

# Liquid Laundry Detergent

Contains REACT-NTI products (highlighted in red)

## Formulary

Ingredients	% Wt.
Marlon A375 (Sasol) (linear sodium alkylbenzenesulphonate (LAS) 75%)	7.00
Edenor K 12-18 (Cognis) (coconut fatty acid C <sub>12</sub> -C <sub>18</sub> )	7.50
Neodol 45-7E (Shell) (alcohol ethoxylate C <sub>14</sub> -C <sub>15</sub> EO7-8)	10.00
<b>EnviroSolve Silver or Gold (React-NTI)</b>	<b>7.00</b>
Triethanolamine	7.50
1, 2-Propylene glycol	11.00
Citric acid 50% aqueous solution	6.50
KOH 45% aqueous solution	9.50
<b>Viscos-ABIT (React-NTI)</b>	<b>0.50</b>
Tinosorb FD (Ciba) (UV-absorber)	0.33
Deionized water	q.s. to 100

## Procedure

1. For better handling, use the LAS as a 30% active aqueous solution, and melt the fatty acid before incorporation.
2. Use a suspension of Tinosorb FD in a solvent mixture for incorporation of the UV-absorber into the detergent formulation.
3. The solvent mixture consists of 22% ethanolamine, 33% water and 45% PEG200.
4. Prepare a suspension of 17% Tinosorb FD in this solvent mixture and heat it to 60°C while stirring.
5. Mix triethanolamine with propylene glycol and add the LAS solution while stirring, followed by the alcohol ethoxylate.
6. Add 2% by weight of the warm suspension containing Tinosorb FD and then the fatty acid.
7. While stirring, slowly add KOH solution, then the water, followed by the citric acid solution.



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