

**MINASOLVE**<sup>®</sup>  
BIO-INGREDIENTS FOR YOUR APPLICATIONS

**green  
solving  
attitude.**

# From Biomass to COSMETIC Sustainable Multifunctional Ingredients and Solutions.

Bio-based chemistry is penetrating all market segments and is promoted more and more to consumers of final products. Cosmetic and beauty care are industries where this trend is strongly growing and provides challenges to the key players to develop new formulations in line with consumer demands. New formulations mean new ingredients with a stronger sustainable approach for the production of the raw material and the final products. **Minasolve® is helping in such achievement by proposing bio-ingredients developed under green chemistry principles** to cope with market demands and customer focus. **One of the key ingredients** developed for this market segment is **Pentiol Green+™** which has been developed and produced with a proprietary process established by Minasolve®'s sister company Pennakem, specialized in furfural chemistry. This bio-based ingredient has now proven its versatility in its use in cosmetic formulations and brings multiple properties to the final products. This bio-based ingredient, **odourless**, GMO free, first of its kind in the 1,2-alkanediol range, has been awarded the silver award for Green Ingredients at in-cosmetics 2014 in Hamburg.

To fulfill to the industry requirements, Minasolve® is also currently launching **ready to use solutions based on Pentiol Green+™**, with a strong focus on efficiency, based on preservation boosting and emollient properties. Accordingly, a new range of blends complying with cosmetic formulation principles has been developed and tested to meet the consumers requests for substituting conventional preservative (parabens, phenoxyethanol, MIT). These blends based on the ingredient Pentiol Green+™ allow to respond to the diversity of situations that cosmetic formulators are facing. A new area of cosmetic formulation is now open and key players are claiming use of those bio-ingredients as an added value for customers.

## Production

Today's general environmental and human safety concerns, associated with the growing global trend for sustainable production, have led to more and more interest in the development of high value ingredients in accordance with the principles of green chemistry.

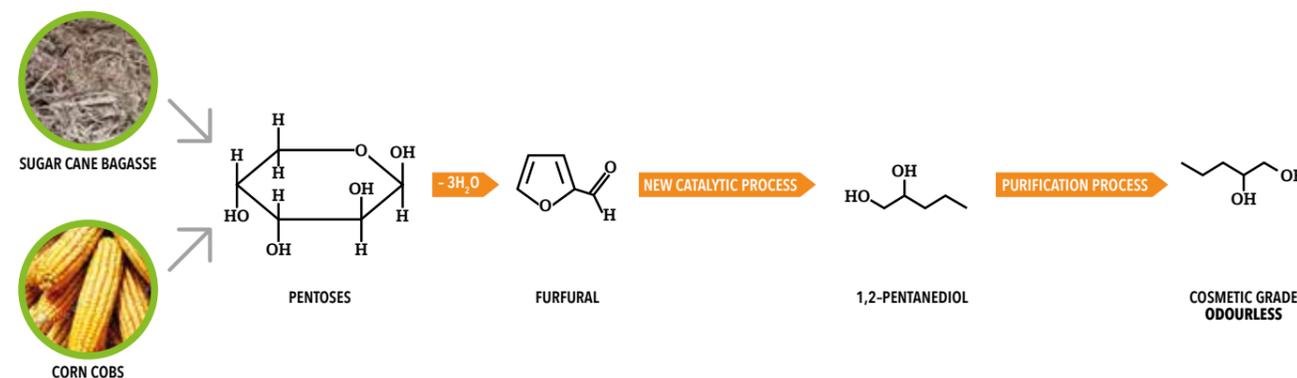
Pennakem, which has been active in renewable chemistry since the 1940s, and Minasolve®, a sister company in the Minafin group, have jointly developed a new, efficient and cost effective process to deliver high volumes of the multifunctional compound, bio-based 1,2-pentanediol (INCI name Pentylene Glycol). Minasolve® is marketing this under the brand name Pentiol Green+™ for personal care and other applications.

Pennakem has developed a proprietary green manufacturing process to manufacture **odourless** bio-based 1,2-pentanediol which is based on valorizing two natural waste materials sugar cane bagasse and

corn cobs and using renewable chemistry to create a high quality cosmetic ingredient.

The growing interest of personal care formulators in using this ingredient is confirmed by the growth of new product launches during the past few years. According to Mintel, the number of new products containing pentylene glycol has grown from 1000 in 2010 to 1500-1600 in the last three years. Additionally, the number of new products claiming "no parabens" almost doubled from under 200 in 2010 to nearly 400 last year.

The anti-microbial activity profile of Pentiol Green+™ has been demonstrated to be equivalent to its petrochemical-based analogues. The suitability of Pentiol Green+™ as an anti-microbial protection agent for typical cosmetic products has been demonstrated in microbial challenge tests in accordance to ISO 11930 standards.



### CONCLUSIONS

The development of an efficient, green, and cost effective process to produce large volumes of bio-based 1,2-pentanediol results from the trend towards sustainable growth in many different global markets. A key multifunctional ingredient for personal care and cosmetic products has been developed in the quest for safer preservation and sensory improvement systems and to support the growing market

demand for natural ingredients. Pentiol Green+™ answers customers' expectations for better environmental respect and social responsibility. It can easily be used to substitute petrochemical-based additives in current cosmetic products and consequently easily improves the natural index of the product. This innovative achievement won the silver Green Ingredients Award at In-Cosmetics 2014.

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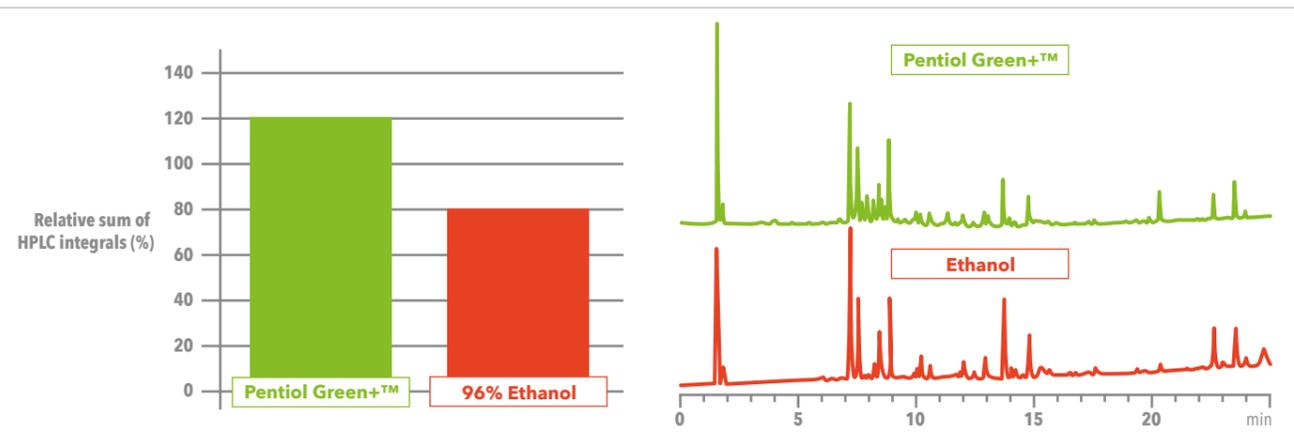
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# Green Extraction Solvent

**Bio-based cosmetic formulations are becoming increasingly popular. The most commonly used natural ingredients are extracts from plant materials. A key decision in the production of truly sustainable extracts is the choice of the extraction solvent.**

**Pentiol Green+™** is a non-volatile hydrophilic/amphiphilic solvent. It can be favorably used as a (co)extraction agent and solvent for herbal ingredients:

- ▶ **The amphiphilic nature** of Pentiol Green+™ ensures that both polar and non-polar constituents are extracted from plant materials and **stabilized inside the extract**. The extraction power of Pentiol Green+™ is comparable to that of ethanol (Figure 1).
- ▶ Pentiol Green+™ **can be easily combined with water as extraction agent**, which lowers the viscosity and **enhances the cost effectiveness**. The solubilization properties of Pentiol Green+™ are largely maintained, even at higher levels of water.
- ▶ Pentiol Green+™ has a relatively **low volatility** with a boiling point of 206 °C. Extractions at high temperature can be carried out under atmospheric pressure.
- ▶ **The attractive skin conditioning effects** of Pentiol Green+™ make it possible to add the obtained extracts directly into cosmetic formulations. It is not necessary anymore to remove any extraction solvent that is possibly not skin friendly. **Energy-intensive solvent exchanges can be omitted**.
- ▶ Thanks to the antimicrobial activity of Pentiol Green+™, extracts containing at least 5% of Pentiol Green+™ **are self-preserved**. Microorganisms potentially present on vegetal materials are effectively killed, and the extracts are well protected against a re-infestation by microbes.



**Figure 1** highlights the application of Pentiol Green+™ in comparison with Ethanol as solvent for the extraction of peppermint leaves. For each extraction, 10 g of plant materials were suspended in 50 g of extraction solvent. The mixtures were heated and stirred at 75-80°C for 15 minutes. After cooling, the solid constituents were filtered off and the filtrates were analyzed by HPLC. In conclusion, Pentiol Green+™ and Ethanol showed comparable performances as extraction solvents.

**Figure 1:** Qualitative and semi-quantitative HPLC-analysis (UV detection at 254 nm) of Peppermint leaf extracts obtained by using Pentiol Green+™ and Ethanol as extraction agents.

**CONCLUSION : Pentiol Green+™ is an innovative green extraction solvent that enables to increase Natural Origin Index of cosmetic formulations.**

# A-Leen® Aroma-3 & E-Leen® Green A

Two universal solutions for natural antimicrobial protection over a large pH range.

**There is a general and steadily growing demand from consumers for safe, mild and nature-based cosmetics. These products should be self-preserved, as well as free of harsh preservatives and allergens. Minasolve® offers two novel solutions to protect these kinds of modern formulations:**

## A leen® Aroma-3

INCI: Phenylpropanol

**A-Leen® Aroma-3 is a nature-derived version of Phenylpropanol**, a fragrance component naturally occurring in flowers and fruits – such as Hyacinths, Narcissus and ripe strawberries.

A-Leen® Aroma-3 is a mild perfuming agent. It brings a comfortable, balsamic and spicy oriental note to personal care products.

A-Leen® Aroma-3 also shows a broad spectrum anti-microbial activity that helps to protect all kinds of cosmetic products against microbial degradation. This activity is largely pH-independent.

A-Leen® Aroma-3 is produced starting from Cassia essential oil, which is traditionally obtained by steam distillation from the leaves and branches of the Chinese cinnamon tree *Cinnamomum cassia*. The full manufacturing process of A-Leen® Aroma-3 is in accordance with the principles of “green-chemistry” and complies with the standards COSMOS and Natrue.

A-Leen® Aroma-3 is free of fragrance allergens and free of listed preservatives.

## E leen® Green A

INCI: Pentylene Glycol (and) Phenylpropanol

**E-Leen® Green A is a novel, synergistic combination of nature-based Pentylene Glycol and nature-based Phenylpropanol.** The mixture represents a cost-effective solution to obtain completely self-preserving cosmetic products.

Both constituents of E-Leen® Green A are produced by means of “green chemistry” and thus meet the requirements of the natural cosmetics standards COSMOS and Natrue.

E-Leen® Green A is skin-moisturizing, skin conditioning and mildly perfuming. Its antimicrobial effect is largely independent of the pH value.

E-Leen® Green A is water-soluble up to 3% and therefore suitable for clear, water-based products. By combination with Pentylene Glycol, the lipophilic Phenylpropanol remains predominantly in the water phase of emulsions. This circumstance contributes significantly to the broad antimicrobial effect of E-Leen® Green A.

## Our Product Range

### Formula Protection: Derived-Natural Products

INGREDIENTS	INCI	ORIGIN	Approved by ECOCERT NATURAL COSMOS APPROVED	Approved by ECOCERT VEGETARIAN COSMOS APPROVED	NATUE COMPLIANT	REGULATORY STATUS (APPROVED)
Pentiol Green+™	Pentylene Glycol	Derived-natural	✓	✓	✓	Europe, USA, Canada, Australia, China, Japan, Korea
A-Leen® Aroma-3 <small>NEW 2018</small>	Phenylpropanol	Derived-natural		✓	✓	Europe, USA, Canada, Australia, China, Japan, Korea
E-Leen® Green A <small>NEW 2018</small>	Pentylene Glycol (and) Phenylpropanol	Derived-natural		✓	✓	Europe, USA, Canada, Australia, China, Japan, Korea
E-Leen® Green OR <small>NEW 2018</small>	Pentylene Glycol (and) Glycerin (and) Citrus Aurantium Amara (Bitter Orange) Fruit Extract (and) Citrus Reticulata (Tangerine) Fruit Extract (and) Citrus Aurantium Sinensis (Orange) Peel Extract (and) Ascorbic Acid (and) Citric Acid (and) Lactic Acid	Derived-natural		✓	✓	Europe, USA, Canada, Australia, China, Japan, Korea
MinaSolve® Green A	Pentylene Glycol (and) Phenylpropanol	Derived-natural				Europe, USA, Canada, Australia, China, Japan, Korea
MinaSolve® Green B <i>Patent pending</i>	Pentylene Glycol (and) Water (and) Sodium Benzoate (and) Benzoic acid	Derived-natural	✓	✓	✓	Europe, USA, Canada, Australia, China, Japan, Korea
MinaSolve® Green C	Pentylene Glycol (and) Glyceryl Caprylate Caprate	Derived-natural	✓	✓	✓	Europe, USA, Canada, Australia, China, Japan, Korea
MinaSolve® Hexam+ <i>Patent pending</i>	Pentylene Glycol (and) Water (and) Hexamidine Diisethionate	Derived-natural				Europe, USA, Canada, Australia, China, Korea
Caprocine	Capryloyl Glycine	Derived-natural	✓			Europe, USA, Canada, Australia, China, Japan, Korea
MinaSolve® CapEasy <i>Patent pending</i>	Water (and) Capryloyl Glycine (and) Sodium Bicarbonate	Derived-natural	✓			Europe, USA, Canada, Australia, China, Japan, Korea

## Our Product Range

### Formula Protection: Non-Natural Products

INGREDIENTS	INCI	ORIGIN	Approved by ECOCERT NATURAL COSMOS APPROVED	Approved by ECOCERT VEGETARIAN COSMOS APPROVED	NATUE COMPLIANT	REGULATORY STATUS (APPROVED)
MinaSolve® Hexam	Hexamidine Diisethionate	Non-natural				Europe, USA, Canada, Australia, China, Korea
Pentiol	Pentylene Glycol	Non-natural				Europe, USA, Canada, Australia, China, Japan, Korea
Hexiol / Hexiol EP	1,2-Hexanediol	Non-natural				Europe, USA, Canada, Australia, China, Japan, Korea
Octiol	Caprylyl Glycol	Non-natural				Europe, USA, Canada, Australia, China, Japan, Korea



## Our Product Range

### Active Ingredients

INGREDIENTS	INCI	ORIGIN	  COSMOS APPROVED	NATRUE COMPLIANT	REGULATORY STATUS (APPROVED)
Caprocine	Capryloyl Glycine	Derived-natural	✓		Europe, USA, Canada, Australia, China, Japan, Korea
MinaSolve® CapEasy <i>Patent pending</i>	Water (and) Capryloyl Glycine (and) Sodium Bicarbonate	Derived-natural	✓		Europe, USA, Canada, Australia, China, Japan, Korea
Elage	Ellagic Acid	Derived-natural	✓	✓	Europe, USA, Canada, Australia, China, Japan (QD <sup>1)</sup> , Korea
E-Leen® Green OR <b>NEW 2018</b>	Pentylene Glycol (and) Glycerin (and) Citrus Aurantium Amara (Bitter Orange) Fruit Extract (and) Citrus Reticulata (Tangerine) Fruit Extract (and) Citrus Aurantium Sinensis (Orange) Peel Extract (and) Ascorbic Acid (and) Citric Acid (and) Lactic Acid	Derived-natural	✓	✓	Europe, USA, Canada, Australia, China, Japan, Korea
Fresh'in	Methyl Diisopropyl Propionamide	Non-natural			Europe, USA, Canada, Australia, China, Japan, Korea
Fresh'in Green+ <i>Patent pending</i>	Pentylene Glycol (and) Methyl Diisopropyl Propionamide	Derived-natural			Europe, USA, Canada, Australia, China, Japan, Korea
MinaSolve® Hexam	Hexamidine Diisethionate	Non-natural			Europe, USA, Canada, Australia, China, Korea
MinaSolve® Hexam+ <i>Patent pending</i>	Pentylene Glycol (and) Water (and) Hexamidine Diisethionate	Derived-natural			Europe, USA, Canada, Australia, China, Korea
Resve	Resveratrol	Natural (Japanese knotweed / min. 98%)			Europe, USA, Canada, Australia, China, Japan, Korea

<sup>(1)</sup> QD: quasi-drug registration required

#### SOME DEFINITIONS, according to ISO 16128-1

**Natural ingredients** are cosmetic ingredients obtained only from plants, animals, micro-organisms or minerals, by physical processes [...], fermentation reactions occurring in nature and leading to molecules which occur in nature, and other procedures of preparation including traditional ones (e.g. extraction using solvents) without intentional chemical modification [...].

**Derived natural ingredients** are cosmetic ingredients of greater than 50% natural origin, by molecular weight, by renewable carbon content, or by any other relevant methods, obtained through defined chemical and/or biological processes with the intention of chemical modification.

**Non-natural ingredients** are ingredients that are greater than or equal to 50% by molecular weight of fossil fuel origin or other ingredients which do not fall into one of the other categories [...].

## Formula Protection

### Antimicrobials with listed preservatives

For broad spectrum protection of acidic to slightly acidic hair care, skin care, toiletries & make-up.



MinaSolve® Hexam		Cationic, mild antimicrobial & antiseptic. Recommended for sensitive skin & suitable for baby applications.			
ECO-IMPROVED PROCESS					
INCI	ANTIMICROBIAL ACTIVITY	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES
Hexamidine Diisethionate	Bacteria, Yeast and Mold	White or slightly yellow powder	3.0•6.5	0.01•0.1% / max. 0.05% eye & oral care	Dissolve into the water phase, or make a premix in water or a diol and add at any stage of the formulation. Keep product pH < 6.5.

MinaSolve® Hexam+		Boosted liquid form of MinaSolve® Hexam with Pentiol Green+™. Cationic antimicrobial blend with skin moisturising properties. For sensitive skin & baby applications.			
INCI	ANTIMICROBIAL ACTIVITY	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES
Pentylene Glycol (and) Water (and) Hexamidine Diisethionate	Bacteria, Yeast and Mold	Clear, colourless to slightly coloured liquid / Odourless or faint	3.0•6.5	0.2•2% / max. 1.0% eye & oral care	Water soluble. Suitable for cold and hot processes. Keep product pH < 6.5.

MinaSolve® Green B		Anionic broad spectrum antimicrobial, ideal for low pH formulations. Contains Pentiol Green+™			
INCI	ANTIMICROBIAL ACTIVITY	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES
Pentylene Glycol (and) Water (and) Sodium Benzoate (and) Benzoic Acid	Bacteria, Yeast and Mold	Clear, colourless liquid / Odourless or faint	3.0•6.0	1.0•3.0% (max. 5%)	Water soluble. Suitable for cold and hot processes. The lower the pH, the stronger the activity.

## Formula Protection

### Multifunctionals with antimicrobial properties

Formula protection, also up to pH 7.0, with non listed preservatives and selective antimicrobial properties. For hair care, skin care, toiletries & make-up.



E-Leen® Green A <small>NEW 2018</small>		Non ionic, preservative-free and nature-derived antimicrobial blend. Contains Pentiol Green+™ and natural origin Phenylpropanol.				
INCI	ANTIMICROBIAL ACTIVITY	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
Pentylene Glycol (and) Phenylpropanol	Bacteria, Yeast and Mold	Clear, colourless liquid / Sweet, floral	3.0•10.0	1.0•3.0%	Water soluble up to 3%. Suitable for cold and hot processes	
E-Leen® Green OR <small>NEW 2018</small>		Non ionic, multifunctional ingredient with antimicrobial properties. Contains Pentiol Green+™ & Citrus extracts. Preservative-free, water-soluble and 100% nature-derived.				
INCI	ANTIMICROBIAL ACTIVITY	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
Pentylene Glycol (and) Glycerin (and) Citrus Aurantium Amara (Bitter Orange) Fruit Extract (and) Citrus Reticulata (Tangerine) Fruit Extract (and) Citrus Aurantium Sinensis (Orange) Peel Extract (and) Ascorbic Acid (and) Citric Acid (and) Lactic Acid	Bacteria, Yeast and Mold	Clear, yellow liquid / Odourless or faint	3.0•6.5	1.0•3.0%	Water soluble. Suitable for cold and hot processes. Keep product pH ≤ 6.5	
MinaSolve® Green A		Non ionic, preservative-free antimicrobial blend. Contains Pentiol Green+™ and aromatic compound.				
INCI	ANTIMICROBIAL ACTIVITY	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
Pentylene Glycol (and) Phenylpropanol	Bacteria, Yeast and Mold	Clear, colourless liquid / Sweet, floral	3.0•10.0	1.0•3.0%	Water soluble up to 3%. Suitable for cold and hot processes.	
MinaSolve® Green C		Non ionic, preservative-free antimicrobial blend. 100% nature-derived. Contains Pentiol Green+™.				
INCI	ANTIMICROBIAL ACTIVITY	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
Pentylene Glycol (and) Glyceryl Caprylate / Caprate	Bacteria, Yeast, Fungistatic against Mold	Clear, colourless liquid / Odourless or faint	4.0•7.0	1.0•3.0%	Dispersible in water. Suitable for cold and hot processes.	
Caprocine		Anionic multifunctional ingredient with antimicrobial properties.				
INCI	ANTIMICROBIAL ACTIVITY	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
Capryloyl Glycine	Bacteria and Mold (weak on C. albicans)	White crystalline powder	4.0•7.0	0.5•2.0%	Dissolve in hot water or in cold alkaline water (pH > 7.0).	
MinaSolve® CapEasy		Self preserved, aqueous solution of Caprocine (~30% a.i.). Multifunctional with antimicrobial properties.				
INCI	ANTIMICROBIAL ACTIVITY	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
Water (and) Capryloyl Glycine (and) Sodium Bicarbonate	Bacteria and Mold (weak on C. albicans)	Clear, colourless liquid / Odourless or faint	4.0•7.0	1.5•7.0%	Can be added at any stage of the formulation. No heating, premixing, or pH-adjustment is needed for dissolution.	

## Formula Protection

### Boosters

Multifunctional ingredients as preservative boosters, to reinforce the activity of alternative protection agents, or to use less of the listed preservatives. For hair care, skin care, toiletries & make-up.



Pentiol / Pentiol Green+™		CHARACTERISTICS			
Non-natural (Pentiol) or derived-natural (Pentiol Green+™) emollient & moisturizer. Preservative booster. Extraction solvent & solubilizer. Excipient for gelling agents.					
INCI	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
Pentylene Glycol	Clear, colourless liquid <b>Odourless</b>	3.0•10.0	0.5•5.0%	For optimum efficacy of preservation, it should be added to emulsions at the post-emulsification stage.	
A-Leen® Aroma-3 <small>NEW 2018</small>		CHARACTERISTICS			
Nature-derived perfuming agent with pH-independent antimicrobial effect. Free of listed preservatives and fragrance allergens.					
INCI	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
Phenylpropanol	Clear, colourless liquid Characteristic odour	3.0•10.0	0.05•1.0%	Soluble in water up to 0.5%, miscible with alcohols and polar oils; should be added to emulsions at the post-emulsification stage for optimum anti-microbial efficacy.	
Hexiol / Hexiol EP		CHARACTERISTICS			
Emollient & moisturizer. Preservative booster. Also a perfume co-solubiliser and pigment dispersing aid.					
INCI	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
1,2-Hexanediol	Clear, colourless liquid Faint characteristic odour / <b>Odourless</b> for Hexiol EP	3.0•10.0	0.3•3.0%	Can be added either upfront in the water phase, or once the emulsion has been made and cooled down to < 40°C.	
Octiol		CHARACTERISTICS			
Emollient & moisturizer. Preservative booster.					
INCI	FORM/ODOUR	pH RANGE	RECOMMENDED USE LEVEL	FORMULATION GUIDELINES	
Caprylyl Glycol	Clear colourless liquid or low melting waxy solid	3.0•10.0	0.1•1.5%	Limited water solubility; to be dispersed in water under strong mixing.	

# Active Ingredients

For your skin care, hair care, make-up & toiletry products, to treat, purify, condition, soothe or refresh!



PRODUCT	INCI	USE LEVEL	APPLICATIONS							
			ANTI OXIDANT	ANTI INFLAMMATORY	ANTI SEBUM	DEO	LIGHTENING	ANTI DANDRUFF	ANTI-AGE COOLING	
<b>E-Leen® Green OR</b> Multifunctional ingredient Water soluble. Efficient at pH 3.0-6.5 <b>NEW 2018</b>	Pentylene Glycol (and) Glycerin (and) Citrus Aurantium Amara (Bitter Orange) Fruit Extract (and) Citrus Reticulata (Tangerine) Fruit Extract (and) Citrus Aurantium Sinensis (Orange) Peel Extract (and) Ascorbic Acid (and) Citric Acid (and) Lactic Acid	1.0-3.0%	✓							
<b>Caprocine</b> Multifunctional ingredient Dissolve in hot water or in cold alkaline water (pH > 7.0). Efficient at pH 4.0-7.0	Capryloyl Glycine	0.5-2.0%		✓	✓	✓			✓	
<b>MinaSolve® CapEasy</b> Multifunctional ingredient Water soluble, no heating needed. Efficient at pH 4.0-7.0.	Water (and) Capryloyl Glycine (and) Sodium Bicarbonate	1.5-7.0%		✓	✓	✓			✓	
<b>Elage</b> Lightening agent Disperse in the water phase of an emulsion.	Ellagic Acid	0.1-1.0%						✓		✓
<b>Fresh'in</b> Refreshing agent Add to the oil phase of the emulsion or solubilise in a diol or alcohol.	Methyl Diisopropyl Propionamide	0.04-1.5% <sup>(1)</sup>								✓
<b>Fresh'in Green+</b> Refreshing agent Water soluble.	Pentylene Glycol (and) Methyl Diisopropyl Propionamide	0.1-2.5% <sup>(2)</sup>								✓
<b>MinaSolve® Hexam</b> Mild preservative with anti-dandruff properties. Dissolve in the water phase or make a premix in water or a diol. Keep product pH < 6.5.	Hexamidine Diisethionate	0.01-0.1% Max. 0.05% eye & oral care							✓	
<b>MinaSolve® Hexam+</b> Mild preservative with anti-dandruff properties. Water soluble. Suitable for cold and hot processes. Keep product pH < 6.5.	Pentylene Glycol (and) Water (and) Hexamidine Diisethionate	0.2-2.0% Max. 1% eye & oral care							✓	
<b>Resve</b> Multifunctional ingredient Lipophilic; soluble in the presence of PEGs, alcohols.	Resveratrol	0.1-1.0%	✓	✓	✓		✓			✓

<sup>(1)</sup> Max recommended use level for a leave-on body application: 0.04% <sup>(2)</sup> Max recommended use level for a leave-on body application: 0.1%

# Quick decision guide:

Antimicrobials & boosters for Skin Care, Hair Care, Toiletries & Make-up



The above information is accurate to the best of our knowledge. Customers are advised to make their own studies on the usefulness of any ingredient for a particular application. Recommended usage information is only provided as indication, and should not be considered as recommendations to use Minasolve®'s products in violation of any laws, patents, or official regulations dealing with manufacture, composition, local procedures, product design, or end usage.

# Minasolve® Solutions

Contract Development & Manufacturing Organization for your blending and milling projects



Minasolve® is able to provide to you a reliable partnership and precise support for your subcontracted powder cosmetic projects.

- ▶ 30 years of experience in preparing packaged blends, according to customer's specifications
- ▶ Proactive, reactive & flexible
- ▶ High adaptability to customers' needs
- ▶ High Quality standards: cGMP rules, Iso 22716 & HACCP

## Production facilities:

- ▶ Iso 8 environment, EP/USP Purified water
- ▶ Capacity: 930 Tons in 2 shifts and 1 400 Tons in 3 shifts
- ▶ Batch size: 500 kg to 2 300 kg

## Warehouse facilities:

- ▶ 2 700 m<sup>2</sup> storage & sampling room
- ▶ 1 800 pallets



## Minasolve® social commitment through our partnership with a local & work adapted company

Minasolve® gives great importance to his social commitment. Since January 2018, Minasolve® is supporting a local, economic and social project. Indeed Minasolve® has decided to subcontract the sampling logistics (filling, labelling, packaging, dispatch) to Axedis. Axedis is a Work Adapted Company located in Belgium where 85% of their employees are disabled people. Our common goal is to offer disabled people a long-term job in a work environment adapted to their needs.

## Minasolve® is a brand of Minafin® Group



The Minafin® Group, whose affiliates develop and manufacture active pharmaceutical ingredients, organic intermediates and specialty fine chemicals for the life science industries and technical applications is organized around 5 brands, each dedicated to specific end-users or chemical technologies :

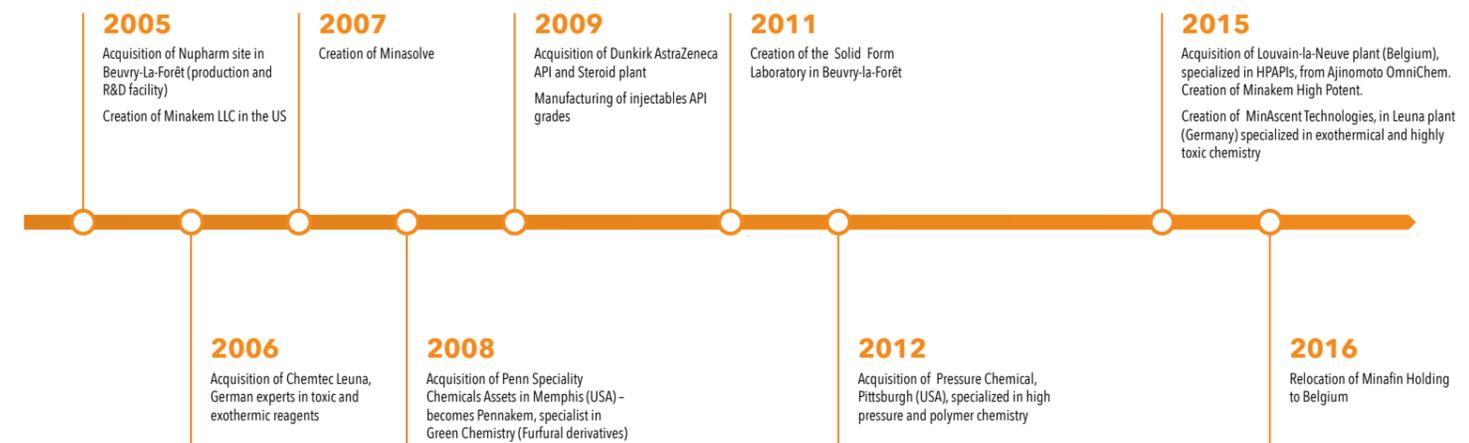
- ▶ Minakem®
- ▶ Minasolve®
- ▶ Pennakem®
- ▶ Pressure Chemical®
- ▶ Minascient®

Serving market leaders as well as emerging players, we support our customers' efforts to improve the quality of life in the global community by :

- ▶ Improving our chemistry and operational excellence today
- ▶ Creating and innovating for tomorrow
- ▶ Driving our enterprises together to go beyond expectations



Founded in 2004 by Dr. Frédéric Gauchet, the group's 806 employees in 4 EU and 2 US sites achieved EUR 184 M sales in 2017. Putting the emphasis on quality, flexibility and innovation allowed an average annual sales growth approaching 20%, fueled by a strong team of 60+ R&D scientists.





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