WHEN PERFORMANCE COUNTS

Montan waxes and special wax blends for car polish base formulations
VOELPKER: TO MAKE IDEAS WORK

Introduction

With more than 100 years of production history, Voelpker is among the most long-standing wax producers in Europe and is internationally renowned as a reliable manufacturer and supplier of montan waxes and special wax blends. True to the motto “to make ideas work”, we do everything to improve and optimize our customers’ products and processes.

Montan waxes – when performance counts

Car polishing is essential. Every day, the paint of cars is radiated by the sun and in constant contact with environmental pollution like acid rain, salt and other contaminants. The care and preservation of vehicle bodywork requires compounds that clean, restore the gloss and colour of the paintwork and leave behind them a hard, water-resistant protective film.

Bleached montan waxes fulfil these requirements perfectly as components of automotive polishes. They act as protective, hard waxes and also add gloss. Due to its excellent physical and chemical properties, montan wax is often an ideal substitute for the expensive and price-volatile Carnauba wax. It is widely used in daily chemical industry, wax polish industry, plastics industry, sinter metal industry and many other industries using wax.

Applications and effects of lubricants classes in different thermoplastics

<table>
<thead>
<tr>
<th>Chemical nature</th>
<th>Drop point (°C)</th>
<th>Acid number (mg KOH/g)</th>
<th>Viscosity at 25°C (mPas)</th>
<th>Applications (examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARADUR® S</td>
<td>ca. 85</td>
<td>ca. 140</td>
<td>ca. 15</td>
<td>Car polish</td>
</tr>
<tr>
<td>WARADUR® B</td>
<td>ca. 86</td>
<td>ca. 114</td>
<td>ca. 15</td>
<td>Car polish</td>
</tr>
<tr>
<td>WARADUR® ELE</td>
<td>Ethylene glycol esters of montanic acids, emulsifier</td>
<td>ca. 85</td>
<td>ca. 26</td>
<td>ca. 15</td>
</tr>
<tr>
<td>WARADUR® LGE</td>
<td>Ethylene glycol esters of montanic acids, emulsifier</td>
<td>ca. 85</td>
<td>ca. 24</td>
<td>ca. 15</td>
</tr>
<tr>
<td>VOELPKER® 2714</td>
<td>Ethylene glycol esters of montanic acids, fatty acid esters, emulsifier</td>
<td>ca. 86</td>
<td>ca. 22</td>
<td>ca. 15</td>
</tr>
<tr>
<td>WARADUR® E</td>
<td>Ethylene glycol esters of montanic acids</td>
<td>ca. 85</td>
<td>ca. 18</td>
<td>ca. 15</td>
</tr>
<tr>
<td>VOELPKER® 6211</td>
<td>Proprietary wax blend</td>
<td>ca. 108</td>
<td>ca. 11</td>
<td>ca. 100</td>
</tr>
</tbody>
</table>

Table 1: Chemical nature, physical data and typical car care applications of Voelpker montan waxes and special wax blends

Structure

WARADUR® S is a mixture of linear montanic acids (C28 - 32). WARADUR® E consists of esters of montanic acids with ethylene glycol. As a result of the long, linear carbon chain, the montan waxes exhibit a good thermal stability and a low volatility.

General Information on Car care

Automotive care agents should restore and refresh the bodywork and paintwork of vehicles, which under daily use of the vehicle takes on a dull and unsightly appearance due to dirt, wet, exposure to sunlight and other effects.

Car care agents maintain the gloss of the surface finish, have a preserving effect on the bodywork itself and protect against corrosion. It should be decided in each individual case which product should be used, depending on the age and condition of the paintwork. Old and weathered paintwork that has become matt should be treated with products containing fine ‘cutting’ or abrasive components, in order to remove weathered paintwork and restore the surface finish (cleaners). Polishes using an emulsion basis (emulsions) can be applied both to dry and wet (previously cleaned) paint surfaces. For polishes using a solvent basis (oils), it is recommended that the washed vehicle be thoroughly dried before application. In order to save time, so-called wash preservers can also be used, which are added to the rinsing water after washing the vehicle (after cleaning with washing agents), or auto shampoos, especially those with a continuous lubricating effect.

MONTAN WAXES
Other functional raw materials

Silicon oil makes the polishing easier, and also promotes a smooth finish and the depth of the gloss (viscosity 350 - 500 mPas). High-viscosity silicon oil can be used to give better consistency (viscosity 10,000 mPas), and also increases the water-resistant properties of wax polishes. Silicon oil makes the paint surface more weather-resistant, allowing raindrops to run off without leaving a mark. The silicon oil is usually added to the solvent agent.

Abrasives have a cleaning effect. These are usually finely ground and pulverised silicates, such as Kaolin, Aerosil or Neuburg siliceous earths. The particle size and quantity of the abrasive compounds used also has an effect on the consistency of the polishes. Very voluminous abrasive agents (e.g. Aerosil) have a much better filling effect than abrasive compounds with less filling capacity. For the care and maintenance of new bodywork, polishes without abrasive additives are used, or very small quantities of very fine abrasive compound on specific areas.

In the case of older bodywork, so-called cleaners are used (liquid or paste), which contain larger quantities of abrasive agent. It is sometimes necessary to use somewhat coarser abrasive agents, such as siliceous (diatomaceous) earth or coarser gradations of chalk. Such abrasive compounds however should contain no very coarse components, in order to avoid leaving fine scratch marks.

Solvents have a cleaning effect and get rid of oily and greasy dirt. In general, white spirit is used, or more volatile spirit with a boiling range of around 100 - 140 °C. At warm times of the year, this means that the polish can sometimes dry off very quickly. In this case, solvents with a higher boiling point (e.g. petroleum) can be used as additives. These solvent agents hardly attack the paint at all, although the individual types of solvent should still be checked for their possible effects.

Paraffin can also improve the polishing properties of the formulation.

Car polish, soft paste, good cleaning effect

% by weight | Raw material
---|---
6.5 | WARADUR® S (or WARADUR® B)
0.5 | Oleic acid
1.0 | Stearic acid
6.0 | Silicon oil AK 350
6.0 | Petroleum
0.8 | Diethylaminoethanol (DEAE)
53.2 | Softened water
15.0 | Snow Floss

Manufacture:
Wax melting: melt WARADUR® S, oleic acid and stearic acid at 85 °C; add the silicon oil to the solvent agent. Add the hot solvent to the melted wax while agitating. Then add the diethylaminoethanol to the clear solution. Pre-heat the water/abrasive agent mixture to about 50 °C and add the mixture while stirring. Continue stirring while allowing the emulsion to cool down to about 45 °C, and then fill into cans or tubes.

Car polish, liquid, can be manufactured cold

% by weight | Raw material
---|---
45.4 | Water
0.2 | Carbopol 62
5.0 | Sillitin N 85
7.6 | Tegopolish additive E 3400/5
8.6 | Tegopolish additive E 35
30.2 | WARADUR® ELE wax emulsion (12 %, APEO free) or VOSUBL® 2714 wax emulsion

Manufacture:
Prepare the water. Mix the Carbopol thoroughly with siliceous earth and slowly stir into the water. When this mixture is homogeneous, add the silicon components slowly one after the other, and finally the wax emulsion. The acrylate polymerises and thickens due to the basic amino-siloxyan. The wax emulsion is prepared in advance using the spreading process.
### Car polish, liquid

<table>
<thead>
<tr>
<th>% by weight</th>
<th>Raw material</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4</td>
<td>WARADUR® S (8)</td>
</tr>
<tr>
<td>1.0</td>
<td>Oleic acid</td>
</tr>
<tr>
<td>3.0</td>
<td>Silicon oil Tegloxan 1000</td>
</tr>
<tr>
<td>1.0</td>
<td>Silicon oil emulsion E 10</td>
</tr>
<tr>
<td>43.5</td>
<td>White spirit (crystal oil K 60)</td>
</tr>
<tr>
<td>1.0</td>
<td>Morpholin</td>
</tr>
<tr>
<td>44.6</td>
<td>Softened water</td>
</tr>
<tr>
<td>3.5</td>
<td>Snow Floss</td>
</tr>
</tbody>
</table>

**Manufacture:**
- Wax melting: melt WARADUR® S and oleic acid at 85 °C; add the silicon oil to the solvent agent. Add the hot solvent to the melted wax while agitating. Then add the diethylaminoethanol to the clear solution. Pre-heat the water/silicon oil emulsion/abrasive agent mixture to about 50 °C and add the mixture while stirring. Continue stirring while allowing the emulsion to cool down to about 45 °C, and then fill into cans or tubes.

### Car polish, thick liquid/creme

<table>
<thead>
<tr>
<th>% by weight</th>
<th>Raw material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0</td>
<td>WARADUR® S (8)</td>
</tr>
<tr>
<td>1.0</td>
<td>Oleic acid</td>
</tr>
<tr>
<td>2.0</td>
<td>Silicon oil Tegloxan 1000</td>
</tr>
<tr>
<td>2.0</td>
<td>Silicon oil Tegloxan 10000</td>
</tr>
<tr>
<td>4.0</td>
<td>Silicon oil emulsion E 10</td>
</tr>
<tr>
<td>18.0</td>
<td>Benzine 100/140</td>
</tr>
<tr>
<td>10.0</td>
<td>Crystal oil K 60</td>
</tr>
<tr>
<td>1.0</td>
<td>Morpholin</td>
</tr>
<tr>
<td>44.0</td>
<td>Softened water</td>
</tr>
<tr>
<td>10.0</td>
<td>Snow Floss</td>
</tr>
</tbody>
</table>

**Manufacture:**
- Wax melting: melt WARADUR® S and oleic acid at 85 °C; add the silicon oil to the solvent agent. Add the hot solvent to the melted wax while agitating. Then add the diethylaminoethanol to the clear solution. Pre-heat the water/silicon oil emulsion/abrasive agent mixture to about 50 °C and add the mixture while stirring. Continue stirring while allowing the emulsion to cool down to about 45 °C, and then fill into cans or tubes.

### Car shampoo

<table>
<thead>
<tr>
<th>% by weight</th>
<th>Raw material</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.0</td>
<td>Lutensol ON 70</td>
</tr>
<tr>
<td>10.0</td>
<td>Lutensid A-LBA</td>
</tr>
</tbody>
</table>

**Manufacture:**
- The active washing agents are dissolved in warm water and then added to the wax emulsion. The wax emulsion is prepared in advance using the spreading process.

### Wash preserver

<table>
<thead>
<tr>
<th>% by weight</th>
<th>Raw material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0</td>
<td>WARADUR® LGE wax emulsion (12 %)</td>
</tr>
<tr>
<td>2.5</td>
<td>Emulsion A</td>
</tr>
<tr>
<td>1.5</td>
<td>Lutensol AP 10</td>
</tr>
<tr>
<td>15.0</td>
<td>White spirit</td>
</tr>
<tr>
<td>8.0</td>
<td>Spindle oil</td>
</tr>
</tbody>
</table>

**Manufacture:**
- The wax emulsion is prepared in advance using the spreading process. Lutensol AP 10 is first added to the hot water. Boil briefly before stirring in the mixture of emulsifier, spindle oil and benzine. Then allow to cool and finally add the thickening agent.
- The wash preserver is added to the rinsing water when washing the vehicle (approx. 0.2 vol %).
**APPLICATION EXAMPLES**

**CAR WAXES:**

**WARADUR® MONTAN WAXES:**

**GENERAL ADVANTAGES AT A GLANCE**

- Ideal for polish applications
- Act as protective, hard waxes and also add gloss
- Ideal for high quality applications
- Easy to emulsion
- Excellent physical and chemical properties
- Ideal substitute for the expensive and price-volatile Carnauba wax

---

### Car polish, liquid

<table>
<thead>
<tr>
<th>% by weight</th>
<th>Raw material</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.8</td>
<td>VOELPKER® 6211</td>
</tr>
<tr>
<td>0.6</td>
<td>Silicon oil Teglae 350</td>
</tr>
<tr>
<td>0.4</td>
<td>Dow-Corning Fluid 530</td>
</tr>
<tr>
<td>2.2</td>
<td>Dow-Corning Fluid 531</td>
</tr>
<tr>
<td>63.0</td>
<td>Benzine 100/140</td>
</tr>
<tr>
<td>30.0</td>
<td>White spirit 140/200</td>
</tr>
</tbody>
</table>

**Manufacture:**

For the manufacture of fine-particle wax dispersions, melt VOELPKER® 6211 at approx. 110 °C. Then add the solvent agent, in which the silicon oils have first been dissolved, while stirring gently, at such a rate as to produce a clear solution. The temperature should not be allowed to fall below 75 - 80 °C. Then cool down to room temperature as quickly as possible while still stirring thoroughly. Further homogenisation (Ultra-Turrax) produces dispersions which create scarcely tight-sealing wax films.

If the clear wax solutions are cooled only until they begin to cloud, and then allowed to cool more slowly, this generally produces semi-solid pastes or gels, which however still consist of very fine particles.

### Car polish, paste

<table>
<thead>
<tr>
<th>% by weight</th>
<th>Raw material</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>VOELPKER® 6211</td>
</tr>
<tr>
<td>0.5</td>
<td>WARADUR® E</td>
</tr>
<tr>
<td>4.5</td>
<td>Lowax A</td>
</tr>
<tr>
<td>3.0</td>
<td>Micro hard wax (85 - 92 °C)</td>
</tr>
<tr>
<td>17.0</td>
<td>Paraffin 52/54</td>
</tr>
<tr>
<td>2.0</td>
<td>Silicon oil Teglae 350</td>
</tr>
<tr>
<td>71.0</td>
<td>White spirit 140/200</td>
</tr>
</tbody>
</table>

**Manufacture:**

For the manufacture of fine-particle wax dispersions, melt VOELPKER® 6211 together with the other waxes at approx. 110 °C. Then add the solvent agent, in which the silicon oils have first been dissolved, while stirring gently, at such a rate as to produce a clear solution. The temperature should not be allowed to fall below 75 - 80 °C. The clear wax solutions are then cooled only until they begin to cloud, and then allowed to cool more slowly.
The information contained herein is believed to be accurate and reliable as of the date issued. However, we do not warrant or guarantee the accuracy or reliability, in particular not for any specific intended use by the customer. It is the responsibility of those to whom we supply our products directly or indirectly to ensure that their use of the products complies with existing regulations, laws, regulations and/or specifications. The information given by Völpker Spezialprodukte does not exempt the customer from carrying out inspections and analyses on goods purchased.

Völpker Spezialprodukte GmbH
Fabrikstraße 1
39393 Völpke
Germany
Telephone +49 39402 962
www.voelpker.com

Product Information

Product Description
WARADUR® S consists of straight chained monocarboxylic acids with a chain length in the range of mainly C28 – C32.

General Advantages
High polarity, high hardness, easy to saponify, easy to emulsify.
High effectiveness at low concentrations: WARADUR® S is suitable for a wide range of plastics applications, mainly as external release agent, dispersing agent, gloss booster and surface improver. WARADUR® S is suitable for engineering plastics, thermostets, etc.

Examples of Use
• Thermoplastics: ABS and copolymers
• Thermosets: Epoxy resins, phenolic resins
• Dispersing agents for colour masterbatches
• Solvent for black or coloured dye bases
• Polishes
• Cosmetics (INCI: Montan Acid Wax)

Delivery Specifications *

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Unit</th>
<th>Target value</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid value *</td>
<td>mg KOH/g</td>
<td>135 – 160</td>
<td>ISO 2114</td>
</tr>
<tr>
<td>Saponification value *</td>
<td>mg KOH/g</td>
<td>153 – 180</td>
<td>ISO 3681</td>
</tr>
<tr>
<td>Drop point *</td>
<td>°C</td>
<td>82 – 88</td>
<td>ASTM 2084</td>
</tr>
<tr>
<td>Colour</td>
<td></td>
<td>pale yellow</td>
<td></td>
</tr>
<tr>
<td>Viscosity @ 120 °C</td>
<td>mPa.s</td>
<td>10 – 15</td>
<td>AA 2.2.1.520</td>
</tr>
<tr>
<td>Density</td>
<td>g/cm³</td>
<td>1.00 – 1.02</td>
<td>Ph. Eur. 2.2.5</td>
</tr>
</tbody>
</table>

Packaging and Handling
Physical form: Flakes, also available as powder
Packaging: Paper bag or Big Bag
Storage: Store at ambient temperature on a dry place. Protect from heat/overheating and direct sunlight. The minimum remaining period is 1.5 years and is defined as the maximum shelf life at the customer. Thereafter, tests of the chemical characteristics are recommended. The maximum shelf life of 5 years is indicated.

Safety
WARADUR® S
• is made from a fossil biological source
• is not classified as carcinogenic, mutagenic or reprotoxic; no health or environmental hazards are known, provided it is applied in industrial and professional settings
For more information, consult SDS.

Delivery Time and Availability
Standard delivery time: 2 – 3 weeks. Preconditions can be met for achieving shorter delivery times on standard products when demanded by the market.

Legislation
Food contact legislation:
• Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food
Other legislation:
• RoHS and CONEG compliant
• Listed in all relevant National Inventories
For further information, please contact mailbox@voelpker.com.
PRODUCT INFORMATION

Product Description

WARADUR® B consists of straight chained monocarboxylic acids with a chain length in the range of mainly C28 – C32.

General Advantages

• Thermoplastic: ABS and copolymers
• Thermoset: Epoxy resins, phenolic resins
• Dispersing agents for colour masterbatches
• Solvent for black or coloured dye bases
• Polishes

Examples of Use

• Polishes – Emulsions of WARADUR® B can be used in dry-bright floor polishes and cleaners for household, industrial and institutional use. They can also be used in leather polishes and care products.
• Leather industry – Additive for leather finishes, for improving handle, flexibility, gloss. Dressing for shoes.
• Wood industry – Mould release for epoxide resins applied as laminates to furniture.
• Paper and Packaging – Anti-blocking agent for PVC and other polymers.
• Plastics industry – Slip agent for injection moulding, and for foam mouldings made from hot-cured polyurethane foam.
• Technical information brochure about emulsions preparation available upon request.

Delivery Specifications

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Unit</th>
<th>Target value</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid value *</td>
<td>mg KOH/g</td>
<td>90 – 120</td>
<td>ISO 2114</td>
</tr>
<tr>
<td>Saponification</td>
<td>mg KOH/g</td>
<td>115 – 155</td>
<td>ISO 3881</td>
</tr>
<tr>
<td>Drop point *</td>
<td>°C</td>
<td>82 – 88</td>
<td>ASTM 3954</td>
</tr>
<tr>
<td>Colour</td>
<td>–</td>
<td>pale yellow – yellow</td>
<td>AA 3.2.1.505</td>
</tr>
<tr>
<td>Viscosity @ 120 °C</td>
<td>mPas</td>
<td>10 – 15</td>
<td>AA 3.2.1.520</td>
</tr>
<tr>
<td>Density</td>
<td>g/m³</td>
<td>1.00 – 1.02</td>
<td>Ph. Eur. 2.2.5</td>
</tr>
</tbody>
</table>

Packaging and Handling

Physical form: Flakes

Packaging: Paper bag or Big Bag

Storage: Store at ambient temperature on a dry place. Protect from heat/overheating and direct sunlight.

The minimum remaining period is 1.5 years and is defined as the minimum shelf life at the customer.

Thereafter, tests of the chemical characteristics are recommended. The maximum shelf life of 5 years is indicated.

Safety

WARADUR® B
• is made from a fossil/biological source
• is not classified as carcinogenic, mutagenic or reprotoxic; no health or environmental hazards are known, provided it is applied in industrial and professional settings

For more information, consult SDS.

Delivery Time and Availability

Standard delivery time: 2 – 3 weeks. Precondition can be met for achieving shorter delivery times on standard products when demanded by the market.

Legislation

Food contact legislation:
• Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food

Other legislation:
• RoHS and CONES compliant
• Listed in all relevant National Inventories

For further information, please contact mailbas@voelpker.com.

The information contained herein is believed to be accurate and reliable as of the date issued. However, we do not warrant or guarantee the accuracy or reliability, in particular not for any specific intended use by the customer. It is the responsibility of those to whom we supply our products directly or indirectly to ensure that the use of the products complies with existing regulations, laws, legislations and proprietary rights. Völpker Spezialprodukte GmbH & Co. KG reserves the right to make changes.

For further information, please contact mailbas@voelpker.com.
### Product Information

**Product Description**

WARADUR® LGE is a special wax blend, consisting of esters of long chain fatty acids (mainly C28 – C32) with multihydroyxalcohols. The corresponding esters exhibit chain length in the range of mainly C34 – C66. Product for the preparation of aqueous dispersions. A proprietary emulsifier mixture is already incorporated in this blend.

**General Advantages**

WARADUR® LGE is easy to emulsify. Non-ionic emulsions can be prepared up to concentrations of 25 – 30%. Because the wax is self-emulsifying, emulsions are easily prepared by stirring the solid pastilles into hot water.

**Examples of Use**

- Leather industry: Additive for leather finishes, for improving handle, flexibility, gloss. Dressing for shoes.
- Other industries: Additive for injection moulding, and for foam mouldings made from hot-cured polyurethane foam.
- Technical information brochure about emulsions preparation available upon request.

**Technical Specifications**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Unit</th>
<th>Target value</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid value *</td>
<td>mg KOH/g</td>
<td>20 – 30</td>
<td>ISO 2124</td>
</tr>
<tr>
<td>Saponification value *</td>
<td>mg KOH/g</td>
<td>127 – 147</td>
<td>ISO 5681</td>
</tr>
<tr>
<td>Drop point *</td>
<td>°C</td>
<td>82 – 88</td>
<td>ASTM 3954</td>
</tr>
<tr>
<td>Colour</td>
<td></td>
<td>pale yellow</td>
<td>AA 3.2.1.505</td>
</tr>
<tr>
<td>Viscosity @ 120 °C</td>
<td>mPas</td>
<td>10 – 20</td>
<td>AA 3.2.1.520</td>
</tr>
<tr>
<td>Density</td>
<td>g/l m³</td>
<td>1.00 – 1.02</td>
<td>Ph. Eur. 2.2.5</td>
</tr>
</tbody>
</table>

**Physical and Handling**

- Physical form: Flakes
- Packaging: Paper bag or Big Bag
- Storage: Store at ambient temperature on a dry place. Protect from heat/overheating and direct sunlight.

**Safety**

Consult SDS.

**Delivery Time and Availability**

Standard delivery time: 2 – 3 weeks. Preconditions can be met for achieving shorter delivery times on standard products when demanded by the market.

**Legislation**

- Food contact legislation: Product for technical applications
- Other legislation: RoHS and CONEG compliant
- Ingredients listed in all relevant National Inventories

For further information, please contact mailto:voelpker.com.
### Product Information

**Product Description**

WARADUR® E is a hard wax ester with a crystalline structure, consisting of esters of montan acids with multihydroxy alcohols. Montan acids are straight chain nonaromatic acids with a chain length in the range of mainly C28 – C32. The corresponding esters exhibit chain length in the range of mainly C36 – C56.

**General Advantages**

WARADUR® E improves the fluidity of a wide range of plastics and at the same time also reduces the demoulding forces. Acts as a dispersing agent, gloss booster, surface improver. Provides low volatility, good thermostability and low migration rates. WARADUR® E is easy to apply and emulsifiable and can be buffed to a high gloss. Also provides good paste- and dispersion forming properties with organic solvents.

**Examples of Use**

- WARADUR® E is extremely versatile and suitable for a wide range of plastics applications as a multi-purpose additive in engineering plastics, thermosets, PVC etc.
- For more information consult the technical leaflet: Montan waxes in plastics: "When performance counts".

**Delivery Specifications**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Unit</th>
<th>Target value</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid value *</td>
<td>mg KOH/g</td>
<td>15 – 20</td>
<td>ISO 2124</td>
</tr>
<tr>
<td>Saponification value *</td>
<td>mg KOH/g</td>
<td>140 – 160</td>
<td>ISO 3881</td>
</tr>
<tr>
<td>Drop point *</td>
<td>°C</td>
<td>82 – 88</td>
<td>ASTM 3954</td>
</tr>
<tr>
<td>Colour</td>
<td>–</td>
<td>pale yellow</td>
<td>AA 3.2.1.505</td>
</tr>
<tr>
<td>Viscosity @ 120 °C</td>
<td>mPas</td>
<td>15 – 20</td>
<td>AA 3.2.1.520</td>
</tr>
<tr>
<td>Density</td>
<td>g/cm³</td>
<td>1.00 – 1.02</td>
<td>Ph. Eur. 2.2.3</td>
</tr>
</tbody>
</table>

**Packaging and Handling**

- **Physical form**: Flakes, also available as powder.
- **Packaging**: Paper bag or Big Bag.
- **Storage**: Store at ambient temperature on a dry place. Protect from heat/overheating and direct sunlight. The minimum remaining period is 1.5 years and is defined as the minimum shelf life at the customer. Thereafter, tests of the chemical characteristics are recommended. The maximum shelf life of 5 years is indicated.

**Safety**

- **WARADUR® E** is made from a fossil biological source.
- **PAH**: Not classified as carcinogenic, mutagenic or reprotoxic.
- **EC**: Not classified as carcinogenic, mutagenic or reprotoxic; no health or environmental hazards are known, provided it is applied in industrial and professional settings.
- **Dispersions of VOELPKER® 6211 can be used in injection moulding as a mould release agent for thermosets, e.g. polyurethanes.**

**Delivery Time and Availability**

Standard delivery time: 2 – 3 weeks. Preconditions can be met for achieving shorter delivery times on standard products when demanded by the market.

**Legislation**

- **Food contact legislation:**
  - FDA 175.105 Adhesives ("montan wax")
  - FDA 177.2000 Rubber articles intended for repeated use ("montan wax")
  - FDA 178.3770 For use in lubricants in the fabrication of vinyl chloride plastic food contact articles
  - Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food
- **Other legislation:**
  - RoHS and CONEG compliant
  - Listed in all relevant National Inventories

For further information, please contact mail@voelpker.com.

---

**Product Information**

**Product Description**

VOELPKER® 6211 is a special wax blend based on polymer waxes, hydrocarbon waxes and stearamines.

**General Advantages**

Depending from the concentration, clear solutions of VOELPKER® 6211 in hot organic solvents crystallize to form very finely divided liquid dispersions. gels or pastes when the heated solution is cooled under stirring. The received wax preparations have a very slightly solvent retention when the wax dispersion is dried. On a surface they form very dense, buffable films.

**Examples of Use**

- VOELPKER® 6211 pastes are indispensable to air, corrosive gases, water, salt solutions, acids, alkalis, and other aggressive substances. These films are therefore very good for protecting metal surfaces from corrosion, e.g. during transportation by sea or during storage of new tools, machinery and motors to preserve the coated surface of new motor vehicles, refrigeration, washing machines etc. and for underbody protection. VOELPKER® 6211 is also used as stop-off wax, e.g. in galvanic applications.
- Very finely divided, liquid wax dispersions can be prepared that dry to form a very glossy and dense, easy to polish film. This is very important for polishes applied to floors and car bodywork or other substrates (other tin surfaces, furniture, parquetry), which requires a good film formation.
- Dispersions of VOELPKER® 6211 can be used in injection moulding as a mould release agent for thermosets, e.g. polyurethanes.
- The consistency of the wax dispersion can be adjusted from liquid to pasty by choosing the adequate properties and concentration of VOELPKER® 6211 and if necessary other additional waxes.

**Delivery Specifications**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Unit</th>
<th>Target value</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid value *</td>
<td>mg KOH/g</td>
<td>10 – 14</td>
<td>ISO 2124</td>
</tr>
<tr>
<td>Saponification value *</td>
<td>mg KOH/g</td>
<td>17 – 25</td>
<td>ISO 3881</td>
</tr>
<tr>
<td>Drop point *</td>
<td>°C</td>
<td>104 – 112</td>
<td>ASTM 3954</td>
</tr>
<tr>
<td>Colour</td>
<td>–</td>
<td>off-white</td>
<td>AA 3.2.1.505</td>
</tr>
<tr>
<td>Viscosity @ 120 °C</td>
<td>mPas</td>
<td>90 – 120</td>
<td>AA 3.2.1.520</td>
</tr>
<tr>
<td>Density</td>
<td>g/cm³</td>
<td>1.00 – 1.02</td>
<td>Ph. Eur. 2.2.3</td>
</tr>
</tbody>
</table>

**Packaging and Handling**

- **Physical form**: Pastilles.
- **Packaging**: Paper bag or Big Bag.
- **Storage**: Store at ambient temperature on a dry place. Protect from heat/overheating and direct sunlight. The minimum remaining period is 1.5 years and is defined as the minimum shelf life at the customer. Thereafter, tests of the chemical characteristics are recommended. The maximum shelf life of 5 years is indicated.

**Safety**

VOELPKER® 6211 is not classified as carcinogenic, mutagenic or reprotoxic; no health or environmental hazards are known, provided it is applied in industrial and professional settings. For more information, consult SDS.

**Delivery Time and Availability**

Standard delivery time: 2 – 3 weeks. Preconditions can be met for achieving shorter delivery times on standard products when demanded by the market.

For further information, please contact mail@voelpker.com.
## Raw material supplier information

### Abrasives
- **Snow Ras**
  - Siliceous earth
  - Lehmann & Voss, Hamburg
- **SiRiN 85**
  - Siliceous earth
  - Hoffmann Mineral, Hamburg

### Waxes
- **Paraffin 53/54**
  - Hydrocarbon wax
  - Ter Hell, Hamburg
- **Luwax A**
  - Ethylene homopolymer wax
  - BASF SE, Ludwigshafen
- **WARADUR® B**
  - Montan acid wax
  - Völpker Spezialprodukte GmbH, Völklingen
- **WARADUR® LCE**
  - Montan ester wax, contains emulsifier
  - Völpker Spezialprodukte GmbH, Völklingen
- **WARADUR® S**
  - Montan acid wax
  - Völpker Spezialprodukte GmbH, Völklingen
- **VOSUR® 2714**
  - Special montan wax blend, contains emulsifier
  - Völpker Spezialprodukte GmbH, Völklingen
- **VOSUR® 6211**
  - Special wax blend
  - Völpker Spezialprodukte GmbH, Völklingen

### Silicon oils
- **Silicon oil 330**
  - Linear non-reactive polydimethylsiloxane
  - with a viscosity of 330,000 mPa·s
  - Wacker Chemie AG
- **Tego Polish Additive E 346005**
  - 40 % amino alkanol emulsion
  - Evonik
- **Tego Polish Additive E 35**
  - 35 % silicon oil emulsion
  - Evonik
- **Silicon oil Tegilan® 1000**
  - Methyldimethyl oil, 1,000 mPa·s
  - Evonik
- **Silicon oil Tegilan® 10000**
  - Methyldimethyl oil, 10,000 mPa·s
  - Evonik

### Solvents
- **Petroleum**
  - White spirit containing aromatics with a boiling range of 250–340 °C
- **Benzene (100/140)**
  - White spirit without aromatics with a boiling range of 100–140 °C
- **Crystal oil 60**
  - White spirit, mixture of aliphatic, naphthenic and aromatic hydrocarbons
  - with a boiling range of 182–212 °C
  - Deutsche Shell, Hamburg

### Emulsifiers
- **Emulon A**
  - Emulsifier
  - BASF SE, Ludwigshafen

### Surfactants
- **Lutensol ON 70**
  - Non-ionic surfactant based in linear fatty alcohol
  - BASF SE, Ludwigshafen
- **Lutensol AP 10**
  - BASF SE, Ludwigshafen
- **Lutensol A-18A**
  - Anionic surfactantamine salt of alkylbenzene-sulfonate
  - BASF SE, Ludwigshafen

### Thickeners
- **Carbopol EZ**
  - Polyacrylic acid, thixology modifier
  - Lubrizol
- **Latekoll D**
  - Water-based acrylate solution
  - BASF SE, Ludwigshafen

### Space for your notes:
Disclaimer
The information contained herein is believed to be accurate and reliable as of the date issued. However, we do not warrant or guarantee the accuracy or reliability, in particular not for any specific intended use by the customer. It is the responsibility of those to whom we supply our products directly or indirectly to ensure that their use of the products complies with existing regulations, laws, legislations and proprietary rights. The information given by Völpker Spezialprodukte does not exempt the customer from carrying out inspections and analyses on goods purchased.