

Long Lasting, Odorless Refreshing Sensation

MultiSal™ SalCool is a proprietary blend of refreshing ingredients that provides a long lasting, odorless cooling sensation from cosmetic and personal care products. SalCool acts on the sensory nerve endings (cold receptors) in the mouth and on the skin to achieve maximum cooling performance and stability. This product is unique because of the cooperative powers of its ingredients. Each one has a different trigger, lag time (the time it takes to perceive the desired sensation), and performance time (duration of sensation).

Technology: MultiSal™ technology is based on double-layered encapsulation of ingredients. The ingredients are contained in sub-micron spheres, which are re-encapsulated in larger microspheres (figure 1). The microspheres can be incorporated into water bases and emulsions without the use of harsh surfactants or dilutants.

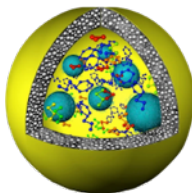
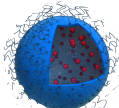


Fig. 1: Structure of MultiSal™ and mechanism to activate the release of the sub-micron spheres containing cooling ingredients.

The outer microsphere ruptures when the lotion is rubbed into the skin, releasing and depositing the smaller sub-micron spheres (that were inside the microspheres) onto the skin, where they release their contents over time.



The sub-micron spheres encapsulate the cooling-generating ingredients. The shell of the sub-micron sphere is comprised of a bio-adhesive functional ingredient that modulates the adhesion onto the skin. The core is comprised of botanical lipophilic ingredients that help modulate the release of the ingredients and at the same time moisturize the skin. The lipophilic structure of the spheres partitions into the skin, reducing water loss from evaporating, thus retaining moisture. As the spheres dissolve and disintegrate, the matrix modulates the slow release of the encapsulated cooling ingredients and enhances the compatibility with the skin so that the nerve endings are targeted more directly and triggered more effectively. The same intensity and longevity cannot be achieved with free (non-encapsulated) ingredients.

Refreshing Intensity: Performance on Skin

The refreshing intensity of 10% MultiSal™ SalCool in a lotion applied to the skin was compared to that of 10% free Menthyl Lactate (control sample) that is commonly used for this application.

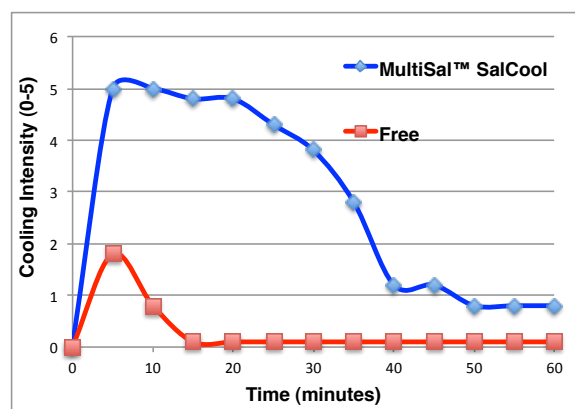


Fig. 2: The refreshing intensity on the skin treated with MultiSal™ SalCool was significantly higher and lasted longer than the control sample, which lost virtually all of its intensity after 15 minutes, while MultiSal™ was still registering a refreshing sensation after 30 minutes.

Applications: Skin Care, Color Cosmetics, Lip Care, Foot Care, Hair Care; Use as is and in combination with analgesic (Lidocaine, etc) to convey the effect.

INCI names:

Methyl Diisopropyl Propionamide (and) Ethyl Menthane Carboxamide (and) Menthyl Lactate (and) Lauryl Laurate (and) and Zea Mays (Corn) Starch (and) Hydrolyzed Corn Starch (and) Hydrolyzed Corn Starch Octenylsuccinate

Product Specification:

Appearance: Free-flowing powder

Color: White

Odor: Odorless

Payload: 10%

Storage: Closed container, room temp.

Shelf Life: 18 months

Solubility: Freely dispersible in all cosmetic formulations



Kinetics of Release:

There are 3 functional ingredients in MultiSal™ SalCool. Each has a different role and feature in terms of lag time and performance time. The kinetics shown in figure 3 indicate that ingredient 1 works almost immediately but the sensation last only a few minutes. Ingredients 2 and 3 have a lag time (delay) before triggering the sensation, but perform over a longer period of time. Therefore, by combining the proprietary blend of ingredients into one product produces a longer lasting cooling sensation for the user.

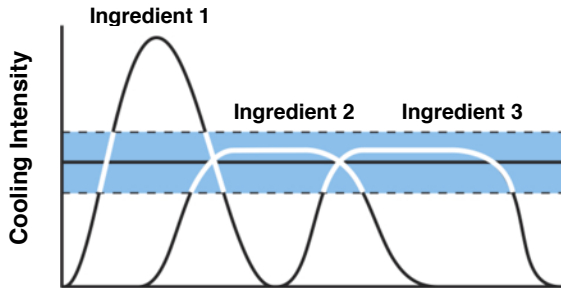


Fig. 3: Graphical representation of the consecutive release and effect of the ingredients in MultiSal™ SalCool.

Salvona offers other refreshing products, including:

MultiSal™ Flavor/Cooling - (PID #2002)

This product includes multiple encapsulated flavors, cooling and tingling agents. The release of the flavor and cooling is synchronized so that the flavor releases first, followed by the cooling, providing a dynamic change in flavor characteristics and sensation over time. For example, in a lip balm application, a fruity taste will be experienced first, then after wetting the lips a delayed cooling sensation ensues and can last anywhere from 30 minutes to an hour.

Flavor/Cooling is available in a variety of flavors. The line of fruit-inspired flavors includes apple, strawberry, sweet cherry, peach, strawberry champagne, and many more. Other flavors include vanilla, chocolate, and coffee. Most flavors are compatible with this technology. MultiSal™ Flavor/Cooling was tested and found to be stable at high temperatures up to 160°C (figure 4). This allows creation of stable products containing MultiSal™ Flavor/Cooling in a hot melt pour such as lip balm, dry perfume sticks, etc.

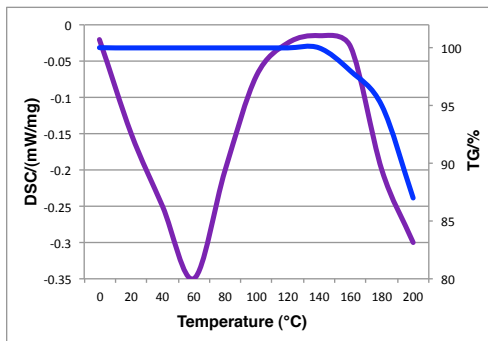


Fig. 4: The DSC-TGA graph shows that Flavor/Cooling is heat stable; no flavor is released up to 160°C (top line).

MultiSal™ Peppermint/Cooling - (PID #2002-7)

This technology delivers a strong refreshing sensation that smells like peppermint but lasts much longer than free (non-encapsulated) peppermint scented products.

Peppermint/Cooling can be applied to a variety of products and product lines. It can be used in oral care for long lasting fresh breath from toothpaste and/or mouth wash (figure 5). It provides a refreshing sensation on the skin in combination with dermatological actives in applications like muscle toning and analgesics.



Fig. 5: Typical products including Peppermint/Cooling: tooth paste (A) and mouth wash (B).

MultiSal™ FreshCool™ - (PID #2134)

This product offers long lasting refreshment through time release cooling sensations. It is intended for use in dermatological, cosmetic, and food applications such as anti-acne, anti-blemish, anti-wrinkle, and anti-dandruff products.

The time release of FreshCool™ noticeably outperforms that of free menthol (figure 6), and can last up to 2 hours, depending on the concentration. Prolonged release also reduces irritation on sensitive skin.

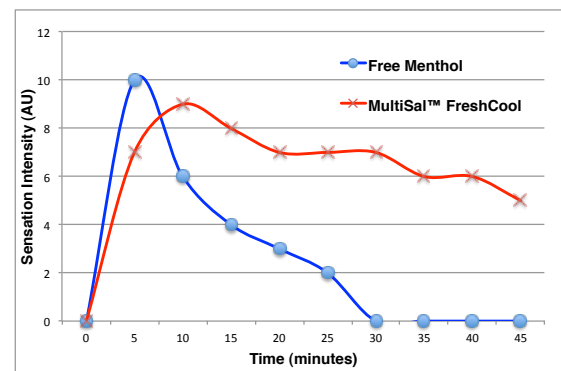


Fig. 6: MultiSal™ FreshCool™ was compared to free Menthol at 1% concentration in lotion. A panel (n=18) evaluated the longevity of the cooling after applying about 0.5 g on the forearm. It was found that MultiSal™ FreshCool™ provides a longer lasting refreshing sensation that is more powerful than the control.