

CLARIANT



Next Generation of **SUGAR SURFACTANTS FOR THE HOME CARE MARKET**

Público

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BU Industrial & Consumer Specialties
Industrial & Home Care
26.07.2017

what is precious to you?

Agenda

- Clariant – Focus on innovation through R&D
- Next generation of sugar surfactants: Glucamides
- Glucamides Range
 - C8-10 Glucamide: **GlucoPure Wet**
 - C12-14 Glucamide: **GlucoPure Foam**
 - C18:1 Glucamide: **GlucoPure Sun**
- Applications
 - Hard surface cleaners
 - Dishwashing Liquids

Clariant

Focus on innovation through R&D

INNOVATION FIGURES

~ 1 100

People in R&D
(end of 2016)

3.5%

of Group sales 2016
spent in R&D

8 > 50

Global R&D Centers
Technical Application Centers

200 m

of R&D expenditures
in CHF

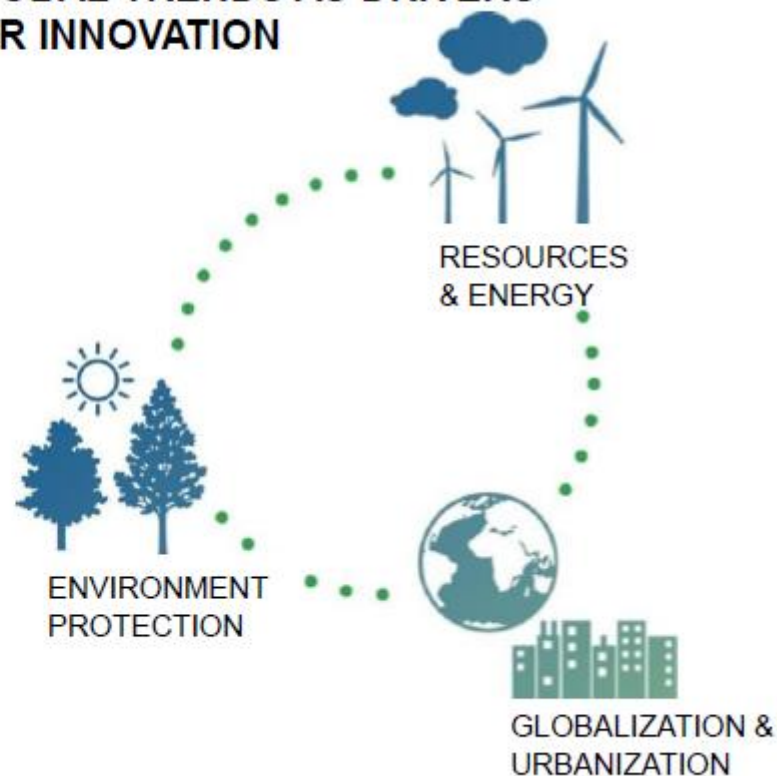
6 500

Patents

> 125

Scientific
collaborations

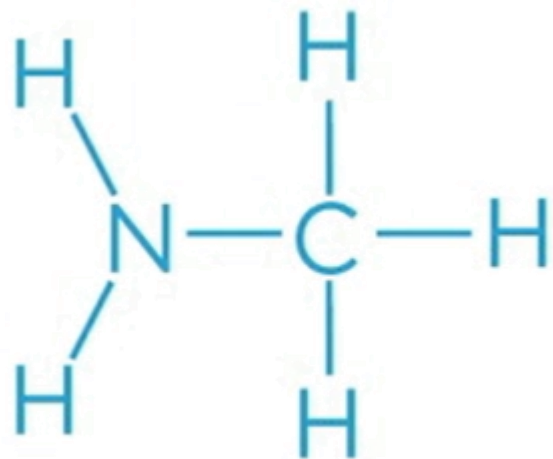
GLOBAL TRENDS AS DRIVERS FOR INNOVATION



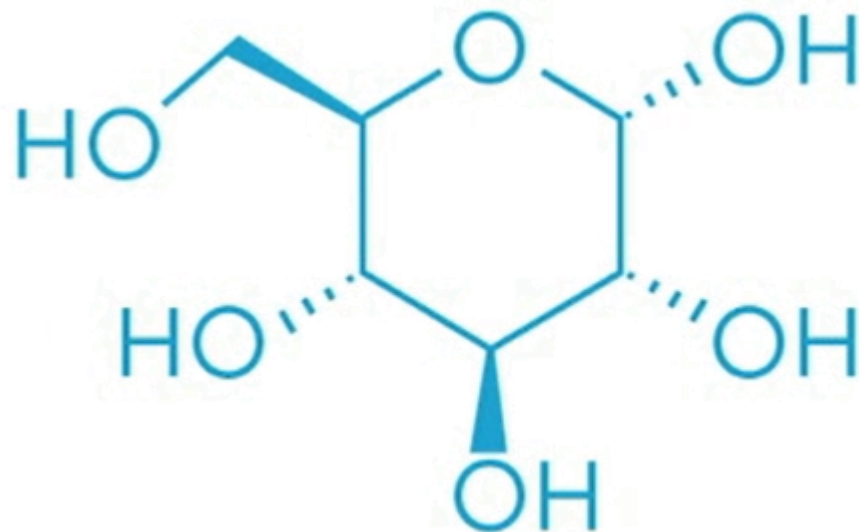
GLUCAMIDES

GLUCAMIDES

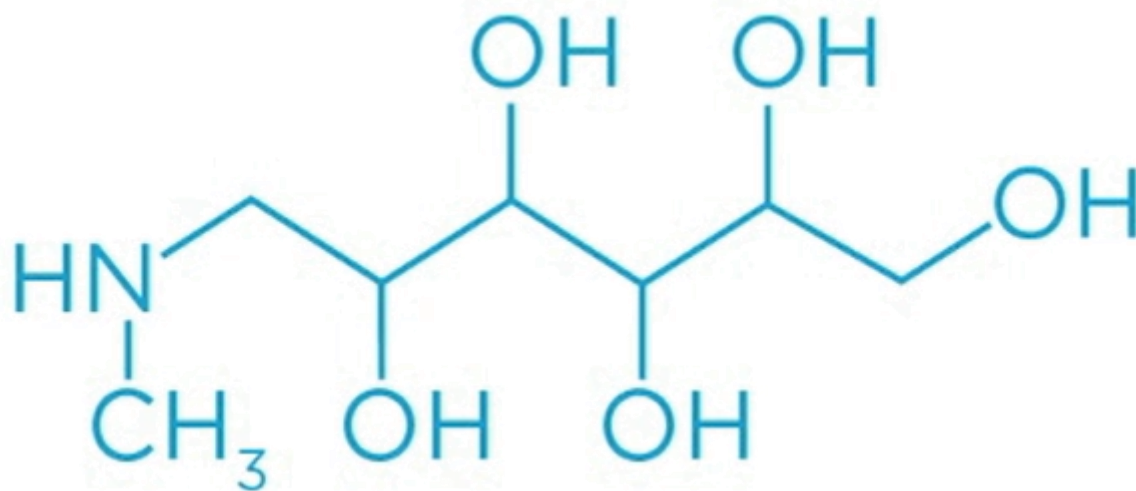




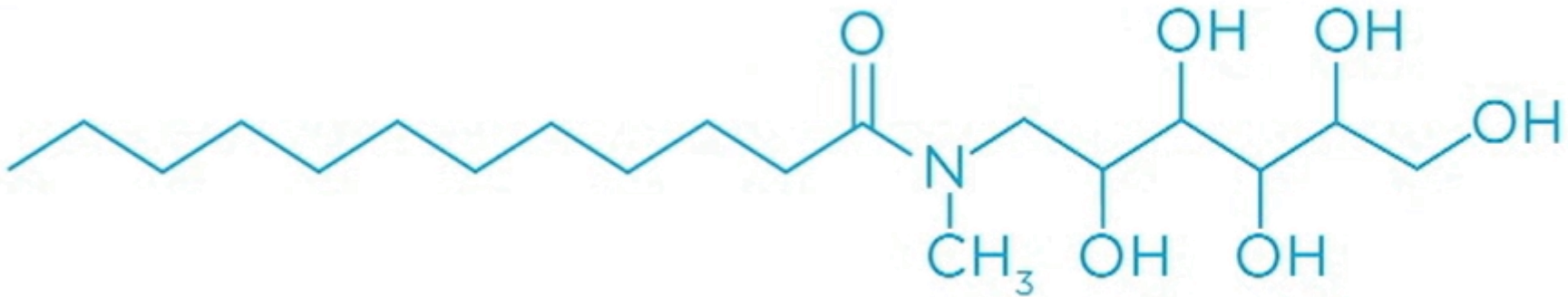
Methylamine



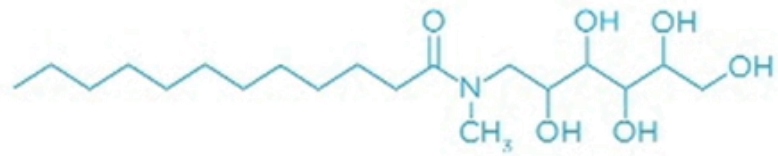
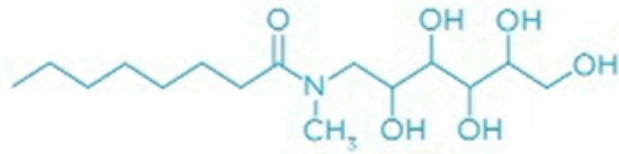
Glucose



N-MethylGlucamine



Glucamides



GLUCAMIDES

eco friendly



green



renewable



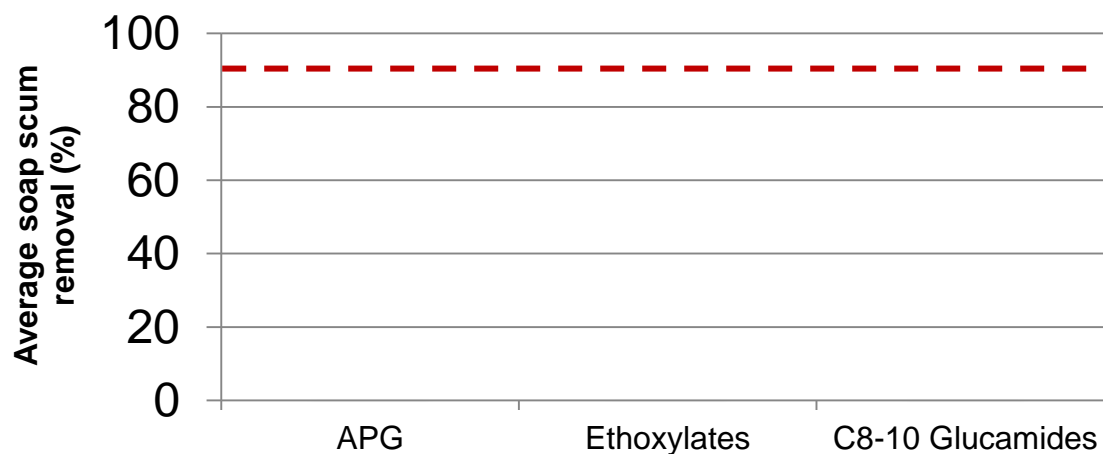
performance



SHORT CUT GLUCAMIDES SHOW EXCELLENT DYNAMIC WETTING

GlucoPure Wet shows superior soap scum removal against the currently used surfactants

Soap scum removal test

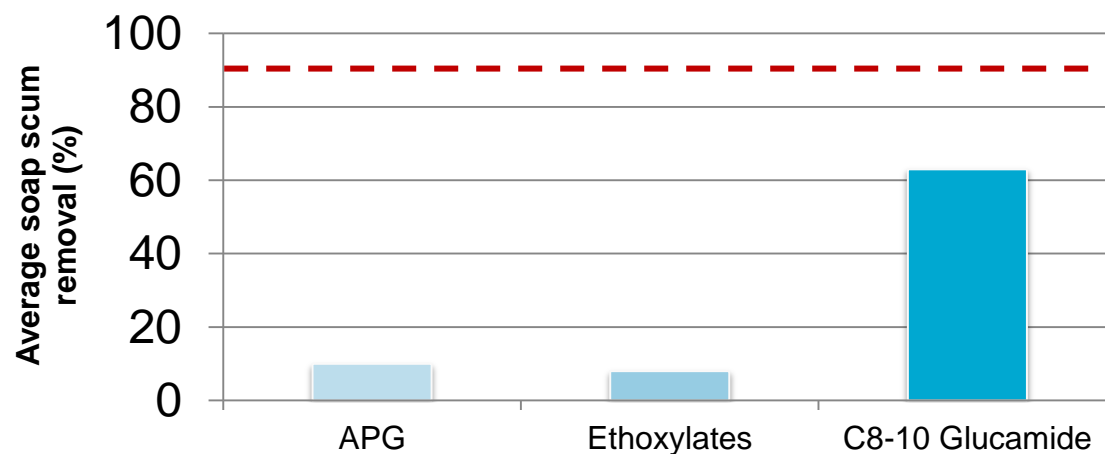


Ingredients (% a.i.)	A	B	C
Alkylpolyglycoside (C8-10)	2,3	-	-
C9-11 Pareth-7	-	2,3	-
C8-10 Glucamide	-	-	2,3
Sodium Laureth Sulfate (2EO)	1,0	1,0	1,0
Appearance	clear	clear	clear
pH value	3,7	3,7	3,7

All formulations with 3.0% Citric Acid, 2.0% Sodium Citrate and water

GlucoPure Wet shows superior soap scum removal against the currently used surfactants

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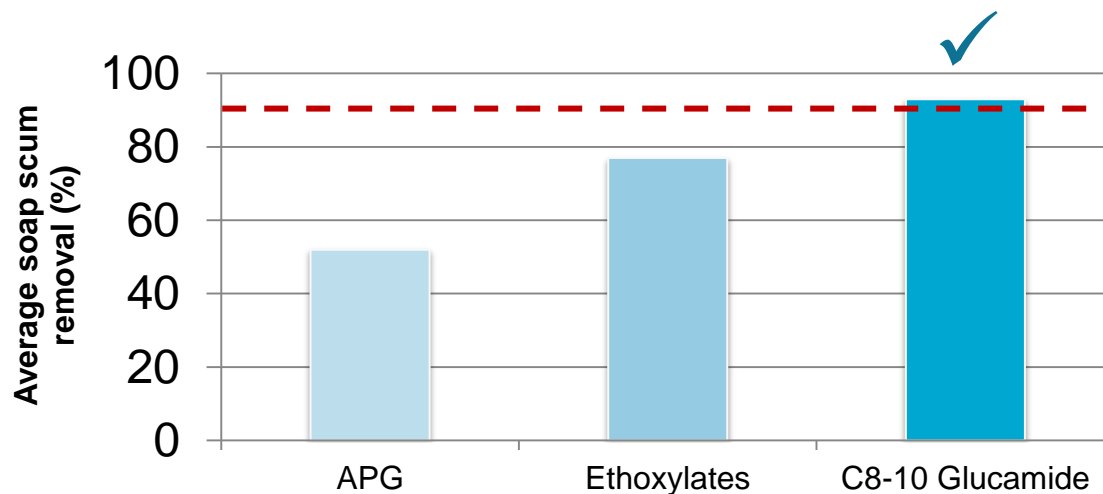


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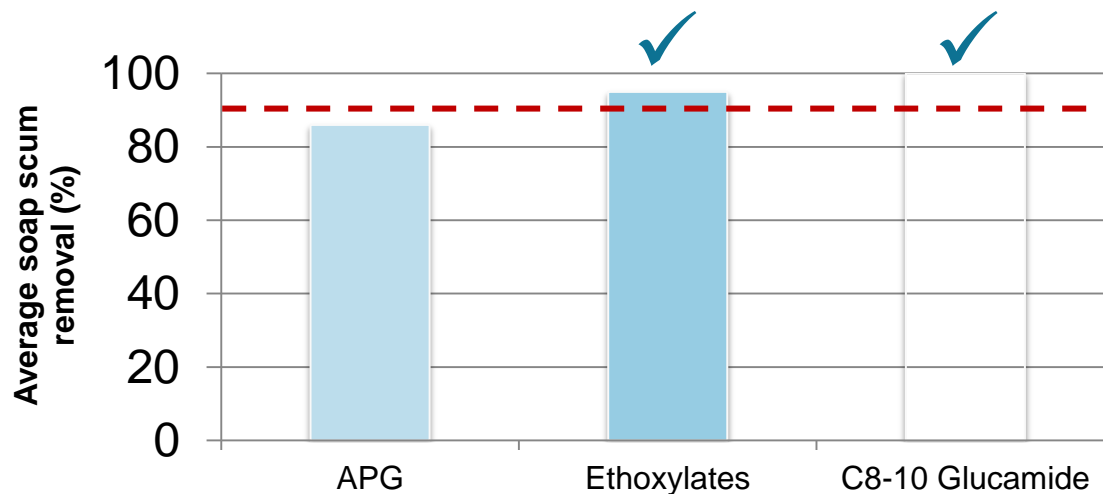


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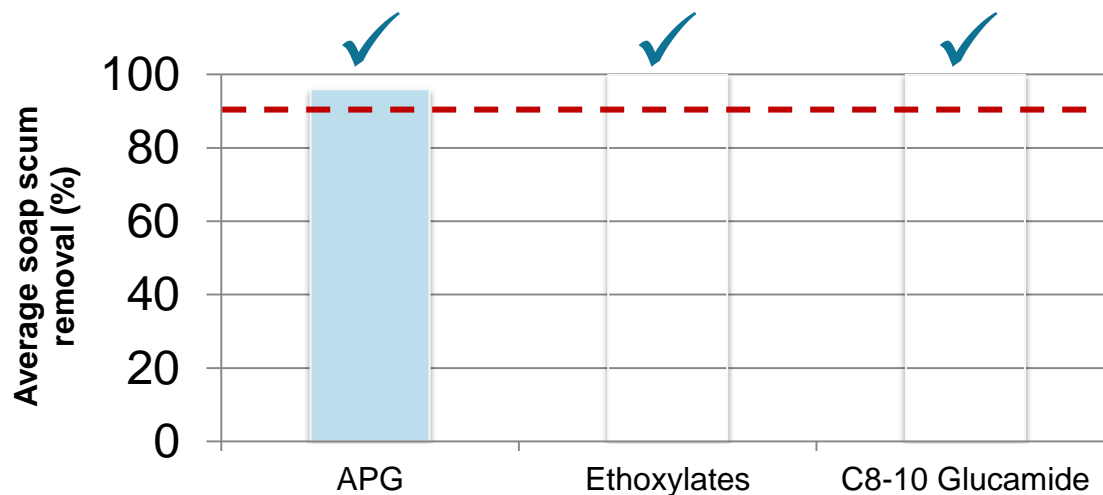


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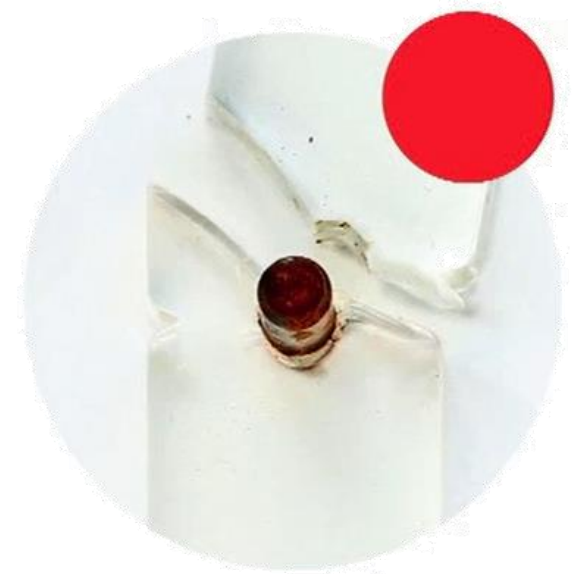
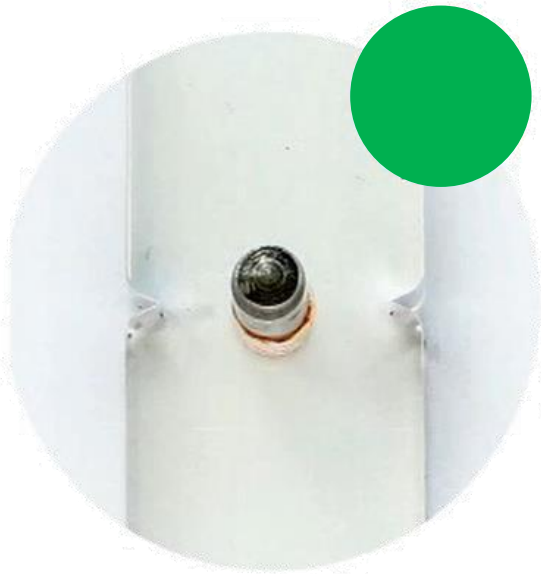
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STRESS-CORROSION CRACKING OF PLASTIC MATERIAL (DIN 53449-T)



GlucPure Wet is compatible with the materials common in bathrooms – in contrast to ethoxylates

Stress-corrosion test*



	A APG (C8-10)		B C9-11 Pareth-7		C C8-10 Glucamide	
Material	0-7d	7-14d	0-7d	7-14d	0-7d	7-14d
ABS <i>Acrylnitrile-Butadiene-Styrene Copolymer</i>	●	●	●	●	●	●
PC <i>Polycarbonate (transparent)</i>	●	●	●	●	●	●
PMMA <i>Polymethylmethacrylate (transparent)</i>	●	●	●	●	●	●
POM1 <i>Polyoxymethylen (grey)</i>	●	●	●	●	●	●
POM2 <i>Polyoxymethylen (white)</i>	●	●	●	●	●	●

*Stress-corrosion cracking of plastic material (DIN 53449-T)

SHORT CUT GLUCAMIDES SHOW ANTI-STROKE PERFORMANCE

GlucoPure Wet shows an excellent anti-stroke performance in a residue test



Alkylpolyglycoside
(C8-10)

C8-10 Glucamide

C9-11 Pareth-7

Ingredients (% a.i.)	A	B	C
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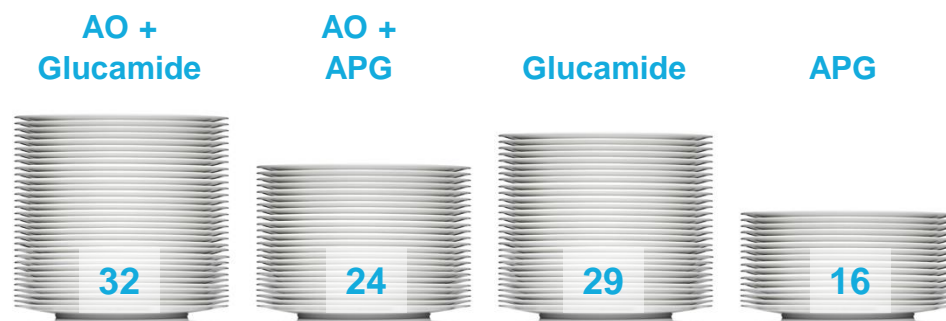
PERFORMANCE OF MID-CUT GLUCAMIDES IN DISHWASHING LIQUIDS

GlucoPure Foam offers high performance at low aquatic toxicity by replacing amine oxides in >95% RCI formulations



Plate Test (IKW I - Carbohydrate)

Number of Washed Plates



Recipe (%a.i.)	A	B	C	D
Sodium Laurylsulfate	8	8	8	8
Lauramine Oxide (AO)	3	3	-	-
C12-14 Glucamide	4	-	7	-
Lauryl-Polyglycoside (APG)	-	4	-	7
Renewable % of surfactants (RCI)	>95%	>95%	>95%	>95%
GHS Labelling of the co-surfactant	H 400 + H 411	H 400 + H 411	No aquatox	No aquatox

No solvent and no NaCl added

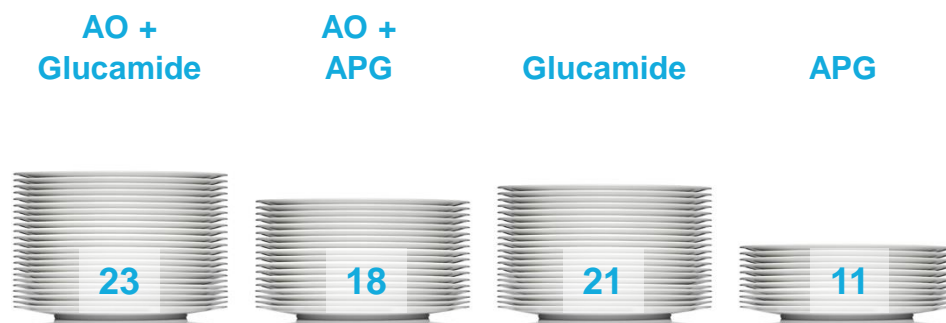
IKW performance test "Recommendation for the quality assessment of the cleaning performance of hand dishwashing detergents" (Nitsch. C. and Hüttmann G. SÖFW-Journal, 128, 5. Pp. 11-15, 2002)

GlucoPure Foam offers high performance at low aquatic toxicity by replacing amine oxides in >95% RCI formulations



Plate Test (IKW II - Grease)

Number of Washed Plates



Recipe (%a.i.)	A	B	C	D
Sodium Laurylsulfate	8	8	8	8
Lauramine Oxide	3	3	-	-
C12-14 Glucamide	4	-	7	-
Lauryl-Polyglycoside (APG)	-	4	-	7
Renewable % of surfactants (RCI)	>95%	>95%	>95%	>95%
GHS Labelling of the co-surfactant	H 400 + H 411	H 400 + H 411	No aquatox	No aquatox

No solvent and no NaCl added

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GLUCAMIDES SHOW EXCELLENT LOW TEMPERATURE STABILITY

Formulations with GlucoPure Foam can be thickened by NaCl keeping the cold cloud point at a very low level

Recipe (%a.i.)	C	D
Sodium Laurylsulfate	8	8
C12-14 Glucamide	7	-
APG	-	7
Sodium chloride	-	-
Viscosity (mPas)	20	20
Cold Cloud Point (°C)	-11,6	-0,5

C'	D'
8	8
7	-
-	7
1,1	1,25
1950	1850
-4,9	1,5

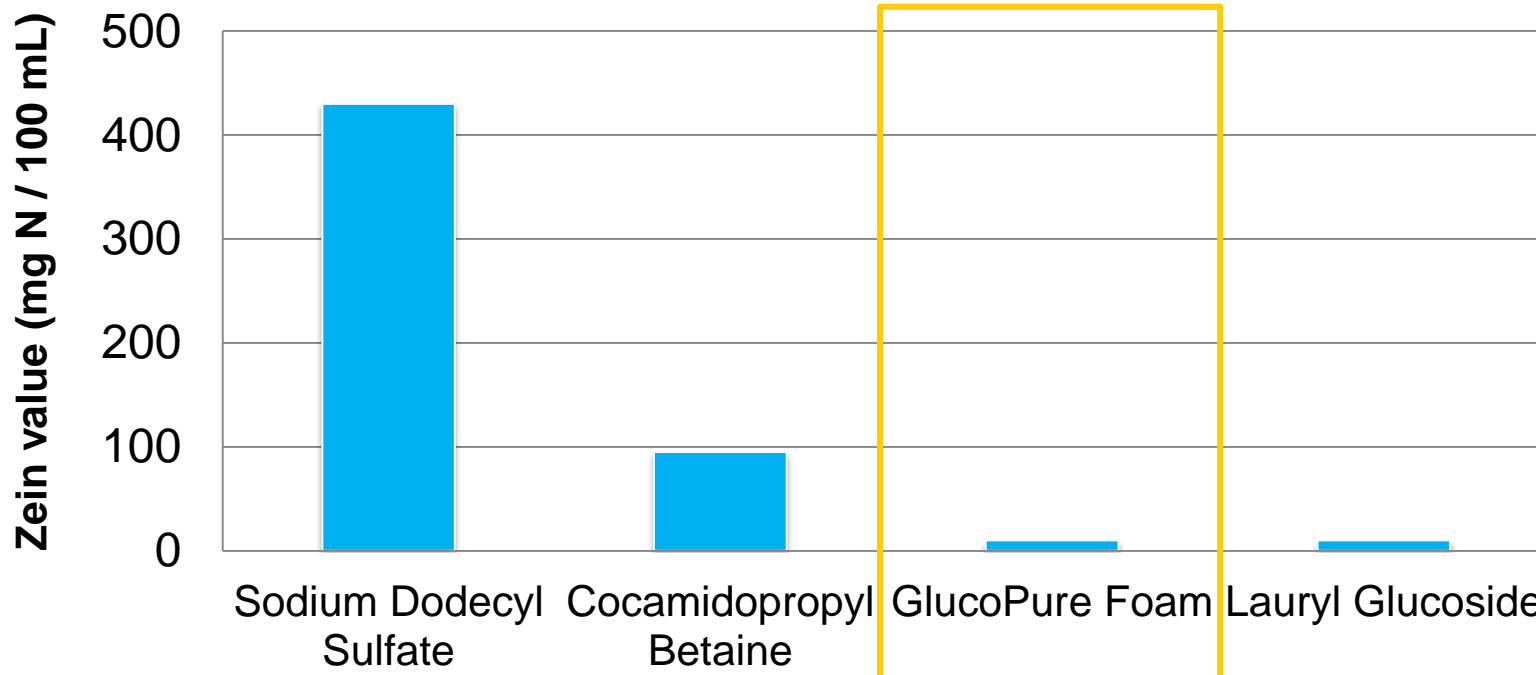


**GLUCAMIDES ARE
VERY MILD**

Zein Test shows that Glucamides are even milder than Betaines



Zein Test



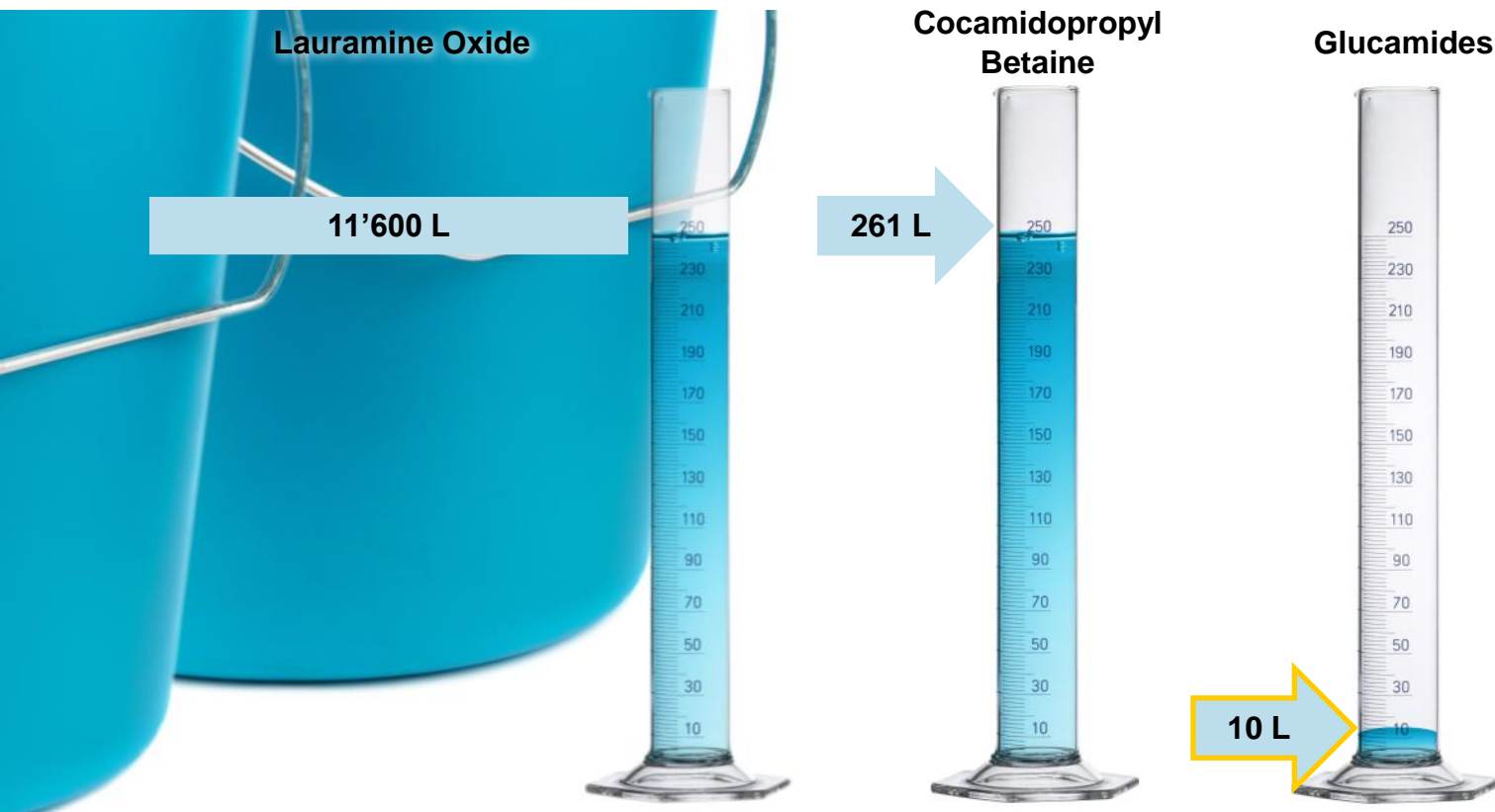
*The lower
the milder*

**GLUCAMIDES
ARE ECOSAFE**

Very low Critical Dilution Volume (CDV)



- **CDV** is the equivalent of water needed to neutralize the impact of the surfactant on the environment. It is an additive criteria, so the lower the CDV of the individual surfactants in a formulation, the better.
- **CDV** is one of the main criteria in evaluation of leading Ecolabels like Nordic Swan or EU Flower.



CDV calculation

The CDV is calculated based on 3 criteria:

- Acute Toxicity
- Chronic Toxicity
- Degradation

All values used for the CDV calculations on the left can be requested to your Clariant contact.

Considering 7% surfactant as a common concentration of co-surfactants in HDWL

HIGHER CUT GLUCAMIDES IMPROVE THE SENSORIAL OF THE FORMULATIONS

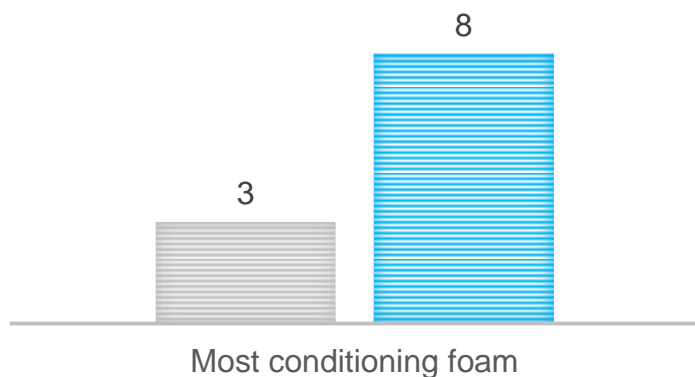
GlucoPure Sun improves the sensorial of the formulations

11 internal sensory experts washed their hands in a blind test with formulations A and B and evaluated:



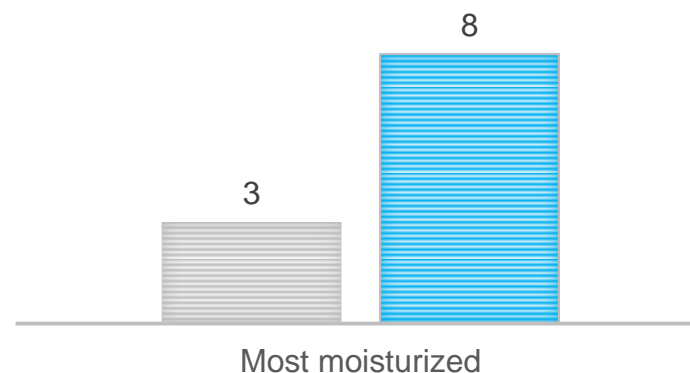
Foaming behavior

■ CAB ■ CAB + GlucoPure Sun



After feel

■ CAB ■ CAB + GlucoPure Sun



Recipe (%a.i.)	A	B
Sodium Laureth Sulfate (2EO)	8.0	8.0
Cocamidopropyl Betaine	2.8	1.8
Oleyl Glucamide	-	1.0
Active matter	10.8%	10.8%



Plate Test (IKW II - Grease)

CAB



CAB +
GlucoPure Sun



Recipe (%a.i.)	A	B
Sodium Laureth Sulfate (2EO)	8.0	8.0
Cocamidopropyl Betaine	2.8	1.8
Oleyl Glucamide	-	1.0
NaCl to reach 1000 mPas	1.5	1.6
Active matter	10.8%	10.8%

* Classification based on calculation and concentration thresholds

IKW performance test "Recommendation for the quality assessment of the cleaning performance of hand dishwashing detergents" (Nitsch. C. and Hüttmann G. SÖFW-Journal, 128, 5. Pp. 11-15, 2002) with 0.5 g HDWL/L

GLUCAMIDES HELP TO BUILD UP VISCOSITY

GlucoPure Sun show excellent performance



Plate Test (IKW II - Grease)

CAB

Glucopure Sun

Glucopure Sun

Glucopure Sun

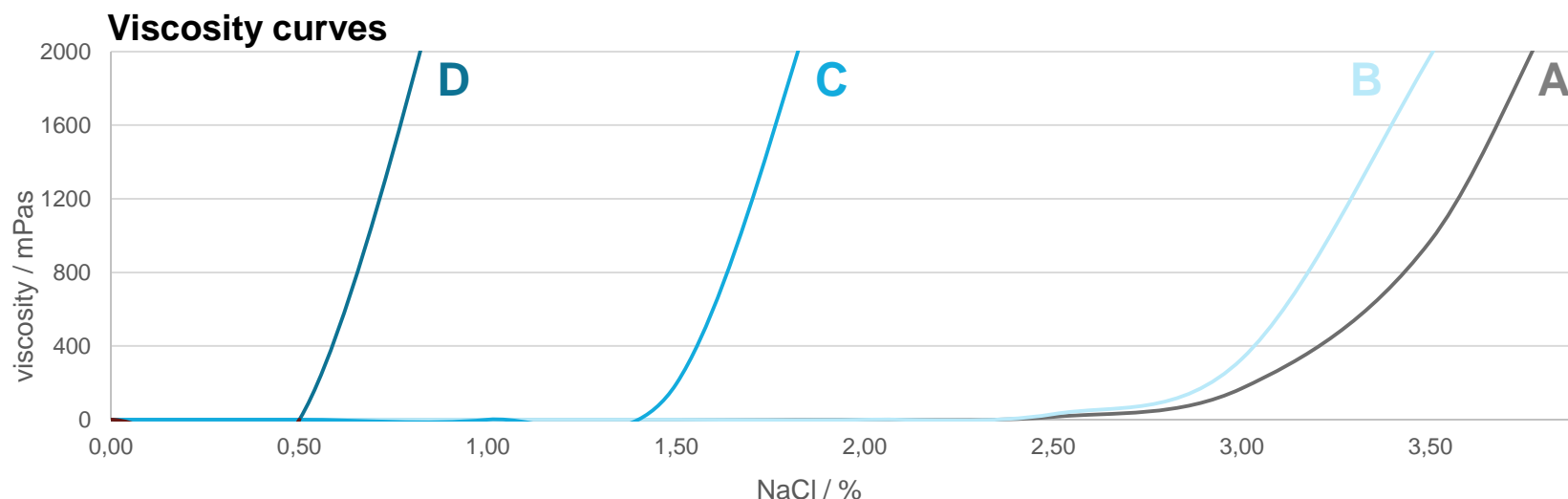


Recipe (%a.i.)	A	B	C	D
Sodium Laureth Sulfate (2EO)	4.8	4.8	4.5	4.2
Cocamidopropyl Betaine	1.0	-	-	-
Glucopure Sun	-	1.0	2.7	4.2
Active matter	5.8%	5.8%	7.2%	8.4%

* Classification based on calculation and concentration thresholds

IKW performance test "Recommendation for the quality assessment of the cleaning performance of hand dishwashing detergents" (Nitsch. C. and Hüttmann G. SÖFW-Journal, 128, 5. Pp. 11-15, 2002) with 0.5 g HDWL/L

GlucoPure Sun helps to build up viscosity efficiently with less amounts of salt



Recipe (%a.i.)	A	B	C	D
Sodium Laureth Sulfate (2EO)	4.8	4.8	4.5	4.2
Cocamidopropyl Betaine	1.0	-	-	-
GlucoPure Sun	-	1.0	2.7	4.2
Active matter	5.8%	5.8%	7.2%	8.4%

GLUCAMIDES

eco friendly



green



renewable



performance



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clariant.com/glucopeure