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CLEANING & HYGIENE
PRODUCTS INDUSTRY

Laundry Detergent Testing Guidelines

Minimum requirements for comparative detergents testing

v.8. – April 2023

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Important notice

The users of these Guidelines shall only quote the Detergents Europe Guidelines as and when the test has been run fully in line with the Detergents Europe Guidelines and the fixed 14 stain set.

These guidelines are for comparative **performance testing of detergents, NOT washing conditions. This means that identical wash conditions are to be used for all detergents tested.**

Disclaimer

Please note that this comparative testing methodology is not intended to be a standard methodology in the detergent industry. It is a compilation of facts presenting the minimum requirements for testing the detergent performance.

While Detergents Europe attempts to provide information on the minimum requirements for basic quality of testing relative detergent performance, it is not possible to completely and exhaustively validate every variation of the performance of any detergent tested and/or guarantee that any particular product tested is fit for any given purpose.

This methodology should therefore not be taken and accepted as a standard but as a minimum set of requirements.

The user of this comparative testing methodology may go however higher and exceed the minimum requirements.

All test results represent a snapshot of detergent performance at one point in time and are not a guarantee of future product effectiveness, performance and quality assurance.

For results available from this comparative testing, Detergents Europe does not warrant or assume any legal liability or responsibility for the accuracy, completeness or usefulness of any data or information contained in this performance testing.

Detergents Europe Working Group “Laundry Detergent Testing”

Test Protocol

- Principle based
- Includes minimum requirements – free to exceed those but not lower them
- Can be adapted to different countries/regions, differences in wash habits, wash cycles and temperatures, recommended dosages, etc. (further development ongoing)

Scope

- Logistics: communication, selection, pick-up, sampling
- Test execution
- Results: calculation, evaluation, communication

Categories

- Heavy Duty Detergents, Light Duty Detergents, Laundry Additives

Countries

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- Should apply to all Detergents Europe member countries

Benefits

- More realistic and more reliable comparison of product qualities for consumers
- Improvement in test quality
- Common approach

Main Topics of the Guidelines

- Information about start of test
- Quality assurance in test lab
- Washing machine, cycle, temperature
- Number of replicates
- Dosage
- Soil Donator
- Stain Set
- Dyes for dye transfer inhibition (further development ongoing)
- Dyes for colour maintenance
- Test execution
- Statistical evaluation
- Communication of results prior to publication
- Future improvements of protocol

Information/Communication prior to testing

ISO/IEC Guide 46-2017

“Every reasonable effort should be made to reflect what is available on the market, unless the limits of selection are explained. Note “reasonable efforts to reflect what is available on the market” might include consulting manufacturers (agents/representatives/importers) or checking current literature, catalogues, and a variety of other sources, including the internet. It is in the interest of consumers and manufacturers (agents/representatives/importers) that such information be made available.”

(excerpt from ISO/IEC GUIDE 46-2017 section 4.1)

Process followed for Test Protocol

- Review existing test protocols in Western Europe e.g.
 - Que Choisir, StiWa, Which? Consumentenbond, Test Achat, AFISE/FHER
 - Terpstra soil workshop
- Review and sharing of internal company data
 - on consumer habits (stains/soils, wash temperature)
 - textile/dye markets/trends
 - internal & external testing experience
- Develop “consensus” proposal

Key Learnings and Principles

- Only a representative set of stains can give a consumer relevant assessment of a product's performance – drive towards use of stains that represent consumer problems in the most realistic way.
- Stains should be commercially available.
- Include (body) soil source since testing WITHOUT soil can lead to seriously misleading results as (body) soil has a significant impact on the absolute level of performance and can also impact the relative performance and ranking of products (ref. Soil Workshop Wageningen).
- Select most consumer/market relevant dyes for Dye Transfer and Colour Maintenance.
- Select the most consumer relevant wash temperature for the product categories that are tested.
- For additives, select detergents as “base” that are representative of additives user habits.

Quality Assurance

- Reliable washing machines, representative for local market
- Fuzzy logic disabled to ensure equal program length/rinse cycles for all test products (to avoid suds interference with washing cycle length)
- Calibration of machines and yearly validation
- Purchase of stains and other test materials from same production lots
- Adherence to expiry date/recommended storage conditions
- NO drying of test fabrics in tumble dryer and ensure constant exposure conditions to light

Washing Cycle and Temperature

- Select the washing cycle and temperature that are most relevant in the country.
- Different washing cycles/temperatures may be used if justified by product category.
- In most countries this is 40°C for generalist detergents.

Dosage/Usage

- Dosages should be based on manufacturers' recommendation:
 - Generalists: normal soil/medium water hardness.
 - Additives: a harmonized dosage (when not clear from the instructions); mechanical action (rubbing) and exposure time should be selected according to test objective
- In case the manufacturers' dosage instructions lead to large differences between products, it should be highlighted.
- Dosage of powders is according to the declared grams on the package. For liquids it is ml.

Soil

- Addition of 4 sheets wfk-SBL2004 or SBL-CFT, introducing about 32 grams of ballast soil.
- SBL (Standard Ballast Soil) is currently the best option to simulate normally soiled laundry (in the absence of normally soiled consumer bundles or wash & wear tests).

Stain Set – Principles

- A representative set of stains should typically comprise a minimum of about 15 stains. Size of stain should permit accurate reading (minimum diameter about 50 mm).
- The total amount of soil coming from ballast soil and stains should be consistent with consumer habits.
- Stains should cover all consumer relevant stain categories for the products that are tested.
- Stains should be produced in a reproducible quality.
- Select suitable stain candidates from available suppliers (Warwick Equest, wfk, Swissatest, CFT) - use mix of “natural” and “standard” stains.
- Remove stains with artifacts e.g. high T aging or presence of foreign pigments/carbon black, soot etc. which can alter the chemical behaviour of the “stain”
- Low variability (before and after wash)
- High discrimination

Detergents Europe Stain Set – v.7. October 2020

Stains	Standard Stains			Hand-made Stains* (ex Warwick-Equest)	Stain classes Consumer denomination/Che mical nature
Tea		WFK 10J	CFT CS-97	WE5LTWKC	Drink / Bleachable
Coffee			CFT KC-H109	WE5ECWKC	Drink / Bleachable
Red wine			CFT KC-H026	WE5RWWKC	Drink / Bleachable
Fruit juice			CFT CS-15		Drink / Bleachable
Tomato puree				WE5TPWKC	Food / Bleachable
Salad Dressing Balsamico			CFT CS-406		Food / Bleachable Enzymatic
French Squeezy Mustard				WE5FSMWKC	Food / Bleachable Enzymatic
Chocolate		WFK 10Z	CFT CS-44		Food / Enzymatic
Grass	EMPA 164		CFT CS-07	WE5SGWKC	General soil / Bleachable Enzymatic
Grass/Mud				WE5GMWKC	General soil / Bleachable Enzymatic Particulate
Blood				WE5DASBWKC	General soil / Enzymatic
Unused motor oil	EMPA 106	WFK 10 RM	CFT C-01s		Grease, Oil / Greasy Particulate
Cooked Beef Fat				WE5BBPC2 (on polyester/cotton)	Grease, Oil / Greasy Enzymatic
Make up	EMPA 143/2	WFK 10MU	CFT CS-17	WE5FM2WKC	Cosmetics / Greasy Particulate

Dyes

Colour Maintenance

- Adopt Detergents Europe 14 monitor dye set as common, most consumer/market relevant dye set.
- Add local consumer/market relevant dyes/shades (pastel, unbrightened) if needed/desired.

Detergents Europe 14 Dye Set

Fabric number of Detergents Europe (14) Monitor Dye Set	Fabric number of Detergents Europe. (14) Dye Set	Dye Class
1	Detergents Europe 1	Sulphur Black
2	Detergents Europe 3	Vat Green
3	Detergents Europe 5	Vat Blue
4	Detergents Europe 8	Direct Yellow + cationic after-treatment (Tinofix ECO)
5	Detergents Europe 16	Reactive Red
6	Detergents Europe 20	Reactive Black (pale shade)
7	Detergents Europe 21	Reactive Black (heavy shade)
8	Detergents Europe 22	Reactive Orange
9	Detergents Europe 24	Reactive Blue
10	Detergents Europe 26	Reactive Violet
11	Detergents Europe 27	Reactive trichromatic combination
12	Detergents Europe 29	Reactive trichromatic combination
13	Detergents Europe 33	Disperse Navy + heat set
14	Detergents Europe 39	Acid Red + syntan



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Dyes

Dye Transfer

The current StiWa protocol focuses on the following unfinished dyes:

- Direct Black 22
- Direct Orange 39
- Direct Red 83.1
- Acid Blue 113

Market reality is that most direct dyes will have some sort of finish. Thus dye transfer is dependent on the durability of that finish.

Further development work is underway to optimize this dye set.

Execution of the Tests

Test Execution for Heavy Duty Detergents (Stain Removal and Whiteness)

Number of cycles	minimum of 6, ideally 8
# Stain set Replicates	1 internal
Standard white fabrics	Cotton, polyester/cotton, polyester and polyamide to measure whiteness
Ballast load	3 kg, clean white ballast load, <u>normalized</u> with 3 washes at 60C with ECE (88031 ex WFK) detergent w/o brightener and bleach to have <u>comparable</u> low optical brightener levels for ALL test products
Ballast soil	4 SBL sheets for HDD
Dosage	recommended dosage for normal soil/medium hardness for generalists
Temperature	40C (or locally adjusted) for generalist detergents

Test execution – SR and Whiteness

Evaluation

Stain removal:

- The evaluation of the degree of stain removal can either be assessed via suitable instrumental measurements such as reflectance (Y-value, SRI) or image analysis, as long as these methods are fully validated.
- Important is a statistical evaluation to arrive at meaningful conclusions.
- Reflectance via spectrophotometer, using the Y-value of the Y, x, y colour coordinates measurement, light source D65 with a UV cut-off filter at 420 nm. Aperture used for real stains 15 mm (minimum 12 mm). Stains are measured unfolded, 2 measurements per stain (in the center of the circular area, or closest homogenous area).
- Measurements are taken on each stain BEFORE wash (to verify quality of stains) unless there is a quality control in place and AFTER the wash and to evaluate standard deviations and are reported.
- Rank products based on statistic evaluation (95% confidence level). An approach for how to do this for a multitude of test products is recommended.
- Rank products on all stains, and if desired per consumer relevant stain classes. An approach for how to do this for a multitude of test products is recommended.

Whiteness:

- Basic whiteness as Y-value and Visual whiteness simulated as Ganz-Griesser value on 4 standard fabrics (cotton, polyester/cotton, polyester and polyamide) after 6 (8) cumulative washes

Test Execution – Colour Maintenance

Coloured Fabrics	14 Detergents Europe Monitor Dye set (plus additional “local fabrics” if needed/desired)
Temperature	40°C for generalists (or adjusted based on consumer habits) Reference to Tenside 2004, 156-162.
Dosage	Recommended Dosage for normally soiled laundry/medium water hardness (15l water / machine) or harmonized dosage
Ballast	3.0 kg (normalised as in SR testing) Addition of 2 SBL sheets to suppress excessive foam formation
Number of washes	20
Evaluation	Before and After the wash : Measurement of colour difference delta E expressed in Grey Scale units (ISO 105 A 05)

Test Execution – Dye Transfer

Equipment	Linitester
Color Donator	Direct Orange 39 Direct Black 22 Acid Blue 113 Direct Red 83.1
Color Acceptor	Cotton and polyamide (6x16cm)
Temperature	60°C
Time	30 minutes
Dosage	See dosage/usage (slide 11)
Water volume	100 ml
Number of replicates (internal/external)	1 fabric per cyclinder / 2 external repetitions
Evaluation	Measurement of color difference delta E, expressed as Grey Scale units (ISO 105 A 04)

Test Execution for Light Duty Detergents (Stain Removal and Whiteness)

Wash Program	Delicate cycle (NOT cotton or wool), high water level
Ballast load	2.5 kg (normalised as in SR testing for generalists)
Ballast soil	2 SBL sheets
Dosage	Recommended Dosage for lightly soiled laundry/medium water hardness (15l water / machine)
Temperature	30°C

Communication of results prior to publication

According to ISO/IEC GUIDE 46-1985

“... inform the manufacturer (agent/representative/importer) of test results on his own product and to invite his comments in sufficient time before publication. The test results submitted to the manufacturer (agent/ representative/importer) should be accompanied by the list of characteristics tested and the test methods used. If the manufacturer (agent/ representative/importer) disagrees with the test results, it is recommended that he speedily supplies data to demonstrate that the test results are wrong or exceptional, or that the test methods used were unsuitable. In the case of exceptional results, it may be appropriate to take further samples.”

(excerpt from ISO/IEC GUIDE 46-1985 section 3.2)

Future Improvements

- Future improvements to increase consumer relevance as far as stain removal, ballast soil, whiteness maintenance, colour maintenance or dye transfer testing is concerned will be evaluated when they become available.
- We will review this on a yearly basis.

Acronyms

ISO	International Standardisation Organisation
IEC	International Electrotechnical Commission
SBL	Soil Ballast Load
ECE	ECE Standard Detergent
HDD	Heavy Duty Detergent
SRI	Stain Removal Index
UV	Ultra violet
SR	Stain Removal

Annex 1 - History of Protocol updates

Summary

Version	Date	Comments
v.1.	February 2009	Original Stain Set
v.2.	July 2012	Due to sourcing issues for original stain recipes new (temporary) Equest Red Wine and new Frying Fat stains are included.
v.3.	June 2013	Following the v2 update, the Equest Red Wine stains is confirmed and additional alternative CfT Red Wine is included.
V.4.	July 2013	Because of suspected carcinogenic risk, used motor oil WFK 10M is replaced by unused motor oil WFK 10RM.
V.5.	November 2013	Tea and Coffee stains are updated to allow for less TAED sensitive alternatives because of market changes towards liquid detergents.
V.6.	May 2020	Salad Dressing Balsamico C-S-406 <u>replaces</u> Baby Food. Grass CS-07 <u>replaces</u> CS-08 and Scrubbed Grass WE5SGWKC is <u>added</u> . Cooked Beef Fat on Polyester/Cotton WE5BBPC2 <u>replaces</u> Burnt Beef on cotton. Face Make Up WE5FM2WKC is <u>added</u> .
V.7.	October 2020	Tea CS-97 is added. Unused Motor Oil C-01s replaces C-01.

Note: all changes made between one version to the following one are indicated in **green bold font** in the following pages

Version: v.1. / Original Stain Set Date: February 2009

Stains	Standard Stains			Hand-made Stains* (ex Warwick-Equest)	Stain classes denomination/Chemical nature	Consumer
Tea	EMPA 167	WFK 10J	CFT BC3		Drink/ Bleachable	
Coffee		WFK 10K	CFT BC2		Drink/ Bleachable	
Red wine				WE5RWWKC	Drink/ Bleachable	
Fruit juice			CFT CS15		Drink/ Bleachable	
Tomato puree				WE5TPWKC	Food/ Bleachable	
Salad Dressing Balsamico C- S-406			Salad DrC-S-406	WE5IACBFWKC	Food/ Bleachable Enzymatic	
French Squeezy Mustard				WE5FSMWKC	Food/ Bleachable Enzymatic	
Chocolate		WFK 10Z	CFT CS44		Food/ Enzymatic	
Grass	EMPA 164		CFT CS08		General soil/ Bleachable Enzymatic	
Grass/Mud				WE5GMWKC	General soil/ Bleachable Enzymatic Particulate	
Blood				WE5DASBWKC	General soil/ Enzymatic	
Motor oil	EMPA 106	WFK 10M	CFT C01		Grease, Oil/ Greasy Particulate	
Frying fat (Hamburger grease)				WE5HBGBKC (blue knitted cotton)	Grease, Oil/ Greasy Enzymatic	
Make up	EMPA 143/2	WFK 10MU	CFT CS17		Cosmetics/ Greasy Particulate	

* All Hand-made Stains are also available in 2.5 cm diameter. Their code number has "2.5" instead of "5"

Version: v.2. Date: July 2012

Stains	Standard Stains			Hand-made Stains* (ex Warwick-Equest)	Stain classes denomination/Chemical nature	Consumer
Tea	EMPA 167	WFK 10J	CFT BC3		Drink/ Bleachable	
Coffee		WFK 10K	CFT BC2		Drink/ Bleachable	
Red wine				Replacement stain offered by request	Drink/ Bleachable	
Fruit juice			CFT CS15		Drink/ Bleachable	
Tomato puree				WE5TPWKC	Food/ Bleachable	
Carrot baby food				WE5IACBFWKC	Food/ Bleachable Enzymatic	
French Squeezy Mustard				WE5FSMWKC	Food/ Bleachable Enzymatic	
Chocolate		WFK 10Z	CFT CS44		Food/ Enzymatic	
Grass	EMPA 164		CFT CS08		General soil/ Bleachable Enzymatic	
Grass/Mud				WE5GMWKC	General soil/ Bleachable Enzymatic Particulate	
Blood				WE5DASBWKC	General soil/ Enzymatic	
Motor oil	EMPA 106	WFK 10M	CFT CO1		Grease, Oil/ Greasy Particulate	
Frying fat (Hamburger grease)				Burnt Beef WE5BBWKC (on WHITE cotton)	Grease, Oil/ Greasy Enzymatic	
Make up	EMPA 143/2	WFK 10MU	CFT CS17		Cosmetics/ Particulate	Greasy

* All Hand-made Stains are also available in 2.5 cm diameter. Their code number has "2.5" instead of "5"

Version: v.3. Date: June 2013

Stains	Standard Stains			Hand-made Stains* (ex Warwick-Equest)	Stain classes denomination/Chemical nature	Consumer
Tea	EMPA 167	WFK 10J	CFT BC3		Drink/ Bleachable	
Coffee		WFK 10K	CFT BC2		Drink/ Bleachable	
Red wine			CFT KC-H026	WE5RWWKC	Drink/ Bleachable	
Fruit juice			CFT CS15		Drink/ Bleachable	
Tomato puree				WE5TPWKC	Food/ Bleachable	
Carrot baby food				WE5IACBFWKC	Food/ Bleachable Enzymatic	
French Squeezy Mustard				WE5FSMWKC	Food/ Bleachable Enzymatic	
Chocolate		WFK 10Z	CFT CS44		Food/ Enzymatic	
Grass	EMPA 164		CFT CS08		General soil/ Bleachable Enzymatic	
Grass/Mud				WE5GMWKC	General soil/ Bleachable Enzymatic Particulate	
Blood				WE5DASBWKC	General soil/ Enzymatic	
Motor oil	EMPA 106	WFK 10M	CFT C01		Grease, Oil/ Greasy Particulate	
Frying fat (Hamburger grease)				Burnt Beef WE5BBWKC (on WHITE cotton)	Grease, Oil/ Greasy Enzymatic	
Make up	EMPA 143/2	WFK 10MU	CFT CS17		Cosmetics/ Particulate	Greasy

* All Hand-made Stains are also available in 2.5 cm diameter. Their code number has "2.5" instead of "5"

Version: v.4. Date: July 2013

Stains	Standard Stains			Hand-made Stains* (ex Warwick-Equest)	Stain classes denomination/Chemical nature	Consumer
Tea	EMPA 167	WFK 10J	CFT BC3		Drink/ Bleachable	
Coffee		WFK 10K	CFT BC2		Drink/ Bleachable	
Red wine			CFT KC-H026	WE5RWWKC	Drink/ Bleachable	
Fruit juice			CFT CS15		Drink/ Bleachable	
Tomato puree				WE5TPWKC	Food/ Bleachable	
Carrot baby food				WE5IACBFWKC	Food/ Bleachable Enzymatic	
French Squeezy Mustard				WE5FSMWKC	Food/ Bleachable Enzymatic	
Chocolate		WFK 10Z	CFT CS44		Food/ Enzymatic	
Grass	EMPA 164		CFT CS08		General soil/ Bleachable Enzymatic	
Grass/Mud				WE5GMWKC	General soil/ Bleachable Enzymatic Particulate	
Blood				WE5DASBWKC	General soil/ Enzymatic	
Unused motor oil	EMPA 106	WFK 10 RM	CFT C01		Grease, Oil/ Greasy Particulate	
Frying fat (Hamburger grease)				Burnt Beef WE5BBWKC (on WHITE cotton)	Grease, Oil/ Greasy Enzymatic	
Make up	EMPA 143/2	WFK 10MU	CFT CS17		Cosmetics/ Particulate	Greasy

* All Hand-made Stains are also available in 2.5 cm diameter. Their code number has "2.5" instead of "5"

Version: v.5. Date: November 2013

Stains	Standard Stains			Hand-made Stains* (ex Warwick-Equest)	Stain classes denomination/Chemical nature	Consumer
Tea		WFK 10J		WE5LTWKC	Drink / Bleachable	
Coffee			CFT KC-H109	WE5ECWKC	Drink / Bleachable	
Red wine			CFT KC- H026	WE5RWWKC	Drink / Bleachable	
Fruit juice			CFT CS15		Drink / Bleachable	
Tomato puree				WE5TPWKC	Food / Bleachable	
Carrot baby food				WE5IACBFWKC	Food / Bleachable Enzymatic	
French Squeezy Mustard				WE5FSMWKC	Food / Bleachable Enzymatic	
Chocolate		WFK 10Z	CFT CS44		Food / Enzymatic	
Grass	EMPA 164		CFT CS08		General soil / Bleachable Enzymatic	
Grass/Mud				WE5GMWKC	General soil / Bleachable Enzymatic Particulate	
Blood				WE5DASBWKC	General soil / Enzymatic	
Unused motor oil	EMPA 106	WFK 10C RM	CFT C01		Grease, Oil / Greasy Particulate	
Frying fat (Hamburger grease)				Burnt Beef WE5BBWKC (on WHITE cotton)	Grease, Oil / Greasy Enzymatic	
Make up	EMPA 143/2	WFK 10MU	CFT CS17		Cosmetics / Greasy Particulate	

* All Hand-made stains are also available in 2.5 cm diameter. Their code number has "2.5" instead of "5".

Besides the new stains (in green) the following stains have been deleted:

- Tea: EMPA 167, CFT BC3
- Coffee: WFK 10K, CFT BC2

Version: v.6. Date: May 2020

Stains	Standard Stains			Hand-made (Warwick Equest)	Stains* Consumer denomination/ Chemical nature
Tea		WFK 10J		WE5LTWKC	Drink / Bleachable
Coffee			CFT KC-H109	WE5ECWKC	Drink / Bleachable
Red wine			CFT KC-H026	WE5RWWKC	Drink / Bleachable
Fruit juice			CFT C-S-15		Drink / Bleachable
Tomato puree				WE5TPWKC	Food / Bleachable
Salad Dressing Balsamico			C-S-406		Food / Bleachable Enzymatic
French Squeezy Mustard				WE5FSMWKC	Food / Bleachable Enzymatic
Chocolate		WFK 10Z	CFT C-S-44		Food / Enzymatic
Grass	EMPA 164		CFT C-S-07		General soil Bleachable Enzymatic
Grass/Mud				WE5GMWKC	General soil Bleachable Enzymatic Particulate
Blood				WE5DASBWKC	General soil Enzymatic
Unused motor oil	EMPA 106	WFK 10RM	CFT C-01		Grease, Oil Greasy Particulate
Cooked Beef Fat				WE5BBPC2 on Polyester/Cotton	Grease, Oil Greasy Enzymatic
Make up	EMPA 143/2	WFK 10MU	CFT C-S-17	WE5FM2WKC	Cosmetics Grease Particulate

* All Hand-made stains are also available in 2.5 cm diameter. Their code number has "2.5" instead of "5".

The following stains have been deleted:

- Carrot Baby Food WE5IACBFWKC
- Grass CFT C-S-08
- Burnt Beef WE5BBWKC

Version v.7. October 2020

Stains	Standard Stains			Hand-made (Warwick Equest)	Stains* Consumer denomination/ Chemical nature
Tea		WFK 10J	CFT C-S-97	WE5LTWKC	Drink / Bleachable
Coffee			CFT KC-H109	WE5ECWKC	Drink / Bleachable
Red wine			CFT KC-H026	WE5RWWKC	Drink / Bleachable
Fruit juice			CFT C-S-15		Drink / Bleachable
Tomato puree				WE5TPWKC	Food / Bleachable
Salad Dressing Balsamico			CFT C-S-406		Food / Bleachable Enzymatic
French Squeezy Mustard				WE5FSMWKC	Food / Bleachable Enzymatic
Chocolate		WFK 10Z	CFT C-S-44		Food / Enzymatic
Grass	EMPA 164		CFT C-S-07		General soil Bleachable Enzymatic
Grass/Mud				WE5GMWKC	General soil Bleachable Enzymatic Particulate
Blood				WE5DASBWKC	General soil Enzymatic
Unused motor oil	EMPA 106	WFK 10RM	CFT C-01s		Grease, Oil Greasy Particulate
Cooked Beef Fat				WE5BBPC2 on Polyester/Cotton	Grease, Oil Greasy Enzymatic
Make up	EMPA 143/2	WFK 10MU	CFT C-S-17	WE5FM2WKC	Cosmetics Grease Particulate

* All Hand-made stains are also available in 2.5 cm diameter. Their code number has "2.5" instead of 5"

Tea CFT CS-97 has been added.

Unused Motor Oil CFT CFT C-01s replaces C-01 (this is a technical change).

Version v.8. April 2023

SBL-CFT is now also accepted as alternative to wfk-SBL2004