



**Environmental Data Sheet**

## **PAINTY INDOOR PAINT V2 WHITE**

**In accordance with ISO 14025+**

**Painty GmbH, Müllerstraße 5,  
10000 Müllersheim, Germany**

## Product specification

### Product description

Silicate wall paint for interior application

### Technical properties

Spreading rate: EASY Paints have a spreading rate of 4 m<sup>2</sup> per kg of product (with 98 % opacity) (1).

Wet scrub resistance: class 3 (2)

Wash proof (3)

Drying time: 24 hours (at 20°C)

Expected life time: 5 years, supporting data and justification under: <http://www.painty.com/servicelife>

- (1) According to ISO 6504/1 (Paints and varnishes, Part 1: Kubelka-Munk method for white and light-coloured paints) or ISO 6504/3
- (2) According to EN 13300 and EN ISO 11998.
- (3) According to DIN 53778



## Composition

### Main components

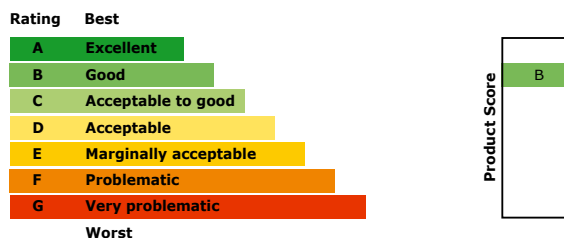
Water, titan (IV)-oxide, potassium water glass, calcium carbonate, kaolin, acrylic ester, silicium dioxide/ aluminium dioxid, hydrophobic agent, stabilizer, thickener, defoaming agent, wetting agent, preservative

### Classified substances in accordance with EU Directive 67/548 and their classification

< 5 w% potassium water glass (CAS 1312-76-1) – irritant (Xi; R 36/38)

< 0,003 w% mixture 3:1 of 5-Chlor-2-methyl-2H-isothiazol-3-on and 2-Methyl-2H-isothiazol-3-on (CAS 55965-84-9) – toxic (T, R 23/24/25), corrosive (C, R 34, R 43), dangerous for the environment (N, R 50/53)

### Chemical rating



The rating is performed in accordance with the method by healthy buildings group described in: <http://www.healthybuildingsgroup.com>

### Classification of product

### Other relevant information

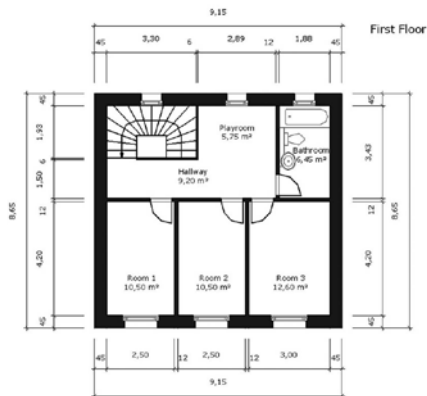
< 0,1 w% SVOC

### Legal aspects

Maximum VOC content limit values for interior matt walls and ceilings, water based according to EC Directive 2004/42/EG : < 75 g/l (actual), < 30 g/l (after 01 01 2010)

PAINTY is significantly below this threshold (1 g/l VOC)

## Product life cycle information/assumptions and choices



### Model house

The model house is a single-family-house with two storeys and a cellar as storage room. The second floor is the occupied attic beneath the pent roof. The building has 3 rooms in the upper floor of which 'room 2' is chosen as a model room for the assessment of environmental impacts and emissions into indoor air. The walls and ceilings are painted with PAINTY every 5 years.

- Parameters of 'room 2':
- Volume: 31.1 m<sup>3</sup>
  - Area of walls and ceilings to be painted: 46,5 m<sup>2</sup>
  - Ratio of painted surface area to volume: 1,5 m<sup>2</sup>/m<sup>3</sup>
  - Ventilation rate: 0.5

Detailed description of the model house: <http://www.modelhouse.eu>

### Functional unit

Quantity of PAINTY INDOOR PAINT to be applied in model room 2 over a consideration period of 50 years (1 painting every 5 years, 0.25 kg per m<sup>2</sup>):  
 $46.5 \times 50/5 \times 0,25 = 116 \text{ kg}$

### Before paint production

„Before paint production“ includes extraction of raw materials, transportation, production of energy and production of all items used in the production at the plant (including auxiliary materials). Data are taken from the ecoinvent Data v1.1 database (<http://www.ecoinvent.com>).

### Production of paint

Only site specific data from the production of PAINTY at the factory in Germany are used (i.e. emissions into air, water, soil and waste incurring on plant).

### Application

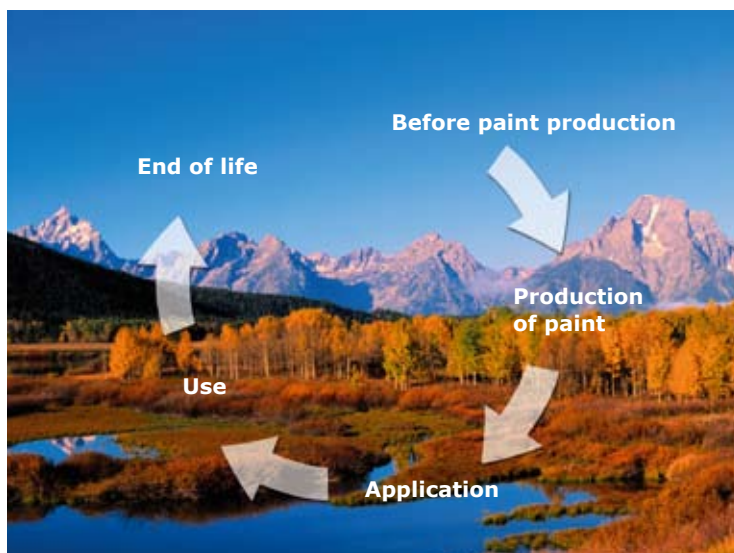
Covers the painting and disposal of painting residues and packaging.

### Use

Covers the painting, i.e. the emissions during and after painting. The results are calculated based on a model-house as described below.

### End of life

Covers post consumer disposal of paint. It has been assumed that PAINTY is landfilled together with the mineral underground.



## Before paint production

### Pre-production processes

The production of methacrylic butyl ester and titanium dioxide are most important from an environmental point of view. The production of the acrylic ester is energy-intensive, more detailed information of the production process is not available. Titanium dioxide see 'Human and environmental risk assessment' below.

### LCIA-results before paint formulation on plant per functional unit (116 kg paint):

Impact category	unit	total before plant	titandioxide	acrylic binder
global warming potential	kg CO2 eq	125	62,5	16.7
photochemical oxidation pot.	kg C2H2	0,03	0,01	0,01
acidification potential	kg SO2 eq	0,71	0,34	0,08
eutrophication potential	kg PO4--- eq	0,14	0,09	0,01
primary energy content				
non-renewable	MJ	2858	1488	516
renewable	MJ	111	60,2	10,4

### Human and environmental risk assessment

The major environmental concern relates to the production of TiO<sub>2</sub> which results in high consumption of water and energy, emission to air and discharges to water. As a consequence Painty GmbH reduced the amount of TiO<sub>2</sub> in Painty as far as possible to a value which is far below the limit value contained in the European eco-label criteria for indoor paints and varnishes (see below).

In addition, Painty GmbH established criteria for its suppliers with respect to the production of the pigment based on the Reference Document on Best Available Techniques (BREF) for the Manufacture of Large Volume Inorganic Chemicals – Solids and Others industry, October 2006. It establishes the BAT for the production of TiO<sub>2</sub>. Painty GmbH requires evidence from its suppliers to comply with BAT. In particular, the following requirements must be kept:

Total emission levels to air associated with the application of BAT, are:

- Dust/particulate matter 0.1 – 0.2 kg/t TiO<sub>2</sub> pigment
- SO<sub>2</sub> 1.3 – 1.7 kg/t TiO<sub>2</sub> pigment
- HCl 0.03 – 0.1 kg/t TiO<sub>2</sub> pigment

Total emission levels to water associated with the application of BAT, are:

- Hydrochloric acid 10 – 14 kg/t TiO<sub>2</sub> pigment
- Chlorides 38 – 330 kg/t TiO<sub>2</sub> pigment
- Suspended solids 0.5 – 2.5 kg/t TiO<sub>2</sub> pigment
- Iron compounds 0.01 – 0.6 kg/t TiO<sub>2</sub> pigment

Following the analysis of the two main production methods – the chloride and the sulphate process – the findings of this document are that the chloride process route offers better energy efficiency. The overall energy efficiency in the chloride process is in the range of 17 – 25 GJ/t TiO<sub>2</sub> pigment and the overall energy efficiency in the sulphate process is in the range of 23 – 41 GJ/t TiO<sub>2</sub> pigment (for plants operated at full capacity level). Consequently Painty GmbH requires from its suppliers products from the chloride process only.

### Legal aspects

The titanium dioxide used must be produced in accordance with Council Directive 92/112 EEC. In addition, the Council Directive 96/61/EC concerning integrated pollution prevention and control applies.



## Production of paint

### Production processes

The raw materials are stored in enclosed containers. Upon request they are automatically supplied to scales. The weighed ingredients are merged in a vessel and finally packed in polypropylen buckets.

---

### LCIA-results of paint production per functional unit (116 kg paint):

Impact category	unit	total plant
global warming potential	kg CO2 eq	0,00
photochemical oxidation potential	kg C2H2	0,00
acidification potential	kg SO2 eq	0,00
eutrophication potential	kg PO4--- eq	0,00
primary energy content		
non-renewable	MJ	59,9
renewable	MJ	1,5

### Human and environmental risk assessment

The reduction of emissions of VOCs – the main issue in the field of production – has been one of the main objective of Painty GmbH for a long time. The total emissions of VOCs. For instance, the VOC emissions in the flue gas are as low as 2 mg C/m<sup>3</sup>, which is a factor of 10 below the legal requirement of 20 mg C/m<sup>3</sup>

---

### Legal aspects

31. Immission Control Ordinance. Painty has fully implemented the requirements already 5 years before the target date 2007.

---



## Application of paint

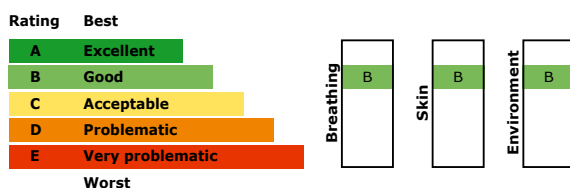
### Toxicological information

Risk phrases:

Water hazard class: 1 (low)

GISCODE: M-SK01 Silikatfarben (silicate paint)

### Risk assessment



The rating is performed in accordance with the method by healthy buildings group described in: [www.healthbuildingsgroup.com](http://www.healthbuildingsgroup.com)

Explanation: PAINTY reaches a good score which is equal or superior to comparable indoor paints. However, certain protective measures are necessary as outlined below.

### Protective measures

General protective and hygienic measures:

- Observe the usual precautionary measures when handling chemicals.
- Immediately remove soiled, saturated clothing.
- Keep away from food, beverages and animal feed.
- Do not eat, drink or smoke while working.
- Use skin protection cream for preventive skin protection.
- Wash hands before pauses and after work.
- Avoid contact with eyes and skin.

Respiratory equipment: Not necessary if room is well-ventilated.

Protection of hands: Rubber gloves

Eye protection: Safety glasses if there is a risk of splashes

Body protection: Protective work clothing.



### First aid

After inhalation: Supply fresh air; consult doctor in case of symptoms.

After skin contact: Wash immediately with water and soap and rinse thoroughly.

If skin irritation continues, consult a doctor.

After eye contact: Rinse opened eye for several minutes under running water.

Call a doctor immediately.

After swallowing: Rinse out mouth and then drink plenty of water.

Do not induce vomiting; call for medical help immediately.

Information for doctor: Danger Long-term or repeated exposure may cause inflammation of the skin (dermatitis). Treatment to avoid dermatitis (skin inflammation), use skin cream.

### Legal aspects

Disposal properties:

Liquid waste must be transported to facilities for collecting hazardous waste or to other similar place to be disposed of as hazardous waste.

European waste code: 08 01 12

Hardened paint and painting waste can usually be taken to a public dumping area. Empty, dry paint containers can usually be taken to public dumping areas or to collection centres for plastic paint packages.

Plastic containers that are taken to recycling must be brush dry/empty, which means that they must not contain wet paint. The bottom of the containers must be perforated to ensure that the containers are ventilated.

## Use phase

### LCIA-results of paint application and use:

(116 kg paint)

Impact category	unit	total plant
global warming potential	kg CO2 eq	0,08
photochemical oxidation pot.	kg C2H2	1,57
acidification potential	kg SO2 eq	0,00
eutrophication potential	kg PO4--- eq	0,00
primary energy content		
non-renewable	MJ	1,57
renewable	MJ	0,01

### Chamber testing for volatile organic compounds

The product is subjected to a chamber testing.

Chamber test method: E DIN EN 13419-1; product category rules PCR 0601

Sample preparation: E DIN EN 13419-3

Analysis: DIN ISO 16000-6

Test chamber conditioned according to parameters of model room.

For a detailed description of the testing methods see Product Category Rule 0601

<http://www.chambertest.eu/RL0601.htm>

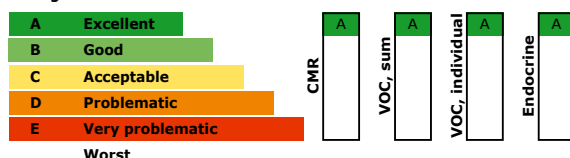


### Indoor Air Quality

#### Detected substances in test chamber:

Substance	value after 24 h in µg/m³	value after 28 d in µg/m³
Formaldehyde	2,2	n.d
1-Decanol	101	45
1.2 Propandiol	916	11,3
2-Ethyl-1-hexanol	4,6	8,6
Alkane C15-C18	13,8	3,1
TVOC	1037	68
SVOC (sum)	-	6

Rating Best



Indoor Air Indicator:

**A**

The rating is performed in accordance with the method by healthy buildings group described in: [www.healthbuildingsgroup.com](http://www.healthbuildingsgroup.com)

Explanation: PAINTY reaches the best score which is equal or superior to comparable indoor paints.

## End-of-life

### End-of-life processes

PAINTY is disposed together with the mineral underground (either recycled or landfilled).

### LCIA-results of disposal:

(116 kg paint)  
not relevant

### Human and environmental risk assessment

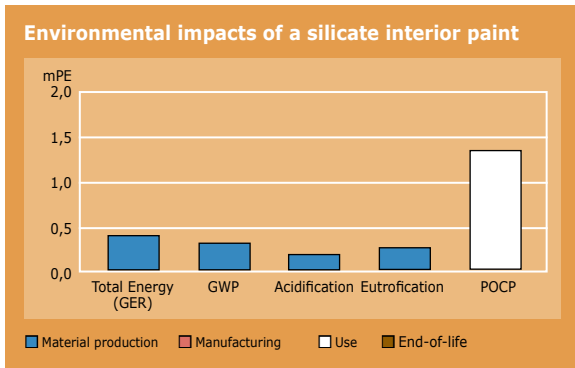
PAINTY contains very low amounts of organic and metallic compounds. It silicifies with the mineral underground so that human and environmental risks through landfill can be excluded.

### Legal aspects

European waste code: 08 01 12

## Total life cycle

### Contribution of different life cycle phases to life cycle indicator results



### Explanation

The figure shows how much a typical silicate interior wall paint contributes – in selected impact categories – to the daily impacts of an average citizen in the EU. The unit used – mPE – is one thousandth of the daily impact caused by the average citizen – or 0.1%. It can e.g. be seen that the energy consumption for painting the model room every 5 years only accounts for 0,04% of the daily consumption of energy and 0,03% of the contribution to global warming. However, the photochemical ozone creation potential (POCP) is of some relevance.

The figure does not address chemical impacts on human health and ecosystems or indoor air quality. This is done by eco-labelling schemes, such as the "Flower", which have established criteria for these aspects. Please see below.

## Life cycle comparisons

### Rating of life cycle indicator results using the following scales:

Environmental impact in mPE	Concern level
≤ 0.1	Almost insignificant
0.1-0.5	Very low
0,5-1	Low
1-5	Some
5-20	Significant
20-50	High
> 50	Very High

### Explanation

When compared to the global and regional environmental impacts from other products and activities, silicate indoor paints are judged to be of very low concern, primarily because only small amounts of energy and resources are used to cover the need of the average citizen.

See table below for comparative figures for different products.

	Energy Consumption	Global warming	Acidification	Eutrophication	Waste	POCP
<b>Energy-using products</b>						
Dishwasher	20,6	15,9	10,9	29,9	1,7	
Television	9,7	7,6	5,0	0,0	0,6	
PC	23,1	19,3	13,2	0,2	4,7	
Fridge-freezer	22,9	18,0	12,2	0,2	2,7	
Mobile phone	0,9	0,8	0,7			0,2
<b>Building products</b>						
<b>Silicate ind. paint room</b>	<b>0,40</b>	<b>0,29</b>	<b>0,19</b>	<b>0,24</b>	<b>≤0,1</b>	<b>1,28</b>
<b>Silicate ind. paint house</b>	<b>2,40</b>	<b>1,7</b>	<b>1,1</b>	<b>1,4</b>	<b>≤0,1</b>	<b>7,7</b>
Wood flooring	12,2	2,9	6,0	5,7		39,2
Insulation	0,7	0,9	0,9	0,5		1,0
<b>Reference product</b>						
10 km in an average car	71.8	82.6	15.4	58.5	3.8	104,2

## Compliance with European eco-label criteria for indoor paints and varnishes (2002/739/EC)

Eco-label awarded


No

Criteria regarding	Criteria fulfilled	Comment
1. White pigments	Yes	The white pigment content is below 38 g per m <sup>2</sup> of dry film (25 g per m <sup>2</sup> of dry film), TiO <sub>2</sub> production related requirements are kept.
2. VOCs	Yes	The content of volatile organic compounds (VOC) does not exceed 30 g/l (9 g/l).
3. Volatile aromatics	Yes	The content of volatile aromatic compounds is less than 0,15% of the product (below 0,01%)
4. Heavy metals	Yes	Heavy metals (i.e. cadmium, lead, chromium VI, mercury, arsenic) have not been used (all elements below 10 ppm).
5. Dangerous substances	No	<p>PAINTY is not classified as very toxic, toxic, dangerous to the environment, carcinogenic, toxic for reproduction or mutagenic in accordance with Directive 1999/45/EC (see section on composition above).</p> <p>None of PAINTY's ingredients other than the preservative is classified as very toxic, toxic, dangerous to the environment, carcinogenic, toxic for reproduction or mutagenic in accordance with Directive 1999/45/EC (see section on composition above).</p> <p>Alkylphenoethoxylates (APEOs) have not been used.</p> <p>Glycol ethers have not been used.</p> <p>The content of isothiazolinone compounds is lower than 500 ppm (below 30 ppm).</p> <p>The content of the mixture of 5-chloro-2-methyl-2H-isothiazol-3-one (EC No 247-500-7) and 2-methyl-2H-isothiazol-3-one (EC No 220-239-6) (3:1) exceeds 15 ppm (below 30 ppm).</p> <p>The content of free formaldehyde present is lower than 10 mg/kg (below 1 mg/kg).</p>
6. Fitness for use	Yes	Meets the requirements concerning: Spreading rate Wet scrub resistance Resistance to water Adhesion Abrasion
7. Consumer information	Yes	<p>Consumer information is attached to the packaging (e.g. information on the use, substrate and conditions of use).</p> <p>Furthermore, the consumer information contains information on recommendation for cleaning tools and appropriate waste management (in order to limit water pollution).</p>

### Explanation

Compliance/non-compliance with the eco-label criteria is indicated by green/red fields. Details are given in the comments column. Where the eco-label criteria specify a limit the actual value of PAINTY is given in brackets.

## General information

<b>Programme operator</b>	Nothingbuttruth, High level street 1, 1000 Green valley
<b>Licencee</b>	Painty GmbH, Müllerstraße 5, 10000 Müllersheim, Germany
<b>Declaration number</b>	NUM-EPD-7891011
<b>Declared Products</b>	PAINTY INDOOR PAINT
<b>Product Category Rule</b>	GL 0601 Indoor wall paint
<b>Validity</b>	2011-09-25
<b>Date of issue</b>	2009-09-25
<b>Signature</b>	

## Verification

### PCR review was conducted by

Environmental Consulting, Dr. Clever, Everywhere, [www.cleverconsulting.com](http://www.cleverconsulting.com) assisted by a multistakeholder panel: Ms. Greenwatch (Environmental watchdog), Mr. Dontbelieve (Consumer Council), Prof. Knowitall (University of Europe)



### Independent verification of the EPD and data,

in accordance with ISO 14025 and ISO 21930

internal  external

### Third party verifier:

Environmental Consulting, Dr. Clever, Somewhere, [www.cleverconsulting.com](http://www.cleverconsulting.com) assisted by a multistakeholder panel: Ms Greenwatch (Environmental watchdog), Mr. Dontbelieve (Consumer Council), Prof. Knowitall (University of Europe)

## Appendix: Test chamber results

Flüchtige organische Verbindungen	Konz. nach 24 h in µg/m <sup>3</sup>	Konz. nach 28 d in µg/m <sup>3</sup>
<b>VOC eingestuft in CMR Kat. 1 oder 2</b>	n.n.	n.n.
<b>Aromatische Kohlenwasserstoffe</b>		
Benzol	n.n.	n.n.
Toluol	n.n.	n.n.
Ethylbenzol	n.n.	n.n.
m/p-Xylol	n.n.	n.n.
o-Xylol	n.n.	n.n.
Dethylbenzol	n.n.	n.n.
Isopropylbenzol	n.n.	n.n.
n-Propylbenzol	n.n.	n.n.
1,2,4-Trimethylbenzol	n.n.	n.n.
1,3,5-Trimethylbenzol	n.n.	n.n.
1,2,3-Trimethylbenzol	n.n.	n.n.
1,2,4,5-Tetramethylbenzol	n.n.	n.n.
1,2,3,5-Tetramethylbenzol	n.n.	n.n.
1,2,3,4-Tetramethylbenzol	n.n.	n.n.
2-Ethyltoluol	n.n.	n.n.
3-Ethyltoluol	n.n.	n.n.
4-Ethyltoluol	n.n.	n.n.
Styrol	n.n.	n.n.
Naphthalin	n.n.	n.n.
Phenol	n.n.	n.n.
Inden	n.n.	n.n.
Heptylbenzol	n.n.	n.n.
Octylbenzol	n.n.	n.n.
Nonylbenzol	n.n.	n.n.
<b>Aliphatische Kohlenwasserstoffe</b>		
n-Hexan	n.n.	n.n.
n-Heptan	n.n.	n.n.
n-Oktan	n.n.	n.n.
n-Nonan	n.n.	n.n.
n-Dekan	n.n.	n.n.
n-Undekan	n.n.	n.n.
n-Dodekan	n.n.	n.n.
n-Tridekan	n.n.	n.n.
n-Tetradekan	n.n.	n.n.
n-Pentadekan	n.n.	n.n.
n-Hexadekan	n.n.	n.n.
1-Okten	n.n.	n.n.
1-Decen	n.n.	n.n.
<b>Cyclische Alkane</b>		
Methylcyclopentan	n.n.	n.n.
Cyclohexan	n.n.	n.n.
Methylcyclohexan	n.n.	n.n.

Flüchtige organische Verbindungen	Konz. nach 24 h in $\mu\text{g}/\text{m}^3$	Konz. nach 28 d in $\mu\text{g}/\text{m}^3$
<b>Terpene</b>		
$\alpha$ -Pinen	n.n.	n.n.
$\beta$ -Pinen	n.n.	n.n.
$\delta$ -3-Caren	n.n.	n.n.
Limonen	n.n.	n.n.
Borneol	n.n.	n.n.
<b>Alkohole</b>		
1-Butanol	n.n.	n.n.
2-Ethyl-1-hexanol	4,6	8,6
Glykole/Glykolether		
2-Methoxyethanol	n.n.	n.n.
2-Ethoxyethanol	n.n.	n.n.
2-Butoxyethanol	n.n.	n.n.
2-Phenoxyethanol	n.n.	n.n.
1-Methoxy-2-propanol	n.n.	n.n.
2-Butoxyethoxyethanol	n.n.	n.n.
<b>Aldehyde</b>		
Pentanal	n.n.	n.n.
Hexanal	n.n.	n.n.
Nonanal	n.n.	n.n.
Benzaldehyd	n.n.	n.n.
Furfural	n.n.	n.n.
<b>Ketone</b>		
Methylisobutylketon	n.n.	n.n.
Cyclohexanon	n.n.	n.n.
Acetophenon	n.n.	n.n.
<b>Halogenierte Kohlenwasserstoffe</b>		
Trichlorethen	n.n.	n.n.
Tetrachlorethen	n.n.	n.n.
1,1,1-Trichlorethan	n.n.	n.n.
1,4-Dichlorbenzol	n.n.	n.n.
<b>Ester</b>		
Ethylacetat	n.n.	n.n.
Butylacetat	n.n.	n.n.
Isopropylacetat	n.n.	n.n.
2-Ethoxyethylacetat	n.n.	n.n.
Texanol®	n.n.	n.n.
<b>Sonstige VOC</b>		
Decanol	101,0	45,1
1,2-Propandiol	915,7	11,3
Alkane C15-C18	13,8	3,1
<b>Summe</b>	<b>1037,3</b>	<b>56,8</b>

