

Technical Data Sheet of S-Block DZ-100 PDCC (Developmental)

Product Description

Fine and stable dispersion of UV grade Zinc Oxide in green cosmetic oils at high 78 % of active. It can be incorporated easily with the conventional equipment into any personal care products to provide the broad-spectrum sun protection benefit. Sunscreens made of S-Block DZ 100 exhibits excellent transparency and soft powdery sensory as if there were no ZnO particles inside. It is Ideal for clean beauty market.

Legislation & Regulation.

- Comply with global regulations.
 - FDA of United States: Broad-Spectrum requirement, USP grade, and Audit.
 - European Union Regulation. EU 2016/621, Annex VI of EC NO. 1223/2009
- INCI Zinc oxide (and) Propanediol Dicaprylate/caprates (and) Polyhydroxystearic Acid (and) Polyglyceryl-3 Polyricinoleate (and) Triethoxycaprylylsilane (and) Lecithin
- CAS # 1314-13-2/1072005-10-7/27924-99-8/29894-35-7/2943-75-1/8002-43-5
- EINECS 215-222-5/684-597-9 /exempt/exempt/220-941-2/232-307-2

General Product Specification

<u>Item</u>	<u>Specification</u>
Appearance	Off-white soft cream
Odor	Characteristic Smell
Viscosity, 10 rpm/SP #5	6,000 – 120,000 cP
Specific Gravity	2.45 – 2.85
% ZnO	76% - 82%

Safety data:

The zinc oxide powder before the dispersion process is USP grade & broad spectrum, and is audited & approved by FDA of United states. It also meets with the safety requirements of European Union via EC No. 1223/2009, annex VI.

- Repeated Insult Patch Test (RIPT) with 50 human subjects shows no skin irritation and no skin sensitization.
- Total heavy metal < 20 ppm, and Arsenic < 2 ppm
- Microbiology data: Total aerobic bacteria count and the total yeast/mold count < 100 cfu/g, free of Pathogens: E.Coli, P. Aeruginosa, and S. Aureus.

Features/Benefits

- High UVA protection for global market
 - In-vitro UVA protocol, Critical wavelength = 371 – 373 nm. Broad-spectrum for US and Canada market.
 - In-Vitro UVA Protocol, ISO 24443:2012. UVAPF/SPF = 0.46, which is $\geq 1/3$ for EU market
 - In-vivo UVA protocol, ISO 24442:2011 protocol for Asia and Europe Market. Persistent Pigment Darkening (PPD) = 16.9. **PA ++++ for Asia market.**
- Fast speed from manufacturing to market.
 - Manufacturing with common equipment of cosmetic beauty products. No special grinding machines and safety precautions for powder is required.
 - Very stable and easy to transfer dispersion with high and consistent % by weight of ZnO active. No need to re-mix.
- Fast speed from formulation development to global market
 - Comply with all global regulatory requirements. One sunscreen formulation for all global markets.
 - Shortened the SPF & UVA test time & process with Fairly Predictable SPF and UVA performances in different formulations.
 - Large formulation space (due to high 78% ZnO actives) enables flexible formulation and sensory.
 - Stable, low viscosity W/O sunscreen without in-package viscosity increase is feasible.
- High transparency on skin, smooth sensory.
- Very high Natural Origin Index (ISO 1628) = 0.9836 for green market and clean market.

Applications

Cosmetic and Toiletry:

- Mineral sunscreens that meet with all global regulations for UVA protection.
- Sunscreens for baby and people with sensitive skin.
- Sport sunscreens with long lasting UV A and B protection.
- Daily skin care lotion and cream with UV A and B protection.
- Color cosmetics with sunscreen benefit.
- Sun protection products of high SPF with a synergistic combination of organic UV filters and ZnO

How to use it?

- Just add into the oil phase of the formulation and mix well with a homogenizer.
- Dosage: About 1.5 SPF per 1% ZnO active. Critical wavelength 371 - 373 nm. For example, a SPF 30 sunscreen formulation would need: $30/1.5 = 20\%$ ZnO active, or about 25.64% S-Block DZ 100 (25.6% x 78% = 20% ZnO active).
- For predicting the SPF and critical wavelength of sunscreen prototypes made of the blends of several G-Block products, please contact us for the "**G-Block Prediction Calculator**" program to do it easily.
- **Sunscreen Test Protocols:**
 - SPF: In-Vivo Protocols of FDA of USA and EN ISO 24444:2010.
 - UVA: In-Vivo protocol of EN ISO 24442:2011; In-Vitro Protocol of FDA of USA(critical wave) ; EN ISO 2443:2012 (UVAPF) .
 - Please note that in-vitro SPF measurement is not suitable for sunscreens of inorganic UV filters

Packaging

25 kg in 3.5 gallon plastic pail

Storage

- Store the product in its original package and avoid storing at extreme high and low temperature

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