



Wash  
preserver

Car polish, liquid  
Car polish, creme  
Car polish, paste

Car  
shampoo

Soft paste, good  
cleaning effect

# 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

	Chemical nature	Drop point (°C)	Acid number (mg KOH/g)	Viscosity @ 120 °C (mPas)	Applications (examples)
WARADUR® S	Montanic acids C28 - C32	ca. 85	ca. 140	ca. 15	Car polish
WARADUR® B	Montanic acids C28 - C32	ca. 86	ca. 114	ca. 15	Car polish
WARADUR® ELE	Ethylene glycol esters of montanic acids, emulsifier	ca. 85	ca. 26	ca. 15	Car shampoo, wash preserver
WARADUR® LGE	Ethylene glycol esters of montanic acids, emulsifier	ca. 85	ca. 24	ca. 15	Car shampoo, wash preserver
VOELPKER® 2714	Ethylene glycol esters of montanic acids, fatty acid esters, emulsifier	ca. 86	ca. 22	ca. 15	Car shampoo, wash preserver
WARADUR® E	Ethylene glycol esters of montanic acids	ca. 85	ca. 18	ca. 15	Water based car polish, Solvent based car polish (liquid/paste)
VOELPKER® 6211	Proprietary wax blend	ca. 108	ca. 11	ca. 100	Solvent based car polish (liquid/paste)

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



## MONTAN WAXES

### 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 have 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.



**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.

**APPLICATION EXAMPLES**

**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 diethyl-amino-ethanol 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 EZ
5.0	Sillifin N 85
7.6	Tegopolish additive E 3400/5
8.6	Tegopolish additive E 35
33.2	WARADUR® ELE wax emulsion (12 %, APEO free) or VÖLPKER® 2714 wax emulsion



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





### Car polish, liquid

% by weight	Raw material
2.4	WARADUR® S (B)
1.0	Oleic acid
3.0	Silicon oil Tegiloxan 1000
1.0	Silicon oil emulsion E 10
43.5	White spirit (crystal oil K 60)
1.0	Morpholin
44.6	Softened water
3.5	Snow Floss

#### 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

% by weight	Raw material
8.0	WARADUR® S (B)
1.0	Oleic acid
2.0	Silicon oil Tegiloxan 1000
2.0	Silicon oil Tegiloxan 10000
4.0	Silicon oil emulsion E 10
18.0	Benzine 100/140
10.0	Crystal oil K 60
1.0	Morpholin
44.0	Softened water
10.0	Snow Floss

#### 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

% by weight	Raw material
20.0	Lutensol ON 70
10.0	Lutensid A-LBA
45.0	Water
25.0	WARADUR® LGE wax emulsion (12 %) or WARADUR® ELE wax emulsion (12 %, APEO free) or VOELPKER® 2714 wax emulsion (12 %)

#### 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

% by weight	Raw material
8.0	WARADUR® LGE or WARADUR® ELE (APEO free)
2.5	Emulan A
1.5	Lutensol AP 10
15.0	White spirit
8.0	Spindle oil
4.0	Latekoll D 4 %

#### 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 %).



**Car polish, liquid**

% by weight	Raw material
3.8	VOELPKER® 6211
0.6	Silicon oil Tegiloxan 350
0.4	Dow Corning fluid 530
2.2	Dow Corning fluid 531
63.0	Benzine 100/140
30.0	White spirit 140/200

**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 specially 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**

% by weight	Raw material
2.0	VOELPKER® 6211
0.5	WARADUR® E
4.5	Luwax A
3.0	Micro hard wax (85 - 92 °C)
17.0	Paraffin 52/54
2.0	Silicon oil Tegiloxan 350
71.0	White spirit 140/200

**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.

**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 emulsify
- Excellent physical and chemical properties
- Ideal substitute for the expensive and price-volatile Carnauba wax

## WARADUR® S

## 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, thermosets, etc.

### Examples of Use

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

### Delivery Specifications \*

Characteristics	Unit	Target value	Method
Acid value *	mg KOH/g	135 – 160	ISO 2114
Saponification value *	mg KOH/g	155 – 180	ISO 3681
Drop point *	°C	82 – 88	ASTM 3954
Colour	–	pale yellow	AA 3.2.1.505
Viscosity @ 120 °C	mPas	10 – 15	AA 3.2.1.520
Density	g/cm <sup>3</sup>	1.00 – 1.02	Ph. Eur. 2.2.5

### 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® 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.

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 Voelpker Spezialprodukte does not exempt the customer from carrying out inspections and analyses on goods purchased.

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## WARADUR® B

## 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

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

### Examples of Use

- Thermoplastics: ABS and copolymers
- Thermosets: Epoxy resins, phenolic resins
- Dispersing agents for colour masterbatches
- Solvent for black or coloured dye basis
- Polishes

### Delivery Specifications \*

Characteristics	Unit	Target value	Method
Acid value *	mg KOH/g	90 – 120	ISO 2114
Saponification value *	mg KOH/g	135 – 155	ISO 3681
Drop point *	°C	82 – 88	ASTM 3954
Colour	–	pale yellow – yellow	AA 3.2.1.505
Viscosity @ 120 °C	mPas	10 – 15	AA 3.2.1.520
Density	g/cm <sup>3</sup>	1.00 – 1.02	Ph. Eur. 2.2.5

### 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. 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

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## WARADUR® ELE

## Product Information

### Product Description

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

### General Advantages

WARADUR® ELE 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.  
Technical support available upon request.

### Examples of Use

- Polishes: Emulsions of WARADUR® ELE 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 car care products.
- Leather industry: Additive for leather finishes, for improving handle, flexibility, gloss. Dressing for shoes.
- Wood industry: Mould release for aminoplast 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 \*

Characteristics	Unit	Target value	Method
Acid value *	mg KOH/g	25 – 35	ISO 2114
Saponification value *	mg KOH/g	110 – 140	ISO 3681
Drop point *	°C	82 – 88	ASTM 3954
Colour	–	pale yellow	AA 3.2.1.505
Viscosity @ 120 °C	mPas	10 – 20	AA 3.2.1.520
Density	g/cm <sup>3</sup>	1.00 – 1.02	Ph. Eur. 2.2.5

### 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

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.

Remark: Voelpker's R&D department is permanently developing new special wax blends for the preparation of aqueous dispersions. Please contact us for your individual requirements.

### 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 mailbox@voelpker.com.

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**Product Description**

WARADUR® LGE is a special wax blend, consisting of esters of long-chain fatty acids (mainly C28 – C32) with multihydroxyl alcohols. 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. Technical support available upon request.

**Examples of Use**

- Polishes: Emulsions of WARADUR® LGE 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 car care products.
- Leather industry: Additive for leather finishes, for improving handle, flexibility, gloss. Dressing for shoes.
- Wood industry: Mould release for aminoplast 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 \***

Characteristics	Unit	Target value	Method
Acid value *	mg KOH/g	20 – 30	ISO 2114
Saponification value *	mg KOH/g	127 – 147	ISO 3681
Drop point *	°C	82– 88	ASTM 3954
Colour	–	pale yellow	AA 3.2.1.505
Viscosity @ 120 °C	mPas	10 – 20	AA 3.2.1.520
Density	g/cm <sup>3</sup>	1.00 – 1.02	Ph. Eur. 2.2.5

**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**

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.

Remark: Voelpker's R&D department is permanently developing new special wax blends for the preparation of aqueous dispersions. Please contact us for your individual requirements.

**Legislation**

Food contact legislation:

- Product for technical applications

Other legislation:

- RoHS and CONEG compliant
- Ingredients listed in all relevant National Inventories

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**Product Description**

VOELPKER® 2714 is a special wax blend, consisting of esters of long-chain fatty acids (C16 – C32) with multihydroxyl alcohols. The corresponding esters exhibit chain length in the range of C34 – C66. Product for the preparation of aqueous dispersions. A proprietary emulsifier mixture (APEO free) is already incorporated in this blend.

**General Advantages**

VOELPKER® 2714 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. Technical support available upon request.

**Examples of Use**

- Polishes: Emulsions of VOELPKER® 2714 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 car care products.
- Leather industry: Additive for leather finishes, for improving handle, flexibility, gloss. Dressing for shoes.
- Wood industry: Mould release for aminoplast 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 \***

Characteristics	Unit	Target value	Method
Acid value *	mg KOH/g	17 – 25	ISO 2114
Saponification value *	mg KOH/g	105 – 125	ISO 3681
Drop point *	°C	85 – 88	ASTM 3954
Colour	–	pale yellow	AA 3.2.1.505
Viscosity @ 120 °C	mPas	10 – 20	AA 3.2.1.520
Density	g/cm <sup>3</sup>	1.00 – 1.02	Ph. Eur. 2.2.5

**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**

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.

Remark: Voelpker's R&D department is permanently developing new special wax blends for the preparation of aqueous dispersions. Please contact us for your individual requirements.

**Legislation**

Food contact legislation:

- Product for technical applications

Other legislation:

- RoHS and CONEG compliant
- Ingredients listed in all relevant National Inventories

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**Product Description**

WARADUR® E is a hard ester wax with a crystalline structure, consisting of esters of montanic acids with multihydroxyl alcohols. Montanic acids are straight chained monocarboxylic acids with a chain length in the range of mainly C28 – C32. The corresponding esters exhibit chain length in the range of mainly C58 – C66.

**General Advantages**

WARADUR® E improves the flowability of a wide range of plastics and at the same time also reduces the demoulding force. Acts as dispersing agent, gloss booster, surface improver. Provides low volatility, good thermostability and low migration rates. WARADUR® E is easy to saponify and emulsify 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".
- WARADUR® E can be used to manufacture polishes based on aqueous emulsions of (saponified) wax with or without emulsifiers. It is used in its saponified form in leather care products, polishes and abrasive pastes (e.g. car polishes), etc. It performs particularly well in co-emulsions of wax and solvents in water. WARADUR® E can be used in combination with microcrystalline waxes, paraffin wax, hydrogenated plant oils and others.
- Other applications: paper coating, cosmetics (INCI: Glycol Montanate), metal work, compacting aids in powder metallurgy.

**Delivery Specifications \***

Characteristics	Unit	Target value	Method
Acid value *	mg KOH/g	15 – 20	ISO 2114
Saponification value *	mg KOH/g	140 – 160	ISO 3681
Drop point *	°C	82 – 88	ASTM 3954
Colour	–	pale yellow	AA 3.2.1.505
Viscosity @ 120 °C	mPas	15 – 20	AA 3.2.1.520
Density	g/cm <sup>3</sup>	1.00 – 1.02	Ph. Eur. 2.2.5

**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
  - reached the criteria for inherent biodegradability (OECD Guideline 301 D, Closed Bottle Test)
  - is not classified as carcinogenic, mutagenic or reprotoxic; no health or environmental hazards are known, provided it is applied in industrial and professional settings

**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 177.2600 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 mailbox@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 their use of the products complies with existing regulations, laws, legislations and proprietary rights. The information given by Voelpker Spezialprodukte does not exempt the customer from carrying out inspections and analyses on goods purchased.

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**Product Description**

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

**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 films are impermeable to air, corrosive gases, water, salt solutions, acids, alkalis, coolants 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, refrigerators, washing machines etc. and for car underbody protection. VOELPKER® 6211 is also used as stop-off wax, e.g. in galvano 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, parquet), 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 proportion and concentration of VOELPKER® 6211 and if necessary other additional waxes.
- Technical information brochure available upon request.

**Delivery Specifications \***

Characteristics	Unit	Target value	Method
Acid value *	mg KOH/g	10 – 14	ISO 2114
Saponification value *	mg KOH/g	17 – 25	ISO 3681
Drop point *	°C	104 – 112	ASTM 3954
Colour	–	off-white	AA 3.2.1.505
Viscosity @ 120 °C	mPas	90 – 120	AA 3.2.1.520
Density	g/cm <sup>3</sup>	1.00 – 1.02	Ph. Eur. 2.2.5

**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.

Remark: Voelpker's R&D department is permanently developing new special wax blends for the preparation of solvent-based dispersions. Please contact us for your individual requirements.

**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 mailbox@voelpker.com.

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### Raw material supplier information

#### Abrasives

Snow floss	Siliceous earth Lehmann & Voss, Hamburg
Sillit N 85	Siliceous earth Hoffmann Mineral, Neuburg

#### Waxes

Paraffin 52/54	Hydrocarbon wax Ter Hell, Hamburg
Luwax A	Ethylene homopolymer wax BASF SE, Ludwigshafen
WARADUR® B	Montan acid wax Völpker Spezialprodukte GmbH, Völpke
WARADUR® ELE (APEO free)	Montan ester wax, contains emulsifier Völpker Spezialprodukte GmbH, Völpke
WARADUR® LGE	Montan ester wax, contains emulsifier Völpker Spezialprodukte GmbH, Völpke
WARADUR® S	Montan acid wax Völpker Spezialprodukte GmbH, Völpke
VOELPKER® 2714	Special montan wax blend, contains emulsifier Völpker Spezialprodukte GmbH, Völpke
VOELPKER® 6211	Special wax blend Völpker Spezialprodukte GmbH, Völpke

#### Silicon oils

Silicon oil AK 350	Linear, non-reactive polydimethylsiloxane with a viscosity of approx. 350 mm <sup>2</sup> /s Wacker Chemie AG
Tego Polish Additive E 3400/5	40 % Amino siloxane emulsion Evonik
Tego Polish Additive E 35	35 % Silicon oil emulsion Evonik
Silicon oil Tegiloxan 1000	Methyl-silicon oil, 1,000 mPa s Evonik
Silicon oil Tegiloxan 10000	Methyl-silicon oil, 10,000 mPa s Evonik

#### Solvents

Petroleum	White spirit containing aromatics with a boiling range of 200 - 240 °C
Benzine 100/140	White spirit without aromatics with a boiling range of 100 - 140 °C
Crystal oil K 60	White spirit, mixture of aliphatic, naphthenic and aromatic hydrocarbons with a boiling range of 182 - 212 °C Deutsche Shell, Hamburg

#### Emulsifiers

Emulan A	Emulsifier BASF SE, Ludwigshafen
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#### Surfactants

Lutensol ON 70	Non-ionic surfactant based in linear fatty alcohol BASF SE, Ludwigshafen
Lutensol AP 10	BASF SE, Ludwigshafen
Lutensit A-LBA	Anionic surfactant amine salt of alkylbenzene-sulfonate BASF SE, Ludwigshafen

#### Thickeners

Carbopol EZ	Polyacrylic acid, rheology modifier Lubrizon
Latekoll D	Water-based acrylate solution BASF SE, Ludwigshafen

### Space for your notes:

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**DESIGN**

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