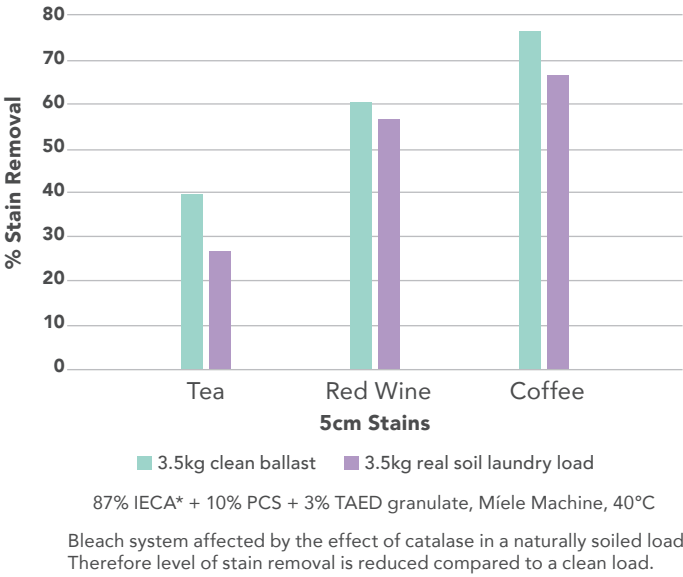


Figure 3: Stain Removal With and Without Soiled Load



Whiteness Monitors

One aspect of laundry detergent performance is its ability to prevent greying of white fabrics over multi-cycle washing, i.e., maintain white-coloured fabrics. Greying is generally caused by dye transfer or redeposition of soil or fugitive dyes during the wash cycle.

To evaluate greying in the laboratory, the addition of new, clean fabrics to the wash cycle is common practice. The whiteness of the fabrics is compared before and after washing to quantify the greying effect.

A selection of new, clean fabrics are available at Warwick Equest to assess greying. Each fabric can be cut to the size needed and is usually supplied as a 20cm x 20cm swatch. We can also overlock the edges of the fabric to prevent fraying during testing.

Home Care Applications

Warwick Equest has the potential to work across a broader range of home care applications, including automatic dish wash and carpet monitors.

For automatic dish wash conditions, we have been developing consumer-relevant monitors that are easy to use and provide a time and cost-efficient alternative to current standard test methods. These monitors have been evaluated by performing a series of wash tests under European ADW conditions and using an in-house prepared detergent and commercially available enzymes. Our set of monitors is commercially available and can be used for the cleaning assessment of auto dish formulations.

Focusing initially on a broad response focus, such as enzymatic response of tough soils, we have available egg on steel, crème brûlée on ceramic, tea on porcelain and pasta on ceramic substrate available.

We continue to develop consumer-relevant stains and substrates, in which our products can also be tailored to meet customer or market requirements. We offer multi-responsive set of stains suited for carpets, including polypropylene carpet.

Other Services

With ever changing and growing industries and markets, Warwick Equest continues to adapt to meet emerging trends and customer needs. We offer product retrieval and product demonstration kits upon request.

To learn how Lubrizol Life Science's products and services of Warwick Equest can support your business needs, contact a representative today at Equest@Lubrizol.com

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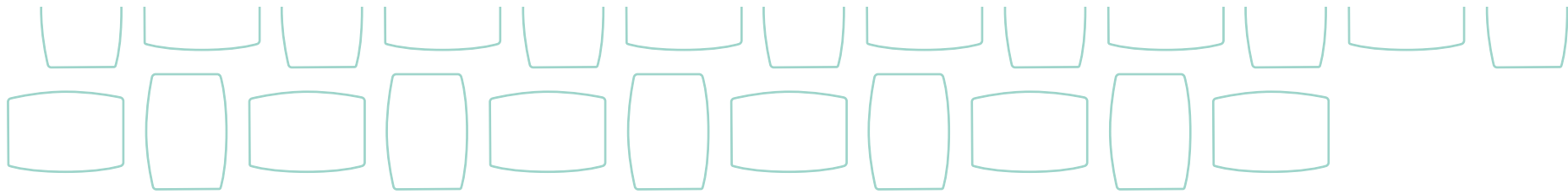
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WARWICK
EQUEST
PRODUCT
BROCHURE





EVALUATE WITH CONFIDENCE

The home care business of Lubrizol Life Science (LLS Home) is proud to offer the products and services of Warwick Equest, an industry leader in supplying “natural” consumer stains. Featuring a comprehensive portfolio of test products, Warwick Equest supplies an extensive range of stained fabrics to detergent and allied industries worldwide. In collaboration with LLS Home.

FOCUSED ON TEST FABRICS

Warwick Equest can apply a wide variety of stains to a range of fabrics. Our stains use real consumer products and represent real-life washing problems relevant to the end consumer. Although stains are generally sourced within the UK market, we also apply customer-supplied stains sourced from other countries to give a more representative test product for that market.

Stains are applied to fabrics that are either pre-washed using Warwick Equest’s standard protocol or to fabrics using customer supplied protocols. In addition, we can apply stains to customer-supplied fabrics that have been pre-washed.



Fabrics available include knitted or woven flat cotton, polycotton, polyester and terry towelling. All fabrics can be used to prepare performance monitors or used in whiteness testing.

Fabrics available include Knitted or Woven Flat Cotton, Polycotton, Polyester and Terry Towelling. All fabrics can be used to prepare performance monitors or used in whiteness testing. We also offer coloured fabrics that can often be used as a substrate for oil-based stains that are difficult to see visually.

WHY USE NATURAL STAINS?

Fresh stains have the advantage of being truly representative of consumer practice. They are not fixed to fabrics artificially and do not contain additional materials, such as dyes to add color, unless requested by the customer.

The response of natural stains can differ from standard, aged stains. Generally, a higher level of stain removal is seen using natural stains compared with standard stains where a lower level of fixing is seen and the stain is generally more easily removed in low wash temperatures or short wash cycles.

Standard stains, such as blood, can be processed to fix them onto the fabric which can alter their nature, making them more difficult to remove in testing environments than in real-world conditions.

Figure 1: Standard Technical Blood Stain

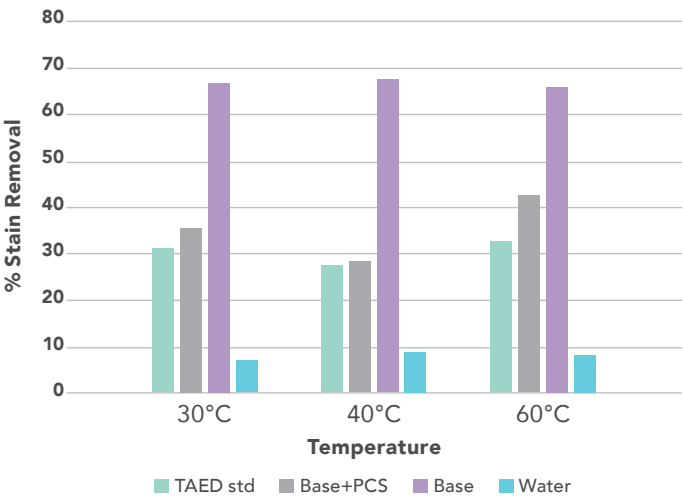
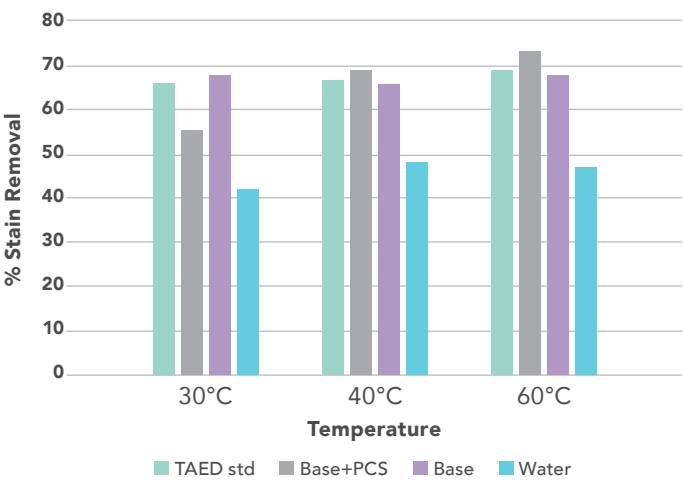


Figure 2: Natural Blood Stain



IEC A ⁺ (g)	Base detergent	85
PCS (Sodium Percarbonate) (g)		10
TAED (Tetraacetylenethylenediamine) (g)		5

Miele Machine, 40°C, 3.5kg ballast load

EVALUATION ORIENTATED STAINS & RECOMMENDATIONS

Our comprehensive range of natural consumer-relevant stains respond to the wide variety of formulation components within a detergent formulation. This includes laundry performance monitors that are bleach, enzyme and detergency/particulate responsive.

Warwick Equest is focused on meeting and tailoring products to meet customer and market needs through the development of stains that are responsive to new conditions and technologies. Warwick Equest features the facilities and expertise needed to screen and study stains to support our recommendations providing monitors which are fit for our customers’ purpose and testing needs.

As wash temperatures reduce, it is important that stains can respond and be used to differentiate between formulations. At Warwick Equest, stains are designed to respond at lower temperatures i.e. tea stain.

Our stains can be applied to different fabrics and sizes to suit the stain-removal performance measurement system used by our customers.



Multi-Stained Swatch, which can accommodate up to 16 customer-specific, 2.5cm circle stains per swatch. Stains on a Multi-Stained Swatch can be increased in size if required by the customer. Individual stains are also available in a variety of sizes.

SPECIALIST PRODUCTS AND SERVICES

Natural AISE Stain Sets

Laundry performance monitors can assist the formulator in the development and screening of detergent prototypes, as well as supporting specific product claims. The stains used within the AISE minimum test protocol for detergent performance are commonly known as the AISE stain set. Warwick Equest offers the natural stains within the set. Stains are 5cm in diameter and available individually or as a multi-stained monitor.



Stains on a Multi-Stained Swatch produced by Warwick Equest that are recommended by AISE to conduct a standard detergent test. These include red wine, tomato puree, blood, coffee, grass and mud, mustard, carrot baby food, tea, coffee and cooked beef fat.

Equest also produces 24 handmade stains that follow the ASTM D4265. These stains can be placed on both knitted cotton and polyester/cotton.

Consumer Soiled Laundry

The presence of soil within a consumer load can influence detergent performance and reduce stain removal depending on the nature and level of soil. Therefore, we offer a range of real consumer soiled goods which are representative of wash loads. Various degrees of soiling are made available as requested by our customers.

Laundry items include pillowcases, terry towels, kitchen towels, shirts, t-shirts and socks.

The performance of the detergent and stain removal level is greater using clean load conditions compared to that when a soiled load is used. Using a real soiled load provides a realistic, consumer representation of detergent performance and stain removal.

