Cognis
Green Chemical Solutions™

The Greening of Personal Care from Ingredient Classification to High Performing Consumer Products

October 27, 2009
Josef Koester, Director Marketing Care Chemicals NAFTA
Cognis in Brief

- Leading global specialty chemicals company
- Headquartered in Germany

- Over 160 years Experience in Oleochemical
- Corporate focus: **Wellness & Sustainability**
- Approximately 6,000 employees operating production sites and service centers in about 30 countries
- 2008 Sales: €3.0 billion ($4.2 billion)
The Green Market Trend

Cognis Green Chemical Solutions™
- Portfolio Easy Guide
- Regulation Easy Guide
- Green Formulation Grid

Emollient Selection Criteria and Formulation Challenges

Conclusion
The Green Market Trend

Going “green” is a reality ... In the media
The Green Market Trend

Going “green” is a reality ... For our customers
Everybody is talking about it!
The Green Market Trend

Does everybody mean the same thing?
The Green Market Trend

Where to begin?

- Suppliers
- Manufacturers
- Certification bodies
- Consumer
- Retailer
- Regulations
The Green Market Trend

Where to begin?

Cosmetic products

Ingredients
Cognis’ Approach to meeting the “Green” Trend

It’s your choice how green you want to be!
Cognis Product Portfolio

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Hair Care (F&amp;B)</th>
<th>Personal Care</th>
<th>Product Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shampoo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conditioner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Wash</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Face Cream</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lotion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soap</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cream</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cognis Product Portfolio Easy Guide

A Systematic Approach...

100 % natural, renewable feedstocks

- only physical purification by water/alcohol or energy
- chemically processed, catalyst or reaction aids used

Cognis Naturals

Cognis Natural modified

Cognis Ecohybrids

Cognis Hybrids

synthetic feedstocks

- chemically processed

Cognis Synthetics
Cognis Product Portfolio Easy Guide

Cognis APG® Surfactants—from 100% natural feedstocks

Alkyl Polyglucosides (APG®)

Corn, Potato, or Wheat → Glucose

Fatty Alcohols

Vegetable Oil
Cognis APG® Surfactants—from 100% natural feedstocks

✓ based on 100% natural renewable raw materials
✓ vegetable origin
✓ produced according to the 12 Principles of Green Chemistry (1)
✓ free from preservatives, sulfates and ethylene oxide
✓ extraordinary environmental footprint
✓ readily biodegradable

✓ APG® meets the requirements for acceptance according to:

- FDA GRAS
- Green Seal
- Nordic Environmental Label
- Soil Association Organic Standard
- Environmental Choice

Cognis APG® Surfactants
For Personal Care Applications

- **Body wash**
  - Shower gel
  - Foam bath
  - Liquid soap
  - Soap bar
  - Facial wash

- **Hair Care**
  - Shampoo
  - Baby + kids shampoo
  - Conditioner

- **Others**
  - Toothpaste
  - Cleansing wipes
  - Skin Care emulsions & creams
Cognis Product Portfolio Easy Guide

**Cognis Naturals**
From 100 % natural, renewable feedstocks; physically purified by water/alcohol or energy.

**Cognis Natural modified**
From 100 % natural, renewable feedstocks; chemically processed, catalyst or reaction aids used.

**Cognis Ecohybrids**
From natural, renewable & synthetic feedstocks; renewable & synthetic building blocks are combined in a chemical process. Greater share of natural C-atoms

**Cognis Hybrids**
From natural, renewable & synthetic feedstocks; renewable & synthetic building blocks are combined in a chemical process. Smaller share of natural C-atoms

**Cognis Synthetics**
From synthetic feedstocks; chemically processed.

Remark: All evaluations do not consider preservations, processing aids, catalysts
Certification Bodies in North America
Personal Care Certification Bodies – Cognis Involvement

BDIH - Originated in Germany, global reach, “natural” standard

Ecocert - Originated in France, global reach, “Bio” and “Eco” standards

NaTrue - Originated in Brussels, Natural and Organic certification seal

NPA - Natural standard

NSF - ‘Made with organic’ standard
   American National Standard, NSF/ANSI 305

OASIS - Organic and ‘made with organic’ standard
Personal Care Certification Bodies – Cognis Involvement

- **BDIH** – 30 Cognis products approved
- **Ecocert** – 73 Cognis products approved
- **NaTrue** – Approval process under development
- **NPA** – 17 Cognis products approved; 48 products pending
- **NSF** – Approval process under development
- **OASIS** – Approval process under development
Cognis Green Formulation Grid
Sustainability vs. performance
Performance is the first priority for premium products

"Greenness"
- e.g. % of natural, renewable C-atoms (weighted) all ingredients*
**Green Grid Consumer Categories**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eco-Passion</td>
<td>GREEN IS MY CREDO .... I respect the earth’s sustainable balance. I seriously consider the choices I make. I am not willing to make any compromise on green.</td>
<td>&gt; 95% natural C-atoms and does not contain the following materials: Petrolatum, Mineral Oil, Silicones, PEG/PPG, DEA/TEA</td>
</tr>
<tr>
<td>Eco-Spirit</td>
<td>GREEN COUNTS.... I try to consume products that are as natural, green and genuine as possible. I am honest and authentic in my purchasing decisions. I am a sophisticated consumer with high demands.</td>
<td>&gt; 85% natural C-atoms in Cognis´green formulations</td>
</tr>
<tr>
<td>Eco-Mind</td>
<td>EXPLORING GREEN ..... I am inspired by green. I expect the fulfillment of performance promises. I decide case by case how green I want to be depending on green claims and performance.</td>
<td>&gt; 70% natural C-atoms in Cognis´green formulations</td>
</tr>
<tr>
<td>Eco-Image</td>
<td>OPPORTUNISTIC GREEN .... I am willing to buy green products that meet expectations and are easily accessible. I do not question every detail. I like easy choices.</td>
<td>&gt; 50% natural C-atoms in Cognis´green formulations</td>
</tr>
</tbody>
</table>
## Naturecare – Pearly Shampoo

### Ingredients

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Eco status</th>
<th>INCI</th>
<th>Weight % (as is)</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>SULFOPON® K 35 UP</td>
<td></td>
<td>Sodium Coco-Sulfate</td>
<td>22.8</td>
<td>Surfactant, cleaning</td>
</tr>
<tr>
<td>PLANTACARE® 818 UP</td>
<td></td>
<td>Coco-Glucoside</td>
<td>13.3</td>
<td>Surfactant, cleaning</td>
</tr>
<tr>
<td>EUPERLAN® GREEN</td>
<td></td>
<td>Lauryl Glucoside (and) Stearyl Citrate</td>
<td>2.0</td>
<td>Agent, pearlescent</td>
</tr>
<tr>
<td>LAMESOFT® PO 65</td>
<td></td>
<td>Coco-Glucoside (and) Glyceryl Oleate</td>
<td>2.0</td>
<td>Lipid layer enhancer</td>
</tr>
<tr>
<td>GLUADIN® WLM BENZ</td>
<td></td>
<td>Hydrolyzed Wheat Protein</td>
<td>1.3</td>
<td>Active, ingredient</td>
</tr>
<tr>
<td>Sodium Benzoate</td>
<td></td>
<td>Sodium Benzoate</td>
<td>0.5</td>
<td>Preservative</td>
</tr>
<tr>
<td>Citric Acid (50 %)</td>
<td></td>
<td>Citric Acid</td>
<td>1.4</td>
<td>Agent, pH adjusting</td>
</tr>
<tr>
<td>NaCl</td>
<td></td>
<td>Sodium Chloride</td>
<td>1.3</td>
<td>Agent, thickening</td>
</tr>
<tr>
<td>Perfume</td>
<td></td>
<td></td>
<td>q. s.</td>
<td></td>
</tr>
<tr>
<td>Water, demin.</td>
<td></td>
<td></td>
<td>54.2</td>
<td></td>
</tr>
<tr>
<td>pH-value (as is)</td>
<td></td>
<td></td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Viscosity (Brookfield RVT, 23 °C, spindle 4, 10 rpm) mPa-s</td>
<td></td>
<td>~ 6,400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Cognis Green Formulation Grid

<table>
<thead>
<tr>
<th>Performance</th>
<th>Market Benchmark</th>
<th>Shampoo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior Product</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Advanced Product</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Classic Product</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

% of natural, renewable C-atoms (weighted) all ingredients*

- > 50%
- > 70%
- > 85%
- > 95%
PLANTASIL® MICRO

New possibilities for ‘green’ conditioning shampoo

- Appearance: transparent
- Active matter: 46 %
- Oil phase: silicone free
- pH: 4.0 – 4.5
- Use level: 1.5 – 10 % (weight % product)

Cognis Natural modified

From 100 % natural, renewable feedstocks; chemically processed, catalyst or reaction aids used.

Dicaprylyl Ether
Decyl Glucoside
Glyceryl Oleate

Plantasil Micro (1%)
**PLANTASIL® MICRO**

New possibilities for 'green' conditioning shampoo

Microemulsion technology for ‘performance in green’

- Novel microemulsion for high performance conditioning shampoos
- 100% vegetable-based raw materials
- Free from ethylene oxide
- Ecocert approved, BDIH approval ongoing
- Easy to handle
- Cold processable
- Crystal clear shampoos
PLANTASIL® MICRO

New possibilities for ‘green’ conditioning shampoo

Formulations

- High compatibility with SLES/CAPB systems
- Easy addition to shampoo formula
- Cold process
## Cognis Green Formulation Grid

<table>
<thead>
<tr>
<th>Performance Market Benchmark</th>
<th>Subsegment Skin Care</th>
<th>96%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior Product</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Advanced Product</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Classic Product</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

% of natural, renewable C-atoms (weighted) all ingredients* - %

- > 50%
- > 70%
- > 85%
- > 95%

*All calculations are based on the feedstocks for the Cognis products; non Cognis raw material calculations are based on public information or best knowledge available; calculations do not consider preservatives, perfume, color and enzymes.
## Basic Green Lotion

**Formulation Number:** US-291-649-196-33

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Eco Status</th>
<th>InCI Name</th>
<th>wt%</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phase I</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eumulgin® SG</td>
<td></td>
<td>Sodium Stearoyl Glutamate</td>
<td>0.25</td>
<td>Emulsifier</td>
</tr>
<tr>
<td>Cutina® GMS-V</td>
<td></td>
<td>Glyceryl Stearate</td>
<td>3.0</td>
<td>Consistency factor</td>
</tr>
<tr>
<td>Lanette® O</td>
<td></td>
<td>Cetearyl Alcohol</td>
<td>2.0</td>
<td>Consistency factor</td>
</tr>
<tr>
<td>Myritol® 331</td>
<td></td>
<td>Cocglycerides</td>
<td>2.0</td>
<td>Emollient</td>
</tr>
<tr>
<td>Cetiol OE®</td>
<td></td>
<td>Dicaprylyl Ether</td>
<td>2.0</td>
<td>Emollient</td>
</tr>
<tr>
<td>Cegesoft® PS 6</td>
<td></td>
<td>Vegetable Oil</td>
<td>2.0</td>
<td>Emollient</td>
</tr>
<tr>
<td>Cegesoft® VP</td>
<td></td>
<td>Vegetable Oil (and) Hydrogenated Vegetable Oil (and) Euphorbia Cerifera (Candelilla) Wax</td>
<td>2.0</td>
<td>Emollient</td>
</tr>
<tr>
<td>Xanthan Gum</td>
<td></td>
<td>Xanthan Gum</td>
<td>0.2</td>
<td>Thickener</td>
</tr>
<tr>
<td><strong>Phase II</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerin</td>
<td></td>
<td>Glycerin</td>
<td>5.0</td>
<td>Moisturizer</td>
</tr>
<tr>
<td>Water, preservative</td>
<td></td>
<td>Aqua</td>
<td>q.s</td>
<td>Diluent</td>
</tr>
</tbody>
</table>

**Viscosity:** Brookfield RVF, 25°C (spindle T-E, 5 rpm with Helipath): 30,000 cps  
**pH Value:** 6.6
# Deep Moisturizing Silky Cream


<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Eco Status</th>
<th>INCI Name</th>
<th>wt%</th>
<th>Function</th>
</tr>
</thead>
</table>

**I. Emulgade® PL 68/50**
- Cetearyl Glucoside (and) Cetearyl Alcohol 2.0 O/W Cream Base SE
- Sodium Stearoyl Glutamate 0.5 Co-Emulsifier
- Glyceryl Stearate 2.0 Consistency Factor
- Glyceryl Oleate 0.5 Lipid Layer Enhancer
- Dicaprylyl Ether 7.0 Emollient
- Cocoglycerides 5.0 Emollient
- Passiflora Incarnata Seed Oil 2.0 Emollient
- Tocopherol 0.5 Active
- Octyldodecanol (and) hydrogenated coco-glycerides (and) Helianthus Anuus (sunflower) seed extract 2.0 Active
- Magnesium Aluminum Silicate 0.5 Thickener

**II. Glycerin**
- Glycerin 3.0 Moisturizer
- Xanthan Gum 0.8 Thickener
- Water q.s. 1.0 Preservative

**III. Geogard 221**
- Dehydroacetic Acid (and) Benzyl Alcohol 1.0 Preservative
- Soy Isoflavones 0.1 Active

**Viscosity:** Brookfield RVF, 23°C (spindled TE, 5rpm, Helipath): 200,000 cps  
**pH Value:** 6.1
Emollient Selection Criteria and Formulation Challenges
## Cognis Emollient Portfolio

<table>
<thead>
<tr>
<th>Cognis Naturals</th>
<th>Cognis Natural Modified</th>
<th>Cognis Ecohybrids</th>
<th>Cognis Hybrids</th>
<th>Cognis Synthetics</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 100% natural, renewable feedstocks; physically purified by water/alcohol or energy</td>
<td>From 100% natural, renewable feedstocks; chemically processed, catalyst or reaction aids used</td>
<td>From natural, renewable &amp; synthetic feedstocks; natural &amp; synthetic building blocks are combined in a chemical process. High share of natural C-atoms</td>
<td>From natural, renewable &amp; synthetic feedstocks; natural &amp; synthetic building blocks are combined in a chemical process.</td>
<td>From synthetic feedstocks; chemically processed</td>
</tr>
</tbody>
</table>

**Cegesoft® GPO / PFO**  
**Cegesoft® SH**  
**Cetiol® OE**  
**Cetiol® PGL**  
**Cetiol® SB 45 / V**  
**Eutanol® G**  
**Fitoderm®**  

**Cetiol® CC**  

**Cetiol® SenSoft**  
**Cetiol® SN**  

**Cetiol® B / AB**
Cognis Emollient Portfolio

Green Aspect by Chemistry

Natural based carbon / overall carbon in a molecule (%)

Cetiol OE

Cetiol CC

Cetiol SenSoft

Cyclomethicone

Dimethicone

Spreading value

mm²/10min

various

>1900

1900

1600

1600

0

25

50

75

100
## Challenges in Applications

<table>
<thead>
<tr>
<th>Application</th>
<th>Naturally inspired</th>
<th>100 % Natural Chemical processed</th>
<th>100 % Natural Physically processed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face / Body Emulsion</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Green" /></td>
</tr>
<tr>
<td>AP / DEO</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
<td><img src="#" alt="Red" /></td>
</tr>
<tr>
<td>Sun Care</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
<td><img src="#" alt="Red" /></td>
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<tr>
<td>Personal Care Wipes</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Green" /></td>
</tr>
<tr>
<td>Color Cosmetic</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
<td><img src="#" alt="Red" /></td>
</tr>
<tr>
<td>Body Wash</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Red" /></td>
</tr>
<tr>
<td>Shampoo</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Red" /></td>
</tr>
<tr>
<td>Conditioner</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
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<tr>
<td>Styling</td>
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<td><img src="#" alt="Red" /></td>
<td><img src="#" alt="Red" /></td>
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<tr>
<td>Hair Color</td>
<td><img src="#" alt="Yellow" /></td>
<td><img src="#" alt="Red" /></td>
<td><img src="#" alt="Red" /></td>
</tr>
</tbody>
</table>
Conclusion

- Formulating Green is not a miracle!
- Challenges in some applications still exist!
- The green trend is a driver for innovation!

- How green do you want to be?...It’s your choice!
GREEN TREND
Don’t wait any longer!

www.labserobio.com  www.cognis.com