Plandool™ G and H

Lanolin Alternative Esters

**Plandool™-G**

**INCI Name:** Bis-Behenyl/Isostearyl/Phytosteryl Dimer Dilinoleyl Dimer Dilinoleate

**Appearance:** White or very light yellow waxy paste

**Properties:**
- Oligomer ester of dimer acid and dimer diol
- Unique moisture retention and richness
- High molecular weight material with melting point close to body temperature
- Adds unique smoothness to lip products
- Adds gloss

**Applications:** Sun care, skincare & color cosmetics

**Plandool™-H**

**INCI Name:** Phytosteryl/Isostearyl/Cetyl/Stearyl/Behenyl Dimer Dilinoleate

**Appearance:** Pale yellow paste

**Properties:**
- Lower molecular weight than Plandool™-G, making it less greasy
- Provides moisture and controls adhesion to skin, hair and eyelashes
- Texture modifier for makeup & emulsion formulations
- Provides moisture to hair in rinse-off products
- Adds gloss

**Applications:** Sun care, skincare, haircare & color cosmetics

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**Water Holding Capacity**

**Procedure:**
The test is conducted according to British Pharmacopoeia and water absorption capacity. Add 0.2-0.5 ml of water to 10g sample and knead. When water is no longer absorbed, this is the end point. Water holding capacity is shown as percentage of sample.
**Plandool™-LG Series**

**Amino Acid Esters**

**Plandool™-LG1**

**INCI Name**: Phytosteryl/Behenyl/Octyldodecyl Lauroyl Glutamate

**Appearance**: White or light yellow solid wax

**Properties**:
- Nippon Fine Chemicals original product
- Forms lamellar liquid crystals helping restoring skin barrier
- *Stratum corneum* repair ingredient

**Applications**: Suncare, skincare, haircare & color cosmetics

**Plandool™-LG2**

**INCI Name**: Phytosteryl/Octyldodecyl Lauroyl Glutamate

**Appearance**: Very light yellow liquid

**Properties**:
- Creates lamellar liquid crystals
- Provides moisture effects & skin barrier functions
- Improves foam quality

**Applications**: Suncare, skincare, haircare, color cosmetics & cleansing products

**Plandool™-LG3**

**INCI Name**: Phytosteryl/Behenyl/Octyldodecyl Lauroyl Glutamate

**Appearance**: White or light yellow solid wax

**Properties**:
- Solid oil
- Creates lamellar liquid crystals
- Provides moisture effects & skin barrier functions

**Applications**: Suncare, skincare, haircare & color cosmetics

**Plandool™-LG4**

**INCI Name**: Phytosteryl/Behenyl/Octyldodecyl Lauroyl Glutamate

**Appearance**: White or light yellow waxy paste

**Properties**:
- Create lamellar liquid crystals
- Provides moisture effects & skin barrier functions

**Applications**: Suncare, skincare, haircare & color cosmetics

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**Improvement of Skin Barrier Function**

Plandool™-LG Series reduces TEWL (Transdermal Water Loss) and improves skin conductance (*Stratum corneum* moisture content).

**Test Method**:
Plandool™-LG1, -LG2, -LG3, and Liquid paraffin were added at 2% in four lotion samples. Along with a control formula, these samples were applied to the forearm of healthy human adults twice daily. Conductance of skin surface and TEWL were measured over time (20°C, 40%RH).
Plandool™ PM & MAS*
Phytosterol Esters

INCI Name: Phytosteryl Macadamiate
Appearance: White or light yellow waxy paste

Properties:
- Similar structure to skin intercellular lipids for moisture barrier protection
- Excellent moisture and richness
- Creates lamellar liquid crystals at low temperature, close to body temperature
- High Water-holding capacity
- Improves moisture retention and TEWL
- Adds gloss

Applications: Suncare & skincare

Test Method:
Heat Plandool™-PM to complete melt.
Put 10μL as test sample on glass slide. Gradually cool to 35ºC.
Observe lamellar liquid crystal with microscope.

LUSPLAN™ DD-DA7+++
Polymer Ester

INCI Name: Dimer Dilinoleyl Dimer Dilinoleate
Appearance: Light yellow liquid

Properties:
- Dimer acid and dimer diol esters
- Viscous liquid that can be used as base oil in a wide range of applications
- Plant-derived lanolin oil replacement
- Adds gloss

Applications: Suncare, skincare, haircare & color cosmetics

Product Name | Refractive Index Rate
--- | ---
Polybutene | 1.49
Methylphenyl Polysiloxane | 1.49
Liquid Lanolin | 1.48
LUSPLAN™ DD-DA7 | 1.47
Castor Oil | 1.47
NS-308 | 1.46
Mineral Oil P70 | 1.45
Diisostearyl Malate | 1.45
IOP (Ethylhexyl Palmitate) | 1.44
IOTG (Triethylhexanoin) | 1.43

Oxidation Stability

<table>
<thead>
<tr>
<th>Product</th>
<th>Conductivity (μS/cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castor Oil</td>
<td>0</td>
</tr>
<tr>
<td>LUSPLAN™ DD-DA7</td>
<td>21</td>
</tr>
</tbody>
</table>

Raw material approved by Ecocert in accordance with the Ecocert Standard

Macadamia nuts
KLP-179

Hot Fuchsia Lipstick with RUBCOULEUR KL501-CL

Part 1

- Protachem™ CTG - Protameen: Caprylic/Capric Triglyceride 39.30%
- INBP50R28U - Kobo Products: Red 28 Lake (And) Isononyl Isononanoate (And) Isopropyl Myristate (And) Stearalkonium Hectorite (And) Isopropyl Titanium Trisostearate (And) Propylene Carbonate (And) Polyhydroxystearic Acid 28.00%

Part 2

- PM WAX 82 - Toray/Kobo Products: Polyethylene (And) Microcrystalline Wax 14.70%
- Plandool™-H - Nippon/Kobo Products: Phytosteryl/Isostearyl/Cetyl/Stearyl/Behenyl Dimer Dilinoleate 7.00%
- Lexgard® O - Inolex: Caprylyl Glycol 1.00%

Part 3

- RUBCOULEUR KL501-CL - Dainichiseika Color/Kobo Products: Lauryl Methacrylate/Glycol Dimethacrylate Crosspolymer (And) Acrylates/Ethylhexyl Acrylate/Dimethicone Methacrylate Copolymer 10.00%

Manufacturing Procedure
1. Combine all of Part 1 ingredients and prop mix at 80°C until homogeneous.
2. Add Part 2 to batch, maintain 80°C.
3. Add Part 3 to batch, maintain 80°C.
4. Pour into mold at @75°C.

Description
This lipstick features RUBCOULEUR KL501-CL (8μm), which contributes to an extra-smooth feeling on the lips, good glide and wear without feeling dryness overtime. Presence of RUBCOULEUR KL501-CL in the formula smooths lips' appearance and makes them look fuller. PM WAX 82 is a combination of waxes used to structure the formulation. Kobo’s INBP50R28U dispersion gives gloss, high color intensity, as well as a creamy feel upon application. INBP Dispersions are available in a wide range of pigments. Plandool™-H is the primary emollient and moisture-protecting agent.

Melting Method of Plandool™/LUSPLAN™

- Place sample bottle in hot water or constant-temperature bath (higher than each melting point) shown next.
- Tighten the lid or sealed sample bottle and place in a plastic bag to prevent water from entering.
- Monitor melting condition with visual observation

Note: Heating above maximum recommended temperature may cause change in odor and/or color

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Melting Point (°C)</th>
<th>Maximum processing Temperature (°C)</th>
<th>Hot Hold (h)</th>
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<tbody>
<tr>
<td>Plandool™ Lanolin Alternative Esters</td>
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</tr>
<tr>
<td>Plandool™-G</td>
<td>~ 40</td>
<td>60~80</td>
<td>6~12</td>
</tr>
<tr>
<td>Plandool™-H</td>
<td>~ 40</td>
<td>60~80</td>
<td>6~12</td>
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<tr>
<td>Plandool™ Amino Acid Esters</td>
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<tr>
<td>Plandool™-LG1</td>
<td>~ 70</td>
<td>80~90</td>
<td>8~14</td>
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<tr>
<td>Plandool™-MAS</td>
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