



## Green Liquid Hand Dishwash

### Rhodapex<sup>®</sup> ESB-70 NAT

**HOME CARE  
FORMULATION HC-2006**

TechServHPC@us.rhodia.com

This LAS-free and DEA-free formulation is based on mild surfactants that are primarily derived from renewable vegetable origins. It features **Rhodapex<sup>®</sup> ESB-70 NAT** which is a preservative free, 100% renewable carbon grade of SLES that is listed on Cleangredients<sup>®</sup>. All components of this formulation are readily biodegradable.

INGREDIENTS	FUNCTION	WT, %	PROCESS
Water, soft	Carrier	QS	1. Charge water and Mackam 35 and heat to 70-75°C. 2. Charge Mackamide CMA and mix until dissolved. 3. Begin cooling while adding Rhodapex ESB-70 NAT 4. At <50°C, add Decyl Glucoside and Sodium Xylene Sulfonate and mix until uniform. 5. Adjust the pH with citric acid, 50% to 5.0-6.0. 6. Add the Rhodapon® L-22 STD and mix until uniform. 7. Adjust pH as needed to reach 5.5 – 6.5 8. Add dye, fragrance and preservative. Mix until homogeneous.
<b>Rhodapex<sup>®</sup> ESB-70 NAT<sup>1</sup></b>	Anionic Surfactant	12.0	
<b>Mackam<sup>®</sup> 35<sup>1</sup></b>	Amphoteric Surfactant	9.0	
<b>Rhodapon<sup>®</sup> L-22 STD<sup>1</sup></b>	Anionic Surfactant	30	
<b>Mackamide<sup>®</sup> CMA<sup>1</sup></b>	Nonionic Surfactant	2.7	
Decyl Glucoside <sup>2</sup>	Nonionic Surfactant	5.0	
Citric Acid, 50%	pH Adjust	QS	
Sodium Xylene Sulfonate, 40%	Viscosity Adjust	6.0	
Fragrance, Dye & Preservative	Aesthetics	As needed	

Suppliers: (1) Rhodia (2) BASF

### Use Instructions

Use in sink or basin of water or apply directly to sponge or rag.

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**WARNING**

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## Green Liquid Hand Dishwash (HC-2006)

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### Typical Properties

Appearance	Thin Liquid
pH @ 25°C	5.5-6.5
Solids, %	28.0-30.0
Viscosity @ 25°C	300 – 800 cps
Storage-Stability	Stable for 1 month (25°C; 50°C ; 4°C) 3 Cycles of Freeze/Thaw

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# Phosphate Free Automatic Dish Wash Powder

Mirapol<sup>®</sup> Surf-S P-free Power & Mackam<sup>®</sup> OAB

**HOME CARE FORMULATION HC-2020**

TechServHPC@us.rhodia.com

This automatic dish wash powder features **Mirapol<sup>®</sup> Surf-S P-Free Power**, a polymer that is specifically designed to boost the cleaning performance of phosphate free formulations. This hydrophilizing polymer provides water sheeting, fast drying and spot and streak free cleaning. **Mackam<sup>®</sup> OAB** is an amphoteric wetting agent that also boosts detergency.

INGREDIENTS	FUNCTION	WT, %	PROCESS
Sodium Carbonate	Carrier	QS to 100	<ol style="list-style-type: none"> <li>Mix Sodium Carbonate and Sodium Sulfate together gently in a ribbon blender.</li> <li>Slowly absorb Mackam OAB onto the carbonate/sulfate mix.</li> <li>Add in SKS-6, Sodium Metasilicate, and Sodium Citrate Dihydrate.</li> <li>Lastly, add CDB-90, Sipernat 50, and Mirapol Surf S P-Free Power and blend until uniform.</li> </ol>
Sodium Sulfate	Builders	8.0	
<b>Mackam<sup>®</sup> OAB<sup>(1)</sup></b>	Wetting Agent	2.5	
Sodium Metasilicate	Builders	30.0	
SKS-6 <sup>(2)</sup> (Sodium Disilicate)	Builders	20.0	
Sodium Citrate Dihydrate	Builders	5.0	
Trichloroisocyanuric Acid(CDB-90) <sup>(3)</sup>	Dispersant	5.0	
Sipernat 50 <sup>(4)</sup>	Builder	10.0	
<b>Mirapol<sup>®</sup> Surf S P-Free Power<sup>(1)</sup></b>	Polymer	2.0	

Suppliers: (1) Rhodia (2) Clariant (3) Sigma Aldrich (4) Evonick

## Use Instructions

Fill reservoir with powder per dishwasher instructions.

## Typical Properties

Appearance	White, free-flowing powder
pH (10%) @ 25°C	10.0-12.0

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# Ultra Liquid Dish Wash

Rhodacal® A246/L, Mackam LSB-50 & Mackamine® LA

**HOME CARE  
FORMULATION HC-2021**

TechServHPC@us.rhodia.com

Dishes become sparkling clean by using **Rhodacal® A246/L** and **Mackamine® LA** for powerful grease cutting and removal of starchy, oily food soils. **Mackam® LSB-50** boosts foam stability and mildness making this dish wash gentle enough to use as a hand soap.

INGREDIENTS	FUNCTION	WT, %	PROCESS
Water	Carrier	QS to 100	<ol style="list-style-type: none"> <li>1. Charge water, Rhodacal A246/L, Mackamine LA, and Mackam LSB-50, mixing well between additions.</li> <li>2. Add the remaining ingredients including preservative.</li> <li>3. Adjust pH to 7.0-8.0 if necessary with citric acid, 50%.</li> <li>4. Adjust viscosity with Propylene Glycol</li> </ol>
Rhodacal® A246/L <sup>(1)</sup>	Anionic	47.00	
Mackamine® LA <sup>(1)</sup>	Nonionic	11.00	
Mackam® LSB-50 <sup>(1)</sup>	Amphoteric	6.00	
Preservative	Preservative	QS	
Citric Acid, 50%	pH adjust	0.20	
Propylene Glycol	Viscosity Adjust	1.5	
Dye, Fragrance	Aesthetics	QS	

Suppliers: (1) Rhodia

## Typical Properties

Appearance	Clear thin liquid
pH @ 25°C	7.0-8.0
Solids, %	25-27%
Viscosity, cps (LVT,sp3/12rpm)	350-800 cps
Storage-Stability	Stable for 3 months (25°C ; 4°C) and 3 Cycles Freeze/Thaw

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