

Comparative Study of Medline Nutrashield For Wash-off Resistance

Prepared for Dr. McCord, McCord Research
By Dow Corning Corporation
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I. Introduction

A study was conducted to assess and compare wash-off resistance and Moisture Vapor Transmission Rate (MVTR) of Medline Nutrashield to several other commercially available products. Results from these studies demonstrate the ability of Nutrashield to resist wash-off longer and through more wash-offs than the comparative products. The following report documents the results and test methods used.

II. Sample Description and Test Methodology

A. Test Samples

In order to obtain an accurate comparison, six commercially available products were assessed for wash-off resistance from human skin. Following is a brief description of the products assessed:

- Medline Nutrashield – Manufactured by Medline Industries, claims moisturization nourishment and protection
Active Ingredients: 1% Dimethicone
- Sween ® 24 - manufactured by Coloplast Corp, this product claims superior moisturization and protectancy.
Active Ingredients: 6% Dimethicone
- Convatec Sensi-Care ® 2 Moisturizing Body Cream – manufactured by Covatec, this product claims skin moisturization
Active Ingredients: 1% Dimethicone and 30% Petrolatum
- Convatec Sensi-Care ® 3 Protective Barrier – manufactured by Covatec, this product claims to provide a protective barrier.
Active Ingredients: 49% Petrolatum and 15% Zinc Oxide
- Aquaphor ® from Eucerin ® - Manufactured by Beiersdorf, this product claims advanced healing and skin protection
Active Ingredients: 41% Petrolatum
- Proshield Plus® - Distributed by HealthPoint, this product claims protection and adhering.
Active Ingredients: 1% Dimethicone
- 3M Cavilon Durable Barrier Cream® - Manufactured by 3M, this product claims protectancy and a water-repellent film.
Active Ingredient: 1.5% Dimethicone

B. Wash-off Resistance

In order to determine wash-off resistance, the test area (underside of the forearm) was cleansed, dried, and a background spectrum collected via a Nicolet ® Magnum IR A 0.1 g sample of product was then placed on the test area and rubbed in for 30 seconds. It was then allowed to dry for 5 minutes and a spectrum was collected.

After 30 minutes, the test area was rinsed with luke warm water for 5 seconds. Lather was then applied via the opposite hand and the test area rubbed lightly 15 times, then again rinsed for 5 seconds, patted dry, and a spectrum collected. After another 30 minutes, the second wash cycle was performed using the same procedure as above. The above was repeated at 30-minute intervals until all evidence of material had been washed off as evidenced by the loss of the organic stretch in the spectra.

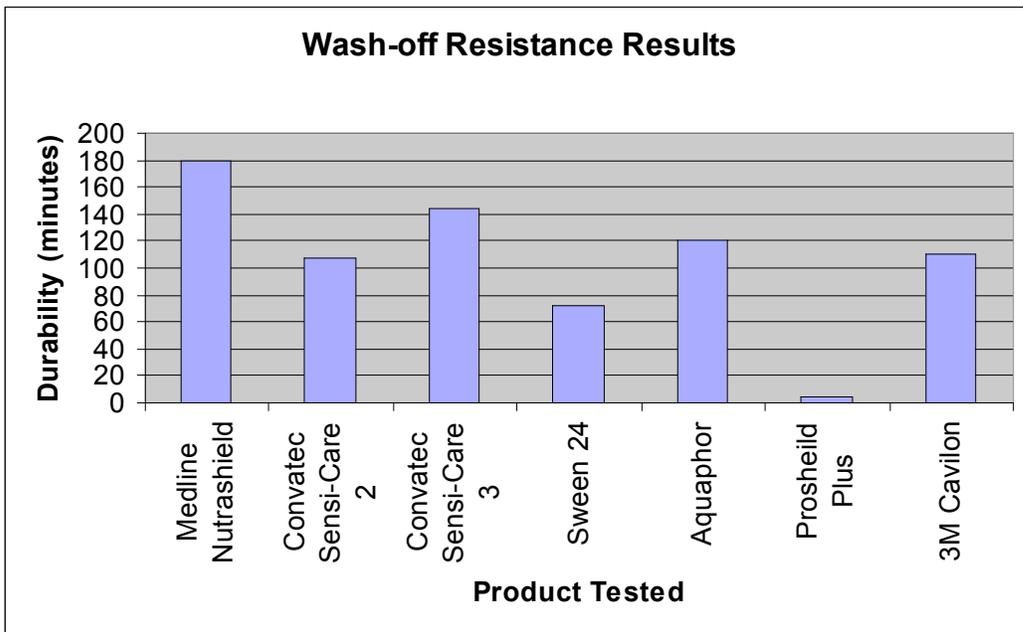
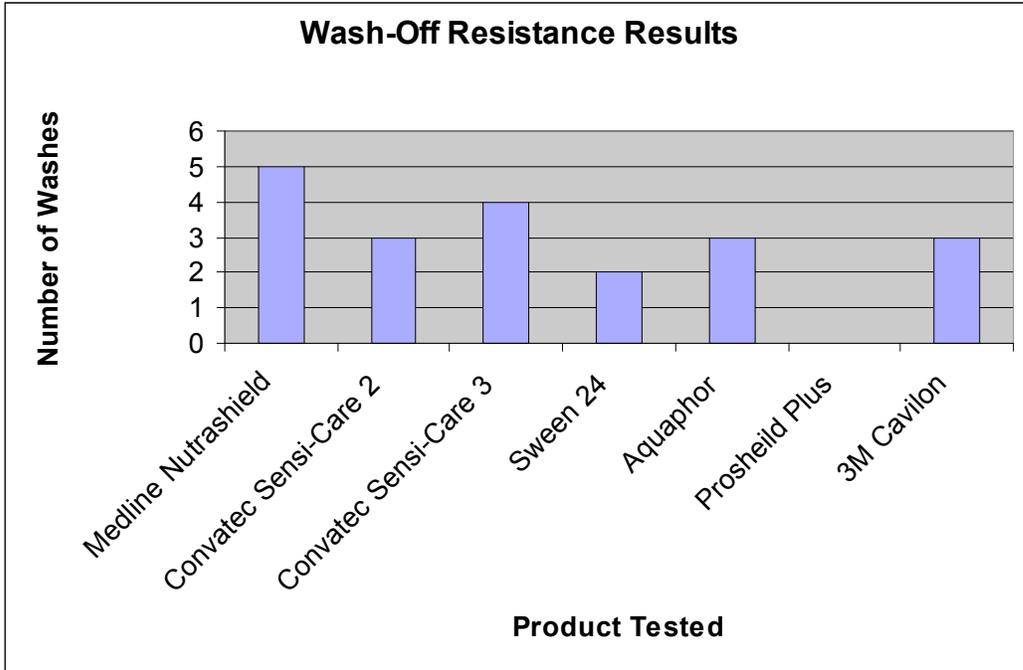
C. Moisture Vapor Transmission Rate

The MVTR Test Protocol (as supplied by Dr. McCord) was performed by treating collagen with Nutrashield, Skin Repair Cream, and a mixture of Nutrashield + Skin Repair Cream. Each treated collagen sheet was then placed over a Fisher Payne Permeability Cup containing 3 grams of water. Each cup was then placed in a 37 C oven and measured for weight loss over a 24-hour period.

IV. Results and Discussion

Wash-off Resistance

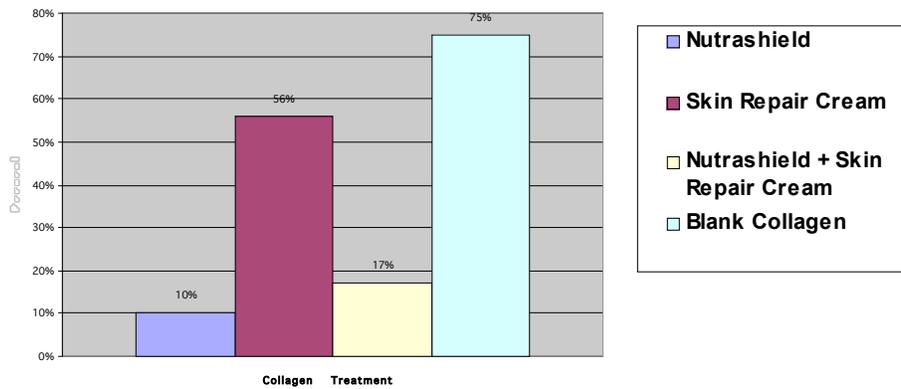
As demonstrated in the following data, Medline Nutrashield out performed all other products tested by surviving 5 wash cycles over a period of 3 hours. The Convatec Sensi-Care 3 was the next highest performer, surviving 4 wash-offs. The Sween 24 performed the poorest, surviving only 2 wash-offs over 72 minutes while the Aquaphor and the Sensi-Care 2 survived 3 washes. The following charts illustrate the comparative differences in both Wash-off Resistance and Durability.



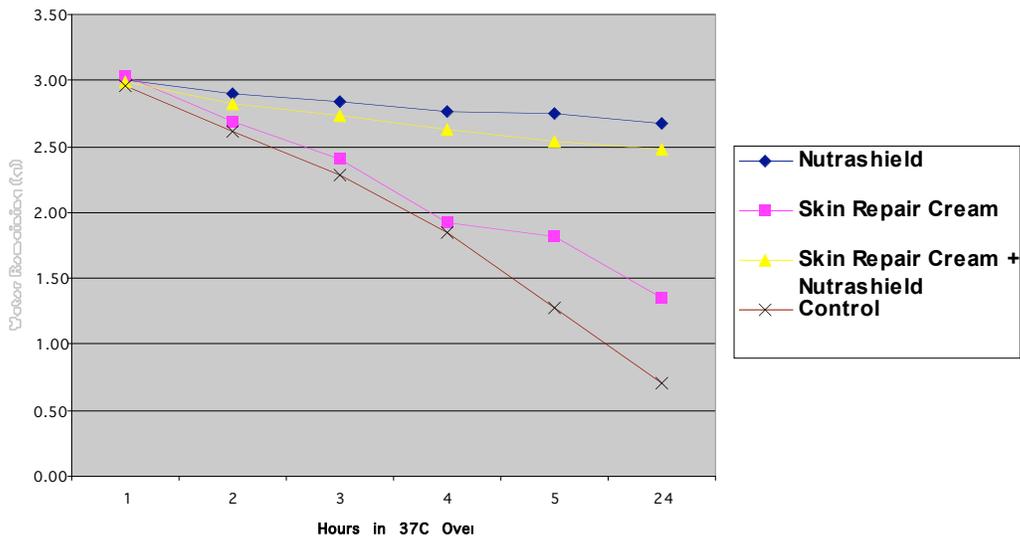
Moisture Vapor Transmission Rate

The MVTR data below demonstrates that the Nutrashield greatly reduces moisture vapor loss by 65% as compared to the control. Interestingly, the Nutrashield / Skin Cream combination did not perform any better than the Nutrashield alone. As can be seen in the second chart, the Nutrashield changes the water loss/evaporation profile the most significantly in the first four hours.

24 Hour MVTR



Moisture Vapor Transmission Rate



II. Summary

Based on the above results, Medline Nutrashield® outperforms products containing petrolatum levels as high as 49%, and petrolatum combined with 15% Zinc Oxide. Additionally, both Sensi-Care 2 and Sween 24 also contain Dimethicone as an active ingredient (Sween at 6% versus 1% in the Nutrashield). Nutrashield has also demonstrated the ability to reduce water vapor loss through collagen by 65%.

The extended performance, resistance, and barrier properties of the Nutrashield is likely due to the addition of Divinyldimethicone/Dimethicone Copolymer (DC HMW-2220), which is a high molecular weight silicone polymer. It is supplied as a water out system with an internal phase viscosity greater than 100,000,000 cps. As DC HMW-2220 is delivered in an emulsion form, it is capable of laying down a thin, but consistent and robust film of silicone polymer. Due to their low surface tension, Silicones spread to form even and consistent films which can be self healing. The consistency of the film combined with the hydrophobicity of silicone polymers provides wash-off resistance, a hydrophobic barrier, and a smooth feel to the area of application.