
Technical Information

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Bisabolol

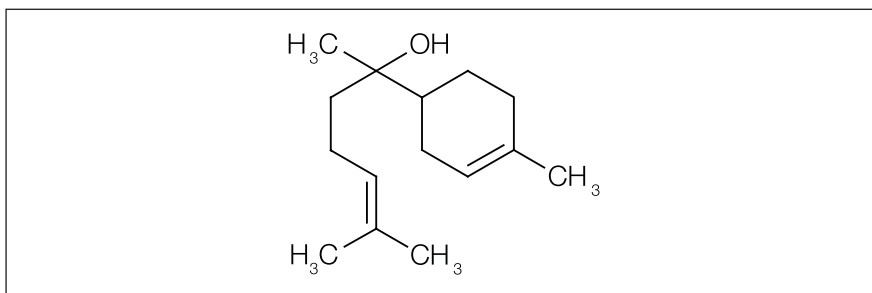
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**Active ingredient for the cosmetics industry.
Natural care for the skin.**

cosmetic
SOLUTIONS

- Hair Care
- **Skin Care**
- Oral Care

 **BASF**
The Chemical Company

Structural formula**INCI name**

Bisabolol

Synonyms

alpha-Bisabolol, Levomenol

Chemical name

1-Methyl-4 (1,5-dimethyl-1-hydroxyhex-4(5)-enyl)cyclohexene

Molecular formula $C_{15}H_{26}O$ **Molar mass**

222.4 g/mol

CAS-No.

515-69-5

EINECS-No.

208-205-9

Description

Bisabolol is a clear, colorless to slightly yellowish liquid with a faint, floral, sweetish odor

Solubility

Bisabolol is soluble in ethanol, 2-propanol and in natural, mineral and synthetic fats and oils. It is insoluble in water and glycerol. Clear aqueous solutions can be prepared with the aid of solubilizers, e.g. Cremophor® CO 40

Product LineBisabolol rac.

is of synthetic origin. It contains the four isomers of alpha-Bisabolol which all occur in nature

Bisabolol nat.is obtained from natural raw material. It is the (-)-alpha-Bisabolol isomer which is the active principle of the traditional medical plant chamomile (*Matricaria chamomilla*)**Specification**

Bisabolol nat.		
Parameter	Specification Limits	Method
Appearance	Clear, colorless to slightly yellowish liquid	
Purity	Minimum 95%	05/0074.00
Optical Rotation $[\alpha]_D^{20}$	- 58° to - 55°	05/0083.00
Refractive Index n_D^{20}	Minimum 1.493 Maximum 1.497	05/0059.00

Bisabolol rac.		
Parameter	Specification Limits	Method
Appearance	Clear, colorless to slightly yellowish liquid	
Purity	Minimum 85%	05/0074.00
Refractive Index n_D^{20}	Minimum 1.492 Maximum 1.498	05/0059.00

The main secondary components are farnesols.

Application

Bisabolol is the main active ingredient of the medical plant chamomile (*Matricaria chamomilla*) which is used in traditional medicine for hundreds of years.

Bisabolol protects and heals the skin from the effects of daily stress. It is a naturally occurring active ingredient that accelerates the healing process of skin. Bisabolol can be used with confidence in personal care formulations, especially in products for sensitive skin, baby care, after-shave, and after-sun application. Its added anti-inflammatory properties make it a truly versatile active ingredient for skin care products.

Stability and storage

If it is stored at around 20°C in the tightly sealed original containers, Bisabolol has a shelf life of at least 24 months.

In-vivo study

Inhibition of UV-induced erythema in double blind study

10 people (male and female, 25-59 years old) were treated with an o/w formulation that contained Bisabolol in 0,5% concentration. Both Bisabolol rac and Bisabolol nat were tested in their ability to prevent irritation caused by UV-radiation.

Prior to the study, the following pattern of 3 x 6 areas was marked on the back of each volunteer.

0	0.5	1.0	1.25	1.5	1.75	MED	
							Bisabolol rac.
							Bisabolol nat.
							untreated

A total of 5 applications of the o/w formulation which contained Bisabolol rac or nat, respectively were give prior to UV-irradiation in the top and middle row of the pattern. (The bottom line remained untreated as control.)

This meant application of 2 mg/cm² of finished formulation twice daily on day 1 and 2. On day 3 the fifth application was given followed by UV-exposure 20 min. later.

The UV-exposure was done in form of a step of light so the 6 columns on the back of each volunteer were exposed to the following doses of UV-light for each substance: 0; 0.5; 1.0; 1.25; 1.5; 1.75 MED.

The results were analyzed on day 5 exactly 48 hours after the UV-exposure.

Thanks to the above mentioned pattern on the back of each of the 10 volunteers, 10 x 5 = 50 exposed areas could be analyzed for each compound and compared with untreated but UV-exposed areas. The results „better“, „same“, or „worse“ than untreated but equivalently exposed were analyzed statistically.

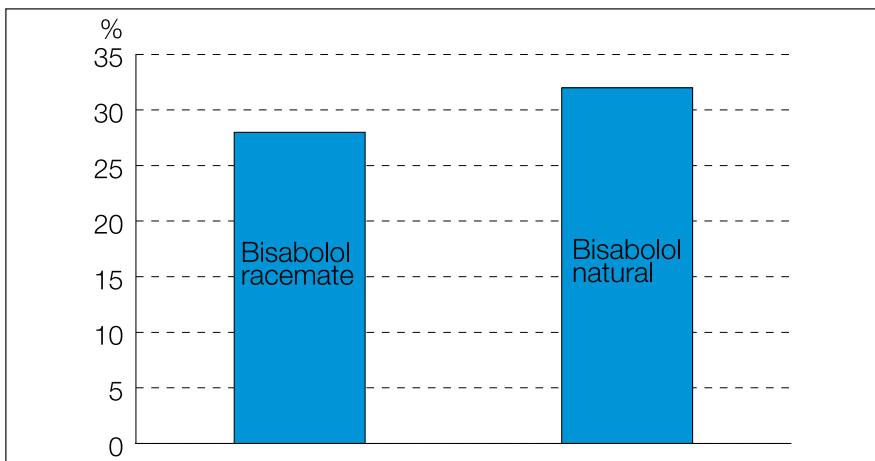
Results:

Percentage of UV-exposed areas which show less irritation compared with control after 48 hrs.:

Bisabolol rac: 28%

Bisabolol nat: 32%

(worse none, rest same as control)



Wilcoxon Test of matched pairs shows that the difference between Bisabolol rac and nat is statistically not significant ($p < 0.5$).

Conclusion:

Both Bisabolol rac. and nat. are very effective active ingredients for inhibiting UV-induced erythema.

They are therefore perfectly suited for all kinds of skin-care products that protect the skin from daily stress.

Typical formulations

Shaving foam „Extra creamy“

No. 07/00038

	%	Ingredients	Supplier	INCI name
A	3.30	Stearic Acid	(27)	Palmitic Acid
	1.70	Myristic Acid	(44)	Myristic Acid
	0.50	Cremophor® A 6	(1)	Ceteareth-6, Stearyl Alcohol
	0.50	Cremophor® A 25	(1)	Ceteareth-25
	3.20	Triethanolamine Care	(1)	Triethanolamine
	2.00	Paraffin Oil, highly fluid		Mineral Oil
	1.00	Isopropylmyristate	(27)	Isopropyl Myristate
	0.50	Lanette O	(27)	Cetearyl Alcohol
B	7.40	Luviquat® Care	(1)	Polyquaternium-44
	5.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	q.s.	Preservative		
	74.70	Water dem.		Aqua
C	0.20	Bisabolol rac.	(1)	Bisabolol
	q.s.	Perfume		

Production:

Saponify phase A at about 80°C for one hour. Heat phase B to about 80°C and stir it into phase A whilst homogenizing. Cool to about 40°C whilst stirring, add phase C and homogenize again.

Filling:

96% active ingredient
4% Propane/Butane 3.5 bar (20°C)

Properties:

Viscosity: 1600 mPa·s Brookfield RVD VII+
pH value: 8.5

After shave balm**No. 07/00040**

	%	Ingredients	Supplier	INCI name
A	0.25	Pemulen TR-1	(6)	Acrylates/C10-30 Alkyl Acrylate Crosspolymer
	1.50	Vitamine E Acetate	(1)	Tocopheryl Acetate
	0.20	Bisabolol rac.	(1)	Bisabolol
	10.00	Miglyol 812	(11)	Caprylic/Capric Triglyceride
	0.20	Perfume "Round" 250 090"	(70)	Perfume
	1.00	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
B	1.00	D-Panthenol USP	(1)	Panthenol
	15.00	Ethanol 96%		Alcohol
	5.00	Glycerin 87%	(20)	Glycerin
	0.05.	Tylose H 4000	(28)	Hydroxyethyl Cellulose
	65.72	Water dem.		Aqua
C	0.08	Sodium Hydroxide	(20)	Sodium Hydroxide

Production:

Weigh out the components of phase A and mix them. Stir phase B into phase A whilst homogenizing and continue homogenizing for a while. Neutralize with phase C and homogenize again.

Properties:

Viscosity: 6000 mPa·s Brookfield RVD VII+
pH value: 7.0

Pre shave**No. 07/00044**

	%	Ingredients	Supplier	INCI name
A	81.70	Ethanol		Alcohol
	3.00	Vitamine E Acetate	(1)	Tocopheryl Acetate
	1.00	Bisabolol rac.	(1)	Bisabolol
	0.20	Perfume		
	0.10	Menthol	(20)	Menthol
	4.00	Luvitol® EHO	(1)	Cetearyl Ethylhexanoate
	2.00	Eutanol G	(27)	Octyldodecanol
	2.00	Miglyol 812	(11)	Caprylic/Capric Triglyceride
	2.00.	D-Panthenol USP	(1)	Panthenol
	2.00	Whitch Hazel Distillate	(212)	Hamamelis Virginiana (Whitch Hazel) Distillate
	2.00	Jojoba Oil		Simmondsia Chinensis (Jojoba) Oil

Production:

Weigh out the components of phase A and dissolve them clearly.

Skin conditioning gel with vitamins**No. 62/00099**

	%	Ingredients	Supplier	INCI name
A	4.00	Cremophor® CO 410	(1)	PEG-40 Hydrogenated Castor Oil
	15.00	Ethanol		Alcohol
	0.10	Bisabolol rac.	(1)	Bisabolol
	0.50	Vitamin E Acetate	(1)	Tocopheryl Acetate
	q.s.	Perfume		
B	3.00	D-Panthenol USP	(1)	Panthenol
	0.60	Carbopol 940	(6)	Carbomer
	76.40	Water, dem.		Aqua dem.
C	0.80	Triethanolamine Care	(1)	Triethanolamine

Production:

Dissolve phase A clearly.
Allow phase B to swell and neutralize it with phase C. Stir phase A into the neutralized phases B + C and homogenize.

Properties:

Viscosity: 57600 mPa·s Brookfield RVD VII+
pH value: 7.7

Deostick transparent**No. 63/00017**

	%	Ingredients	Supplier	INCI name
A	3.00	Cremophor® A 25	(1)	Ceteareth-25
	3.00	Cremophor® CO 40	(1)	PEG-40 Hydrogenated Castor Oil
	0.20	Bisabolol rac.	(1)	Bisabolol
	1.00	Vitamin E Acetate	(1)	Tocopheryl Acetate
	3.00	Perfume		
	5.00	Sodium Stearate C1	(44)	Sodium Stearate
	0.50	Irgasan DP 300	(12)	Triclosan
	15.00	Glycerin 87%	(20)	Glycerin
	60.00	1,2-Propylene Glycol Care	(1)	Propylene Glycol
	9.30	Water dem.		Aqua

Production:

Weigh out the components of phase A and melt them.
Cast the melted mixture into appropriate moulds.

Properties:

pH value: 9.0

Suppliers

1. **BASF Aktiengesellschaft**
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6. **Noveon Inc.**
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Tel.: 1 216 447-5000
10. **Bärlocher GmbH**
Freisinger Straße 1, 85716 Unterschleißheim, Germany
Tel.: 089 14373-0
Fax: 089 14373-312
11. **Sasol Germany GmbH**
Paul Baumann-Strasse 1, D-45764 Marl, Germany
Phone: 49 2365 49-4863
Fax: 49 2365 49-6935
12. **Ciba Geigy AG**
79664 Wehr/Baden, Germany
Tel.: 07762 82-0
17. **Dragoco Gerberding & Co. GmbH**
Dragocostraße; 37601 Holzminden, Germany
Tel.: 05531 970
Fax: 05531 971391
20. **Merck KGaA**
Frankfurter Straße 250; 64293 Darmstadt, Germany
Tel.: 49 6151 72-7869
Fax: 49 6151 728333
27. **Cognis Deutschland GmbH**
Care Chemicals
Henkelstr. 67 or Postfach 130164, 40551 Düsseldorf, Germany
Tel.: 49 211 9740-0
Fax: 49 211 798-4008
28. **Clariant GmbH - Functional Chemicals Division,
Personal Care**
65926 Frankfurt/Main, Germany
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Note

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