BENCHMARK SKINCARE LTD
UNIT 307 SPRINGVALE IND EST
CWMBRAN
TORFAEN
NP44 5BR UK
Tel: +44 (0)1633 877569
Info@dermashield.co.uk
www.dermashield.co.uk

SOLVING SKINCARE ISSUES IN THE HEALTHCARE PROFESSION

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&
PROVEN TO SOLVE YOUR SKINCARE CONCERNS

MANUFACTURED IN THE UK, TRUSTED WORLDWIDE

This document has been prepared by Benchmark Skincare Ltd for healthcare professionals. It contains information on how Derma Shield can benefit the healthcare profession. Some information may be repeated, as this document is designed to allow readers to obtain all the information on Derma Shield they need in discreet sections.

bsi. ISO 13485:2016 Medical Device Quality Management

Healthcare Professionals and Derma Shield

Contents

Introduction to Derma Shield

Derma Shield is a skin protection product that is aimed at people who either have, or have the potential to have: dry, cracked, damaged or work stained skin.

It is a Medical Device that is manufactured in the UK under medical quality standard ISO 13485:2016 and proven to prevent irritant contact dermatitis.

Derma Shield is light and easy to use and dispensed as a mousse, which quickly sinks into your skin releasing top quality moisturisers and nutrients. Derma Shield then quickly forms a bond with your skin, which allows your skin to breathe and perspire normally, but also stays on your skin for up to four hours, despite repeated washing.

Derma Shield locks moisture in to your skin and at the same time blocks substances that might easily irritate your skin.

Derma Shield supersedes traditional barrier creams!

Delivered from hygienic CFC-free aerosols, Derma Shield is light and easy to use and you are not contributing to ozone depletion.

Derma Shield provides a microscopic barrier which prevents abused or sensitive skin becoming irritated even after repeated washing. This protective barrier gives the skin a chance to heal from existing conditions and protects from most incoming irritants, whilst high quality moisturisers nurture the skin to keep it in prime condition.

Derma Shield is mild enough for any area of your skin.

Derma Shield is food safe, whether at home or at work, and can be safely used in food preparation areas.

Your hands probably take a lot of abuse from your work. The nutrients in Derma Shield are formulated to keep your skin in top condition and is proven to prevent irritant contact dermatitis.

Once applied Derma Shield bonds with the skin and only comes off when the skin sheds naturally. You don't lose your sense of touch and you don't have to re-apply your protection every time you touch something or get your skin wet.

Your skin will not feel greasy when wearing Derma Shield so you won't be working with greasy hands that become slimy when wet or "squidgy" inside gloves. Users often report how Derma Shield makes gloves more comfortable to wear. Derma Shield also protects the skin from irritations that can sometimes occur after prolonged glove usage. This all ensures that users wear gloves when needed and that the gloves are replaced far less frequently. Using Derma Shield inside gloves will not damage the integrity of the glove.

One application lasts up to 4 hours, despite repeated washing so even frequent applications of skin sanitisers will not easily remove Derma Shield.

The protective layer on your skin will also repel strong odours and stains so if you work in an environment where this is a concern and you often go home with stained or soiled hands, using Derma Shield will help you leave strong odours and stains at work – where they belong.

A Biochemical Description of How Derma Shield Works

The distinction of molecules as either hydrophilic or hydrophobic, "water-loving" or "water-hating", is one that can be made on the basis of whether or not molecules can interact with water molecules. These interactions, or the lack thereof, are electronic and structural in nature. Water, H20, has a bent geometry and distinct electronegative and electropositive regions to its structure. There is a distribution of charge throughout the molecule so that the oxygen atom is more negative (denoted δ-, meaning partially negative) and the hydrogen atoms are partially positive. Essentially, water is polarized.

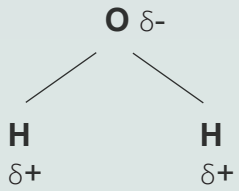

Figure 1: The partial charges on the atoms in a water molecule.

Because each water molecule is polarized, adjacent water molecules orient so that oppositely charged parts of the molecule face each other: this interaction is known as hydrogen bonding, and actually causes water to have a pseudo-structure like a lattice-work of all the molecules interacting with another.

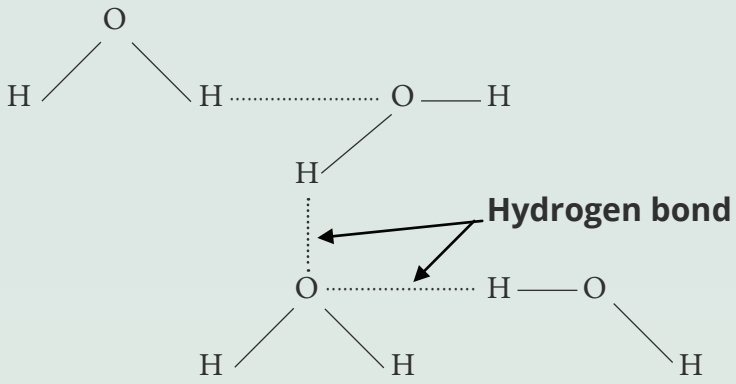

Figure 2: Hydrogen bonding among water molecules.

Solubility in water, or the lack of it (and hence the ability of substances to be repelled), dictates the capability of to interact with water molecules in hydrogen bonding. Polarised or charged substances (salts, sugar, etc.) can form hydrogen bonds, are hydrophilic, and therefore dissolve well. Oil does not easily form hydrogen bonds given that it is non-polar, and is therefore categorised as hydrophobic. In general, hydrophobicity is a property of compounds that can interact with water through the generation of hydrogen bonds. If a substance is hydrophobic, it means that a substance cannot easily form hydrogen bonds and does not easily dissolve.

Derma Shield is an emulsification of mainly hydrophobic compounds in water, and is most effective when an application is allowed to dry thoroughly (letting the water evaporate). The active ingredients in Derma Shield are these hydrophobic compounds, which actually function analogously to skin. Skin is a naturally hydrophobic barrier and this works to prevent penetration by charged and water-soluble molecules (Figure 4). The application of Derma Shield enhances this natural barrier. Most of the components of biological fluids, for instance, are hydrophilic in nature, being dissolved

in a water-based environment. They are therefore unlikely to be able to penetrate a hydrophobic layer such as that which Derma Shield forms, and test results have shown this to be the case.

The non-penetration of acids is explained by this model. Acids, and bases, dissociate in water to give charged components.

$$HA \rightleftharpoons H^+ + A^-$$

Figure 3: Acid dissociation constant.

Where HA is an intact acid, and H+ and A- are the hydrogen ion and resulting deprotonated compound, respectively. The resulting charge of these entities predicts that they will be able to interact with quasi-charged water molecules and other hydrophilic substances, but not with hydrophobic compounds such as are found in Derma Shield's barrier. The result is a lack of penetration through Derma Shield and an added protection to the natural skin barrier.

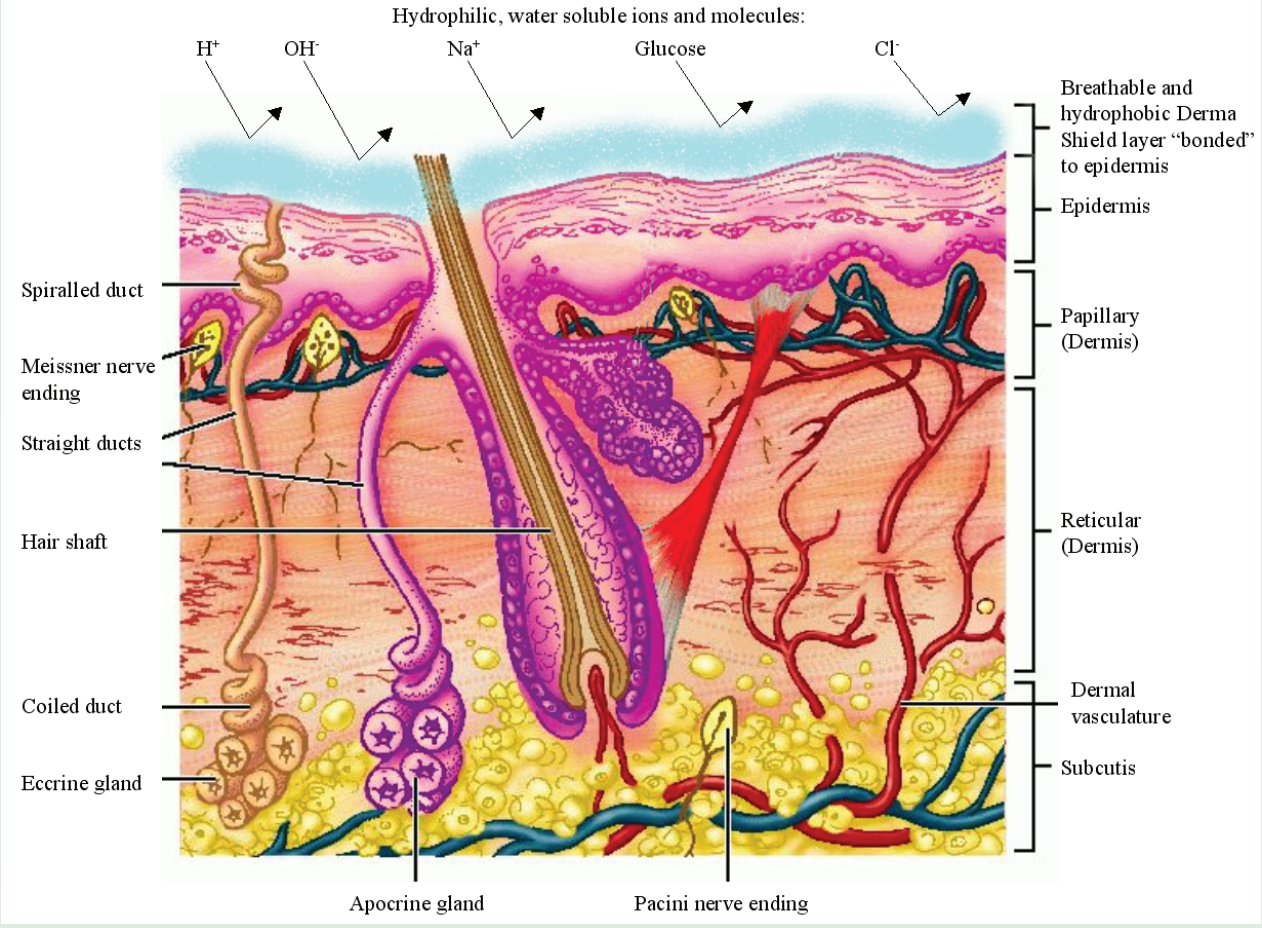

Figure 4: The natural barrier of the skin.

Infection-Control Management

It has been estimated that more than 5,000 people die each year as a result of healthcare-associated infections. The cost of managing such hospital associated infections is high – the National Audit Office estimated it at £1 billion per year.

In a society of cost-cutting, insurance claims, budget setting and target-meeting, pressure is on healthcare management to provide cost-effective, efficient solutions to reduce the incidence of healthcare associated infections.

Hand washing techniques are a key feature of essential infection-control programmes. However, research and evidence suggests that the continual use of skin sanitisers can have a detrimental effect on the health of the skin. "Irritant contact dermatitis, which is associated with frequent hand washing, is an occupational risk for healthcare professionals, with a prevalence of 10% to 45%."[1]

Studies have shown that hand washing technique compliance is low, in some cases lower than 50%[3]. Increasing compliance would benefit both the patient and the healthcare system by helping to work towards a reduction in hospital associated infections, reduced litigation and an improvement in staff absences, which has been reported at a national average of 4.6%.[4]

In order to make hand hygiene successful it is necessary to take into account factors that affect compliance, one of which is the adverse effect the hand hygiene techniques have on employees' skin condition. Employers have a duty under law to ensure, so far as is reasonably practicable, employees' health, safety and welfare at work. The degree of risk in a particular job or workplace needs to be balanced against time, trouble, cost and the physical difficulty of taking measures to avoid or reduce the risk.

Prolonged exposure to skin sanitisers will lead to the onset of irritant dermatitis, which in turn may involve expensive litigation claims and time off work. Derma Shield acts as a complimentary product to those already promoted through various healthcare skin hygiene campaigns, and is used to protect, nurture and moisturise the hands. It is an extremely cost-effective solution to skin problems that will be exacerbated by skin sanitisation programmes.

Skin will not feel greasy when wearing Derma Shield so users won't be working with greasy hands that become slimy when wet or "squidgy" inside gloves. Users often report how Derma Shield makes gloves more comfortable to wear. Derma Shield also protects the skin from irritations that can sometimes occur after prolonged glove usage. This all ensures that users wear gloves when needed and that the gloves are replaced far less frequently. Using Derma Shield inside gloves will not damage the integrity of the glove.

Successful management is a proactive management rather than reactive management. Implementing preventative measures now will ultimately save time and money.

Derma Shield is already available to many sectors of the healthcare profession. For more information please **Contact us at *info@dermashield.co.uk.***

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Occupational Health Personnel

Occupational dermatitis is a common condition responsible for much suffering, and is associated with financial loss for both employees and employers.

There are two types of occupational dermatitis:

1. Irritant – this is the most common and occurs as a result of exposure to the general physical and chemical properties of a caustic agent.

2. Allergic – this develops as a result of a sensitisation process, ultimately resulting in the development of an allergy to the causative agent.

Many Trusts have addressed the issue of allergenic dermatitis, which had become more prevalent as the use of latex products increases. Alternatives and procedures have been put into place for those who have become sensitised to latex. However, there is another problem that now faces many hospital staff. With the introduction of various healthcare skin hygiene campaigns, and the promotion of skin sanitisers, skin problems are presenting themselves in the form of irritant contact dermatitis.

Derma Shield is a Medical Device that has been clinically trialled and tested within the NHS and has been identified as a complementary product to those already used for hand sanitisation. Furthermore, Derma Shield has been proven to improve skin complaints, and has been readily accepted by staff who have found it quick and easy to use.

Derma Shield is non-greasy, hypo-allergenic skin protectant dispensed as a mousse. It does not contain triclosan, yet still retains some anti-microbial properties.

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Trials were carried out within an NHS hospital in disciplines as varied as theatre, ward, catering, and cleaning and porterage. The results are good news for everyone concerned with skin hygiene:

- 82% of participants noted an improvement in skin condition

- 81% of participants with prior skin conditions reported an improvement in skin condition

- 68% of participants believed that Derma Shield is easier to apply than products used prior to the trial

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Infection Control Personnel

Hand washing technique has been identified as a key feature of infection control. However, hand hygiene compliance can be as low as 50%. There are two main factors that account for poor compliance. The first is the aggressive affect that traditional hand washing products have on the skin.

"Irritant contact dermatitis, which is associated with frequent hand washing, is an occupational risk for health-care professionals, with a prevalence of 10% to 45%." [1]

Secondly, hand washing techniques are time consuming and consequently more user-friendly products are needed. Greater compliance is needed to address the increase in hospital-acquired infections such as MRSA and Derma Shield has sought to address these issues.

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Laboratory Trials

Studies carried out tested the resistance of Derma Shield to penetration by components of biological fluids. The results of these studies lead to the conclusion that the application of Derma Shield to a surface will prevent the penetration of biological fluids brought into contact with that coated surface.

Hand wash testing was carried out by an independent certified laboratory which showed approximately a 10-fold reduction in colony count (a marker of bacterial growth) for at least two hours after application, with no evidence of bacterial build up when Derma Shield was applied.

The introduction of Derma Shield as a part of the hand hygiene process would ensure greater compliance due to skin problems, time and motivational issues being addressed, and thus may result in a reduction of hospital acquired infections.

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Microbial Activity Report for Derma Shield

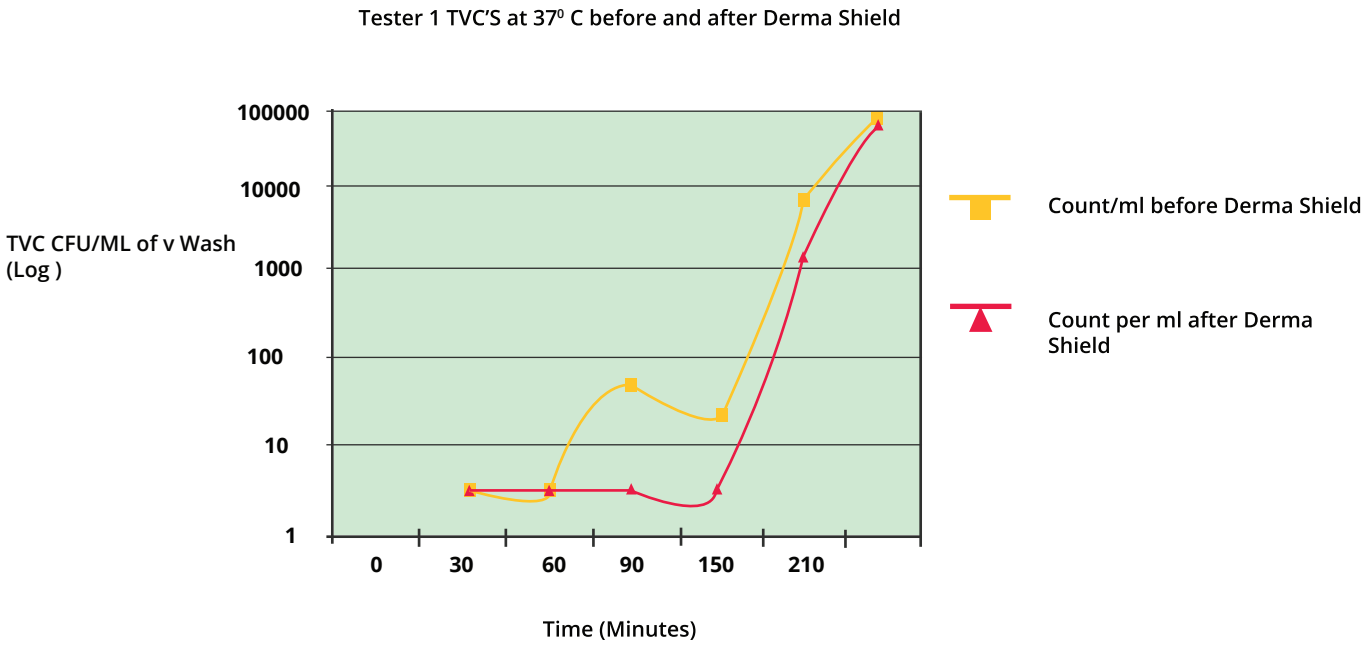
An investigation of the effect of Derma Shield on microbial activity on the hands

Tests were conducted by a UKAS and CPA accredited laboratory to determine the effect of Derma Shield on microbial activity on the hands.

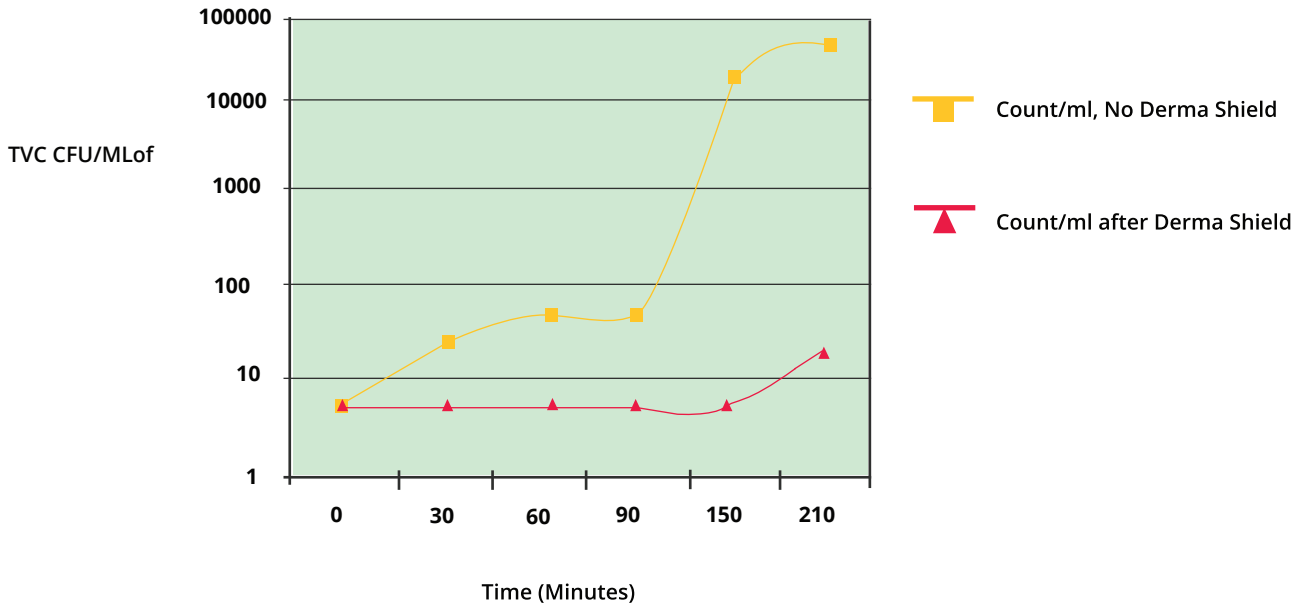
Tests were conducted on three volunteers over two days and below is a summary of the report.

The report summarized that "The use of Derma Shield shows approximately a tenfold reduction in colony count for at least two hours with no evidence of bacterial build up.

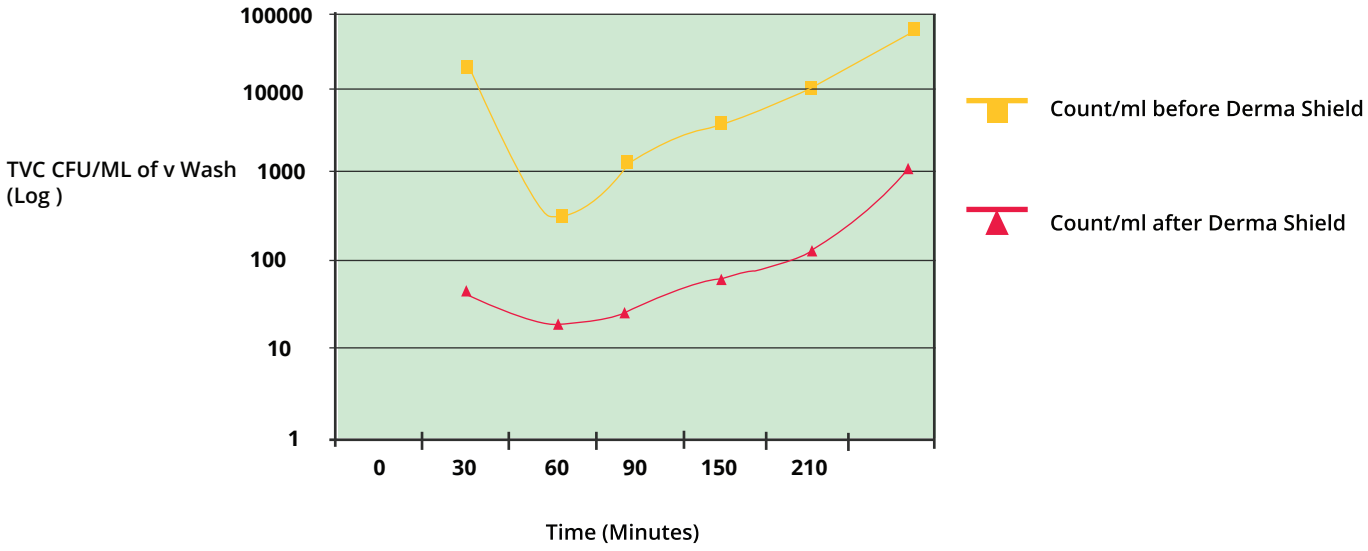
TVC – (total viable count)



Tester 2 TVC'S at 37⁰ C before and after Derma Shield



Tester 3 TVC'S at 37⁰ C before and after Derma Shield



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Clinical Reports

Key findings

The results on trans epidermal water loss (TEWL), erythema and morphological imaging obtained by confocal reflectance microscopy (CRM) show that pre-treatment of the skin with “Derma Shield” reduces; damage of the skin barrier, inflammatory response and speeds healing caused by exposure to sodium lauryl sulphate (SLS). - TEWL reduced by over 60% - Erythema reduced by up to 80%

Background

Skin diseases are the second most common work-related health problem in Europe. They represent more than 7% of all occupational illnesses and are one of the most important emerging risks related to the exposure to chemical, physical and biological risk factors5. Estimated annual economic burden due to absence from workplace and loss of productivity by OSD in Germany alone are >1.5 billion €.[2]

Available globally to industry, the general public and medical professionals, Derma Shield has an excellent reputation as a skin protection product. It is trusted to solve many skincare concerns, save organisations money and improve the lives of people who suffer with dermatitis.

Study aim

To investigate:

- The ability of Derma Shield to protect in patients with a history of atopic dermatitis against SLS induced damage.
- Effectiveness of Derma Shield to aid healing of SLS-damaged skin.
- Skin healing was investigated in a clinical study at a major European dermatology hospital. SLS is commonly found not only in industrial settings, but in household items such as shampoo, bubble bath.

Results of these clinical investigations are very promising; Derma Shield minimised irritant-induced damage and the associated inflammatory response of skin. Furthermore, Derma Shield aided recovery and promoted healthy skin. Because these results stem from a larger programme of clinical studies, investigators have taken the decision to delay publication of the results until all data have been collected and analysed. In order to make all interested parties aware of the significance of the interim results, this document sets out two important findings relating to dry, cracked, damaged and broken skin.

Irritant Contact Dermatitis

Irritant contact (atopic) dermatitis is a skin condition caused by direct contact with a substance that irritates the skin, and often appears as dry, sometimes cracked, red and sore looking skin. A clinician would classify such an appearance as an irritant reaction, reflected by significant increase in TEWL and erythema.

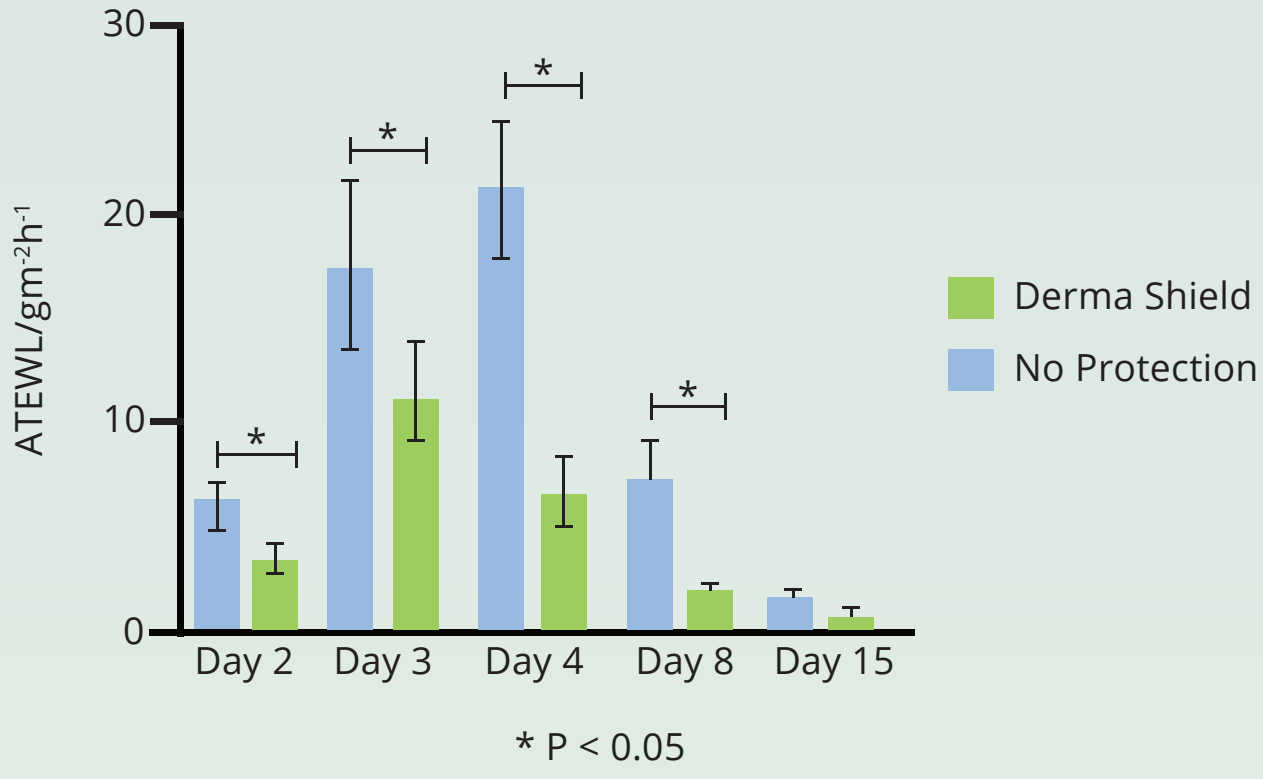
Study methodology

Twenty subjects with a history of atopic dermatitis volunteered to take part in this study. Two test sites on the patients' arm were selected and both sites were exposed to the irritant for 4 hours on three consecutive days. Prior to exposure, one site was protected with Derma Shield. The subjects continued to use Derma Shield until Day 14 of the study; the two test sites were examined on Days 2, 4, 8 and 15.

TEWL

TEWL is one of the most important parameters in evaluating the skin's health. Healthy skin will generally have lower TEWL compared with damaged skin. Derma Shield significantly reduced TEWL whilst the skin was exposed to the irritant in subjects with a history of atopic dermatitis who had been exposed to an irritant. When subjects continued to apply Derma Shield after the three-day study period, their skin healed at a faster rate compared with those who had not used Derma Shield. This unequivocally demonstrated that Derma Shield's ability to increase the rate of recovery of the skin after exposure to irritants" (Figure 5).

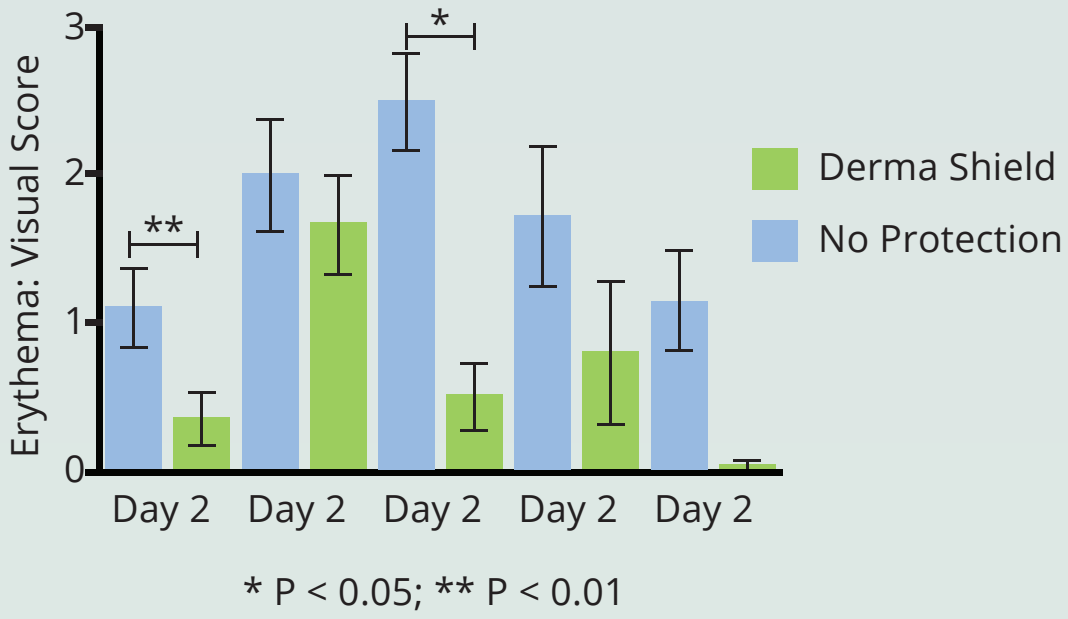
Figure 5: The effect of Derma Shield on TEWL



Erythema

Erythema, or skin redness, commonly occurs in skin that is directly exposed to an irritant. Derma Shield reduced the severity of erythema in the skin of subjects who were exposed to SLS. Furthermore, the extent of erythema in patients who applied Derma Shield in the days after exposure to an irritant was greatly reduced compared with unprotected skin. These results demonstrate that Derma Shield is effective in minimising irritant-induced damage and aiding recovery of the skin (Figure 6).

Figure 6: The effect of Derma Shield on Erythema



Summary

Personal protective equipment, such as gloves, is an essential part of home and workplace. However, research shows [2] that gloves alone are not enough to eradicate dry, cracked, broken and damaged skin. These interim results of the ongoing clinical investigations with Derma Shield demonstrate Derma Shield visibly improves the appearance of and clinically improves the health of dry, cracked and damaged skin. Given that skin health can cause significant financial impact on companies, can damage the morale and health of employees, and can really affect the quality of life of a sufferer of damaged skin, preserving this vital organ is of paramount importance. Fundamentally, in contrast with traditional barrier or pre-work creams, Derma Shield is retained on the skin for several hours despite repeated washing; thus fewer applications result in a lower overall cost and ultimately, excellent value for money.

Derma Shield is already available to many sectors of the healthcare profession. For more information please **Contact us at *info@dermashield.co.uk.***

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