MINASOLVE®
BIO-INGREDIENTS FOR YOUR APPLICATIONS

Technical Data Sheet
June 2018 – V5

Pentiol

Pentiol is a **skin moisturizer with anti-microbial properties.** It helps to reduce the concentration of traditional preservatives by **boosting** their anti-microbial activity. In this way, Pentiol ensures the **safety** and integrity of cosmetic formulations.

Pentiol provides a multitude of **functional performances** through its **emollient** and **humectant** properties, adding a **sensorial dimension** to formulations.

Functions

- Emollient
- Skin humectant
- Solubilizer
- Antimicrobial agent & Preservative booster

Applications

- Skin care
- Hair care
- Make-up
- Perfumes & Toiletries

Performances:

- **Pentiol** provides an overall **pleasant, non-tacky and non-oily skin feel.**
- **Pentiol** is a **skin moisturizer** with a long lasting effect comparable to that of Glycerin.
- **Pentiol** can help to solubilize and stabilize lipophilic ingredients in aqueous solutions.
- **Pentiol shows a broad spectrum antimicrobial activity** against yeasts, moulds, and bacteria. It disturbs the integrity of microbial cell membranes, a mechanism of action that is unlikely to be affected by resistance. Being a non-ionic ingredient, the anti-microbial effect of **Pentiol is** largely **pH-independent**.
- **Pentiol** can act as a **standalone antimicrobial protection agent**. In addition, it can be easily combined with other classical or non-classical antimicrobial agents, to **boost** their **preservation effects.**

Specifications and characteristics

INCI name	Pentylene Glycol
CAS reg. N°	[5343-92-0]
Recommended pH of use	2.0 – 12.0 (unlimited)
Recommended use level	0.5 to 5.0 %
Appearance	Clear colourless liquid
Odour	Odourless or faint
Purity (GC)	Min. 99.0 area-%
Water content	Max. 1.0 mass-%
Melting point	< - 30 °C
Boiling point	206 °C
Regulatory status	Globally approved; safety and regulatory data available upon request
Origin, ISO 16128-1	Non-natural (petrochemical)
Chemical structure:	

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 SAS's products in violation of any laws, patents, or official regulations dealing with manufacture, composition, local procedures, product design, or end usage.

MINASOLVE®
BIO-INGREDIENTS FOR YOUR APPLICATIONS

Technical Data Sheet
June 2018 – V5

Pentiol

Performance Data

1) Antimicrobial Performance

1a) Microbial challenge tests according to ISO 11930 – Formulations

a) O/W-emulsion, pH 5.5 (Pentiol as a booster for Caprocine)

Phase	Ingredient	INCI name	%
A	Water	*Aqua*	ad 100
	Xanthan Gum OC [1]	*Xanthan Gum*	0.5
	Caprocine [2]	***Capryloyl Glycine***	**2.0**
	Pentiol [2]	***Pentylene Glycol***	**2.0**
B	Emulgade PL 68/50 [3]	*Cetearyl Glucoside (and) Cetearyl Alcohol*	5.0
	Lipex Sheasoft [4]	*Butyrospermum Parkii (Shea) Butter*	3.0
	Jojoba Oil[5]	*Simmondsia Chinensis (Jojoba) Oil*	3.0
	Hazelnut Oil[5]	*Corylus Avellana (Hazel) Seed Oil*	3.0
C	Bioxan T70 [6]	*Tocopherol*	0.1
D	Citric Acid (50%)	*Citric Acid (and) Aqua*	ad pH 5.5

b) Wellbeing body cream, pH 5.3 (Pentiol as a standalone preservative)

Phase	Raw material	INCI name	%
A	Water	*Aqua*	Ad 100
B Premix	**Pentiol** [2]	***Pentylene Glycol***	**3.0**
	Xanthan Gum PC[1]	*Xanthan Gum*	0.3
C	Emulium Kappa 2[7]	*Candellila/Jojoba/Rice Bran Polyglyceryl-3 Esters (and) Glyceryl Stearate (and) Cetearyl Alcohol (and) Sodium Stearoyl Lactylate*	1.5
	Glyceryl Monostearate	*Glyceryl Monostearate*	2.3
	TEGO Care PS[8]	*Methyl Glucose Sesquistearate*	1.2
	Jojoba Oil[5]	*Simmondsia Chinensis (Jojoba) Seed Oil*	5.0
	Almond Oil[5]	*Prunus Amygdalus Dulcis (Sweet Almond) Oil*	4.0
	Lipex Cocoasoft[4]	*Theobroma Cacao Butter*	3.0
	BergaCare FG5[9]	*Ethylhexyl Palmitate (and) Ethylhexyl Stearate (and) Hydrogenated Olive Oil (and) Caprylic/Capric Triglycerides*	2.0
	Grape Seed Oil[5]	*Vitis Vinifera (Grape) Seed Oil*	4.0
	Beeswax	*Cera Alba*	1.5
D	Celebration Fitness[10]	*Parfum*	0.1
	DL-α-Tocopherol (>97%)	*Tocopherol*	0.1

Raw materials suppliers:

[1] Jungbunzlauer
[2] **Minasolve**
[3] BASF
[4] Aarhus Karlshamn (AAK)
[5] Caesar & Loretz
[6] BTSA
[7] Gattefossé
[8] Evonik
[9] Berg + Schmidt
[10] Luzi

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 SAS's products in violation of any laws, patents, or official regulations dealing with manufacture, composition, local procedures, product design, or end usage.

MINASOLVE®
BIO-INGREDIENTS FOR YOUR APPLICATIONS

Technical Data Sheet
June 2018 – V5

Pentiol

1b) Microbial challenge tests according to ISO 11930 – Results

a) O/W-emulsion, pH 5.5 (Pentiol as a booster for Caprocine)

b) Wellbeing body cream, pH 5.3 (Pentiol as a standalone preservative)

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

→ **Pentiol** can act as an effective preservative **booster** (example a), and also as a **standalone preservative** (examples b).

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 SAS's products in violation of any laws, patents, or official regulations dealing with manufacture, composition, local procedures, product design, or end usage.

Pentiol

2) Sensory profile – consumer study

As an emollient, **Pentiol** provides an overall **pleasant skin feel** to cosmetic formulations. Its favorable impact on various sensorial properties was shown in a consumer study, where three different moisturizers were tested at 3 % in an O/W-emulsion, by 23 volunteers. As a conclusion, the sensorial impact of **Pentiol** was preferred by the panellists, demonstrating its **superior skin conditioning and in-use properties**:

3) Corneometry study – consumer study (PhD Trials, Lisbon)

Pentiol shows a **long lasting moisturizing effect** similar to that of Glycerin, in a comparative study where both substances were applied as an aqueous solution to the forearm area.

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 SAS's products in violation of any laws, patents, or official regulations dealing with manufacture, composition, local procedures, product design, or end usage.

MINASOLVE®
BIO-INGREDIENTS FOR YOUR APPLICATIONS

Technical Data Sheet
June 2018 – V5

Pentiol

Applications in cosmetic formulations

- **Pentiol** is an **easy to handle liquid**. It can be added directly to the water phase, but can also be mixed with vegetal oils. For optimum efficacy of preservation, it should be added to emulsions at the post-emulsification stage.
- **Pentiol** is an effective **skin humectant** with **emollient** properties, making it a versatile **skin-conditioning** agent in cosmetic products.
- **Pentiol** can act as a **solubilizer** and as a **solvent for extraction**; it also helps to **hydrate gelling agents** such as Xanthan Gum.

Solubility of Pentiol in cosmetic solvents

Bibliography

- Bergfeld W.F. et al., "Final Report of the Cosmetic Ingredient Review on the Safety Assessment of 1,2-Glycols as Used in Cosmetics", *Cosmetic Ingredient Review*, **2011**.
- Pillai R. et al., "1,2-Alkanediols for Cosmetic Preservation", *Cosmetics & Toiletries Magazine* **2008**, *123 (10)*, 53-61.
- Schnittger S. et al., "Use of alkanediols in personal care formulations – closer look at antimicrobial activity", *Proceedings of the SCC Annual Scientific Meeting & Technology Showcase*, New York, **2006**.

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 SAS's products in violation of any laws, patents, or official regulations dealing with manufacture, composition, local procedures, product design, or end usage.