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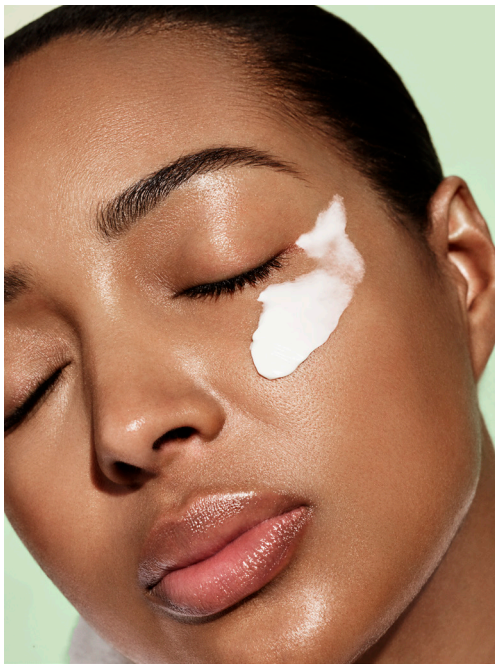
BEAUTY™

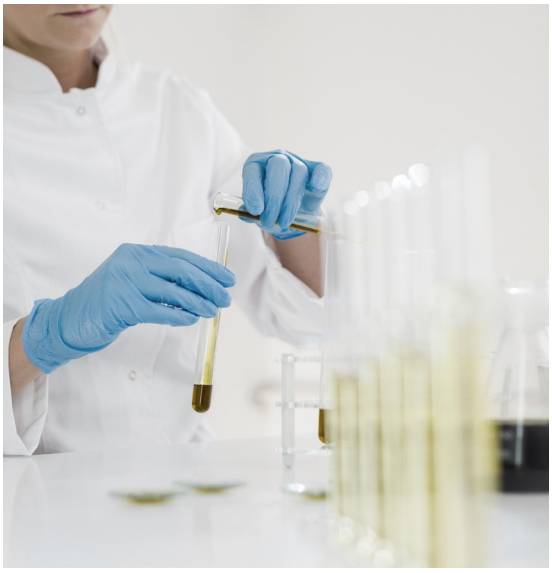
Chapter: Product Performance Testing

Section

01 Product Performance Testing



There are two main testing methodologies to evaluate beauty product performance: "in-vitro" and "in-vivo" testing. When a product is evaluated with in-vitro testing, it's done a lab using skin cells cultured in a glass dish. This method has limitations: How well a product penetrates skin cells cultured on a glass plate is different than how it penetrates the outer layer of a person's skin. Also, in-vitro testing can't accurately simulate all of the environments human skin is exposed to on a daily basis. In-vivo testing, on the other hand, involves application of a product onto the skin of human volunteers, within a clinical lab setting. While in-vivo testing involves a certain amount of "subjective/qualitative" evaluation, it often provides the most useful data.



Below are some examples of performance claims in-vivo testing is used to evaluate, and the types of instruments used to measure the results.

Skin Smoothness and Anti-Wrinkle Effect

In-vivo testing involves using a camera system, such as DermaTOP®. This system takes images of the size and depth of wrinkles present on a volunteer's skin both before and after use of a product to determine how much, if any, effect the product had on the volunteer's wrinkles.

Skin Firmness

A system known as DynaSKIN® is used in combination with the DermaTOP® system. The DynaSKIN® blows air onto the surface of a volunteer's skin at an perpendicular angle, in order to produce a deformation on the skin. Images of the deformations are taken before and after use of the product. If the depth/magnitude of deformation is less after use of the product, enhanced skin firmness has been realized.

Skin Hydration/Moisturization

Two types of devices are typically used, namely, a corneometer and/or a tewameter. A corneometer measures the ability of skin to conduct electricity. Measurements are taken before and after use of a product to determine the amount of electricity conducted by the skin. Since water is known to be an excellent conductor of electricity, an increase in electrical conductance corresponds to an increase in skin's hydration/moisture levels, showing the product performs as represented. A corollary device for assessing hydration/moisturization is a tewameter used to measure Transepidermal Water Loss (TEWL). This device measures skin's ability to retain water. When water passes through the skin, which is a natural biological process, and evaporates from the skin's surface, this phenomenon is referred to as TEWL and is a measure of skin's ability to retain moisture present in the dermis. If the skin's ability to retain moisture is enhanced after use of a product, its effectiveness as a moisturizer is confirmed.

Anti-aging Effect on Skin

A device known as a Dermascan® emits an ultrasound beam that generates a two-dimensional image of the dermis and epidermis, which is used to measure the thickness of the skin. As a person ages, their skin naturally becomes thinner. An increase in thickness after use of a product indicates a positive “anti-aging effect.”

Redensifying Effect on Skin

An SIAscope is a device that utilizes spectrophotometric (aka “Light”) analysis to determine whether a product is effective at increasing the density of the dermis. This is an indirect measure of the collagen content present in the skin.

Restructuring Effect on Skin

A device known as a Squame Scan® is used to evaluate the ability of the skin’s outermost layer to effectively protect the body from external factors, such as sunlight and pollution, as well as retain moisture to prevent it from becoming dry, and is determined by the amount of particular skin proteins found in this outer layer. Special designed tape is first applied onto the skin to remove dead skin cells from its surface, at which point the amount of protein in the cells is measured. A decrease in protein levels following use of a product confirms that it is successful in restructuring the outermost layer of skin.

Sebum/Oil Control

Sebum levels on a person’s forehead and cheeks are measured using a Sebumeter before and after use of the product being tested.

Reference:

www.ncbi.nlm.nih.gov/pmc/articles/PMC3842001/