

a cold-processable, upcycled, and reduced odor sulfur as an effective acne treatment

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sulfur for acne treatment

Sulfur is a valuable ingredient in acne treatment due to its potent antifungal, antibacterial, and keratolytic properties which help to address excess oil, clogged pores, and acne-causing bacteria. Unlike benzoyl peroxide and salicylic acid, sulfur offers advantages such as reduced irritation and a lack of photosensitivity or drying effects providing an effective yet gentle approach to acne treatment.

challenges with historical sulfur formulations

- The notable sulfur odor, reminiscent of rotten eggs, can deter formulators and consumers which limits the appeal of sulfur-based products
- Sulfur does not readily disperse into water, requiring additional steps and ingredients to ensure proper formulation and stability
- Traditional sulfur extraction methods, like mining elemental sulfur, pose environmental concerns. These methods can lead to groundwater contamination, leaching of heavy metals into the environment, and disruptions to natural ecosystems. As environmental sustainability gains importance, exploring alternative sulfur sources and extraction methods becomes crucial.

upcycled colloidal sulfur

The sulfur used in the production of Sulfidal Colloidal Sulfur is upcycled as a byproduct of fossil fuels, specifically generated in excess by the petroleum industry. Repurposing sulfur that would otherwise go to waste helps to minimize the environmental impacts linked to traditional sulfur extraction methods like mining. This upcycling approach reduces the reliance on mined elemental sulfur and offers notable environmental benefits including the reduction of waste and the mitigation of air pollution. Upcycled sulfur not only serves as an effective solution for acne and other skin conditions, but also presents a creative and sustainable approach to addressing environmental concerns.

Sulfidal™ Colloidal Sulfur harnesses the powerful properties of sulfur to effectively treat acne and reduce redness while addressing the challenges associated with formulating sulfur-based products. This innovative ingredient contains 75% active sulfur in a protective colloid that is naturally derived from the sap of the Acacia Senegal tree. The colloid structure offers formulators a more convenient and efficient approach to streamline the formulation process and maximize the benefits of sulfur.



easily dispersible for simple formulation



cold processable to promote energy efficiency



reduced odor for improved consumer experience



upcycled to mitigate environmental impact

formulation advantages

Formulating skincare products with **Sulfidal Colloidal Sulfur** offers significant advantages over standard sulfur formulations. Due to its unique colloid structure, one notable advantage is the ease of dispersion. Unlike standard sulfur, which often requires extensive mixing and grinding to achieve homogeneity, colloidal sulfur readily disperses into formulations without the need for additional processing steps. This key benefit saves time and resources during the formulation process, allowing for more efficient production and improved consistency in the final product.

Sulfidal Colloidal Sulfur exhibits a significantly reduced odor compared to standard sulfur formulations which can also be attributed to the colloid structure. The characteristic unpleasant smell often associated with sulfur, reminiscent of rotten eggs, can be a challenge for formulators and a deterrent for consumers. The reduced odor of colloidal sulfur enhances the overall sensory experience of the product, making it more appealing and user-friendly.

Another advantage is the cold processability of **Sulfidal Colloidal Sulfur**. Unlike some sulfur compounds that require elevated temperatures to be incorporated into formulations, colloidal sulfur can be cold processed. This temperature flexibility not only simplifies the manufacturing process but also helps preserve the stability and efficacy of other heat-sensitive ingredients present in the formulation.

The formulation advantages of **Sulfidal Colloidal Sulfur** help to streamline the manufacturing process and improve the sensory aspects of sulfur-based skincare products. These advantages not only benefit formulators by simplifying production but also enhance the consumer experience, ultimately contributing to the overall success and desirability of the final product.

clinical study for efficacy

A clinical study was conducted to evaluate the efficacy of various formulations in treating acne over an 8-week period. A total of 90 healthy male and female subjects were divided into five groups, with each group of eighteen participants assigned a different leave-on formula. The subjects were given instructions to use their assigned product as a spot treatment once a day over the 8 weeks. The subjects then returned for evaluations by a dermatologist which included a visual assessment, expert clinical grading using the Investigators Global Assessment (IGA) scale, lesion count, and sebumeter readings. Digital photographs were taken at the 8 week evaluations.

The five leave-on formulas included a placebo, 6.7% Sulfidal Colloidal Sulfur (5% active sulfur), 6.7% Sulfidal Colloidal Sulfur (5% active sulfur) with 4% Niacinamide (Vitamin B3), 4% Niacinamide (Vitamin B3), and a commercial 5% Benzoyl Peroxide Gel.

8-Week Comparison	Placebo	Sulfidal Colloidal Sulfur	Niacinamide	Sulfidal Colloidal Sulfur + Niacinamide	Benzoyl Peroxide
Sebum	3%	-5%	-3%	-22%	-12%
Redness	43%	-33%	-60%	-100%	-43%
Whiteheads	+10% to +40%	-15% to -30%	-20% to -40%	-70% to -100%	-40% to -80%
Blackheads	+10% to +40%	-20% to -40%	-40% to -60%	-90% to -100%	-60% to -80%
IGA Score	10%	-20%	-23%	-69%	-60%

In the clinical study, **Sulfidal Colloidal Sulfur** demonstrated its effectiveness in treating acne blemishes, particularly whiteheads. Compared to a placebo, it effectively reduced sebum production and redness without causing irritation, scaling, or dryness. The dermatological assessment using the IGA scale showed a 20% improvement in acne severity compared to the baseline.

The study found that the addition of Niacinamide alongside Sulfidal Colloidal Sulfur enhanced the overall appearance of blemished skin. This combination outperformed Benzoyl Peroxide (BPO) by working twice as fast in reducing redness. It also resulted in a significant 22% reduction in sebum levels, surpassing the 12% reduction achieved by BPO. The IGA assessment demonstrated an impressive overall improvement of nearly 70%. Furthermore, panelists expressed a preference for the results obtained in terms of the overall appearance of their skin.



These findings highlight the efficacy of **Sulfidal Colloidal Sulfur** in clearing acne blemishes, with notable improvements in sebum control, redness reduction, and overall acne severity. The addition of Niacinamide further enhanced its performance, making it a compelling option for consumers seeking effective and aesthetically pleasing solutions for acne-related skin concerns.

a promising solution

Sulfidal Colloidal Sulfur is a game-changing topical treatment for acne and related skin conditions. This innovative ingredient offers a range of key benefits that sets it apart from traditional acne treatments. Clinical studies have demonstrated its ability to reduce blemishes, sebum production, and redness, surpassing even benzoyl peroxide in certain aspects. With its upcycled nature, ease of formulation, reduced odor, and proven efficacy, Sulfidal Colloidal Sulfur offers a promising solution for an effective approach to managing acne while showcasing Aurorium's commitment to sustainability and environmental responsibility.



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References:

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