

# Formulation

|                     |  |   |
|---------------------|--|---|
| Name                | <b>HAIR CONDITIONER WITH COCONUT OIL</b>   |   |
| No.                 | 1234   |   |
| Description         | This is a thick, rinse-off conditioner designed for slightly dry hair. It can be used for daily use or as a weekly restorative treatment.  |   |
| Formulation         | <p><b>INGREDIENTS:</b></p> <p>Deionized Water<br/>                 Natrosol 250 HHR (Hercules) Hydroxyethylcellulose<br/>                 AMMONYX® 4<br/>                 NINOL® CAA<br/>                 HALLSTAR® CO-1895 (Hallstar) Stearyl Alcohol<br/>                 HALLSTAR® CO-1695 (Hallstar) Cetyl Alcohol<br/>                 HALLSTAR® IPP (Hallstar) Isopropyl Palmitate<br/>                 Coconut Oil<br/>                 Citric Acid, 50% solution<br/>                 Sodium Hydroxide, 50% solution<br/>                 Preservative, Dye and Fragrance</p>  | <p><b>% by Weight    Functionality</b></p> <p>q.s. to 100.00 Carrier<br/>                 1.25 Viscosity Modifier<br/>                 4.50 Conditioning Agent<br/>                 0.50 Secondary Surfactant<br/>                 4.00 Thickener<br/>                 2.00 Thickener<br/>                 0.75 Emollient<br/>                 1.50 Emollient<br/>                 q.s. pH Adjuster<br/>                 q.s. pH Adjuster<br/>                 q.s. Additives</p> |
|                     | <b>Total</b>   | <b>100.00</b>   |
| Procedure           | <ol style="list-style-type: none"> <li>1. In a suitable vessel equipped with heating/cooling and agitation, charge Deionized Water.</li> <li>2. Sprinkle in Natrosol 250 HHR. Adjust pH to ~10.0 with Sodium Hydroxide, 50% solution. Mix until the Natrosol 250 HHR is hydrated and the solution is clear.</li> <li>3. Adjust pH down to ~4.0 with Citric Acid, 50% solution.</li> <li>4. Heat to 70°C, then add AMMONYX® 4, NINOL® CAA, HALLSTAR® CO-1895 and HALLSTAR® CO-1695. Mix for 30 minutes until everything is dissolved and solution is homogeneous.</li> <li>5. Add Isopropyl Palmitate and Coconut Oil. Continue to mix for another 20 minutes and begin to cool to 40°C.</li> <li>6. Adjust pH to 4.0-4.5 with either Citric Acid, 50% solution or Sodium Hydroxide, 50% solution.</li> <li>7. Add Preservative, Dye, and Fragrance.</li> </ol> |   |
| Physical Properties | Appearance at 25°C<br>pH, as is<br>Viscosity at 25°C, cps  | Thick white, opaque paste<br>4.0 - 4.5<br>45,000 - 55,000   |
| Storage/Stability   | 4 weeks at 25°C<br>4 weeks at 45°C<br>Freeze/Thaw, 3 cycles  | Stable<br>Stable<br>Passes  |
| External Comment    | Marketing Notes: NINOL® CAA is a multifunctional secondary surfactant that is naturally-derived (derived from plant, animal or marine sources). BCI = 69. 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 <a href="http://www.stepan.com">www.stepan.com</a> .   |   |
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Stepan Company  
Northfield, Illinois 60093  
Telephone (847) 446-7500

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