



ACCELERATED  
MATERIALS

# Z<sup>☛</sup>rmour PURE

High UV Protective Additive

## Redefining Safer UV-blocking Cosmetics with ZArmour PURE

Many additives used in cosmetic formulations have toxic effects for humans and the environment, including irritants and heavy metal-containing substances. Further safety requirements in skincare and cosmetics products, such as the US Food and Drug Administration's recent limit on approved UV-blocking agents, now only Titanium Dioxide (TiO<sub>2</sub>) and Zinc Oxide (ZnO), require safer and more effective additives.

ZArmour PURE is a high purity nanostructured ZnO for UV-blocking cosmetic formulations. As a non-toxic material with low heavy metal content, it is a safe and highly effective solution to replace conventional additives in a wide range of applications. ZArmour PURE is distinguished by several key attributes:

1. *Low Heavy Metals Content:* Our ZnO formulation is meticulously crafted to minimise heavy metals content, ensuring it meets the highest industry standards. With levels below 2ppm, our material surpasses current regulations.

2. *Safe for Cosmetic Use:* ZnO material is Generally Recognized as Safe (GRAS) by the FDA (Title 21, Code of Federal Regulations, Section 182.8991) and approved for use in its nanostructured form as a UV-blocking agent in the EU.

3. *UV-Blocking/Shielding Ability:* Shielding the skin from harmful UV radiation is crucial in maintaining healthy and youthful-looking skin. As a wide bandgap semiconducting material, ZnO effectively absorbs UV-rays. By modifying the size and shape of ZnO, we also achieve high surface areas, which further block UV-rays from reaching the skin.

4. *Pure White:*

ZArmour PURE has a lasting white colour, and may be easily formulated into many products while retaining their aesthetic appearance. With its small size, ZArmour PURE can also be applied in thin, visually transparent layers.

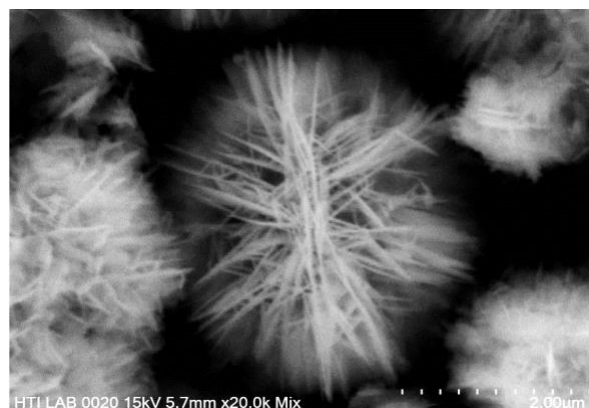
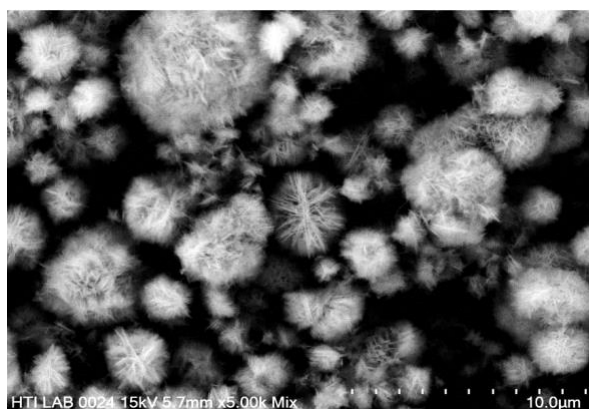


Figure 1. SEM images of high UV absorbing ZnO microparticles

## Product Overview

To cater to specific needs, we provide Z Armour PURE as a water-based dispersion, or as a dry powder upon request. We pride ourselves on offering versatile solutions that seamlessly integrate into your formulation processes. Additionally, our dispersions can be formulated without the need for surfactant additives, ensuring a pure and more friendly composition.

For those who wish to create new cosmetic formulations and functionalities with Z Armour PURE, we provide a bespoke product development service, utilizing our in-house expertise in ZnO, formulations and agile R&D workflows. The result is a custom, drop-in formulation that we can also produce at commercial scales.

## Representative Product Specifications

Colour (L, a*, b*)	98.3, 0.53, -0.1
Form	25-35 wt% in water
Composition	ZnO
Particle size (nm)	<150 nm to 5 um
Purity	>99%
Pb content, ppm	<2.0
Cd content, ppm	<2.0
As content, ppm	<2.0
Cumulative heavy metals	<10.0

## Product Data

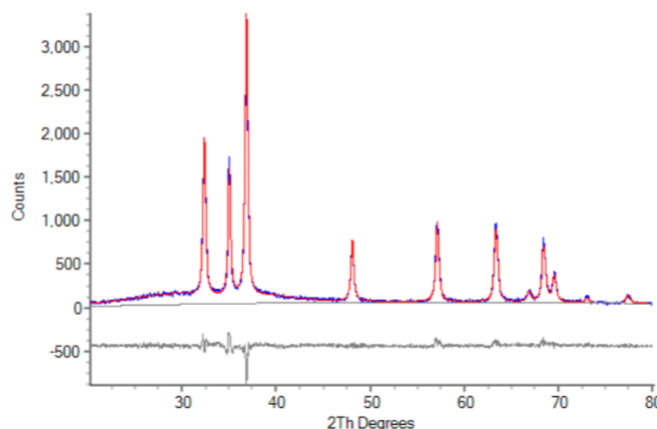


Figure 2. X-ray diffractogram of Z Armour PURE showing highly crystalline pure Zincite with a crystalline size of 34 nm

Join us today in shaping a future where beauty and well-being go hand in hand. Contact us at [info@acceleratedmaterials.co.uk](mailto:info@acceleratedmaterials.co.uk) to explore the possibilities.