

AMPHISOL® K

The versatile, robust and trustable emulsifier

CHARACTERISTICS

Introduction

AMPHISOL® K (INCI: Potassium Cetyl Phosphate) is a versatile emulsifier suitable for various cosmetic applications. Its strong stability performance makes it a trustable emulsifier to formulate challenging formulations. Its analogy to natural skin phospholipids structures confers to AMPHISOL® K mildness and good compatibility with the skin. Finally, this signature emulsifier is characterized by an elegant texture.

General properties

- Anionic O/W emulsifier
- White to beige, practically odourless powder
- HLB: 9.6
- PEG-free
- pH: 5-5.5
- Recommended concentrations:
 - as primary emulsifier: 1-3%
 - as secondary emulsifier: 0.5-1%

Benefits

- Gold standard emulsifier, able to stabilize challenging formulations with:
 - high oil concentrations
 - high pigment load
 - organic acids
 - ethanol
 - salts and electrolytes
- Tolerates a broad pH range from 5 to 9
- Provides snow white emulsions
- Shows highest flexibility for various applications (sun care, face care, body care, make-up, cleansing products) and various forms (cream, lotion, spray, mousse, roll-on, cushion)
- Contributes to SPF and water-resistance

FORMULATING

Solubility

AMPHISOL® K doesn't dissolve completely neither in water nor in oil and unsolved particles will remain. This is normal. Do not filter it off.

Formulation

We always recommend combining AMPHISOL® K, when used as primary or secondary emulsifier, with a lipophilic co-emulsifier to avoid the formation of insoluble crystals. We made the experience that especially fatty alcohols are best compatible with AMPHISOL® K.

This information is for illustration purposes only and based upon our current knowledge and experience at the time of printing. We do not make any representation or warranty of any kind, express or implied, including merchantability or fitness for a particular use, with respect to such information or its application. Use of this information is at your discretion and risk. Nothing herein relieves you from carrying out your own suitability determinations and tests. You are responsible for observing all laws and regulations relevant to your products, uses or processes. We do not assume any liability in connection with your product and its use. The foregoing information and suggestions are also provided without warranty of non-infringement as to the intellectual property rights of third parties, and shall not be construed as any inducement to infringe the rights of third parties.

AMPHISOL® K and the co-emulsifier should be used at an optimal ratio. DSM has elaborated a co-emulsifier map available on request. AMPHISOL® K and the co-emulsifier will form, during the emulsification, a liquid crystalline structure in the oil phase and at the interphase of oil and water droplets within the first 24 hours without formation of crystals.

Incorporation

- AMPHISOL® K can be added to the heated oil phase (85-90°C) or to the heated water phase (80-85°C). Hot temperatures are required to ensure the best long-term stability.
- When incorporating AMPHISOL® K into either phase follow phase incorporation below. After combining both phases we recommend a homogenization step.



- AMPHISOL K is not sensitive to shear forces and doesn't need strong shearing. Adapt shear force to production scale and shearing equipment accordingly.
- Keep stirring during cooling.
- Add neutralizing agents and temperature sensitive ingredients below 40°C.
- We recommend a second but shorter homogenization step below 40°C.
- Stir while cooling down further.
- The formulations need 24-48h for ripening and completely build out the liquid crystalline structures and to adjust to final viscosity.

Compatibilities

In general, AMPHISOL® K shows very good compatibility with all kind of raw materials like emulsifiers, emollients and waxes, preservatives, hydrocolloids, sunscreens, detergents and other commonly used substances.

Because of its anionic character, the combination of AMPHISOL® K with cationic ingredients needs to be carefully checked as well as the combination with metal salt and alkaline earth metals.

Polyacrylate based thickeners can be formulated in the same phase as AMPHISOL® K without stability issues. When adding polyacrylate based thickeners in the oil phase where AMPHISOL® K is present a slight neutralization already happens with the potassium leading to a slight thickening of the phase.

Recommended pH range is pH 5-9. The adjustment of the desired pH of the finished product can be done with any neutralization agent.

The compatibility always depends on the complete final formulation. Therefore, the formulator has to monitor potential incompatibilities during the time of storage with each formulation.

This information is for illustration purposes only and based upon our current knowledge and experience at the time of printing. We do not make any representation or warranty of any kind, express or implied, including merchantability or fitness for a particular use, with respect to such information or its application. Use of this information is at your discretion and risk. Nothing herein relieves you from carrying out your own suitability determinations and tests. You are responsible for observing all laws and regulations relevant to your products, uses or processes. We do not assume any liability in connection with your product and its use. The foregoing information and suggestions are also provided without warranty of non-infringement as to the intellectual property rights of third parties, and shall not be construed as any inducement to infringe the rights of third parties.

VARIOUS

Storage

AMPHISOL® K can be stored up to 24 months from the date of manufacture in the unopened original container and at temperatures below 25 °C.

In order to avoid microbial contamination following opening, containers should be handled with special care. For safety information please refer to the Safety Data Sheet (SDS).

This information is for illustration purposes only and based upon our current knowledge and experience at the time of printing. We do not make any representation or warranty of any kind, express or implied, including merchantability or fitness for a particular use, with respect to such information or its application. Use of this information is at your discretion and risk. Nothing herein relieves you from carrying out your own suitability determinations and tests. You are responsible for observing all laws and regulations relevant to your products, uses or processes. We do not assume any liability in connection with your product and its use. The foregoing information and suggestions are also provided without warranty of non-infringement as to the intellectual property rights of third parties, and shall not be construed as any inducement to infringe the rights of third parties.