

## Technical Data Sheet

ZinClear® IM50 AB (50 wt% zinc oxide dispersed in C12-15 alkyl benzoate)

### Introduction

ZinClear-IM50 AB is a 50 wt% dispersion of uncoated zinc oxide in C12-15 alkyl benzoate, for use in a variety of sun care, skincare and cosmetics applications.

ZinClear-IM 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
Isostearic Acid	30399-84-9

### Features and Benefits

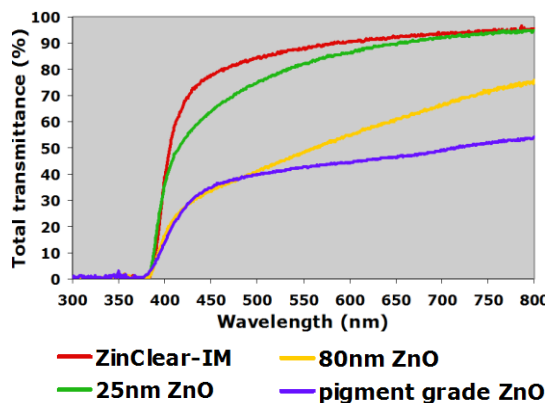
- Transparent / Non-whitening
- Broad Spectrum UVA/UVB protection
- Suitable for all skin types
- Easy to handle dispersion

### Typical Applications

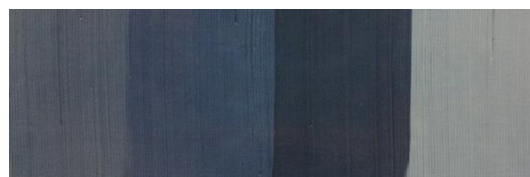
- Mineral sunscreens, cosmetics and skincare
- Low irritant or sensitive skin sunscreens
- Baby and children's sun care products
- Nappy rash creams and balms
- Daily wear skincare and cosmetics delivering sun protection
- Lip balms
- Colour cosmetics

### Physical Characteristics

ZinClear-IM 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. A comparison of ZinClear-IM transparency to competitor ZnO products is shown in the graph below.



The market leading transparency of ZinClear-IM dispersions is also shown in the draw-down charts below against competitor materials.



Zinc Oxide A    Zinc Oxide B    ZinClear-IM®    Zinc Oxide C

### Broad Spectrum Protection

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

**Typical Performance / Required Loadings**

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

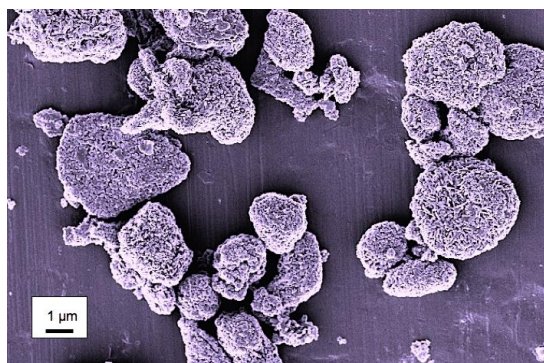
The table below serves as a guide only, as the SPF will additionally depend on the type of formulation.

SPF Target	ZinClear-IM 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-IM 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. A typical SEM image of the zinc oxide particles in ZinClear-IM is shown in the image below. This image illustrates that the zinc oxide is present in the form of porous particles having sizes mostly in the micrometer range.

**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%
South Africa	25%

**Handling**

It is recommended that all ZinClear-IM 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-IM50 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.

*ZinClear-IM® forms part of the ZinClear® range of products. ZinClear-IM®, ZinClear® and their logos are registered trademarks of Antaria Pty Ltd. Patents pending.*

**ZinClear-IM50 AB: Technical Specification**

Appearance	Pale yellow to yellow green (Visual)
ZnO Assay	48.0 – 52.0 % (Ion Chromatographic Method)
Secondary Particle Size (D[4,3])	≥ 1.00 µm (Laser Light Scattering)
Total Transmittance (550nm)	≥ 90.0 % (UV-Vis, Internal Method)

Zinc oxide contained in ZinClear-IM50 AB is tested prior to dispersion and complies with the current USP Monograph for zinc oxide.

The information set out above is indicative and provided for illustrative purposes only. Antaria does not guarantee that the product is fit for any particular purpose and the user is responsible for conducting its own evaluations and tests. Antaria's liability is limited by its general terms and conditions of sales which are available upon request. This product information is current as of July 2021.