Name | 1251  
Description | This shampoo demonstrates how to formulate excess alkalinity surfactants with pH-sensitive polymers like carbomer and cationic guar.

**Formulation**

**INGREDIENTS:**  

| Phase 1 |  
| Deionized water | q.s. to 100.00  
| Carbopol ETD 2020 Polymer (Lubrizol) Acrylates/C10-30 alkyl acrylate crosspolymer | 0.50  
| STEOL® CS-130 HP | 40.00  

| Phase 2 |  
| Jaguar C-13S (Solvay Novecare) Guar | 0.10  
| Hydroxypropyltrimonium Chloride | 1.00  
| Fragrance |  

| Phase 3 |  
| STEPANOL® WA-EXTRA HA | 6.70  
| AMPHOSOL® HCA-HP | 6.70  
| Dow Corning 2-1870 (Dow Corning) Dimethiconol | 8.00  
| Sodium Hydroxide, 50% solution | 0.10  
| Sodium Chloride | 0.40  
| Kathon CG (Dow) Methylisothiazolinone | 0.04  
| and Methylchloroiothiazolinone |  

**Total** | 100.00  

**Procedure**  
1. To a suitable container with mixing and heating capability, add Deionized Water with mixing.
2. Under moderate agitation, slowly disperse Carbopol ETD 2020 Polymer, taking care to avoid aeration. Mix until powder particles are dissolved and no particles are visible. Continue mixing for another 20 minutes until a hazy to clear homogenous solution is formed.
3. Add STEOL® CS-130 HP and mix well. Mix until homogenous.
4. In a separate vessel, premix Jaguar C-13S and Fragrance. The guar will be pre-wetted but not dissolved.
5. Add guar-oil premix into the other batch. Mix well for about 20 minutes.
6. Add STEPANOL® WA-EXTRA HA and mix well. Mix until homogenous.
7. Add AMPHOSOL® HCA-HP and mix well. Mix until homogenous.
8. Add Dow Corning 2-1870 and mix well. Mix until homogenous.
9. Add Sodium Hydroxide, 50% solution, with mixing. Mix well for about 20 minutes.
10. Add Sodium Chloride with mixing, as needed to adjust viscosity.
11. Add Kathon CG with mixing. Mix well for about 20 minutes or until batch is completely homogenous.
12. Check pH and viscosity. Adjust to target specifications as needed.

**Physical Appearance at 25°C** | Translucent, free-flowing liquid
Properties

- pH, as is: 5.5 - 6.5
- Viscosity at 25°C (LV, spindle 3, speed 12 rpm), cps: 3,000 - 7,000

Storage/Stability

- 25°C at 3 months: Stable
- 4°C at 3 months: Stable
- 45°C at 3 months: Stable
- Freeze/Thaw, 3 cycles: Passes

External Comment

BCI = 85. Total Biorenewable Carbon Index (BCI) was calculated only for the Stepan surfactants used in this formulation. Other ingredients were not evaluated. For further information on Stepan's BCI, visit www.stepan.com. This formulation contains several surfactants that are preserved by excess alkalinity. This allows the formulator flexibility when selecting a preservative for the finished formulation.

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For Additional Assistance

For applications or product handling assistance, call our Technical Service Department at 1-800-745-7837 (U.S.) or 011-334-76-505-100 (Europe).
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