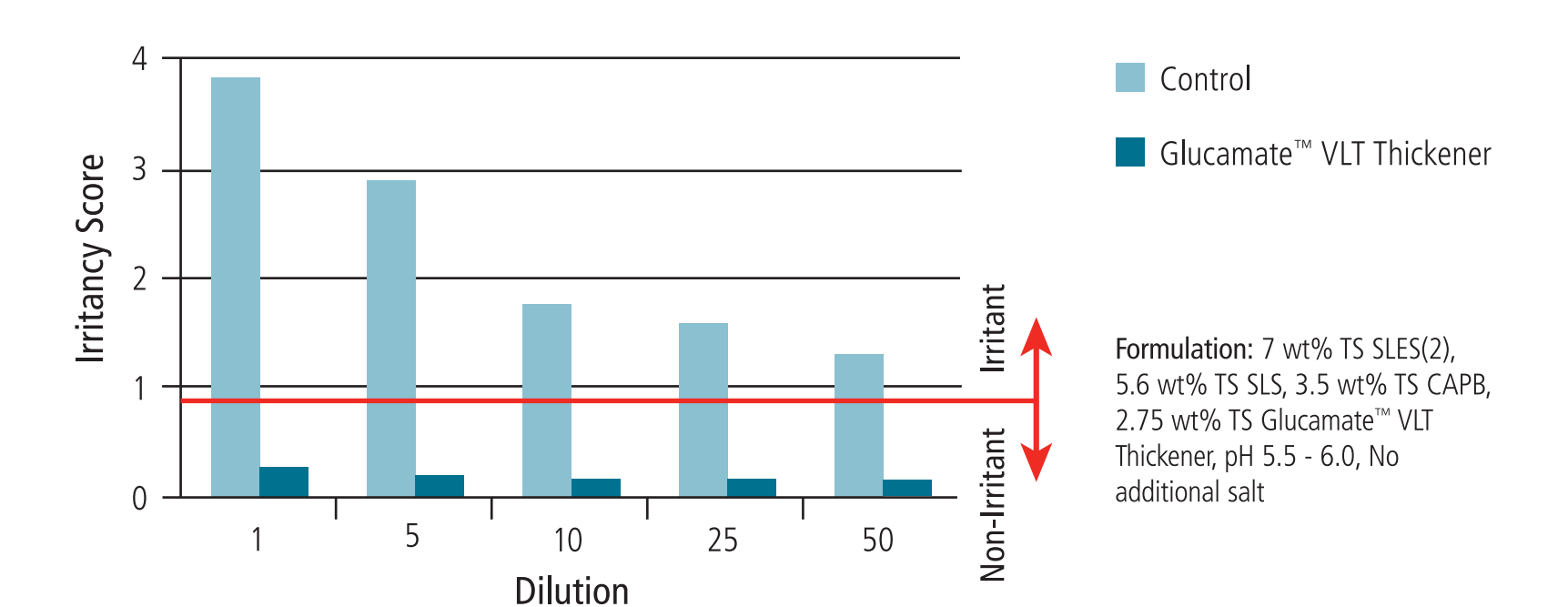
Glucamate™ VLT thickener builds viscosity in surfactant systems through an associative mechanism (Figure 6).

FIGURE 6: Associative thickening mechanism of Glucamate™ VLT thickener.



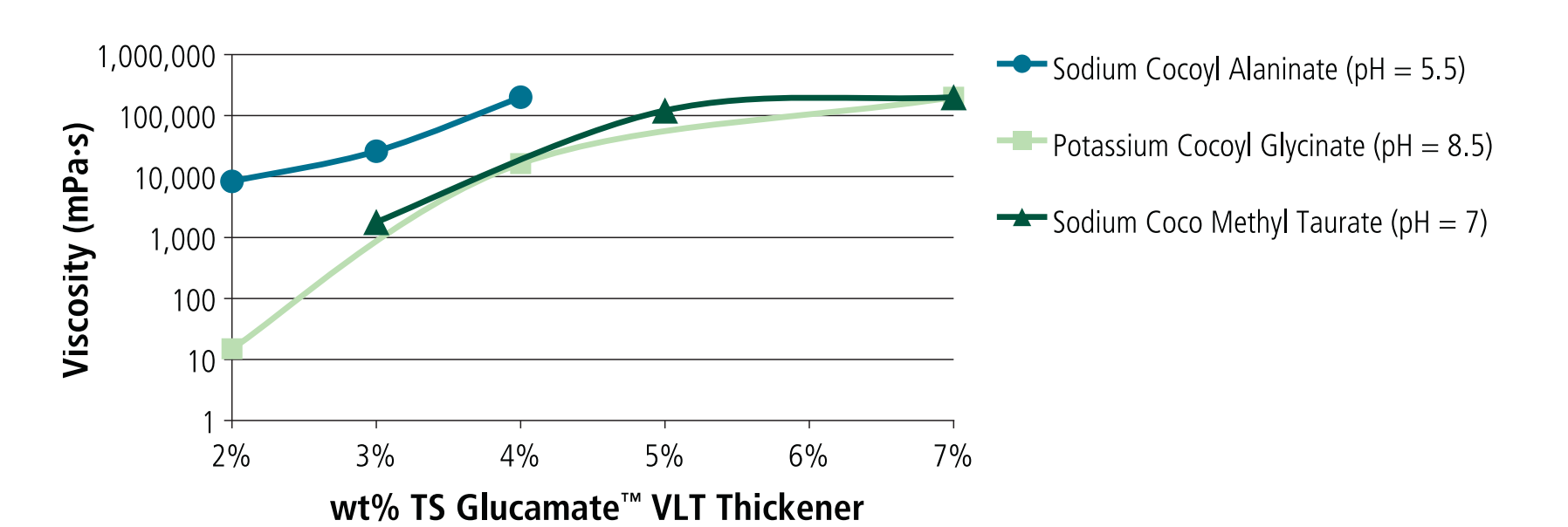
By forming bridges between surfactant micelles, Glucamate VLT thickener reduces the critical micelle concentration (CMC) of surfactants, decreasing the amount of free surfactant monomer and reducing the irritancy of the formulation (Figure 7).

FIGURE 7: Glucamate™ VLT thickener reduces the dermal irritancy of an SLES-2/SLS/CAPB surfactant blend.



In an effort to formulate milder products, formulators are looking at using amino acid-based surfactants. Amino acid surfactants do not build viscosity as efficiently as do traditional surfactants, they do not in many cases synergistically thicken with salt, and it can be challenging to formulate clear systems with them. Glucamate VLT thickener is a highly efficient associative thickener for building viscosity in amino acid-based surfactant systems (Figure 8).

FIGURE 8: Associative thickening of 15 wt% TS amino acid surfactant systems with Glucamate™ VLT thickener.



### Key Benefits of Glucamate™ VLT Thickener

- Naturally derived from corn
- Improved sustainability and cost-in-use
- Efficient viscosity builder
- Designed for anionic, amphoteric and nonionic surfactant systems
- Synergistic thickening with surfactants and salt
- Excellent clarity
- Exceptionally mild and non-irritating to eyes and skin
- Very light, pleasant skin feel

Visit [www.lubrizol.com/personalcare](http://www.lubrizol.com/personalcare)