

Technical Data Sheet

ZinClear® XP47 AB+TES (47 wt% zinc oxide dispersed in C12-15 alkyl benzoate)

Introduction

ZinClear-XP47 AB is a 47 wt% dispersion of uncoated zinc oxide in caprylic/capric triglyceride, for use in a variety of sun care, skincare and cosmetics applications.

ZinClear- XP provides zinc oxide (ZnO) particles offering broad spectrum UV protection with exceptional transparency, allowing the formulation of elegant skincare products that do not cause unacceptable whiteness on the skin.

Chemical Composition

INCI Name	CAS No.
Zinc Oxide	1314-13-2
C12-15 alkyl benzoate	68411-27-8
Polyhydroxystearic Acid	27924-99-8
Triethoxycaprylsilane	2493-75-1

Features and Benefits

- Transparent / Non-whitening
- Broad Spectrum UVA/UVB protection
- Suitable for all skin types
- Easy to handle dispersion
- NPA Certified
- COSMOS Certified

Typical Applications

- Natural sunscreens, cosmetics and skincare
- Mineral only sunscreens
- Low irritant or sensitive skin sunscreens
- Baby and children's sun care products
- Nappy rash creams and balms
- Daily wear skincare and cosmetics delivering sun protection
- Lip balms
- Colour cosmetics

Physical Characteristics

ZinClear- XP dispersions are supplied in the form of a viscous, free flowing liquid. The dispersion is pale yellow to yellow-green in colour but when applied to the skin will remain highly transparent, even at high loadings.

Broad Spectrum Protection

ZinClear- XP has a broad absorption profile spanning both UVA and UVB. ZinClear-XP may be used alone or in combination with other UV filters to produce high SPF sunscreens that will meet the UVAPF>1/3SPF criterion where required. ZinClear-XP can also be formulated for the critical wavelength to reach 370nm where required. ZinClear-XP is photostable in formulations and is not prone to degrade or lose effectiveness under influence of UV.

Typical Performance / Required Loadings

ZinClear- XP can be formulated at high loadings to achieve high SPF without compromising the clarity of the end product.

The table below serves as a guide only, as the SPF will additionally depend on the type of formulation.

SPF Target	ZinClear-XP Loading	Equivalent ZnO Loading
<15	15-25%	~7.5-12.5%
15-25	30-40%	~15-20%
30+	40-50%	~20-25%

Antaria recommends that formulators conduct *in vivo* SPF testing when possible during product development to ensure reliability of results.

Particle Morphology

The zinc oxide particles in ZinClear- XP consist of primary particles, which form aggregates up to a few tens of micrometres in size. Larger aggregates have a unique porous structure that provides a closer match between the refractive index of the particle and the refractive index of the emollient, resulting in high transparency.

Natural Certification

ZinClear- XP47 AB is currently certified as compliant with the Natural Product Association (USA) & COSMOS (EU). Certificates available on request.

Regulatory Status

For use as a UV filter, zinc oxide is approved within the limits prescribed in the table below.

Region	Approval Limit
USA	25%
Canada	25%
EU union	25%
Japan	No Limit
Korea	25%
Australia / NZ	No Limit
ASEAN	25%
China	25%

ZinClear- XP47 AB: Technical Specification

Appearance	Pale yellow to yellow-green (Visual)
ZnO Assay	44-50 % (Ion Chromatographic Method)
Secondary Particle Size (D[4,3])	≥ 1.00 µm (Laser Light Scattering)
Total Transmittance (550nm)	≥ 88.0 % (UV-Vis, Internal Method)

Zinc oxide contained in ZinClear-XP47 AB is tested prior to dispersion and complies with the current USP Monograph for zinc oxide.

South Africa	25%
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Handling

It is recommended that all ZinClear- XP dispersions be well mixed prior to use. A minor loss of product as sediment in the bottom of the container may be experienced.

Consult the MSDS for additional handling or safety information.

Packaging

Pack Type	Unit Size	Full Pallet
HDPE Pail	18kg	576kg
Steel Drum	180kg	720kg
IBC	1260kg	1260kg

Shelf Life

ZinClear- XP47 AB has a stability shelf-life of 24 months when stored under standard conditions (above 5°C and below 30°C) after which retest is required to extend the shelf life to 3 years from manufacturing date.

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