

EasySafe

OC 8 – P8 – GC 8

**ECO-FRIENDLY & COST EFFECTIVE
SYNERGISTIC SOLUTIONS
FOR OPTIMUM ANTIMICROBIAL PROTECTION**

- ✓ *Optimized for high performance*
- ✓ *Efficient at low dosage*
- ✓ *Versatile & easy to use*
- ✓ *Readily biodegradable*

MINASOLVE
BIO-INGREDIENTS FOR YOUR APPLICATIONS

**green
solving
attitude.**

Product Range

Minasolve: your partner for **Sustainable Solutions**



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Product Range – antimicrobial



| A-Leen | | E-Leen | |
|-------------------------------------|---|-------------------------|---|
| A-Leen 5 | Pentylene Glycol (nature-derived) | E-Leen Green A | Pentylene Glycol (and) Phenylpropanol |
| A-Leen Aroma 3 | Phenylpropanol (nature-derived) | E-Leen Green B | Pentylene Glycol (and) Water (and) Sodium Benzoate (and) Benzoic Acid |
| E-Leen Green OR | Pentylene Glycol (and) Glycerin (and) Bioflavonoids | E-Leen Green C | Pentylene Glycol (and) Glyceryl Caprylate/Caprate |
| Boosters & Preservatives | | EasySafe | |
| Caprocine Ecocert | Capryloyl Glycine | EasySafe Hexam+ | Pentylene Glycol (and) Water (and) Hexamidine Diisethionate |
| MinaSolve CapEasy Ecocert | Water (and) Capryloyl Glycine (and) Sodium Bicarbonate | EasySafe Green A | Pentylene Glycol (and) Phenylpropanol |
| Pentiol | Pentylene Glycol | EasySafe P8 | Caprylyl Glycol (and) Phenylpropanol |
| Hexiol | 1,2-Hexanediol | EasySafe GC 8 | Caprylyl Glycol (and) Glyceryl Caprylate/Caprate (and) Glycerine |
| Octiol | Caprylyl Glycol | EasySafe OC 8 | Caprylyl Glycol (and) Phenylpropanol (and) o-Cymen-5-ol |
| MinaSolve Hexam | Hexamidine Diisethionate | | |

Product Range

Active Cosmetic Ingredients

E-Leen Green OR * Pentylene Glycol, Glycerin, Bioflavonoids

Natural Anti-oxidant

Elage ** Ellagic Acid

Natural Skin-whitening agent

Resve * Resveratrol

Natural Skin Care agent

Fresh'in Methyl Diisopropyl Propionamide

Allergen-free cooling agent

Fresh'in Green+ Pentylene Glycol, Methyl Diisopropyl Propionamide

Allergen-free cooling agent

Caprocine ** Capryloyl Glycine

Anti-sebum/ -dandruff/ -acne

MinaSolve CapEasy ** Water, Capryloyl Glycine, Sodium Bicarbonate

Anti-sebum/ -dandruff/ -acne

MinaSolve Hexam Hexamidine Diisethionate

Anti-acne/ anti-dandruff

EasySafe Hexam+ Pentylene Glycol, Water, Hexamidine Diisethionate

Anti-acne/ anti-dandruff

*** COSMOS approved, ** ECOCERT approved**

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EasySafe

An economic product line

How often do you buy “high-value” cosmetics?

How many people can afford expensive products?

Safety is no question of price!

→ **Cost-effective formula protection with EasySafe:**

- based on safe and undisputed components
 - readily biodegradable / environmentally friendly
 - suitable for “clean labelling” ...
- ... halogen-free, paraben-free, formaldehyde-free ...



EasySafe P8 - EasySafe OC 8 - EasySafe GC 8

**A toolbox of 3 solutions
for COST-EFFECTIVE
ANTIMICROBIAL PROTECTION**



EasySafe P8: **ultimate performance, preservative-free**

INCI: Caprylyl Glycol, Phenylpropanol

EasySafe OC 8: **eco-friendly alternative to Triclosan**

INCI: Caprylyl Glycol, Phenylpropanol, o-Cymen-5-ol

EasySafe GC 8: **mild to the skin, low odour, preservative-free**

INCI: Caprylyl Glycol, Glyceryl Caprylate/Caprates, Glycerin

EasySafe

Characteristics

| Name | Melting point | Aspect at 5°C to 80°C | Odour | pH of use | Use-level | Cold process |
|---------------|---------------|------------------------|-----------------|-----------|-----------------------------|--------------|
| EasySafe P8 | < 5 °C | Liquid | Faint, aromatic | 3-10 | 0.5 – 2.0 % | YES |
| EasySafe OC 8 | < -10 °C | Liquid | Faint, aromatic | 3-8 | 0.5 – 1.5 % | YES |
| EasySafe GC 8 | < -10 °C | Liquid | Low odour | 4-7 | 0.75 – 2.0 % | YES |
| Octiol | 35 °C | <u>SOLID or Liquid</u> | Low odour | 3-10 | 0.5 – 1.0 % (standalone) | <u>NO</u> |

How to use EasySafe ingredients:

- Soluble in aqueous solutions of surfactants, e.g. in shampoo, micellar water ...
- Soluble in water in the presence of solubilizers, e.g. Tween XX ...
- Should be added at the end of the formulation / after emulsification

EasySafe

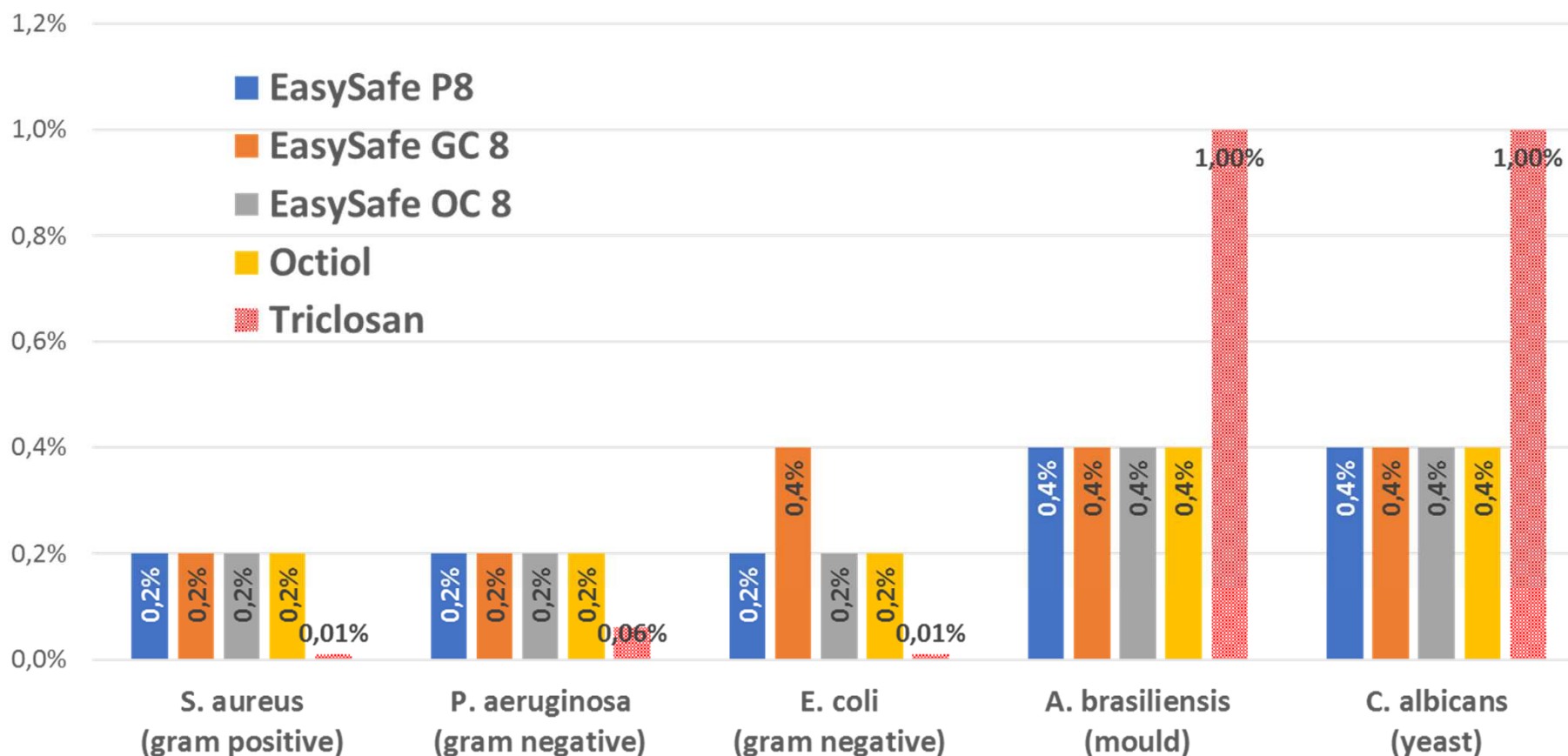
Characteristics

All EasySafe ingredients are:

- effective at **low dosage** – also at **neutral pH!**
- versatile and easy to use liquids
 - for energy saving / cold manufacturing processes
- optimized performance ↔ high content of Caprylyl Glycol
 - higher activity + lower odour than market standards



EasySafe MIC^(*) compared with Triclosan



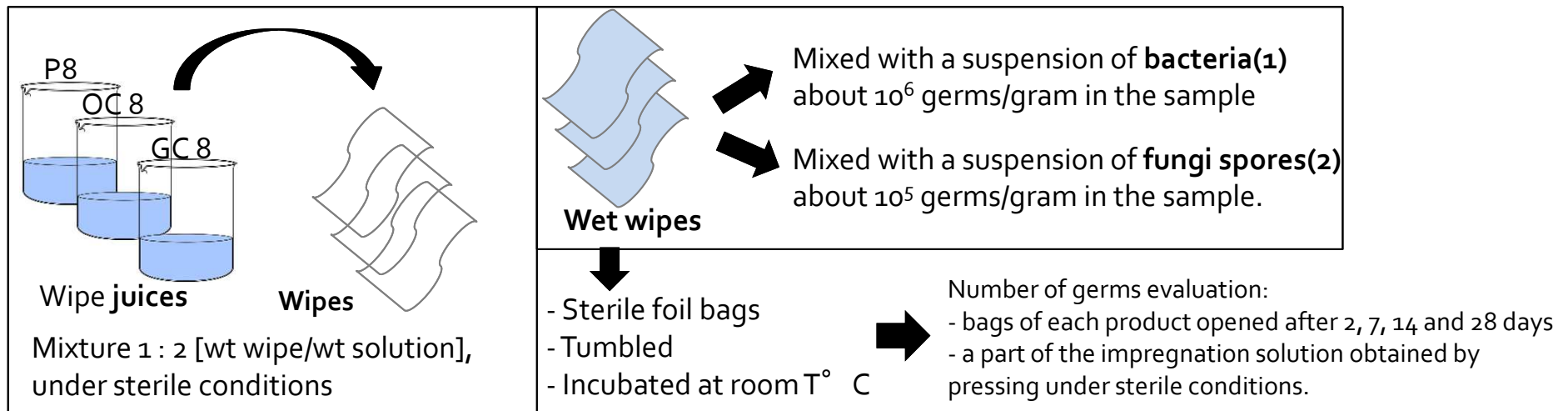
^(*) solubilised with Natragem S140 NP

EasySafe P8 - EasySafe OC 8 - EasySafe GC 8

A toolbox of 3 solutions OPTIMIZED for WET WIPES PROTECTION



Procedure



(1) Bacteria: *Pseudomonas aeruginosa*
Staphylococcus aureus
Escherichia coli
Proteus mirabilis
Pluralibacter gergoviae

(2) Moulds : *Aspergillus brasiliensis*
Penicillium expansum
Trichoderma viride

(2) Yeast : *Candida albicans*

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EasySafe P8 - EasySafe OC 8 - EasySafe GC 8

A toolbox of 3 solutions OPTIMIZED for WET WIPES PROTECTION



Wet wipes juice:

91-94% water, 5-8% Natragem S140 NP, 1% EasySafe Blend
pH = 5,5 with citric acid

Tested wipes:

Ascutec, 50 g/m² airlaid
92% total chlorine free (TCF) cellulose + 8 % ethylene/vinyl acetate binder

Challenge test in accordance with **Pharm. Eur.** protocol

EasySafe P8 - EasySafe OC 8 - EasySafe GC 8

A toolbox of 3 solutions OPTIMIZED for WET WIPES PROTECTION



Results:

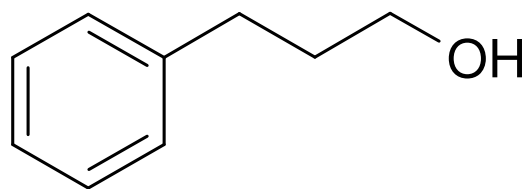
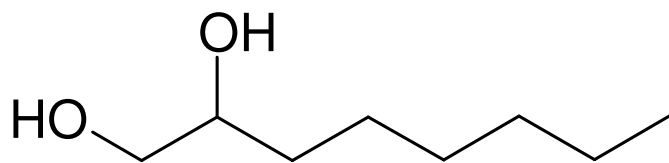
- ➔ EasySafe **OC 8** and **P8** are effective at **1%** use-level (criteria A).
- ➔ Recommended use-level for EasySafe **GC 8** is **1.5%** (criteria B at 1%).



EasySafe P8

Alternative for ultimate performance

INCI: Caprylyl Glycol, Phenylpropanol



Claims:

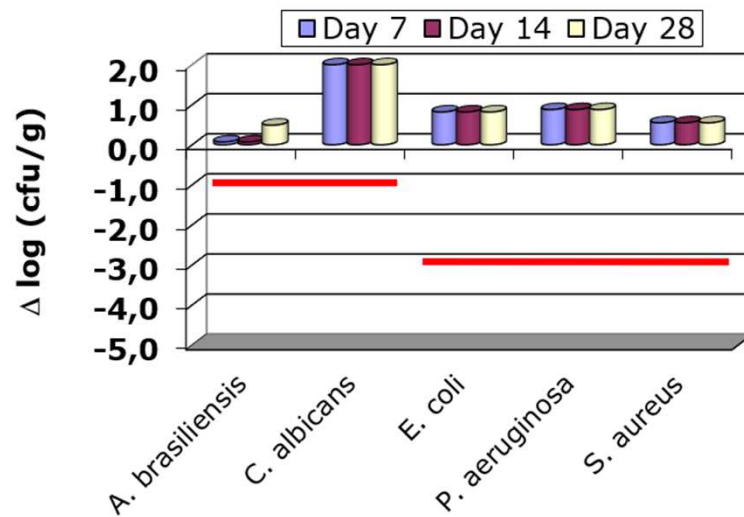
- Preservative-free → **creates self-preserved formulations**
- **Largely pH-independent** effect against bacteria + yeast + mould
- Caprylyl Glycol = well-known skin humectant
- Phenylpropanol = nature-identical aroma → masking agent, for hygiene/deodorant
- Free of fragrance allergens



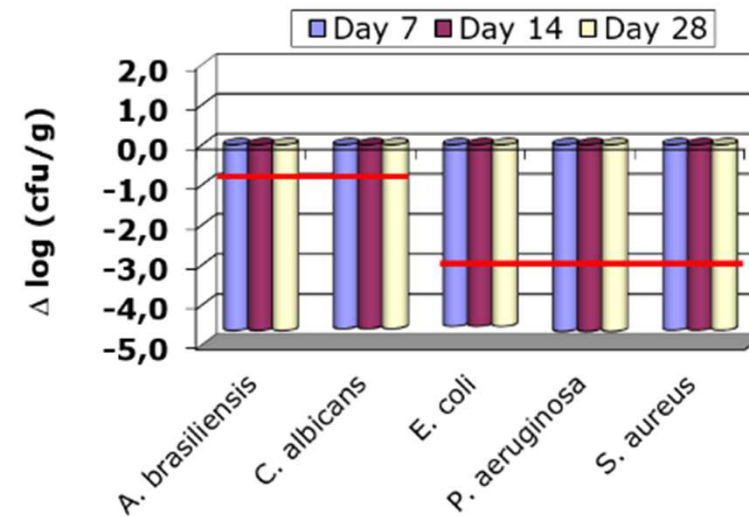
EasySafe P8

Alternative for ultimate performance

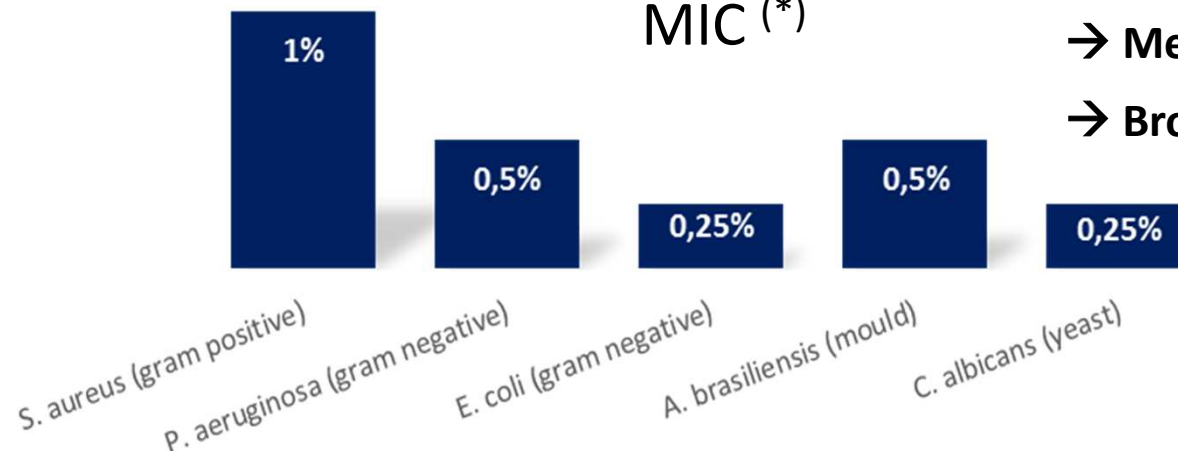
O/W-emulsion - pH 7 - 0% EasySafe P8



pH 7 - 1% EasySafe P8



MIC (*)



→ Meets criteria A / ISO 11930

→ Broad-spectrum anti-microbial effect

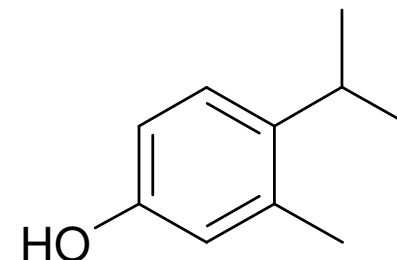
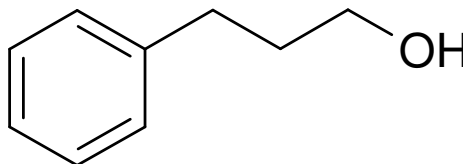
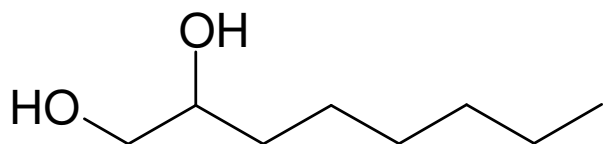
(*) dispersed in distilled water

— ISO 11930 requirements for reduction of log (cfu/g) after 28 days ("criteria A")

EasySafe OC 8

The eco-friendly alternative to Triclosan

INCI: Caprylyl Glycol, Phenylpropanol, o-Cymen-5-ol



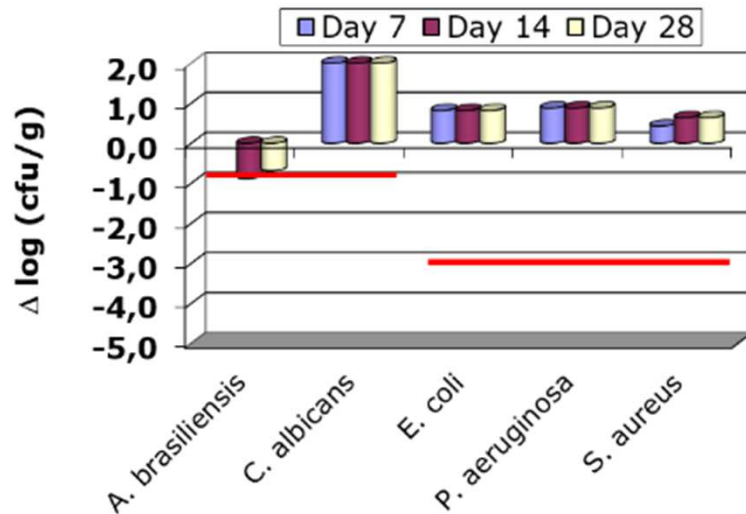
Claims:

- **Mild preservative with anti-oxidant effect**, free of fragrance allergens
- protection against bacteria + yeast + mould at pH 3-8
- Caprylyl Glycol = skin humectant
- Phenylpropanol = nature-identical aroma → masking agent, for hygiene/deodorants
- o-Cymen-5-ol = preservative, isomer of thymol – the active ingredient of Thyme
- **Safe + environmentally friendly substitute for old-fashioned preservatives**

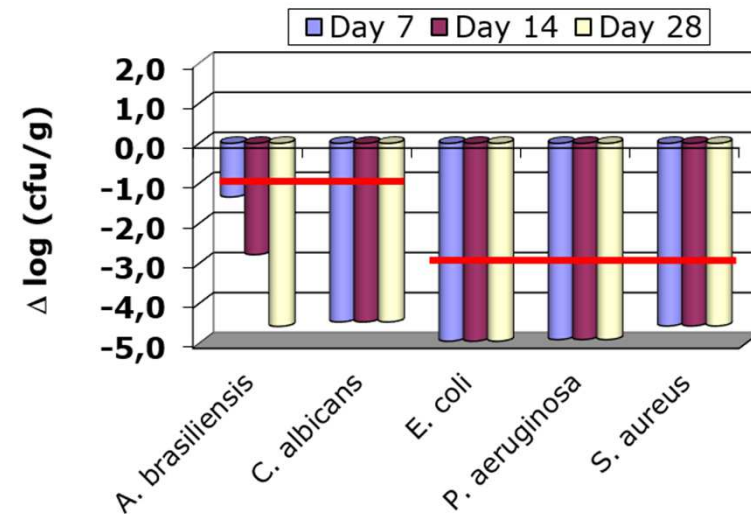
EasySafe OC 8

The eco-friendly alternative to Triclosan

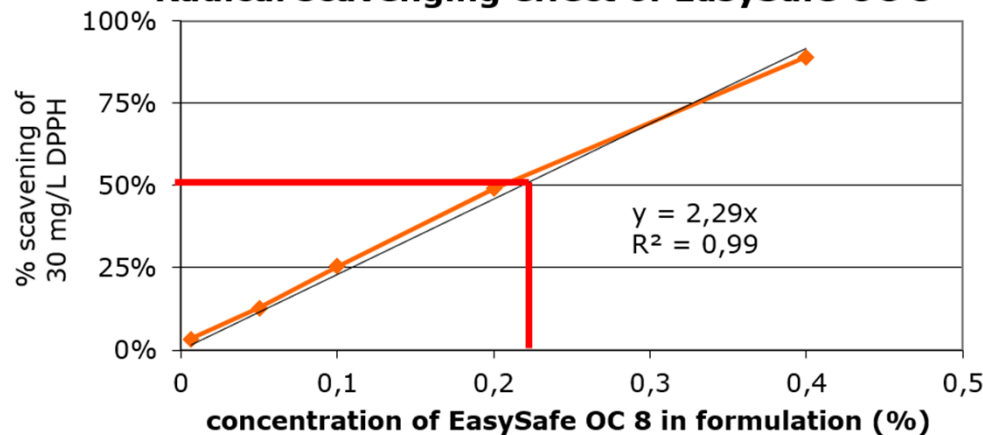
O/W-emulsion, pH 5.5, 0% EasySafe OC 8



pH 5.5, 0.75% EasySafe OC 8



Radical scavenging effect of EasySafe OC 8



- Meets criteria A / ISO 11930
- Broad-spectrum anti-microbial effect
- Anti-oxidant ... against oxidative stress
- ... skin protection + formula protection

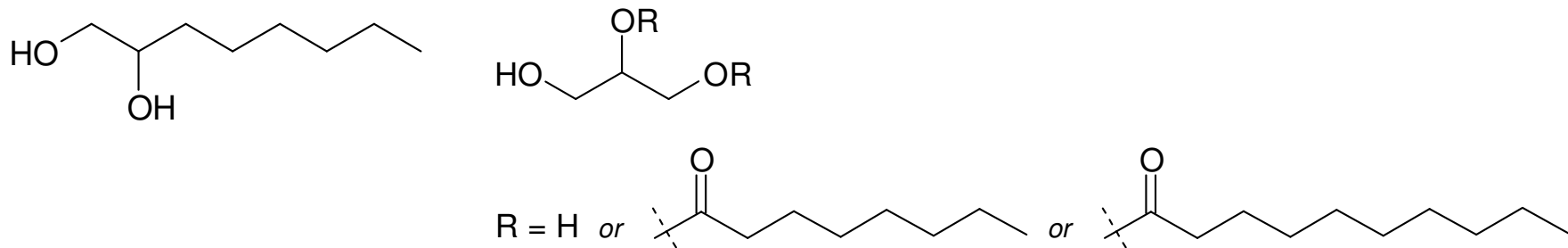
— ISO 11930 requirements for reduction of log (cfu/g) after 28 days ("criteria A")

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EasySafe GC 8

Mild to skin, low odour, preservative free

INCI: Caprylyl Glycol, Glyceryl Caprylate/Caprate, Glycerin



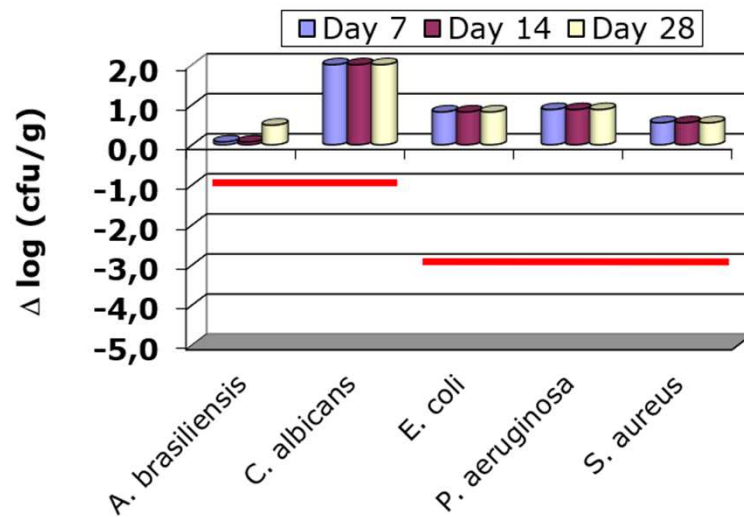
Claims:

- Preservative free → creates self-preserved formulations
- Perfume free → **suitable for low-odour products**
- **Non-ionic, suitable for pH 4-7**
- Glyceryl Caprylate/Caprate = **very mild re-fatting agent** + anti-bacterial + thickener
- Derived-natural, **Natural Origin Index = 0.6 (ISO 16128)**
- Components derived from palm kernel oil are RSPO mass-balance certified

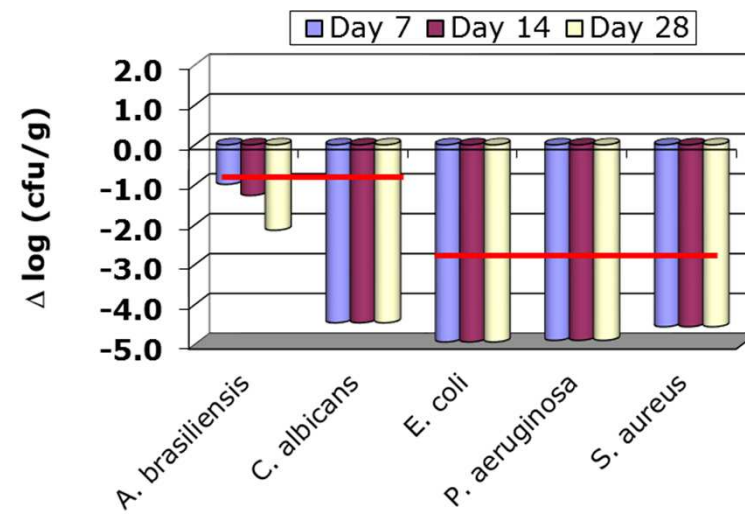
EasySafe GC 8

Mild to skin, low odour, preservative free

O/W-emulsion, pH 7, 0% EasySafe GC 8

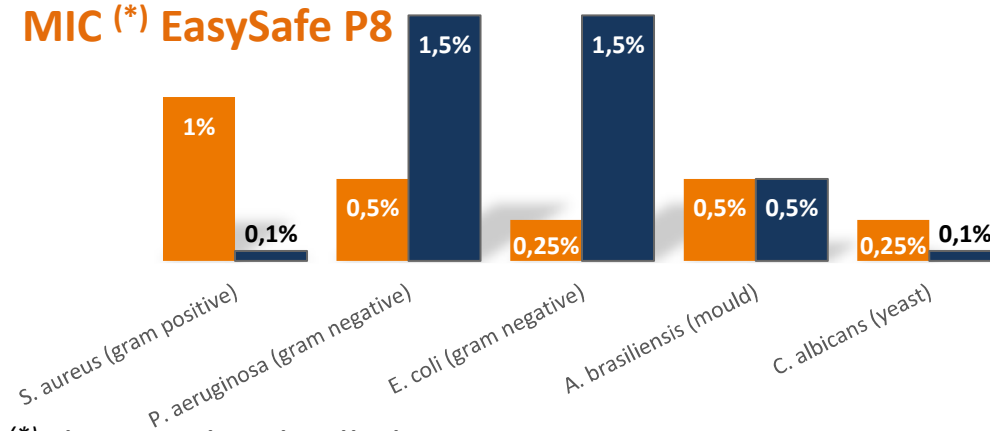


pH 7, 1.5% EasySafe GC 8



MIC (*) EasySafe GC 8

MIC (*) EasySafe P8



(*) dispersed in distilled water

— ISO 11930 requirements for reduction of log (cfu/g) after 28 days ("criteria A")

→ Meets criteria A / ISO 11930

→ complementary to EasySafe P8:

→ EasySafe GC 8 + EasySafe P8
can be favourably combined

... for hard to preserve products

EasySafe

Performance in challenge tests

| O/W emulsion | Phase | Ingredient | INCI name | % |
|----------------------|-------|--|---|--------------|
| | A | Demineralized Water | Aqua | ad 100 |
| | | Xanthan Gum ⁽²⁾ | Xanthan Gum | 0.5 |
| | B | Emulgade PL 68/50 ⁽³⁾ | Cetearyl Glucoside (and) Cetearyl Alcohol | 5.0 |
| | | Shea Butter ⁽⁴⁾ | Butyrospermum Parkii (Shea) Butter | 3.0 |
| | | Jojoba Oil ⁽⁴⁾ | Simmondsia Chinensis (Jojoba) Oil | 3.0 |
| | | Hazelnut Oil ⁽⁴⁾ | Corylus Avellana (Hazel) Seed Oil | 3.0 |
| | C | Bioxan T70 ⁽⁵⁾ | Tocopherol | 0.1 |
| | D | aq. Citric Acid / NaOH | Citric Acid / Sodium Hydroxide / Aqua | pH 4.5-8.0 |
| | E | EasySafe P8 / GC 8 / OC 8 ⁽¹⁾ | Caprylyl Glycol + X ... | 0.5 - 1.5 % |
| Sulfate-free shampoo | Phase | Ingredient | INCI name | % |
| | A | Demineralized Water | Aqua | Ad 100 |
| | | Xanthan Gum ⁽²⁾ | Xanthan Gum | 0.5 |
| | | Plantacare 818 UP ⁽³⁾ | Cocoglucoside | 15.00 |
| | | Plantapon AGG HC ⁽³⁾ | Sodium Cocoyl Sulfate | 5.00 |
| | | TE 100 Betain 5 ⁽⁶⁾ | Cocamidopropyl Betain | 5.00 |
| | B | aq. Citric Acid / NaOH | Citric Acid / Sodium Hydroxide / Aqua | pH 4.5-8.0 |
| | C | EasySafe P8 / GC 8 / OC 8 ⁽¹⁾ | Caprylyl Glycol + X ... | 0.75 - 2.0 % |

Raw material suppliers:

⁽¹⁾ Minasolve ⁽²⁾ Jungbunzlauer ⁽³⁾ BASF ⁽⁴⁾ Casear & Loretz ⁽⁵⁾ BTSA ⁽⁶⁾ Evonik

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EasySafe STANDALONE performance in challenge tests

Results of microbial challenge tests (ISO 11930)

| | | EasySafe P8 | | | EasySafe GC 8 | | | EasySafe OC 8 | | | <i>Octiol</i> |
|-----------------|--------|-------------|-------|----|---------------|----|------|---------------|-------|----|---------------|
| Use level: | | 0.5% | 0.75% | 1% | 0.75% | 1% | 1.5% | 0.5% | 0.75% | 1% | 0.75% |
| O/W emulsion | pH 4,5 | A | A | | B | A | | A | A | | |
| | pH 5,5 | A | A | A | B | A | A | A | A | A | A |
| | pH 7,0 | | B | A | B | B | A | | B | A | A |
| | pH 8,0 | | A | A | | | | | A | A | |

| | |
|---|---|
| A | Fully protected (criteria A, ISO 11930) |
| | Likely to be fully protected |
| B | OK for protective packaging (ISO 11930) |
| | Not suitable for this application |

→ Effective at
low use-levels

EasySafe

SYNERGISTIC performance in challenge tests

Results of microbial challenge tests (ISO 11930)

| Use level: | | EasySafe P8 | | | EasySafe GC 8 | | | EasySafe OC 8 | | | Octiol |
|----------------------|--------|-------------|------|----|---------------|------|----|---------------|----|------|--------|
| | | 1% | 1.5% | 2% | 1% | 1.5% | 2% | 0.75% | 1% | 1.5% | 1 % |
| Sulfate-free shampoo | pH 4,5 | A | | | B | A | | B | A | | |
| | pH 5,5 | | B | A | B | B | A | B | B | A | B |

| Use level: | | EasySafe GC 8 + P8 | | | EasySafe GC 8 + OC 8 | | |
|----------------------|--------|--------------------|---------------|---------|----------------------|---------------|---------|
| | | 0.5 + 0.5 % | 0.75 + 0.75 % | 1 + 1 % | 0.5 + 0.5 % | 0.75 + 0.75 % | 1 + 1 % |
| Sulfate-free shampoo | pH 4,5 | A | | | A | | |
| | pH 5,5 | | A | | | A | |

| | |
|---|---|
| A | Fully protected (criteria A, ISO 11930) |
| | Likely to be fully protected |
| B | OK for protective packaging (ISO 11930) |
| | Not suitable for this application |

→ GC 8 + P8 /
→ GC 8 + OC 8
= Synergistic

EasySafe P8 – OC 8 – GC 8

HRIPT (Human Repeated Insult Patch Test)

HRIPT protocol :

- Study on skin compatibility and absence of allergenic potential,
- Repeated applications of the ingredients under occlusive conditions*, over 36 days.
- Quantity applied : 20 µL, neat ingredient

* *Patch material* : Occlusive patch Finn Chamber standard

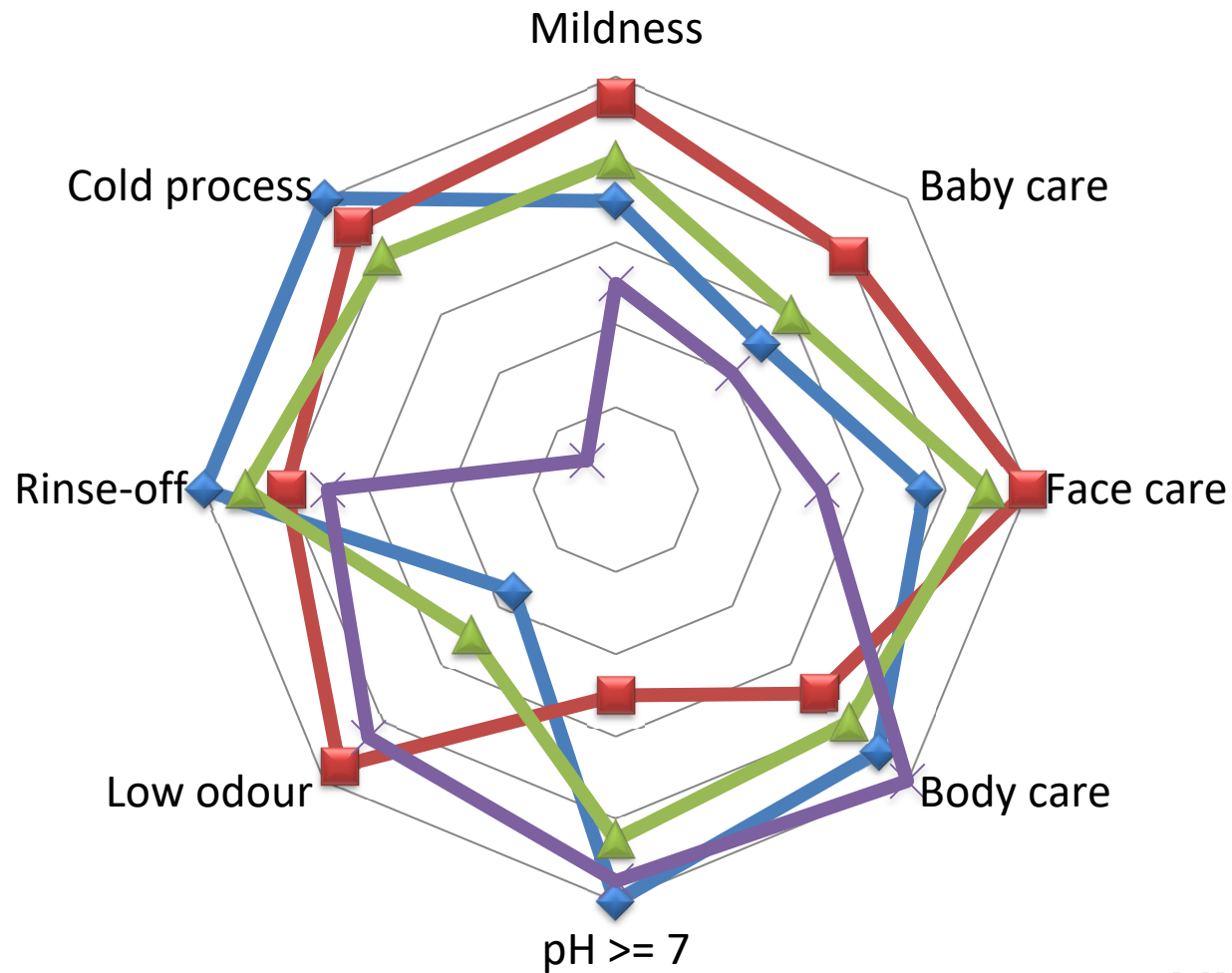
| HRIPT | EasySafe P8 EasySafe OC 8 EasySafe GC 8 |
|----------------------|--|
| Number of subjects** | 51 |
| Age | 18-70 |
| Type of skin | All types |
| Skin Phototype | I to IV |
| RESULT | <ul style="list-style-type: none">- No irritation reaction- Very good skin compatibility- No allergic reaction |

* 20 % of the panellists had a sensitive skin. During and after the test, nobody showed any skin reaction.

EasySafe

When to choose which one?

EasySafe ... ◆ P8 ■ GC 8 ▲ OC 8 ✕ Octiol



Caprylyl Glycol vs. Pentylene Glycol

When to choose which blend?

- EasySafe P8
- EasySafe GC 8
- EasySafe OC 8

- **Powerful**
- **Lipophilic**
- **Cost-effective**

- E-Leen Green A/B/C/OR
- EasySafe Green A
- EasySafe Hexam+

- **Multifunctional**
- **Hydrophilic**
- **Nature-based**

← Octiol (Caprylyl Glycol) based blends

A-Leen 5 (Pentylene Glycol) based blends →

Mass-market products

Natural / high value cosmetics

Hygiene products / deodorants

“Green” toiletries / perfumes

O/W emulsions – hard to preserve

O/W + W/O emulsions

Sunscreens

High pH cosmetics

Clear aqueous solutions

EasySafe

Time to test it yourself ...

Sample kits with ...

... 1 % of EasySafe P8 or OC 8 or GC 8 inside ...

O/W-cream → odor in emulsion, application + skin feel

Shampoo → clarity, viscosity, odor in surfactant mixtures

Mist → clarity/ solubility, color and odor in water

IN COMPARISON WITH ...

- 2% “E-Leen Green A/Green OR”, based on A-Leen 5
- 0.75 % of pure Phenylpropanol (“A-Leen Aroma-3”)

EasySafe

Sample “Cream”

| Phase | Raw Materials | INCI Name | E-Leen Green OR | E-Leen Green A | A-Leen Aroma 3 | EasySafe GC 8 | EasySafe P8 | EasySafe OC 8 |
|-------------------------|-----------------------------|--|--------------------|-------------------|-------------------|-----------------------|----------------|------------------|
| A | Water | Aqua | ad 100% | | | | | |
| | Xanthan Gum | Xanthan Gum | 0.5% | | | | | |
| B | Emulgade PL 68/50 | Cetearyl Glucoside (and) Cetearyl Alcohol | 5.0% | | | | | |
| | Lipex Sheasoft | Butyrospermum Parkii (Shea) Butter | 3.0% | | | | | |
| | Joboba Oil | Simmondsia Chinensis (Jojoba) Seed Oil | 3.0% | | | | | |
| | Apricot Oil | Prunus Armeniaca (Apricot) Kernel Oil | 3.0% | | | | | |
| C | Tocopherol | Tocopherol | 0.1% | | | | | |
| D | Minasolve Ingredient | | 2.0% | 2.0% | 0.75% | 1.0% | 1.0% | 1.0% |
| E | Aq. Citric Acid | Aqua (and) Citric Acid | pH 5.0 – 5.5 | | | | | |
| Aspect of final product | | | off-white cream | | | Fluid off-white cream | | |
| | | | E-Leen Green OR | E-Leen Green A | A-Leen Aroma 3 | EasySafe GC 8 | EasySafe P8 | EasySafe OC 8 |

O/W-cream → relatively low odor in emulsion
→ neutral skin feel

EasySafe

Sample “Shampoo”

| Phase | Raw Materials | INCI Name | E-Leen Green OR | E-Leen Green A | A-Leen Aroma 3 | EasySafe GC 8 | EasySafe P8 | EasySafe OC 8 |
|-------------------------|------------------------------|--|----------------------|----------------------|-------------------|------------------|----------------|------------------|
| A | Water | Aqua | ad 100% | | | | | |
| | TEGO Betain F 50 | Cocamidopropyl Betaine | 4.5% | | | | | |
| | Texapon NSO UP | Sodium Laureth Sulfate | 35.0% | | | | | |
| | Plantacare 1200 UP | Lauryl Glucoside | 3.0% | | | | | |
| B | Glucamate VLT Thickener | PEG-120 Methyl Glucose Trioleate (and) Propanediol | 0.7% | | | | | |
| C | Minasolve Ingredient* | | 2.0% | 2.0% | 0.75% | 1.0% | 1.0% | 1.0% |
| D | Sodium chloride | Sodium Chloride | q.s. / ca. 2 % | | | | | |
| E | Aq. Citric Acid | Aqua (and) Citric Acid | pH 5.0 – 5.5 | | | | | |
| Aspect of final product | | | Yellow, clear gel | Colorless clear gels | | | | |
| | | | E-Leen Green OR | E-Leen Green A | A-Leen Aroma 3 | EasySafe GC 8 | EasySafe P8 | EasySafe OC 8 |

* EasySafe GC 8 was added
after adjustment of the pH to 7

Shampoo → relatively low odor in surfactant solution
→ clear and viscous gels

EasySafe

Sample “Mist”

| Phase | Raw Materials | INCI Name | E-Leen Green OR | E-Leen Green A | A-Leen Aroma 3 | EasySafe GC 8 | EasySafe P8 | EasySafe OC 8 |
|-------------------------|-----------------------------|--|--------------------------------|--------------------------|-------------------|------------------|----------------|------------------|
| A | Water | Aqua | ad 100% | | | | | |
| | Natragem™ S140 NP | Polyglyceryl-4 Laurate/Sebacate (and) Polyglyceryl-6 Caprylate/Caprates (and) Aqua | - | - | 16.0% | 7.0% | 5.0% | 8.0% |
| B | Minasolve Ingredient | | 2.0% | 2.0% | 0.75% | 1.0% | 1.0% | 1.0% |
| C | Aq. Citric Acid | Aqua (and) Citric Acid | pH 5.0 – 5.5 | | | | | |
| Aspect of final product | | | Slightly yellow solution | Clear colorless solution | | | | |
| | | | E-Leen Green OR | E-Leen Green A | A-Leen Aroma 3 | EasySafe GC 8 | EasySafe P8 | EasySafe OC 8 |

Mist → solubility in water

→ solubilizers can mask the odour of Phenylpropanol

→ E-Leen Green A vs. A-Leen Aroma-3 vs. EasySafe P8

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OC 8 – P8 – GC 8

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- ✓ *Efficient at low dosage*
- ✓ *Versatile & easy to use*
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attitude.**

THANK YOU FOR YOUR ATTENTION



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- Minagro
- Pennakem
- Pressure Chemical
- Minascent
- EcoXtract

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**



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