

schülke -+

sensiva® PA 20

Multifunctional cosmetic ingredient



the plus of pure
performance

sensiva® PA 20

- Synergistic blend of phenethyl alcohol and ethylhexylglycerin
- Applicable in a wide variety of cosmetic products
- Antimicrobial stabilizer blend
- Effective against odor-causing bacteria
- Mild humectant

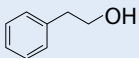
Use / Use concentrations

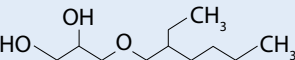
For leave-on formulations, deodorants, wet-wipes 0.5 – 1.0%

Product description

sensiva® PA 20 is a multifunctional cosmetic additive based on ethylhexylglycerin and phenethyl alcohol. Its unique properties make it suitable for use in a wide range of cosmetic applications. It combines the excellent skin care and deodorizing properties of ethylhexylglycerin with the antimicrobial properties of phenethyl alcohol. Phenethyl alcohol is a nature-identical fragrance ingredient with a mild flowery, rose-like scent which can mask possible unpleasant odors of other ingredients. Its antimicrobial properties are enhanced by the boosting effect of ethylhexylglycerin.

Composition

Phenethyl Alcohol	
	$C_8H_{10}O$ 122.17 g/mol
CAS no.:	60-12-8
CAS name:	2-Phenylethanol
INCI name:	Phenethyl Alcohol
EINECS name:	2-Phenylethanol
EINECS no.:	200-456-2

Ethylhexylglycerin	
	$C_{11}H_{24}O_3$ 204.31 g/mol
CAS no.:	70445-33-9
CAS name:	3-[(2-Ethylhexyl)oxy]-1,2-propanediol
INCI name:	Ethylhexylglycerin
ELINCS name:	sensiva SC 50
ELINCS no.:	408-080-2
REACH registration no.:	01-0000015745-65-0001

EU INCI declaration

Phenethyl Alcohol
Ethylhexylglycerin*

US INCI declaration

Phenethyl Alcohol (and)
Ethylhexylglycerin*

* Stabilised with synthetic alpha-Tocopherol

Deodorizing efficacy

Body odor arises when sweat, odorless itself, is decomposed by microorganisms. These Gram-positive bacteria form substances from the sweat contents which have an unpleasant odor.

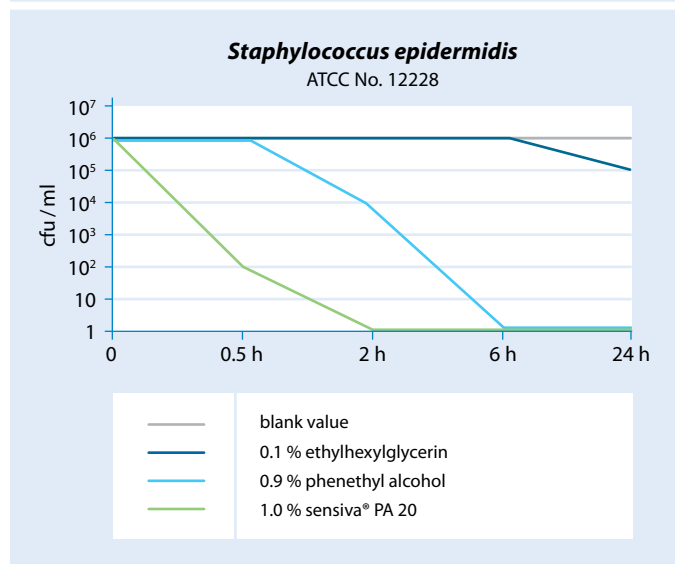
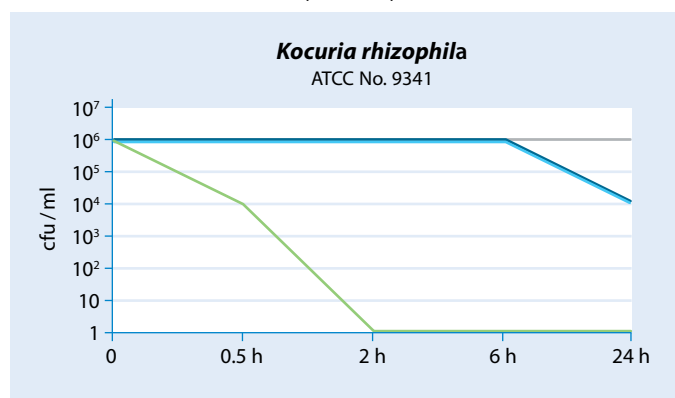
sensiva® PA 20 inhibits the growth and multiplication of odor causing bacteria, while at the same time not adversely affecting beneficial skin flora.

Antimicrobial effectiveness against odor-causing Gram-positive bacteria

Determination of the minimum inhibitory concentrations (MIC) of sensiva® PA 20 in the serial dilution test is shown in the following values:

Species	ATCC No.	MIC value [%]
<i>Corynebacterium xerosis</i>	373	0.5 %
<i>Corynebacterium flavescens</i>	10340	0.5 %
<i>Corynebacterium callunae</i>	15991	0.5 %
<i>Staphylococcus epidermidis</i>	12228	0.5 %
<i>Bacillus subtilis</i>	6633	0.5 %
<i>Ochrobacter anthropi</i>	11425	0.12 %
<i>Leifsonia aquatica</i>	14665	0.25 %
<i>Kocuria rhizophila</i>	9341	0.5 %

Germ count reduction tests (in water)



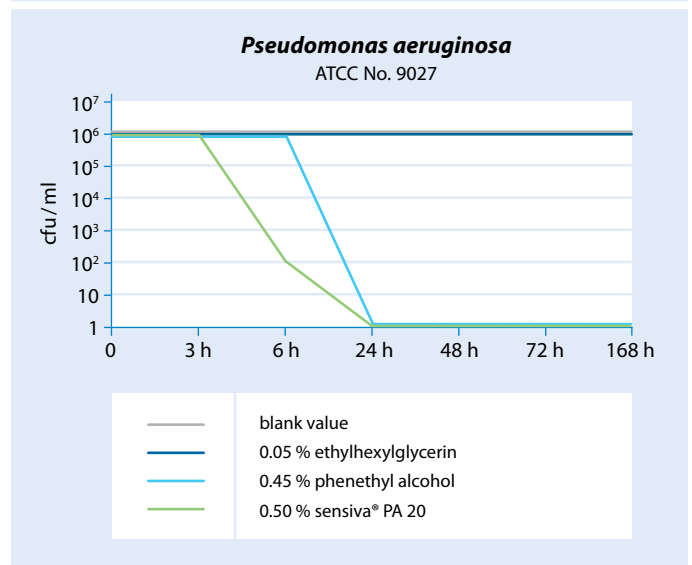
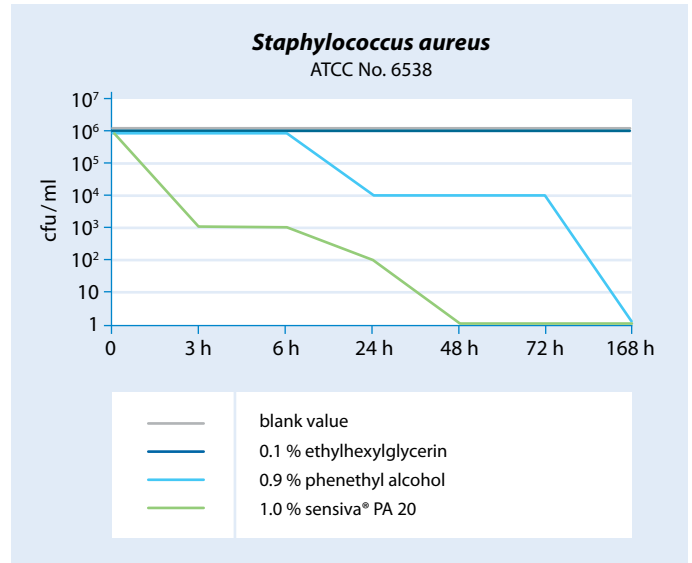
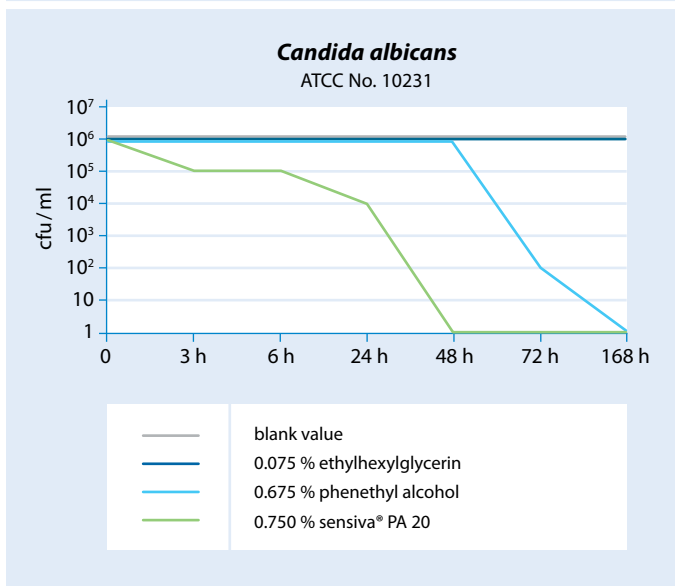
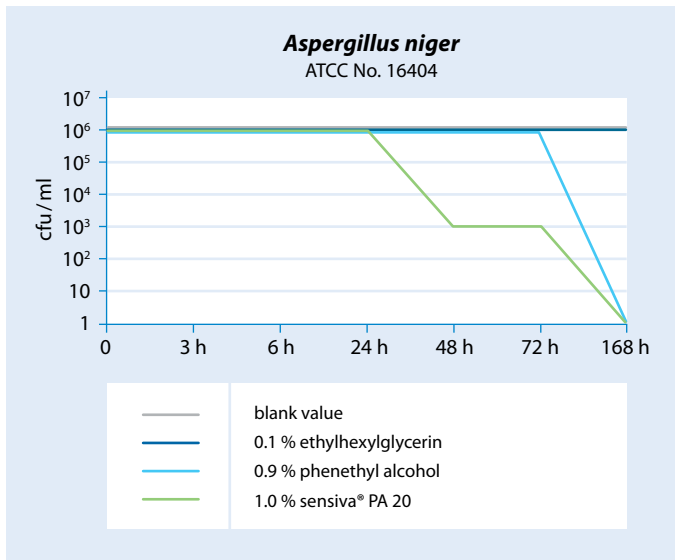
sensiva® PA 20

Antimicrobial stabilizer blend

Cosmetic formulators are looking for ways to keep their products microbiologically stable without the use of traditional preservative systems. These include a combination of possibilities to prevent microorganisms from growing, such as modifying pH value or water activity of a formulation; using chelating agents or multifunctional materials; as well as employing tamper-resistant packaging.

sensiva® PA 20 is a multifunctional cosmetic ingredient consisting of phenethyl alcohol and ethylhexylglycerin. Phenethyl alcohol is a nature-identical fragrance ingredient and is effective against typical germs found in cosmetic formulations. Ethylhexylglycerin is well known as a booster for preservatives and antimicrobial actives. Ethylhexylglycerin enhances the antimicrobial properties of phenethyl alcohol. Germ count reduction tests and preservative challenge tests have shown that sensiva® PA 20 can contribute to the antimicrobial stability of a cosmetic formulation.

Germ count reduction tests (in O/W Cream, RL-04-9004)



Repeated challenge tests (schülke KoKo test)

In the schülke KoKo test a mixture of bacteria, yeast and mold is inoculated 6 times (once a week) into the test material with the goal of keeping the test material germ-free for this period. The inoculum contains pathogenic microorganisms and germs which are well known for product spoilage. All species are cultivated separately and mixed directly before the addition to ensure a constant composition and germ count of the inoculum. Total germ count is approximately 10⁸ – 10⁹ cfu/ml, which equates to a germ count of approximately 10⁶ cfu/ml per test organism in the sample.

Experience has shown that a cosmetic product without growth of microorganisms after 6 inoculation cycles can be considered microbiologically stable for 30 months, which is recommended for cosmetic products.

sensiva® PA 20 can contribute to the microbiological stability of a cosmetic formulation. For more results please contact us.

sensiva® PA 20

Formulation

W/O Cream (RL-04-9006)		
INCI Name	Function	[% w/w]
Phase A		
Water		Q.S. 100
Glycerin, 85%	Humectant	0.90
Propylene Glycol	Humectant	0.50
Sodium Hydroxide (45% aq. solution)	pH adjuster	0.50
Sodium Chloride	Stabilizer	0.15
Phase B		
Cetyl PEG/PPG-10/1 Dimethicone	Emulsifier	0.80
Cera Alba	Wax	0.35
Hydrogenated Castor Oil	Stabilizer	0.25
Mineral Oil	Emollient	7.30
Carbomer	Thickener	0.70

Formulation

O/W Cream (RL-04-9004)		
INCI Name	Function	[% w/w]
Phase A		
Water		Q.S. 100
Glycerin, 85%	Humectant	2.30
Sodium Hydroxide (45% aq. solution)	pH adjuster	0.20
Phase B		
Mineral Oil	Emollient	6.00
Dimethicone	Emollient	5.00
Stearic Acid	Consistency agent	4.00
Cetyl Alcohol	Consistency agent	3.00
Glyceryl Stearate, PEG-30 Stearate	Emulsifier	3.00
Octyl Palmitate	Emollient	1.50

KoKo test results

W/O Cream (RL-04-9006)	Inoculation Cycles						
	0	1	2	3	4	5	6
without antimicrobial stabilization	-	+++ B, Y, M	+++ B, Y, M	./.			
+ 0.75% euxyl® PE 9010	-	-	-	-	-	-	-
+ 1.0% euxyl® PE 9010	-	-	-	-	-	-	-
+ 0.75% sensiva® PA 20	-	-	-	-	-	-	-
+ 1.0% sensiva® PA 20	-	-	-	-	-	-	-

Legend:

0 = Sterility control	- = free of microbial growth
B = Bacteria	+ = slight growth
M = Mold	++ = moderate growth
Sp = Sporeforming bacteria	+++ = massive growth
Y = Yeast	

KoKo test results

O/W Cream (RL-04-9004)	Inoculation Cycles						
	0	1	2	3	4	5	6
without antimicrobial stabilization	-	+++ B, Y, M	+++ B, Y, M	./.			
+ 0.75% euxyl® PE 9010	-	+ M	+ M	+ M	+ M	+ M	+ B, M
+ 1.0% euxyl® PE 9010	-	-	-	-	-	-	-
+ 0.75% sensiva® PA 20	-	-	-	-	+ M	+ M	+ M
+ 1.0% sensiva® PA 20	-	-	-	-	-	-	-

Legend:

0 = Sterility control	- = free of microbial
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International approvals

	Phenethyl Alcohol	Ethylhexylglycerin
Europe / USA:	INCI name: Phenethyl Alcohol	INCI name: Ethylhexylglycerin
Australia:	listed on AICS TGA approved	listed on AICS/NICNAS (NA/966) TGA approved
Canada:	listed on DSL	listed on DSL
Japan:	listed on ENCS	listed on ENCS and CLS 1999

sensiva® PA 20

Indications for use

General remarks

sensiva® PA 20 is a colorless to light yellow liquid with characteristic odor. It is stable to hydrolysis, temperature and pH.

Use concentration

The recommended use concentration for sensiva® PA 20 is 0.5 – 1.0%.

Emulsions

As both components in sensiva® PA 20 are surface active ingredients which can interact with emulsifier systems, we recommend incorporating sensiva® PA 20 after the emulsification process. At this time, the emulsion has already formed and any negative influence on the emulsifier system will be minimized. However, every formulation can behave differently and in some cases incorporation into the external phase, prior to emulsification can be advantageous. Addition to the internal phase is not recommended because it is most likely that the majority of sensiva® PA 20 will remain in the internal phase. This will prevent the total antimicrobial efficacy from being achieved.

Solubility

sensiva® PA 20 has a limited solubility in water (approx. 1.0%) and is highly soluble in organic solvents, like alcohols and glycols. The solubility of sensiva® PA 20 in selected solvents is listed below. The solubility in the single solvents is influenced by the whole formulation and has to be tested in each individual case.

	approx.
Water	1.0%
Ethanol	≥ 50%
Propylene Glycol	≥ 50%
Propylene Glycol (10% in water)	1.0%
Glycerin (85%)	5.0%
Mineral Oil 30 mPas	2.0%
Dimethicone	1.0%
Cyclopentasiloxane	2.0%

Solubility tests were conducted at room temperature (approx. 22°C).

Physical-chemical Data	
Appearance:	colorless to light yellow liquid
Color index (Hazen):	max. 60
Odor:	characteristic
Density (20°C):	approx. 1.013 g/cm ³
Refractive Index n_D^{20} :	approx. 1.524
pH value (7 g/l):	5 – 7
Flash point (DIN 51 758):	> 100°C
Flow time (DIN 53 211/20°C):	< 15 s
Water solubility (24°C):	10 g/l
Solidification temperature:	< -18°C
Viscosity (Brookfield-RVT, 20°C, Spindle 1, 10 rpm)	approx. 20 mPas

Material compatibility*

Concentrate

In the material compatibility tests with the concentrate of sensiva® PA 20 stainless steel, brass, copper, zinc and aluminum, as well as polyethylene (PE), polyoxymethylene (POM), polyamide (PA) and hard polyvinyl chloride (hard PVC) proved to be suitable materials for handling the undiluted product. Polycarbonate (PC), polymethylmethacrylate (PMMA), polyethyleneterephthalate (PET), polysulphone (PSU), polystyrene (PS) and acrylnitrilbutadienstyrolcopolymer (ABS) should not be used. Other non-metallic materials should be checked for their suitability. When handling undiluted sensiva® PA 20 fluorine rubber, polymethylsiloxane or polytetrafluorethylene (PTFE) should be preferred as sealing material. Other sealing materials can show swelling or washing out or lead to pronounced discoloration of sensiva® PA 20.

Dilutions

The behavior of sensiva® PA 20 in 1.0% aqueous solution with regard to material compatibility of metals and plastics was not significantly different from that of the tap water used for the dilution. The only exception is polyamide which can show more swelling. Other sealing materials can show swelling or washing out or lead to pronounced discoloration of sensiva® PA 20.

* Please check compatibility in individual cases.

Storage

Store at room temperature in the original container. Protect from heat and direct sunlight.

Shelf life

12 months at recommended storage conditions. Product specification is valid for the entire shelf life.

Toxicology

sensiva® PA 20 is used as a multifunctional additive for cosmetics and toiletries with a recommended use concentration of 0.5 – 1.0%. Both components of sensiva® PA 20 have undergone toxicological testing. On the basis of the results, with the given upper concentration of 1.0%, sensiva® PA 20 can be considered safe for the use in cosmetics and toiletries.

Environmental information

Schülke & Mayr GmbH has DIN EN ISO 9001 and EN ISO 14001 certification and has a validated environmental management system in accordance with the Eco Audit Regulation (Reg. No. D-150-00003). The 10 kg containers and 200 kg drums used by schülke are made of polyethylene (HDPE) and are labeled accordingly. The labels are made of polyethylene (PE). Our packaging materials contain no PVC and are recyclable. Samples of our products are supplied together with extensive information and are supported by personal advice.

Industrial property rights

sensiva® PA 20 is covered by protective rights.



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Our recommendations regarding our products are based on in-depth scientific testing in our Research Department; they are given in good faith, but no liability can be derived from them. It is the responsibility of the final product manufacturer to assure that claims made for the final product are in conformance with all applicable local laws. In other respect our Conditions of Sale and Supply apply.

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