

## FORMULATION

# Unit Dose Liquid Laundry Detergent

## Overview

- Unit dose laundry detergent with excellent soil and stain removal
- Effective in hard and cold water conditions
- Keeps whites white and colors bright
- Biodegradable, free from environmentally persistent ingredients such as polyacrylates, and free-from phosphates

## Composition

Ingredient	Trade Name	Function	% w/w
Monoethanolamine (MEA)		Neutralizing Agent	3.5-5.0
Linear Alkyl Benzene Sulfonic Acid	Bio-Soft S-101 (Stepan)	Biodegradable Anionic Surfactant	12-15
Sodium Oleate		Biodegradable Anti-Foamer	1
Sodium Citrate		Biodegradable Chelant	1.5-3.0
<b>Sodium Polyaspartate (40% active)</b>	<b>Soltellus 2101L (Lygos)</b>	<b>Biodegradable multi-functional polymer</b> <ul style="list-style-type: none"> <li>• <b>Anti-redeposition agent for brighter colors and whiter whites</b></li> <li>• <b>Anionic surfactant and enzyme booster</b></li> </ul>	<b>2.0-3.0</b>
Sodium Laureth Sulfate (60% active)	Steol CS-460 (Stepan)	Biodegradable Anionic Surfactant	5-7
Laureth-7 (100% active)	Genapol LA-070	Biodegradable Nonionic Surfactant	35-50
Glycerin		Biodegradable Co-Solvent	12-15
Propylene Glycol			15-20
NaOH or Citric Acid		pH Adjuster	As Needed
Protease	Liquinase Evity 3.5L (Novonesis)	Facilitates the Breakdown of Protein Stains	0.75
Amylase	Amplify Prime 100L (Novonesis)	Facilitates the Breakdown of Starch Stains	0.5
Methylisothiazolinone / Benzisothiazolinone	Acticide MBS (Thor)	Biodegradable Preservative	0.1
Fragrance/Dyes	Adjuvants	Product Aesthetics	

## Directions

1. Slowly add BIO-SOFT S-101 and monoethanolamine with uniform mixing
2. Add co-solvents (glycerin/propylene glycol), surfactants, chelants, anti-foamers, co-solvents, and Soltellus 2101L while uniformly mixing
3. Add pH adjuster and viscosity modifiers to reach pH 7.5-8.5 and desired viscosity
4. If using heated process, let system cool to ambient temperature prior to adding enzymes, stabilizer, preservatives, and adjuvants.

## Potential Claims

- Keeps whites white and colors bright
- Excellent for cleaning in hard water
- Saves money and the environment with a cold water clean
- Safe for sensitive skin
- Free from harmful ingredients
- Free-from polyacrylates and phosphates
- Biodegradable
- Safe for septic tanks

## Product Properties

Parameter	Value
Appearance	Colorless to lightly colored formulation
pH (as is)	7.5-8.5
Compatability	Limited compatability with cationic ingredients

