HydroSal™ Fragrance

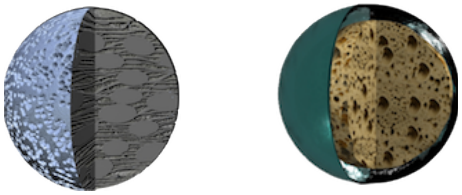
PID #7014

U.S. Patent #20030053

Long Lasting Fragrance with Odor Control

HydroSal™ Fragrance is a unique controlled-release delivery system that is designed to provide a burst of fragrance in response to a moisture trigger. Where many fragrances lose their intensity in the presence of moisture, HydroSal™ responds with a more intense experience. In addition to fragrance intensity, this delivery system provides a secondary property of malodor neutralization. HydroSal™ can also maintain more fragrance on the target site over time.

Technology: The first "level" of HydroSal™ Fragrance is the sponge-like sub-micron sphere where the fragrance is encapsulated (brown core, fig. B below). These spheres are suspended in water and loosely surrounded with an additional polymeric shell (green shell, fig. B below).



(A) (B)

Fig. 1: Structure of HydroSal™ core with a temporarily evaporated shell (A), and with the outer shell intact (B).

When the product is applied, the consumer experiences an initial burst of fragrance. As the water evaporates and the skin surface dries, the polymeric shell seizes up and seals the sub-micron, forming a continuous barrier. Permeation through the barrier shell is the limiting factor for diffusion/release of the fragrance. When moisture (perspiration, etc.) is reintroduced, the barrier properties of the shell are disturbed and loosened, allowing the encapsulated fragrance to diffuse faster through the shell, thus giving the user another burst of lasting fragrance. As the fragrance is released, malodor agents are drawn into the core of the HydroSal™ and effectively neutralized.

A B C

Fig 2: Commercial products using HydroSal™ Fragrance: Skin Lotion - Moisturizer (A), Body Spray (B), and Scent Alert (C).

Extended Fragrance Release:

HydroSal™ Fragrance in water based spray (4% HydroSal™) was compared to 4% free fragrance (figure 3). HydroSal™ does not require additional solubilizer to dissolve the fragrance. The solutions were each sprayed over a paper towel and allowed to dry at room temperature for 48 hours before evaluation.

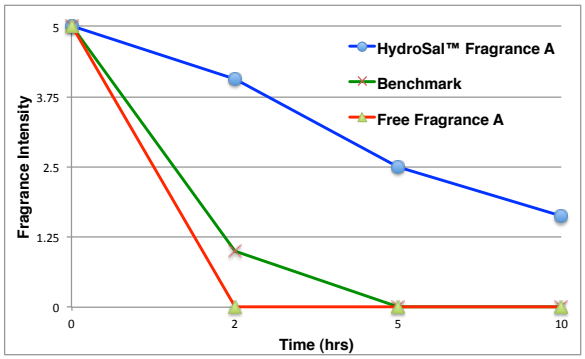


Fig. 3: HydroSal™ maintains a higher fragrance intensity over time compared to the free fragrance, a benchmark product, commercially used as an air freshener.

Applications: Deodorant spray, hair deodorizers, fabric deodorizers, hydro-alcoholic splashes, fine fragrances, hair spray, leave-on conditioners, aerosols, paper products

INCI names:
Polyvinyl Alcohol (and) Fragrance (and) Acrylates/ C12-22 Alkyl Methacrylate Copolymer (and) Phenoxyethanol (and) Ethylhexylglycerin

Product Specification:
Appearance: White Liquid Dispersion
Color: White to opaque
Odor: Typical of Fragrance

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Release on Skin:

HydroSal™ extends the release of fragrance from body applications. Skin extractions combined with GC analysis have confirmed the long lasting effect (figure 4).

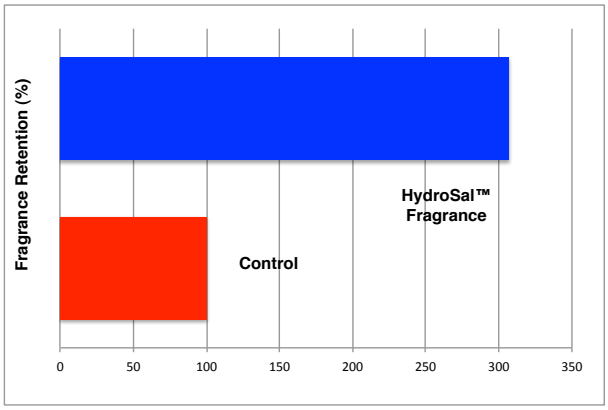

Fig. 4: HydroSal™ retains over 3 times more fragrance compared to the Control (free) on skin. The technology produced significant malodor reduction.

Release on Hard Surface:

Long lasting performance of a fragrance is a key, desirable benefit, and it is used to gauge the freshness of the product and/or its efficacy. Another benefit of HydroSal™ is the activation of the fragrance when exposed to moisture. The fragrance technology was sprayed onto paper and allowed to dry at room temperature for 48 hours. The retention of the fragrance was tested by taking ethanol extractions followed by GC analysis.

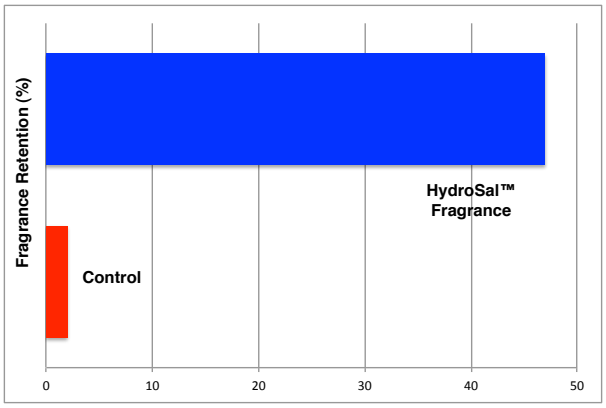

Fig. 5: HydroSal™ retains over 23 times more fragrance compared to the Control (free) from a hard surface application (paper). The benefit of this technology is consistent with both inert surfaces and skin, however the effect is more pronounced using paper. This is probably due to the fact that humidity can be controlled better with paper than with human skin.

Malodor Management:

Malodor reduction was tested on a paper towel with a combination of onion and ammonia solution as a malodor source. Trained volunteers (n=12) evaluated the malodor intensity of the samples ranking the intensity on a scale of 1 to 5, where 5 had the strongest malodor intensity compared to the Control (malodor at the same concentration, 0.3% in water).

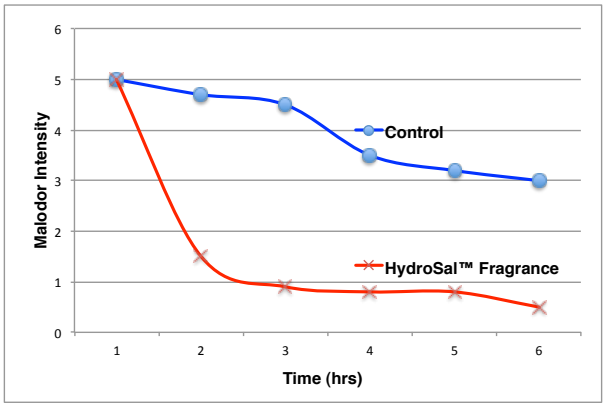

Fig. 6: HydroSal™ technology results in a substantial reduction in malodor intensity compared to the Control fragrance, which never nears the HydroSal™ level of performance.

Moisture Activation

HydroSal™ technology provides bursts of fragrance in response to moisture (water, sweat). Upon contact, HydroSal™ swells, loosening, the barrier-like properties of the shell, allowing easier diffusion of the fragrance (figure 7). The fragrance intensity can be perceived with most fragrance types.

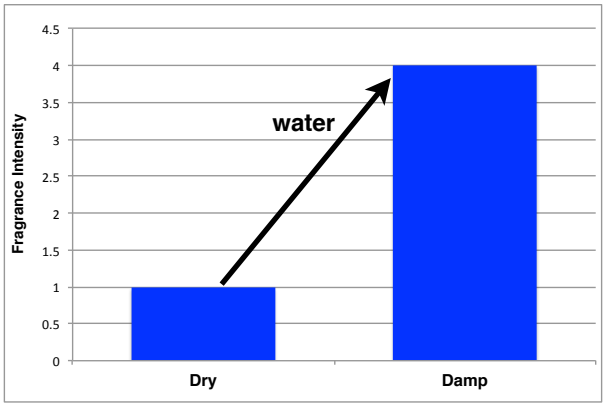

Fig. 7: Fragrance intensity increases by 4 times, proving greater diffusion of fragrance upon contact with moisture. The test included water spray on a paper surface. The paper was sprayed with HydroSal™ Fragrance 24 hours prior to activation. The results are almost the same with aged paper.