PRODUCT INFORMATION

# WARADUR® OP

## Product Description

WARADUR® OP is an ester wax consisting of esters of montanic acids with multihydroxyl alcohols. Montanic acids are straight-chained monocarboxylic acids with a chain length in the range of C28 – C32. The corresponding esters exhibit chain length in the range of C58 – C66 and provide this wax with a low volatility, good thermostability and low migration rates. WARADUR® OP contains calcium montanate in addition to the montanic acid esters.

## General Advantages

High effectiveness at low concentrations: WARADUR® OP is extremely versatile and suitable for a wide range of plastics applications as a multi-purpose additive, e.g. release agent, flow improver, dispersing agent, nucleation agent, gloss booster, surface improver. WARADUR® OP is suitable for engineering plastics, thermosets, PVC, etc.

## Examples of Use

- Thermoplastics: PA, PBT, TPE, PC, PVC, styrenics
- Thermosets: epoxy resins, phenolic resins, polyurethane
- Dispersing agents for colour masterbatches and filled plastics (talc, glass fibre)

## Delivery Specifications *

| Characteristics | Unit | Target value | Method |
|---|---|---|---|
| Acid value * | mg KOH/g | 7 – 14 | ISO 2114 |
| Drop point * | °C | 99 – 105 | ASTM 3954 |
| Saponification value | mg KOH/g | approx. 110 – 130 | ISO 3681 |
| Colour | – | light yellowish | AA 3.2.1.505 |
| Viscosity @ 120 °C | mPas | 150 – 300 | AA 3.2.1.520 |
| Density | g/cm³ | 1.00 – 1.02 | Ph. Eur. 2.2.5 |

## Packaging and Handling

| | |
|---|---|
| Physical form | Flakes or powder |
| Packaging | Paper bag or Big Bag |
| Storage | Store at ambient temperature on a dry place. Protect from heat/overheating and direct sunlight.<br>The maximum shelf life is 5 years after production. Thereafter, tests of the chemical characteristics are recommended.<br>After delivery, a minimum remaining shelf life at the customer of 1.5 years is warranted. |

## Safety

WARADUR® OP
- is made from a fossil biological source
- in a test for ready biodegradability showed 22 % biodegradability, which can be considered as indication for inherent primary biodegradability, according to OECD (2006)
- 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
- FDA 177.2600 Rubber articles intended for repeated use
- 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:
- REACH, RoHS and CONEG compliant
- Listed in all relevant national inventories

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

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