Technical Data Sheet

ZinClear-XP55 Sunflower (55 wt% zinc oxide dispersed in Organic Helianthus Annuus Seed Oil)

Introduction

ZinClear-XP55 Sunflower is a dispersion of 55 wt% ZinClear XP™ (uncoated zinc oxide) in Organic Helianthus Annuus Seed Oil, for use in a variety of suncare, skincare and cosmetics applications.

ZinClear-XP55 Sunflower 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
Helianthus Annuus Seed Oil	8001-21-6
Polyglyceryl-3 Polyricinoleate	29894-35-7
Isostearic acid	30399-84-9

Features and Benefits

- Transparent / Non-whitening
- Exceeds critical wavelength requirements
- Broad Spectrum UVA/UVB protection
- Suitable for all skin types
- Easy to handle dispersion
- ECOGEA 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

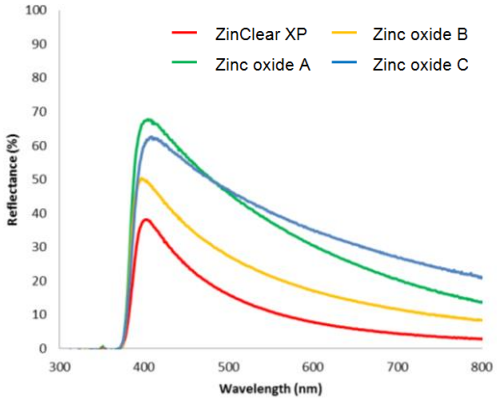
Organic vs Non-organic

Organic products are derived from entirely natural sources, using approved manufacturing methods, and may only be produced using certain approved, naturally derived fertilisers, pesticides, fungicides, herbicides, and insecticides. Organic production methods are often more sustainable with a lower environmental impact.

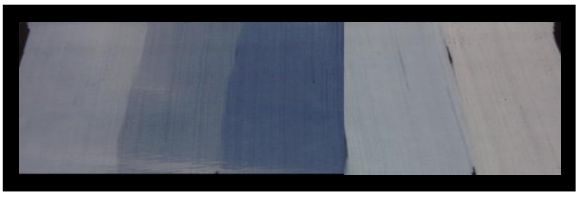
Non-organics products are not subject to the same restrictions and may use a combination of synthetic and naturally derived materials, produced via a wider variety of manufacturing methods, and may use a wider variety of fertilisers, pesticides, fungicides, herbicides, and insecticides.

Physical Characteristics

ZinClear-XP55 Sunflower dispersions are supplied in the form of a viscous, free flowing liquid. The dispersion is off-white to light yellow in colour but when applied to the skin will remain highly transparent, even at high loadings. A comparison of ZinClear XP™ (100 wt% ZnO) transparency to competitor zinc oxide products is shown in the chart below.



The market leading transparency of ZinClear XP™ is demonstrated below in dispersion draw down charts against competitor materials.



Zinc oxide B | Zinc oxide D | **ZinClear XP™** | Zinc oxide A | Zinc oxide C

Broad Spectrum Protection

ZinClear XP™ has a broad absorption profile spanning both UVA and UVB. Therefore, ZinClear-XP55 Sunflower may be used as a sole UV filter, or in combination with chemical UV filters to produce high SPF sunscreens which comply to both European (UVAPF > 1/3 SPF), and FDA's (Critical Wavelength ≥ 370 nm) Broad Spectrum requirements. ZinClear-XP55 Sunflower is photostable in formulations and is not prone to degrade or lose effectiveness under influence of UV.

Typical Performance / Required Loadings

ZinClear-XP55 Sunflower 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-XP55 Sunflower 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.

Organic / Natural / Vegan Certification

ZinClear-XP55 Sunflower is currently certified as Organic compliant with ECOGEA (EU), Natural compliant with COSMOS (EU) & Vegan compliant with VegeCert (NA). 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%
South Africa	25%

Handling

It is recommended that all ZinClear-XP55 Sunflower 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 SDS for additional handling or safety information.

Packaging

Pack Type	Unit Size	Full Pallet
HDPE Pail	19 kg	608 kg
IBC	665 kg	665 kg
IBC	1,330 kg	1,330 kg

Shelf Life

ZinClear-XP55 Sunflower has a provisional shelf-life of 2 years when stored under standard conditions (above 5°C and below 30°C).

ZinClear-XP55 Sunflower: Technical Specification

Appearance	Off-white to light yellow (Visual)
ZnO Assay	53.0 – 57.0 % (Ion Chromatographic Method)
Secondary Particle Size (D[4,3])	≥ 1.00 µm (Laser Light Scattering)

Zinc oxide contained in ZinClear-XP55 Sunflower is tested prior to dispersion and complies with the current USP Monograph for zinc oxide.