



## Saltidin® Aerosol 20 % oil-based

Saltidin® (known as Picaridin in the US)

**Issued in February 2011**

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## 1. Preliminary Remarks

The use of repellents by application to skin and clothing is an important means of human protection against blood-sucking insects and ticks as well as arthropod-borne disease transmission.

Saltidin® belongs to a new generation of synthetic repellents developed as an alternative to DEET.

Developed by Bayer AG using molecular modelling techniques, Saltidin® showed the best performance among more than 800 substances against a variety of arthropods and the best characteristics as far as safety and compatibility with skin and plastic materials are concerned.

Presently, this molecule is owned by Saltigo GmbH (LANXESS Group) and is marketed by LANXESS Corporation (previously a Division of Bayer Corporation) in the USA.

Saltidin® is a safe and reliable insect repellent and stands for effective protection against various diseases transmitted by:

- ✓ Mosquitoes
- ✓ Ticks
- ✓ Flies
- ✓ Horseflies
- ✓ Sandflies
- ✓ Biting midges
- ✓ Fleas
- ✓ Ants
- ✓ Cockroaches

Due to its broad spectrum of efficacy, its favourable toxicological and cosmetic properties, Saltidin® can be safely used by consumers.

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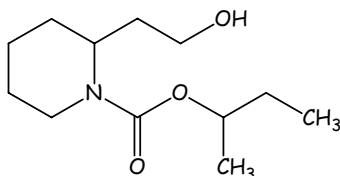
## 2. Physical and Chemical Properties

Chemical Name: 1-PIPERIDINECARBOXYLIC ACID, 2-(2-HYDROXY-ETHYL), 1-METHYLPROPYLESTER

Commercial Name: Saltidin®

Other Names: Icaridin, KBR 3023, Bayrepel™, Picaridin, (US EPA Registration)

Structure:



Empirical Formula: C<sub>12</sub>H<sub>23</sub>NO<sub>3</sub>

ELINCS Number 423-210-8

CAS Number 119515-38-7

Molecular weight: 229.3 g/mol

Melting point: < -170 °C

Boiling point: 272 °C at 1013 hPa

Viscosity: 30.7 sec. flow time accord. To DIN 53211, Dynamic: 129 mPa.s at 20 °C

Vapour pressure: 3.4 x 10<sup>-4</sup> hPa at 20 °C  
5.9 x 10<sup>-4</sup> hPa at 25 °C  
7.1 x 10<sup>-3</sup> hPa at 50 °C

Flash point: 142 °C

Density: 1.036 g/m<sup>3</sup> at 20 °C

Solubility: In water: 8.6 g/L at 20 °C  
In propane-2-ol: > 250 g/L at 20 °C  
In acetone: > 250 g/L at 20 °C  
In n-heptane: > 250 g/L at 20 °C  
In xylene: > 250 g/L at 20 °C

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Appearance:	Clear liquid, colourless to brownish
Odour:	Slightly odorous
Storage conditions:	Store at room temperature

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### 3. Formulation

#### Saltidin® Aerosol 20% oil-based

##### 3.1 Aerosol formulation:

No	Ingredient	CAS no	Supplier	Content %
1	Saltidin®	119515-38-7	Saltigo GmbH	20,32
2	White Oil Pionier 2076		Hansen&Rosenthal KG	14,48
3	Isopropyl myristate	110-27-0		10,00
4	Ethanol denatured	64-17-5		15,00
5	Perfume Floral D 12889 G	Not available	Symrise	0,20
6	Propane/Butane 2,7bar	Propellant		40,00

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### 3.2 Premix formulation:

No	Ingredient	CAS no	Supplier	Content %
1	Saltidin®	119515-38-7	Saltigo GmbH	33,88
2	White Oil Pionier 2076		Hansen&Rosenthal KG	24,12
3	Isopropyl myristate	110-27-0	Hansen&Rosenthal KG	16,67
4	Ethanol denatured	64-17-5		25,00
5	Perfume Floral D 12889 G	Not available	Symrise	0,33

### 3.3 Premix preparation

Mix all ingredients of the premix phase at room temperature and stir for 15 min

### 3.4 Premix physical data:

Oudor	Perfume conform
Appearance	Clear, light yellow liquid
Density [g/cm <sup>3</sup> ]	0,850 - 0,867
Content Saltidin® [%]	32,8 – 34,8

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### 3.5 Aerosol preparation:

Can filling: 60% Saltidin® premix and 40% propellant Propane/Butane 2,7bar

### 3.6 Packaging material:

Can	Material	Valve	Supplier valve	Supplier can
Monoblock	Aluminium	2x.020 360° Buna SH65 gasket Activator: Kosm. + Aqua	DPV Hattersheim	Tubex
Necked in	Tin plate gold coated	2x.020 360° Buna SH65 gasket Activator: Kosm. + Aqua	DPV Hattersheim	Tubex

The above formulation is intended solely as a guide for our business partners and others interested in our product. As the conditions of use and application of the suggested formulation are beyond our control, it is imperative that it be tested to determine, to your satisfaction, whether it is suitable for your intended use(s) and application(s). This application-specific analysis at least must include testing to determine suitability from a technical, as well as health, safety and environmental standpoints. Further, although the ingredients, quantities thereof and properties of compounds or finished goods mentioned herein reflect our recommendation at the time of publication, this guide may not be subject to continuous review and/or updating, and you agree that use is undertaken at your sole risk. All information is given without warranty or guarantee, and it is expressly understood and agreed that you assume, and hereby expressly release us from all liability, in fort contract or otherwise, incurred in connection with the use of this guide.

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## 4. Efficacy

The efficacy of the proposed formulation has been assessed on the basis of available data, in accordance with the above intended usages on behalf of Saltigo GmbH (Germany). Reported here below are efficacy data against mosquitoes, ticks, flies, sandflies, biting midges and fleas obtained with formulations containing 10 - 20 % of Saltidin®. The studies are summarized in the report: "Summary Report of Efficacy Data Saltidin®", February 2011.

### 4.1 Effectiveness against Mosquitoes

Saltidin® has been shown to be a safe and effective repellent against various species of mosquitoes (e. g., *Aedes aegypti*, *Aedes albopictus*, *Culex quinquefasciatus*, and *Anopheles dirus*). This type of Aerosol formulation was used for testing the efficacy of Saltidin® on the most aggressive Mosquito *Aedes aegypti* in cage tests on human volunteers.

Cage tests on human volunteers were conducted during the development of the product to estimate the efficacy of the product under standardized conditions.

In the study by Luepkes (2008), the dimension of the cages was 90 x 30 x 40 cm and the application rate was 150 µg/90 cm<sup>2</sup>.

The results showed that the 20 % Aerosol formulation provided 6 - 7 hours protection against the mosquito *Aedes aegypti* (Table 1).

Table 1: Efficacy (Protection time = PT) of 20 % Saltidin® Aerosol formulation against mosquitoes in cage tests.

Test Species	Test Location (Time of test)	Saltidin®		DEET		Study ID/Reference
		(%)	PT (h)	(%)	PT (h)	
<i>Aedes aegypti</i>	BioGenius GmbH, Monheim, Germany	20.0	6.4	Not determined		Luepkes, 2008 <sup>[1]</sup>

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## 5. Customer information

Further information on toxicity tests and effectiveness of Saltidin® formulations are listed in the table "Possible formulations" under the link "All Family Insect Repellent Spray 20%" and "All Family Insect Repellent Cream 20%".

## 6. References

- [1] Luepkes, K. H., (2008) Mosquito repellent effect against *Aedes aegypti* Institute BioGenius GmbH

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