# Azelis Personal Care

## Blanova® TENS APG Range

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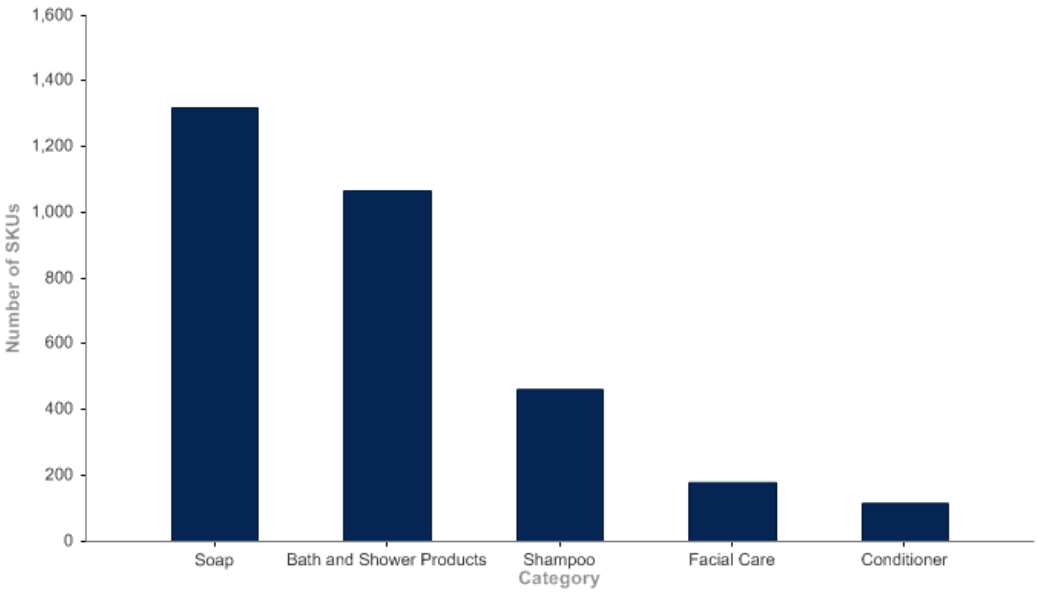
## Mild Surfactants for Body Care

The importance of surfactants in cosmetic products across Europe is on the rise. Data Monitor figures show a growth of ~ 10% in the last 5 years in the demand for mild surfactants with good cleaning and foaming.

This increasing trend can be met through the use of Alkyl Polyglucosides (APG's), a range of sugar-derived surfactants ideal for cleaning sensitive skin.

They are sulphate and ethoxylate free and offer a high level of user safety and acceptance. Additionally the feed stocks, glucose and fatty alcohols, are derived from renewable, sustainable sources.

APG's are used in shower gels, shampoos, liquid soaps, baby care products and tooth care products.




Number of product launches containing APG's in Europe 2007-2012
Source: Data Monitor

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## Blanova® TENS APG Range

| | Blanova®TENS APG 810 | Blanova®TENS APG 818 | Blanova®TENS APG 1200 | Blanova®TENS APG 2000 |
|---|---|---|---|---|
| **INCI** | Caprylyl/Capryl Glucoside | Coco-Glucoside | Lauryl Glucoside | Decyl Glucoside |
| **Appearance** | Yellowish to brownish, slightly cloudy, viscous liquid | Yellowish, slightly cloudy, viscous liquid | Yellowish, slightly cloudy, viscous liquid | Yellowish, slightly cloudy, viscous liquid |
| **Active concentration** | ~ 65% | ~ 50% | ~ 50% | ~ 50% |
| **Features** | Mild surfactant<br>Good foaming properties | Mild surfactant<br>Very good foaming properties<br>Thick creamy foam | Mild surfactant<br>Very good foaming properties<br>Very good cleaning performance | Very mild surfactant<br>Good foaming properties |
| **Uses** | Shampoo<br>Shower gel<br>Liquid soap<br>Mouthwash | Shampoo<br>Shower gel<br>Liquid soap<br>Facial cleanser | Shampoo<br>Shower gel<br>Liquid soap<br>Haircare | Shampoo<br>Shower gel<br>Liquid soap<br>Baby care |

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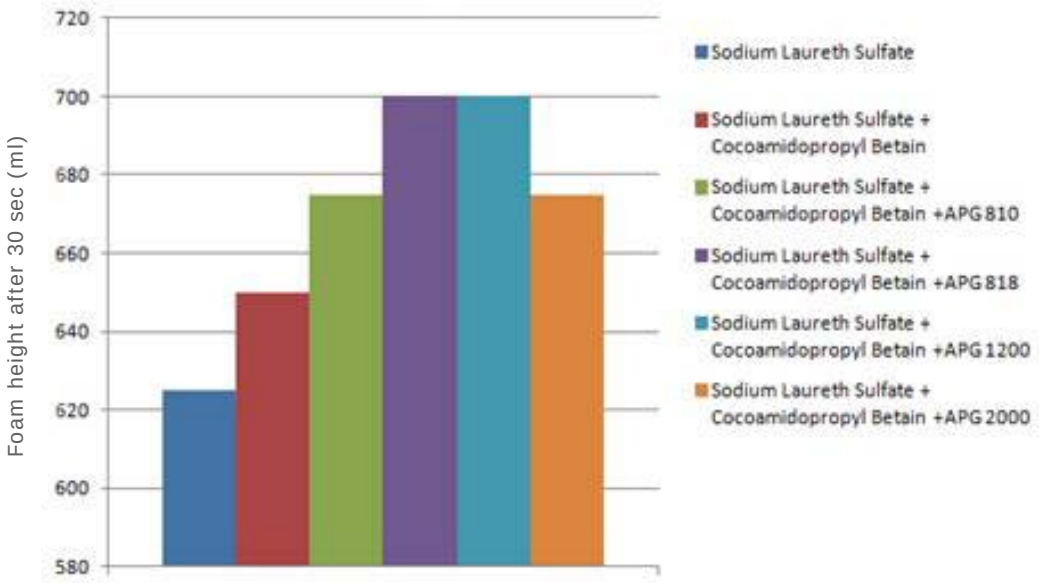
# Blanova® TENS APG - Foaming Properties

Alkyl Polyglucosides are characterised by their foaming capabilities and foam stability. Foam height and stability are improved when used in combination with other surfactants.

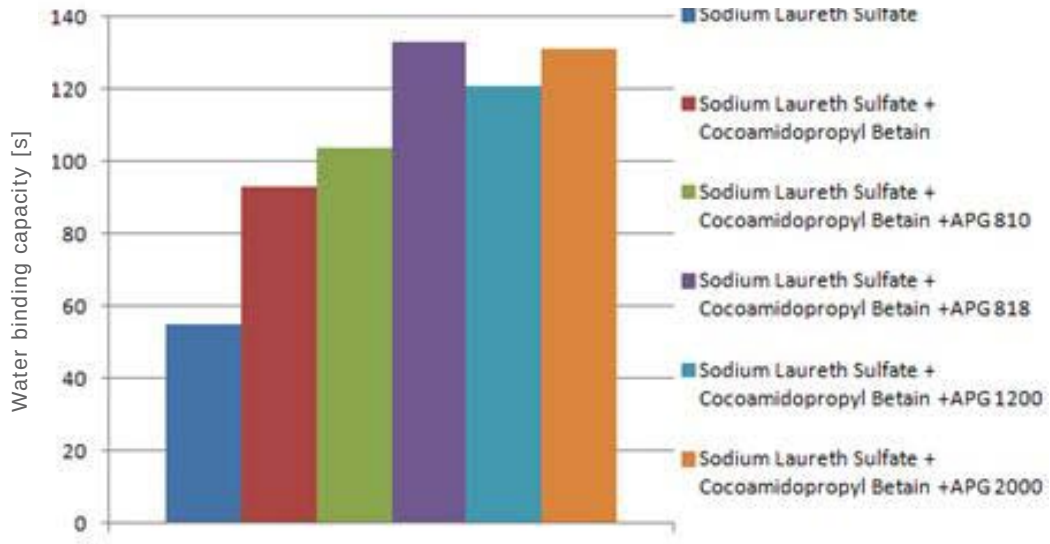
Comparisons of Sodium Laureth Sulfate alone, Sodium Laureth Sulfate and Cocamidopropyl Betaine combined (3:1), as well as combinations of Sodium Laureth Sulfate, Cocamidopropyl Betaine and Alkyl Polyglucoside (3:1:1) show significant improvements for each surfactant mixture.

**Foam height of Blanova Tens APG surfactant mixtures**




Method: Frictional foam method by Wilsmann.

**Foam Stability of Blanova Tens surfactant mixtures**




Method: Time (in seconds), at which the accumulation of the foam drainage fluid reaches the 100 ml mark.

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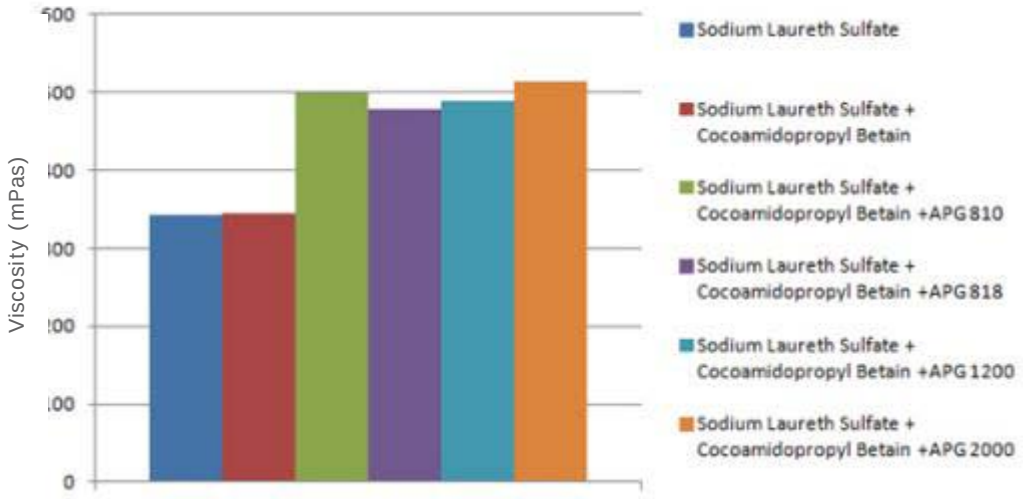
# Blanova® TENS APG - Foam Viscosity Properties

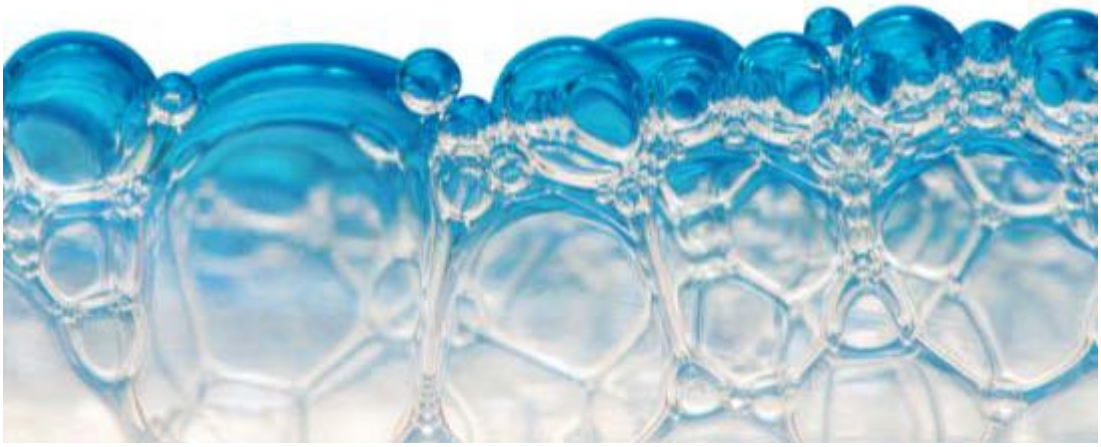
Foaming behaviour is important when formulating with surfactants. By using combinations of different surfactants, the viscosity of the foam can be influenced, thereby improving the sensory characteristics.

- Comparisons with Sodium Laureth Sulfate alone, Sodium Laureth Sulfate and Cocamidopropyl Betaine combined (3:1), as well as combinations of Sodium Laureth Sulfate, Cocamidopropyl Betaine and Alkyl Polyglucoside (3:1:1) show that a combination of surfactants will increase the viscosity and thereby the stability and creaminess, of the foam.

**Foam-viscosity properties of Blanova Tens APG surfactant mixtures**




Method: Rheometer Bohlin Gemini Rotonetic drive 2



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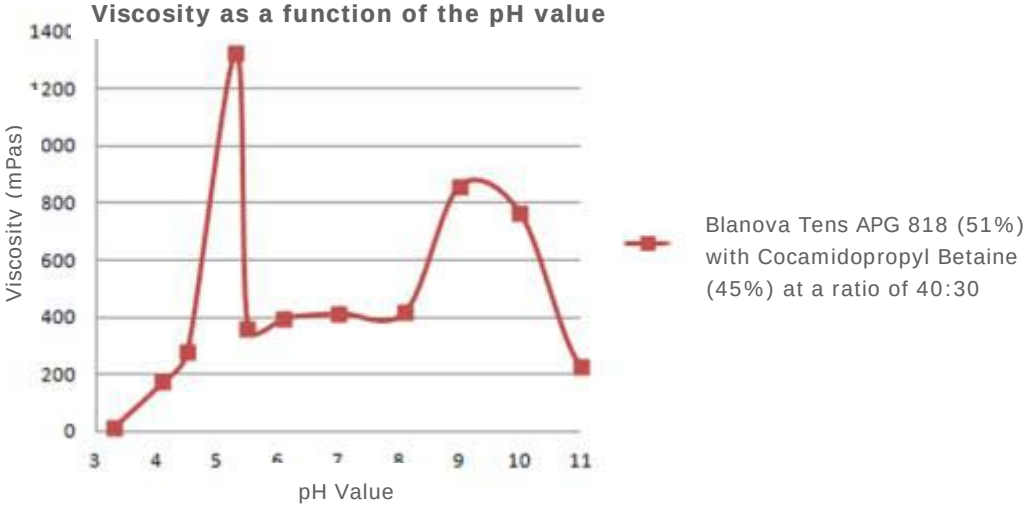
# Blanova® TENS APG - Viscosity Properties

Viscosity control is very important when formulating with surfactants. By combining various APG surfactants, synergistic viscosity effects can be achieved.

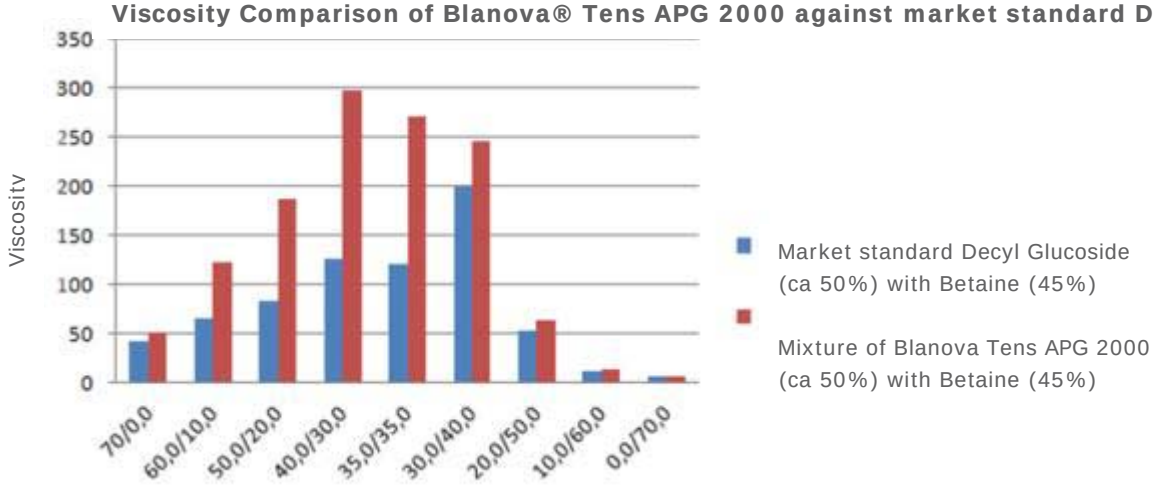
- Combinations of Cocamidopropyl Betaine and Blanova® Tens APG 818 in a ratio of 30:40 give a maximum viscosity level at skin neutral pH (5.2-5.6) ideal for rinse-off products.

**Viscosity as a function of the pH value**




- Combinations of Cocamidopropyl Betaine and Blanova® Tens APG 2000 were characterised and compared to mixtures with another commercial grade of Decyl Glucoside showing higher viscosity performance.

**Viscosity Comparison of Blanova® Tens APG 2000 against market standard Decyl Glucoside**




Mixture ratio Decyl Glucoside (APG 2000, ca 50%)/Cocamidopropyl Betaine (45%)

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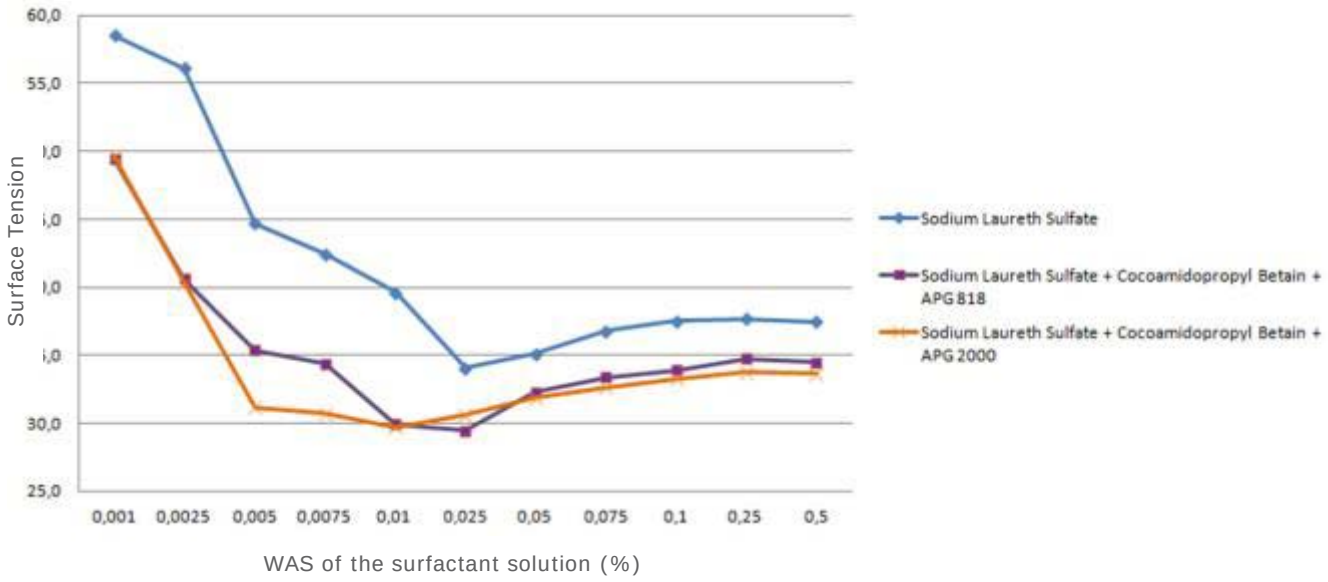
# Blanova® TENS APG - Mildness

Alkyl Polyglucosides are characterised by low irritation potential, and are often used to reduce the irritation potential of other surfactants and surfactant mixtures. The critical micelle concentration (CMC), determined from surface tension measurements as a function of surfactant concentration, gives information about the expected mildness.

The CMC is a measure of the maximum monomer concentration of the surfactant solution. The lower the CMC, the lower the expected skin irritation potential.

- Comparisons of Sodium Laureth Sulfate, and the preferred surfactant mixture of Sodium Laureth Sulfate, Cooamidopropyl Betaine and Alkyl Polyglucoside (3:1:1) show a shift of the CMC to low concentrations. With the addition of Cocamidopropyl Betaine and APG's, this correlates to a reduced skin irritation potential as well as more efficient cleaning potential.

**CMC Determination**




- All Blanova® TENS APG products are human patch tested for irritation potential. All products have been classified as harmless. The test results can be made available upon request.

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# Product Sheet: Blanova® TENS APG 810

INCI: Caprylyl/Capryl Glucoside

## Description

- Alkyl Polyglucoside
- Non-ionic surfactant
- Plant origin
- No preservatives
- No antioxidants
- GMO free

## Composition

- Active content: ~65%
- Water content: ~35%

## Appearance

Yellowish to brownish, slightly cloudy, viscous liquid

## Application

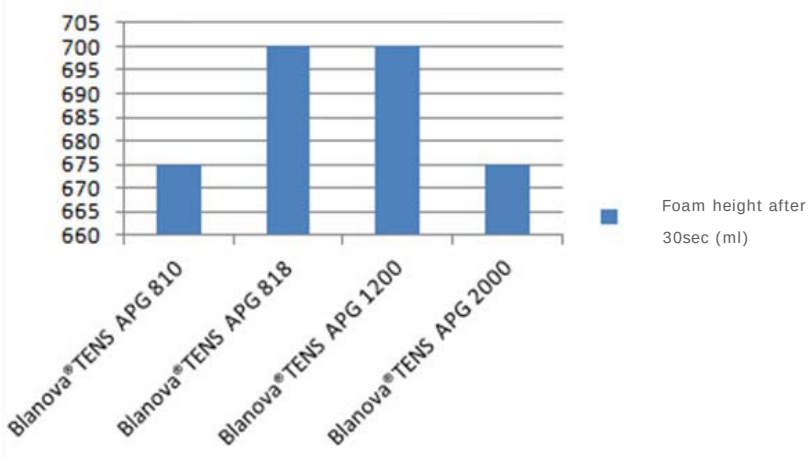
Mild surfactant with good foaming properties for use in shampoos, shower gels and mouthwash

## Usage concentration

2-20%

## Foaming properties

Foaming properties in combination with Sodium Laureth Sulphate and Cocamidopropyl Betaine

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# Product Sheet: Blanova® TENS APG 818

INCI: Coco-Glucoside

## Description

- Alkyl Polyglucoside
- Non- ionic surfactant
- Plant origin
- No preservatives
- No antioxidants
- GMO free

## Composition

- Active content: ~50%
- Water content: ~50%

## Appearance

Yellowish, slightly cloudy, viscous liquid

## Application

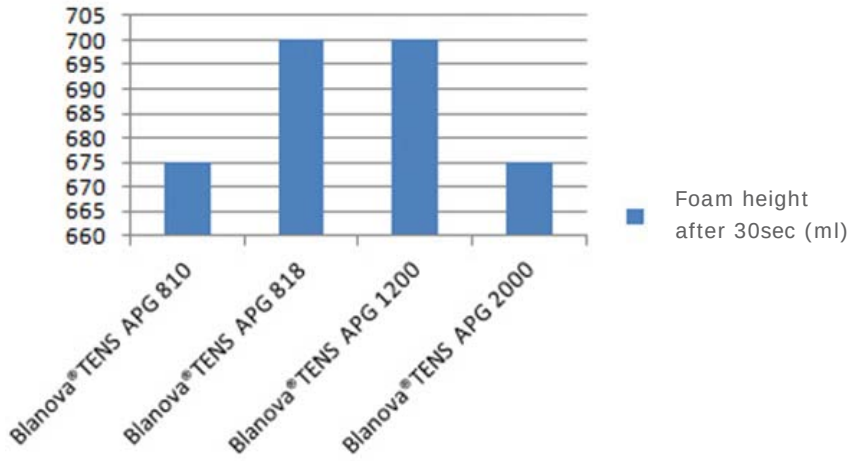
Mild surfactant with very good foaming properties for use in shampoos, shower gels and facial cleansers

## Usage concentration

2-20%

## Foaming properties

Foaming properties in combination with Sodium Laureth Sulphate and Cocamidopropyl Betaine

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# Product Sheet: Blanova® TENS APG 1200

INCI: Lauryl Glucoside

## Description

- Alkyl Polyglucoside
- Non-ionic surfactant
- Plant origin
- No preservatives
- No antioxidants
- GMO free

## Composition

- Active content: ~50%
- Water content: ~50%

## Appearance

Yellowish, slightly cloudy, viscous liquid

## Application

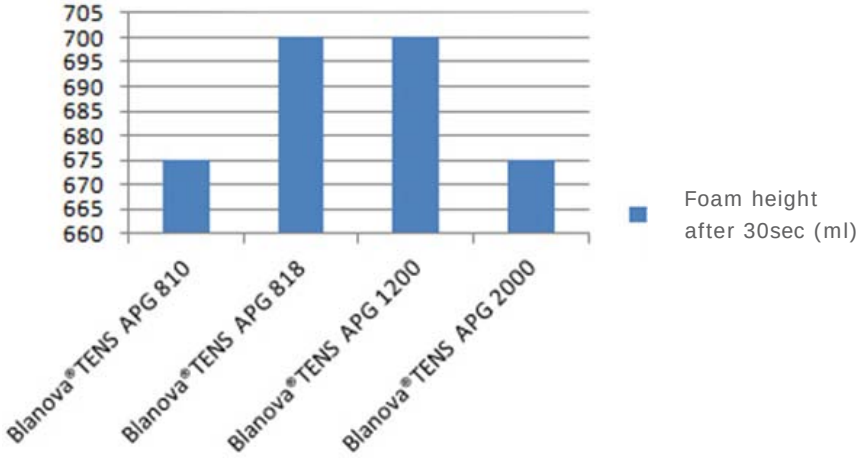
Mild surfactant with very good foaming properties and good cleaning performance for use in shampoos, shower gels and haircare

## Usage concentration

2-20%

## Foaming properties

Foaming properties in combination with Sodium Laureth Sulphate and Cocamidopropyl Betaine

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# Product Sheet: Blanova® TENS APG 2000

INCI: Decyl Glucoside

## Description

- Alkyl Polyglucoside
- Non-ionic surfactant
- Plant origin
- No preservatives
- No antioxidants
- GMO free

## Composition

- Active content: ~50%
- Water content: ~50%

## Appearance

Yellowish, slightly cloudy, viscous liquid

## Application

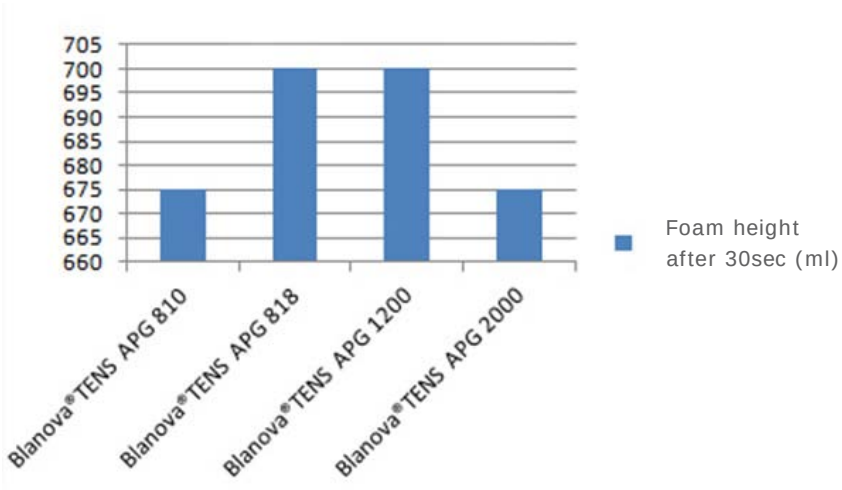
Very mild surfactant with good foaming properties for use in shampoos, shower gels and baby care

## Usage concentration

2-20%

## Foaming properties

Foaming properties in combination with Sodium Laureth Sulphate and Cocamidopropyl Betaine

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# Formulation Guidelines using Blanova® TENS APG

Below are the formulation guidelines for different surfactant combinations to achieve viscosities and foaming properties.

- **Formulation 6922: Intense Body Wash Concentrate**
  Surfactant combination: Blanova TENS APG 1200 + Blanova® TENS APG 810
  Viscosity: 950[mPas]
  Foaming properties: very fine bubbles, creamy

- **Formulation 6923: Natural Nourishing Creamy Shower Gel**
  Surfactant combination: Blanova® TENS APG 818
  Viscosity: 8800[mPas]
  Foaming properties: fine bubbles, creamy

- **Formulation 6924: Smooth Foaming Hand Cleanser**
  Surfactant combination: Blanova® TENS APG 818 + Sodium Coco-Sulfate + Sodium Cocoyl Isethionate
  Viscosity: 3000[mPas]
  Foaming properties: fine and medium-sized bubbles, nurturing skinfeel

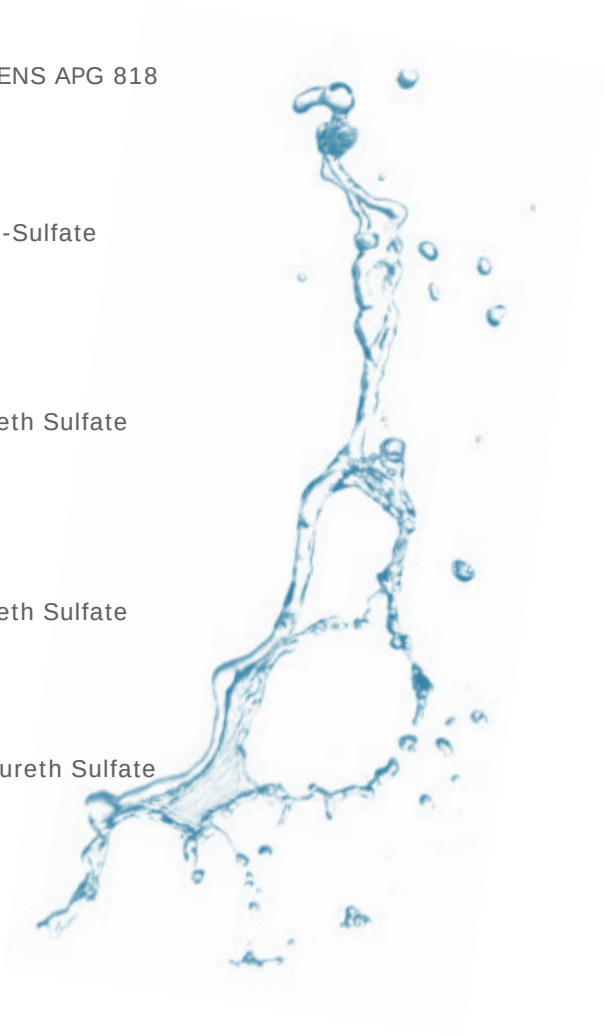
- **Formulation 6925: Pure Baby Wash**
  Surfactant combination: Blanova® TENS APG 2000 + : Blanova TENS APG 818
  Viscosity: 8140[mPas]
  Foaming properties: fine bubbles, good foaming

- **Formulation 6930: Clear Washing Hand Gel**
  Surfactant combination: Blanova® TENS APG 818 + Sodium Coco-Sulfate + Cocamidopropyl Betaine
  Viscosity: 6100[mPas]
  Foaming properties: strong foaming

- **Formulation: 6936: Simply Clear Shampoo**
  Surfactant combination: Blanova® TENS APG 818 + Sodium Laureth Sulfate + Cocamidopropyl Betaine
  Viscosity: 7200[mPas]
  Foaming properties: creamy, good foaming

- **Formulation: 6946: Clear Micro Emulsion Shampoo 2 in 1**
  Surfactant combination: Blanova® TENS APG 818 + Sodium Laureth Sulfate
  Viscosity: 510[mPas]
  Foaming properties: fine bubbles, creamy, good foaming

- **Formulation: 6947: Long Lasting Colour Shampoo**
  Surfactant combination: Blanova® TENS APG 818 + + Sodium Laureth Sulfate + Cocamidopropyl Betaine
  Viscosity: 1500[mPas]



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# Formulations:

### Clear Washing Hand Gel
Formulation reference: 6930

| Raw Material | Composition | % w/w | Supplier |
|---|---|---|---|
| **Phase A** | | | |
| DEMIN. WATER | Aqua | 59.70 | |
| BLANOVA® TENS APG 818 | Coco Glucoside | 13.00 | Azelis |
| MACKOL™ CAS-100N | Sodium Coco-Sulfate | 7.00 | Solvay/Rhodia |
| MACKAM 50 UL | Aqua; Cocamidopropyl Betaine | 3.00 | Solvay/Rhodia |
| **Phase B** | | | |
| DEMIN. WATER | Aqua | 8.35 | |
| RONACARE® SODIUM BENZOATE | Sodium Benzoate | 0.50 | Merck |
| **Phase C** | | | |
| CITRIC ACID 40% SOLUTION | Aqua, Citric Acid | 2.65 | |
| **Phase D** | | | |
| DEMIN. WATER | Aqua | 4.80 | |
| SODIUM CHLORIDE EP | Sodium Chloride | 1.00 | Merck |
| | | | |

### Mixing Instructions
Mix components of Phase A until uniform. Add Phase B slowly and mix until homogeneous. Adjust to pH 5.2. Add Phase C and readjust pH if necessary. Adjust viscosity with Phase D.

Formulation developed by Azelis Personal Care.

### Product Characteristics
- Viscosity 6100 mPas (25°C)
- pH 5,2
- Storage Test @40°C: 1 month; @50°C: 1 month; Thaw-Freeze-Cycles (-18°C/+40°C): 5x



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## Caring Soft Shampoo with Panthenol

Formulation reference: 6926

| Raw Material | Composition | % w/w | Supplier |
|---|---|---|---|
| **Phase A** | | | |
| BLANOVA® TENS APG 818 | Coco Glucoside | 11.00 | Azelis |
| MACKOL™ CAS-100N | Sodium Coco-Sulfate | 8.00 | Solvay/Rhodia |
| **Phase B** | | | |
| DEMIN. WATER | Aqua | 56.45 | |
| ELFAN AT 84 G | Sodium Cocoyl Isethionate | 3.00 | AkzoNobel |
| SORBITOL | Sorbitol | 3.00 | Merck |
| BLANOVA® ACTIVE D-PANTHENOL 75% | Panthenol; Aqua | 1.50 | Azelis |
| **Phase C** | | | |
| DEMIN. WATER | Aqua | 10.00 | |
| RONACARE® SODIUM BENZOATE | Sodium Benzoate | 0.55 | Merck |
| **Phase D** | | | |
| DEMIN. WATER | Aqua | 5.00 | |
| SODIUM CHLORIDE EP | Sodium Chloride | 1.50 | Merck |

### Mixing Instructions

Mix components of Phase A and heat until uniform. Add Phase B slowly and mix until homogeneous. Adjust to pH 5.2. Add Phase C and readjust pH if necessary. Adjust viscosity with Phase D.

Formulation developed by Azelis Personal Care.

### Product Characteristics

- Flow point 600 mPas (25°C)
- Viscosity 1100 mPas (25°C)
- pH 5,2
- Storage Test @40°C: 1 month; @50°C: 1 month; Thaw-Freeze-Cycles (-18°C/+40°C): 5x



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## Natural Baby Wash

Formulation reference: 6925

| Raw Material | Composition | % w/w | Supplier |
|---|---|---|---|
| **Phase A** | | | |
| BLANOVA® TENS APG 2000 | Decyl Glucoside | 15.00 | Azelis |
| BLANOVA® TENS APG 818 | Coco Glucoside | 1.00 | Azelis |
| **Phase B** | | | |
| DEMIN. WATER | Aqua | 72.70 | |
| AMAZE® XT | Dehydroxanthan Gum | 0.75 | AkzoNobel |
| **Phase C** | | | |
| DEMIN. WATER | Aqua | 10.00 | |
| RONACARE® SODIUM BENZOATE | Sodium Benzoate | 0.55 | Merck |
| | | | |

### Mixing Instructions

Heat components of Phase A and mix until uniform. Add Phase A to pre-dispersed Phase B slowly and mix until homogeneous. Adjust to pH 5.2. Add Phase C and readjust pH if necessary.

Formulation developed by Azelis Personal Care.

### Product Characteristics

- Flow point 2000 mPas (25°C)
- Viscosity 8100 mPas (25°C)
- pH 5,2
- Storage Test @40°C: 1 month; @50°C: 1 month; Thaw-Freeze-Cycles (-18°C/+40°C): 5x



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## Smooth Foaming Hand Cleanser

Formulation reference: 6924

| Raw Material | Composition | % w/w | Supplier |
|---|---|---|---|
| **Phase A** | | | |
| BLANOVA® TENS APG 818 | Coco Glucoside | 11.00 | Azelis |
| MACKOL™ CAS-100N | Sodium Coco-Sulfate | 8.00 | Solvay/Rhodia |
| ELFAN AT 84 G | Sodium Cocoyl Isethionate | 3.00 | AkzoNobel |
| Aldo MO KFG | Glyceryl Monooleate | 1.00 | Lonza |
| **Phase B** | | | |
| DEMIN. WATER | Aqua | 59.95 | |
| **Phase C** | | | |
| DEMIN. WATER | Aqua | 10.00 | |
| RONACARE® SODIUM BENZOATE | Sodium Benzoate | 0.55 | Merck |
| **Phase D** | | | |
| DEMIN. WATER | Aqua | 5.00 | |
| SODIUM CHLORIDE EP | Sodium Chloride | 1.50 | Merck |

### Mixing Instructions

Mix components of Phase A and heat until uniform. Add Phase B slowly and mix until homogeneous. Adjust to pH 5.2. Add Phase C and readjust pH if necessary. Adjust viscosity with Phase D.

Formulation developed by Azelis Personal Care.

### Product Characteristics

- Flow point 1400 mPas (25°C)
- Viscosity 3000 mPas (25°C)
- pH 5,2
- Storage Test @40°C: 1 month; @50°C: 1 month; Thaw-Freeze-Cycles (-18°C/+40°C): 5x



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## Natural Nourishing Creamy Shower Gel

Formulation reference: 6923

| Raw Material | Composition | % w/w | Supplier |
|---|---|---|---|
| **Phase A** | | | |
| BLANOVA® TENS APG 818 | Coco Glucoside | 32.00 | Azelis |
| BLANOVA® SWEET ALMOND OIL | Prunus Amygdalus Dulcis (Sweet Almond) Oil | 5.00 | Azelis |
| **Phase B** | | | |
| DEMIN. WATER | Aqua | 53.70 | |
| GLYCERIN (85%) | Glycerin | 2.00 | Merck |
| AMAZE® XT | Dehydroxanthan Gum | 0.50 | AkzoNobel |
| BLANOVA® ACTIVE D-PANTHENOL 75% | Panthenol; Aqua | 1.00 | Azelis |
| **Phase C** | | | |
| DEMIN. WATER | Aqua | 5.00 | |
| GEOGARD 221 | Dehydroacetic Acid; Benzyl Alcohol | 0.80 | Lonza |
| | | | |

### Mixing Instructions

Add Phase A slowly to pre-dispersed Phase B and mix until homogeneous. Adjust to pH 5.5. Add Phase C and readjust pH if necessary.

Formulation developed by Azelis Personal Care.

### Product Characteristics

- Flow point 2400 mPas (25°C)
- Viscosity 8800 mPas (25°C)
- pH 5,5
- Storage Test @40°C: 1 month; @50°C: 1 month; Thaw-Freeze-Cycles (-18°C/+40°C): 5x



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## Intense Body Wash Concentrate

Formulation reference: 6922

| Raw Material | Composition | % w/w | Supplier |
|---|---|---|---|
| **Phase A** | | | |
| BLANOVA® TENS APG 1200 | Lauryl Glucoside | 19.00 | Azelis |
| BLANOVA® TENS APG 810 | Caprylyl/Capryl Glucoside | 2.00 | Azelis |
| MACKAM 50 UL | Aqua; Cocamidopropyl Betaine | 10.00 | Solvay/Rhodia |
| ALDO MO KFG | Glyceryl Monooleate | 1.00 | Lonza |
| **Phase B** | | | |
| DEMIN. WATER | Aqua | 57.45 | |
| **Phase C** | | | |
| DEMIN. WATER | Aqua | 10.00 | |
| RONACARE® SODIUM BENZOATE | Sodium Benzoate | 0.55 | Merck |
| | | | |

### Mixing Instructions

Heat components of Phase A and mix until uniform. Add Phase A to pre-dispersed Phase B slowly and mix until homogeneous. Adjust to pH 5.2. Add Phase C and readjust pH if necessary.

Formulation developed by Azelis Personal Care.

### Product Characteristics

- Flow point 2000 mPas (25°C)
- Viscosity 8100 mPas (25°C)
- pH 5,2
- Storage Test @40°C: 1 month; @50°C: 1 month; Thaw-Freeze-Cycles (-18°C/+40°C): 5x



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## Power Hair and Body Shampoo

Formulation reference: 6921

| Raw Material | Composition | % w/w | Supplier |
|---|---|---|---|
| **Phase A** | | | |
| BLANOVA® TENS APG 1200 | Lauryl Glucoside | 19.00 | Azelis |
| BLANOVA® TENS APG 818 | Coco Glucoside | 2.00 | Azelis |
| MACKAM 50 UL | Aqua; Cocamidopropyl Betaine | 10.00 | Solvay/Rhodia |
| ALDO MO KFG | Glyceryl Monooleate | 1.00 | Lonza |
| **Phase B** | | | |
| DEMIN. WATER | Aqua | 54.45 | |
| **Phase C** | | | |
| DEMIN. WATER | Aqua | 10.00 | |
| RONACARE® SODIUM BENZOATE | Sodium Benzoate | 0.55 | Merck |
| | | | |

### Mixing Instructions

Heat Blanova® Tens APG 1200 up to 45°C until uniform. Mix components of Phase A slowly. Add Phase B slowly and mix until homogeneous. Adjust to pH 5.2. Add Phase C to Phase AB.

Formulation developed by Azelis Personal Care.

### Product Characteristics

- Flow point 300 mPas (25°C)
- Viscosity 700 mPas (25°C)
- pH 5,2
- Storage Test @40°C: 1 month; @50°C: 1 month; Thaw-Freeze-Cycles (-18°C/+40°C): 5x



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