

## Premium UVA Protection Without Heavy Feel

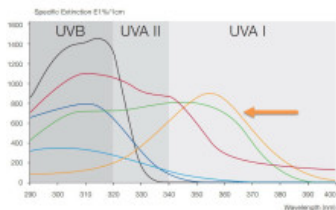
Modern UV-care customers want strong UVA protection, elegant skin feel, and less whitening in daily facial products. DHHB Ultra-Pure™ gives formulators a stable UVA-filter option for premium sunscreen, day-care, primer, foundation, and UV-protection concepts.

- ✓ Targets UVA protection in the 320–390 nm range
- ✓ Supports PA-focused daily and outdoor sunscreen systems
- ✓ Helps reduce reliance on high-load physical-only UVA systems
- ✓ Fits elegant face-care textures with easy spreading



## A Photostable Alternative To Avobenzone

DHHB Ultra-Pure™ is positioned for formulas where long-lasting UVA performance and formula stability are priorities. It offers a practical route to stable UVA protection without depending on Avobenzone-style stabilization systems.



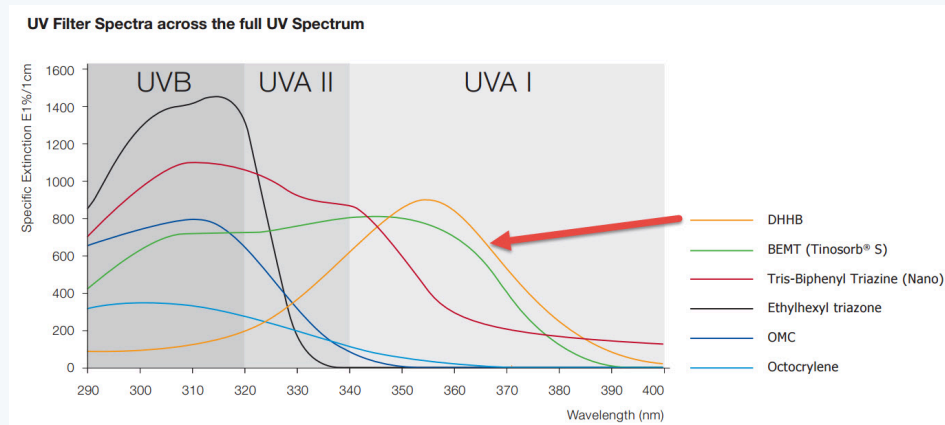
DHHB

320 - 390nm (UVA I/II)

- High-purity organic UVA filter for cosmetic use
- Strong sunlight stability for longer-lasting UVA systems
- Compatible with Zinc Oxide and Titanium Dioxide
- Useful with organic UVB filters such as OMC

# UVA Coverage Built For PA Storytelling

DHHB helps protect across the UVA-focused 320–390 nm range and supports PA-oriented formula design. For brands, that creates a clear route to premium daily UV-care positioning around stable UVA defense.



- 5% DHHB supports PA+++ guidance from source calculation

- More than 7.5% DHHB supports PA++++ guidance

- DHHB is UVA-focused, not a stand-alone UVB filter

- Pair with UVB filters to build broader SPF/PA systems

## Texture Advantages For High-End Face Sunscreen

DHHB Ultra-Pure™ supports elegant cosmetic textures because it does not create the whitening effect associated with high-load physical filters. It is especially useful when the product experience must feel creamy, smooth, and easy to blend.

No whitening effect positioning for facial formulas

Creamy skin feel with easy spreading

Reduced separation concerns versus physical-only high-load systems

Suitable for sunscreen, day-care, primer, and foundation

## Flexible Solubility Helps Formulators Build Systems

DHHB is oil-soluble and can be dissolved in common sunscreen solvents and emollients, giving formulators practical flexibility when designing hybrid and organic UV-filter systems. Controlled oil-phase dissolution helps unlock its use in elegant formats.

Up to 39% in Octocrylene or OMC

Up to 36% in Homosalate

Up to 30% in Octisalate

Up to 23% in LipidSoft

Soluble in oil, ethanol, and silicone systems

# Clear Use Levels For Different Product Goals

DHHB Ultra-Pure™ can be scaled by product ambition, from daily UVA-focused creams to high-PA sunscreen systems. The usage guidance helps customers match ingredient level to the product story they want to launch.

- 2–5% for daily day-cream UVA-focused protection

- 2.5–3% with Zinc Oxide as the main UVA base

- 5–7.5% when DHHB is the main UVA filter

- 0.10–10.00% general usage range

- Europe, Thailand, and Japan source limits: not more than 10%

# Processing Guidance Reduces Adoption Friction

The practical formulation route is to dissolve DHHB properly in the oil or suitable solvent phase while keeping heat controlled. This gives developers a clear handling path for stable incorporation without overcomplicating the process.

- Dissolve into oil phase or suitable solvent system

- Use heat to help dissolve at 80°C for not more than 30 minutes

- Avoid heat above 80°C and avoid prolonged excessive heat

- Technical handling notes also flag last-step addition and avoiding temperature above 40°C

# Evidence Supports Stable UVA Claim-Building

Research context supports DHHB's value in photostable UVA systems and oxidative-stress-oriented sunscreen storytelling. These proof points help brands build stronger reason-to-believe for premium UVA protection.

- Supports longer-lasting UVA protection by showing DHHB improved Avobenzone photostability in cosmetic sunscreen formulations. Citation: Kawakami CM et al.
- Supports UVA absorption and oxidative-stress positioning by reporting UVA absorption plus singlet-oxygen quenching potential for Uvinul A Plus. Citation: Shamoto Y et al.

# Proof Points For Advanced UV Systems

Additional research supports DHHB's role in stable UV-filter mixtures and advanced formulation technology. This gives developers more confidence when positioning DHHB in sophisticated hybrid or next-generation sunscreen systems.

- Supports lower photo-reactive UV-filter systems by showing DHHB photostabilized triazine filters and produced no detectable UV-induced free radicals in tested formulations. Citation: Sohn M et al.
- Supports advanced dispersion interest by showing DHHB nanoparticles retained ultrafast excited-state energy dissipation with improved water dispersibility in an experimental system. Citation: Ye F et al.

# Launchable Concepts For Premium UV Care

DHHB Ultra-Pure™ helps brands move from ingredient selection to marketable product concepts. It fits daily UVA defense, high-PA face sunscreen, hybrid mineral-organic sunscreen, no-white-cast urban sunscreen, and UV-protective complexion products.

- Premium Daily UVA Defense Cream: 2–5% DHHB for daily exposure
- High-PA Face Sunscreen SPF25+ System: Zinc Oxide plus 2.5–5% DHHB and UVB filters
- Elegant No-White-Cast Urban Sunscreen: stable UVA protection with smoother cosmetic finish
- UV-Protective Foundation or Primer: UVA support without unwanted whitening

