Detta är ett sammanslaget dokument som inkluderar utskrift av mailväxling mellan David Wensbo Posaric och RISE under perioden 2019-04-22 till 2019-04-26. Alla bifogade bilagor/filer i dessa mail är inkluderade i detta sammanslagna dokument.

Från:	Jonas Aspling
Till:	David WP
Ärende:	SV: Angående Testrapport nr. 5140234-2, 2014-07-10
Datum:	den 26 april 2019 14:24:25
Bilagor:	Ang tvättrapport.docx

Hej David,

Då har jag haft möjlighet att gå igenom detta med mina kollegor. Se bifogat dokument.

Mvh

/Jonas

Från: David WP <david.wensbo@wepo.se>
Skickat: den 24 april 2019 11:44
Till: Jonas Aspling <jonas.aspling@ri.se>
Ämne: SV: Angående Testrapport nr. 5140234-2, 2014-07-10

Hej Johan,

Tack för ett snabbt svar. Jag förstår att du/ni behöver lite tid att gå igenom detta. Det går, som sagt, bra att slå mig en signal när du/ni vill. Min enda avsikt är att få fram lite hård fakta kring vilka försök som gjorts och hur resultat därav rimligen bör tolkas. Just nu finns det väldigt mycket utrymme för fria tolkningar som riskerar ha en stark bias av egna intressen, vilket inte är hjälpsamt för en produktiv diskussion.

Hälsningar,

David

Från: Jonas Aspling <jonas.aspling@ri.se>
Skickat: den 24 april 2019 09:42
Till: david.wensbo@wepo.se
Ämne: SV: Angående Testrapport nr. 5140234-2, 2014-07-10

Hej David,

Vi har fått ditt mail. Jag kommer gå igenom detta med berörda kollegor och återkomma till dig.

Mvh

Jonas Aspling

Jonas Aspling, M.Sc.

Manager Materials department

RISE Research Institutes of Sweden

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RISE Research Institutes of Sweden is a group of companies, including RISE IVF AB (previously Swerea IVF AB), which is the sender of this email. As of 1 October 2018, RISE Research Institutes of Sweden AB, the parent company in said group of companies, is, indirectly, the sole shareholder of RISE IVF AB.

Från: Info Ivf <ivf@ri.se>
Skickat: den 24 april 2019 08:21
Till: Jonas Aspling <jonas.aspling@ri.se>
Ämne: VB: Angående Testrapport nr. 5140234-2, 2014-07-10
Prioritet: Hög

Kan du ta över detta ärende?

//Ingrid

Från: David WP <david.wensbo@wepo.se>
Skickat: den 22 april 2019 23:13
Till: Info Ivf <ivf@ri.se>
Ämne: Angående Testrapport nr. 5140234-2, 2014-07-10
Prioritet: Hög

RISE IVF AB

Box 104

431 22 Mölndal

Postas och även skickat per e-post till ivf@ri.se

Angående Testrapport nr. 5140234-2, 2014-07-10

Mitt namn är David Wensbo Posaric. Jag skriver detta brev med tillhörande upplysningar och frågor då jag bedriver en utredning kring användning av s.k. ”ultrarent vatten” som ersättning för detergenter. Det har härvid framkommit att dåvarande Swerea IVF utfärdat en i sammanhanget central testrapport under 2014, vilket av det uppdragsgivande företaget Scandinavian Water Technology AB (SWATAB) hänvisas till som stöd för fullgod användning av avjoniseringssystemet DIRO® vid tvätt av kläder utan användning av tvättmedel. Som vetenskapligt skolad ställer jag mig, tillsammans med många andra, mycket tveksam till SWATABs grundläggande utgångspunkt i sin affärsverksamhet, vilken kan sammanfattas som: vatten med avsaknad av lösta joner och mineraler antar egenskaper som möjliggör tvätt av kläder med resultat som motsvarar användning av traditionella detergenter. Denna sammanfattning och en koppling till Swerea IVFs centrala testrapport kan direkt härledas från vad SWATAB framför i sin marknadsföring, nedan exemplifierat genom några urklipp från SWATABs hemsida:

”DIRO® kopplar du in och placerar mellan ditt inkommande vatten och din tvättmaskin, vattnet omvandlas till ett unikt ultrarent vatten, som gör tvätten ren helt utan tvättmedel och andra tillsatser.” [https://www.swatab.com/diro-tm21]

”När vattnet kommer i kontakt med textilierna i tvättmaskinen bryts jonbindningen mellan fibrerna och smutsen precis som vid användning med vanligt tvätt-medel. DIRO®-vattnet får fett och smuts att lossna från textilierna helt naturligt utan kemikalier även vid låga temperaturer.” [https://www.swatab.com/katalog]

”Vårt DIRO® filtersystem är testat av oberoende testinstitut enligt samma metod som testar

vanligt tvättmedel, vid dessa tester uppnådde vårt DIRO® filtersystem godkänd rengöringseffekt enligt EU-Ecolabel. Det tvättar lika rent som på marknaden vanligt förekommande tvättmedel." [https://www.swatab.com/fragor-och-svar]

"*DIRO® filtersystem producerar DIRO® vatten som har renande förmågor på textiler. DIRO® vatten används istället för tvättmedel i din tvättmaskin och* ***dess renande egenskaper har testats av SWEREA IVF.***" [https://www.swatab.com/fragor-och-svar]

Ovan hänvisade centrala testrapport, utfärdad av Swerea IVF under 2014, har i sin helhet skickats av SWATAB till en eller flera av SWATABs kunder. Denna testrapport (nr. 5140234-2) har därefter nått mig genom vidarebefordring och bifogas till detta brev som Bilaga A. Efter att ha analyserat denna testrapport och tillhörande aktuella kriterier avseende EU-Ecolabel:s "Fitness for use" (Bilaga B), samt sätter dessa i samband med ovanstående uttalande *"… vid dessa tester uppnådde vårt DIRO® filtersystem godkänd rengöringseffekt enligt EU-Ecolabel.*", drar jag följande slutsatser:

1) **Testrapporten är ofullständig** i en möjlig avsikt att kunna uppvisa "Fittnes for use" för erhållande av godkännande enligt EU-Ecolabel då den bara innefattar två tester ("Stain Removal DY" och "Basic Degree of Whiteness") av fyra som krävs för detta (se Bilaga B). De utelämnade testerna utgörs av "Colour Maintenance" och "Dye Transfer Inhibition".

2) **Testrapporten visar att nödvändiga kriterier inte kunnat mötas** för att kunna medge godkännande enligt EU-Ecolabel då testet "Basic Degree of Whiteness" inte fått godkänt resultat enligt någon av de möjliga klasserna (HDD, CSD eller LDD, se sid 2 i Bilaga B).

3) **Uttalandet "…** ***vid dessa tester uppnådde vårt DIRO® filtersystem godkänd rengöringseffekt enligt EU-Ecolabel."*** **är oförenligt med testrapporten** i det fall "*dessa tester*" avser tester ingående i densamma.

Förutom att testrapporten, direkt och/eller indirekt, hänvisas till på SWATAB:s hemsida och i annan marknadsföring, har den även refererats till i handlingar som SWATAB ingivit till Energimyndigheten i samband med ansökningar om ekonomiskt stöd. I en sådan offentlig handling (Bilaga C), vilken utgör del av ansökan om ekonomiskt stöd ingiven 2018-05-20 (Energimyndighetens Diarienr. 2018-007026) och vilken för närvarande är under behandling av Energimyndigheten, återges testrapporten endast delvis och med en tillskriven tolkning som är starkt missledande till favör för DIRO®-producerat vattens effektivitet. Endast det test i den fullständiga testrapporten som utfallit med godkänt testresultat, "Stain Removal DY", återges emedan det andra utförda testet, "Basic Degree of Whiteness", vilket utfallit med underkänt resultat, varken återges eller nämns. Med hänvisning till en passage som är explicit inskriven i testrapporten – "*This report may not be reproduced other than in full, except with prior written approval of the issuing laboratory*" – och med förmodan att SWATAB inte fått någon föregående tillåtelse från Swerea IVF att endast återge fördelaktiga delar av rapporten utan att återge tillhörande ofördelaktiga sådana, drar jag följande slutsats:

4) **SWATAB har brutit mot Swerea IVF:s villkor avseende hantering av utfärdad testrapport.**

I ljuset av att Energimyndigheten för närvarande överväger att utdela ett avsevärt ekonomiskt stöd (drygt 13 milj. kronor) till SWATAB på oriktiga grunder, där den rimligen essentiella testrapportens faktiska innehåll förvrängts till SWATABs favör, **ber jag RISE IVF (tidigare Swerea IVF) att snarast vidta lämpliga åtgärder för att tillse att alla inblandade parter har riktig och korrekt information att utgå ifrån som beslutsgrund.** Jag vill här påpeka att inte bara Energimyndigheten är att se som en sådan inblandad part, utan även SWATAB:s tidigare, nuvarande och eventuellt kommande kunder.

Då jag avser att gå vidare i denna påbörjade utredning, skulle jag även uppskatta **att få RISE IVF:s officiella synpunkter avseende slutsatserna 1 till 4 häri ovan**.

I det fall RISE IVF har några ytterligare frågor eller skulle vilja komma i kontakt med mig, går det bra att kontakta mig per telefon, e-post eller brev. Jag ger härmed RISE IVF tillstånd att publicera detta brev i vilket medium som RISE IVF önskar och/eller finner lämpligt, med fullständigt angivande av mitt namn, telefonnr., e-post och adress. Jag uttrycker således INGEN önskan om att

vara anonym.

Med vänliga hälsningar och med hopp om att RISE IVF prioriterar detta ärende i enlighet med dess allvarlighetsgrad.

Lund / 2019-04-22

David Wensbo Posaric

Tel. 0707-494919

e-post: david.wensbo@wepo.se

Iliongränden 28

224 71 Lund

Tre bilagor i mail med förfrågan från David Wensbo Posaric till RISE 2019-04-22:

* Bil A_swereaIVF_report_5140234-2_140710
(Rapport som SWATAB vanligtvis refererar till som stöd/bevis för teknologins gadtagbara funktionalitet)

* Bil B_Performance Test Laundry Detergents_v1.1-26032018
(Detaljerad beskrivning av test enligt "EcoLabel")

* Bil C_urklipp_ansökan_20180520
(Urklipp från ansökan om ekonomiskt stöd ställd från SWATAB till Energimyndigheten som visar att den ursprungliga rapporten inte återgetts i sin helhet utan endast det som kan anses vara "positiva resultat" därav)

swerea IVF

REPORT

Postal address	Visiting address
Swerea IVF AB	Argongatan 30, SE- 431 53 MÖLNDAL
Box 104 SE-431 22 MÖLNDAL	Org. nr. 556053-1526
Tfn +46 (0)31 706 60 00 Fax +46 (0)31 706 63	VAT no. SE556053-152601

Client	Client's ref. no.	
Swatab **Prinsessvägen 7** **297 72 Everöd**	Contact person **Per Hansson**	Our ref. no. **5140234-2**

Object

Performance test of the cleaning effect of water produced by System Rodi.

Test Material

1	System Rodi

The water system was installed by the client 2014-04-01 and 2014-05-06.

Summary

Stain removal	DY	Result
Tea	-1.73	PASS
Coffee	-1.28	PASS
Red wine	-6.31	PASS
Fruit juice	-0.83	PASS
Tomato Puree	1.14	PASS
Carrot baby food	-2.57	PASS
French Squeezy Mustard	6.32	PASS
Grass	3.54	PASS
Grass/Mud	1.88	PASS
Chocolate	-12.83	PASS
Blood	38.50	FAIL
Unused motor oil	1.25	PASS
Frying fat(hamburger grease)	-3.31	PASS
Make up	2.85	PASS
Basic degree of Whiteness	5.8	FAIL

Table 1 Criteria

Stain removal DY	≤10.0 =PASS (3 failures allowed)
Basic degree of Whiteness	< 3.0=PASS

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Procedure and results

The Performance test performed according to
EU Ecolabel Performance Test for Laundry Detergents Final Draft Version of 07/01/2014

Washing machine: Miele Softronic
Wash program: Cotton 30 °C
Duration main wash: 70 min
Total program duration: 2 h 09 min
Ballast: Cotton towels and pillowcases

Total load: 4.5 kg
Water hardness: (14 ±0.5) °dH
Inlet water temperature: (20 ±2) °C

Reference detergent: 70 g/wash cycle IEC A*+0.28 g PVP

Reflectance measurements
Equipment: Spectrophotometer Konica Minolta CM-3600
Opening diameter: 25.4 mm.
Setting : D-65, 10 °-observer, Y-value.
Specular gloss excluded
UV cut: 420 nm

Date of test: 2014-05-09—06-04

Stain Removal (SR) and Basic Degree of Whiteness (BDW)
Dosage of test detergent: no detergent was used
Wash cycles: 1-15 (BDW)
6-11 (SR)
Soil: 4 pieces SBL 2004/wash cycle
Standard cloth for BDW: WFK 11 A (pre-treated 3 times)
Stain Set: 2 stains/wash cycle

Table 2, Stains

Stain	Standard	Handmade
Tea	EMPA 167	
Coffee	WFK 10K	
Red wine	EMPA 114	WE5RWWKC
Fruit juice	CFT CS15	
Tomato Puree		WE5TPWKC
Carrot baby food		WE5IACBFWKC
French Squeezy Mustard		WE5FSMWKC
Grass	EMPA 164	
Grass/Mud		WE5GMWKC
Chocolate	EMPA 160	
Blood	EMPA 111	WE5DASBWKC
Unused motor oil	EMPA 106	
Frying fat(hamburger grease)		WE5HBGBKC(white knitted cotton)
Make up	EMPA 143	

Table 3 Results of stain removal , reflectance value Y

Stain	System Rodi (AVE. + s)	Reference (r) (AVE. - s)	DY
Tea	46.52	44.79	-1.73
Coffee	57.73	56.45	-1.28
Red wine	67.70	61.39	-6.31
Fruit juice	46.13	45.30	-0.83
Tomato Puree	73.93	75.07	1.14
Carrot baby food	84.53	81.96	-2.57
French Squeezy Mustard	66.79	73.12	6.32
Grass	59.37	62.91	3.54
Grass/Mud	49.22	51.09	1.88
Chocolate	48.94	36.10	-12.83
Blood	35.13	73.63	38.50
Unused motor oil	42.16	43.41	1.25
Frying fat(hamburger grease)	66.31	63.00	-3.31
Make up	59.89	62.75	2.85

Table 4 Results of Basic degree of whiteness, reflectance value Y

Product	1st cloth	2nd cloth	Average	Reference- Product
Rodi	80.8	80.1	80.4	5.8
Reference	86.5	86.1	86.3	

All results relate only to the material tested.

Mölndal, 2014-07-10
Swerea IVF

Karin Christiansen

Ann Stare
Project leader

Version 1.1/26.03.2018

Revised EU Ecolabel protocol for testing laundry detergents

Content

0. Background
1. Test criteria
2. Laboratory requirements to conduct the testing.
3. Materials and conditions
4. Methods
5. Evaluation
Annex 1. Example

Abbreviations

HDD	Heavy duty detergent	DTI	Dye transfer inhibition
CSD	Colour safe detergent	SBL	Soil ballast load
LDD	Light duty detergent	PC	Sodium percarbonate
SR	Stain removal	TAED	Tetra acetyl ethylene diamine
BDW	Basic degree of whiteness	PVP	Polyvinylpyrrolidone
CM	Colour maintenance	CO	Cotton
PA	Polyamide	PES	Polyester
PES/CO	Polyester/cotton	WO	Wool
SI	Silk		

0. Background

This test protocol serves as a means of proof to show compliance with the criterion "Fitness for use" of the Commission Decision (EU) 2017/1218 of 23 June 2017 establishing EU Ecolabel criteria for "Laundry detergents". The product shall be fit for use, meeting the needs of users.

The test is for products that fall under the scope of the product group "Laundry detergents", which includes laundry detergents and stain removers. For each of these products, a different performance test is published, as specified in the Section 3.1 "Range of application".

The performance test for laundry detergents shall show that laundry detergents achieve good washing performance according to soil and stain removal, basic degree of whiteness, colour maintenance and dye transfer inhibition criteria. The product shall meet the requirements for wash performance set out in all the criteria listed in Section 1.

1. Test criteria

- soil and stain removal (SR)
- basic degree of whiteness (BDW)
- colour maintenance (CM)
- dye transfer inhibition (DTI)

2. Laboratory requirements to conduct the testing.

The manufacturer's test laboratory or/and an external test laboratory can be approved to conduct testing to document effectiveness of laundry detergents if the following requirements are met:

- it must be possible for EU Ecolabel competent bodies to monitor the performance of testing (e.g. on-site visits to the laboratory),
- the EU Ecolabel Competent Body must have access to all data on the product (e.g. technical data sheets),

- whenever possible, the samples must be made anonymous for the test laboratory (e.g. product A and product B).
- the test laboratories must be equipped with the devices described in the test method,
- performance of the effectiveness test as well as the test method must be described in the quality control system.

Competent bodies shall preferentially recognise attestations which are issued by bodies accredited in accordance with the relevant harmonised standard for testing and calibration laboratories and verifications by bodies that are accredited in accordance with the relevant harmonised standard for bodies certifying products, processes and services. Accreditation shall be carried out in accordance with Regulation (EC) No 765/2008 of the European Parliament and of the Council

3. Materials and conditions

The test institute must be able to prove compliance with all the test conditions laid down in the following paragraphs. Documentation demonstrating compliance with all the test conditions shall be part of the test report.

3.1 Range of application:

In the context of the EU Ecolabel, this performance test can be applied to the following types of laundry detergents and stain removers:

- Heavy-duty detergent (HDD) means a detergent used for ordinary washing of white textiles at any temperature
- Colour-safe detergent (CSD) means a detergent used for ordinary washing of coloured textiles at any temperature
- Light-duty detergent (LDD) means a detergent intended for delicate fabrics

3.2 Washing machine types:

Programmable electronic Miele[1] household washing machines which fulfil the following requirements:

Table 1. Washing machine and wash programmes specifications

	Cotton wash program (at 30 °C, 20 °C[a], 15 °C[b])	Delicate program[n] (at 30 °C, 20 °C[a], 15 °C[b])
Duration main wash	50-70 min	30-40 min
Total program duration	100-120 min	55-65 min
Water quantity main wash	15±2 l	20±2 l
Total water quantity	55±5 l	64±5 l
Number of rinse cycles	3	3
Final spin speed	1200 rpm[2]	600 rpm

[a] for cold water products

[b] most of the older machines do not offer cold water programs. Those machines which offer cold water programmes normally heat up the entering water to 21 °C, which can be used for products that claim to be effective at 20 °C. For test runs at 15 °C the heating elements of the washing machine have to be disconnected to prevent the heat up

[n] some newer washing machines offer an equivalent synthetic program

Fuzzy logic type control shall be disabled.

3.3 Water conditions:

[1] Miele machine was proposed as a reference machine due to its stable performance and regular quality of the outcomes.
For use in laboratories Miele launched a special line of machines where the fuzzy logic is already disabled (e.g. Miele 1935 WPS WTL).
Another machine could be used as reference machine if it provides similar performance for a comparable programme.

[2] Other spin can be used but it should be at least 900 rpm

Water hardness: 2,5 ± 0,2 mmol $CaCO_3$/l. The Ca/Mg ratio shall be 3 ± 0,5.
Water inlet temperature: 20,0 ± 4,0 °C, except for those products that claim to be effective at lower temperatures. The water inlet temperature for products that claim to be effective at lower temperatures shall be 15,0 ± 4,0 °C, but the reference product shall be tested in this case at 20,0 ± 4,0 °C.
The amount of water shall be controlled along the washing process, if possible.
The water hardness and the water inlet temperature shall be reported for the test product and reference detergent.

3.4 Ballast load:
For HDD and CSD: cotton ballast load.
The base load of cotton shall consist of cotton pillowcases and cotton huckaback towels conforming the IEC 60456 "Clothes washing machines for household use – Methods for measuring the Performance"[3]
For LDD: polyester ballast load.
The base load shall consist of double knitted polyester in pieces conforming to the following specifications[4].

Table 2. Ballast load for LDD

	Knitted polyester fabric.
Mass	35 ± 3 g
Mass per unit area	200 ± 25 g/m^2
Pieces	30±3cm x 30±3cm, double layer sewn along all four edges

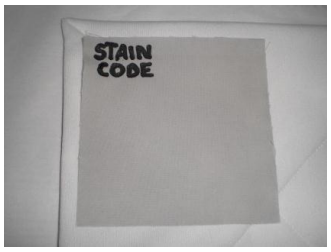

Figure 1: Marking of the stain sets

Figure 2: Marking of the stain sets

Figure 3: Marking of the stain sets

3.5 Stains set

Current AISE stain set as described in Section 3.9.c. 2 sets of stains per wash cycle (in the same batch) should be used. Mark with a water resistant pen each stain as the Figure 1. Fix the stains on the loads with a plastic staple with a gun on the load, as shown in Figure 2 and Figure 3.

See Figure 4 for an example of how the stains can be fixed.

[3] Examples of commercial article codes are W-IEC T13 or E-353 for cotton pillow cases and W-IEC T12 or E-351 for Huckabeck Towels
[4] Examples of commercial article codes are W-IEC or E-356

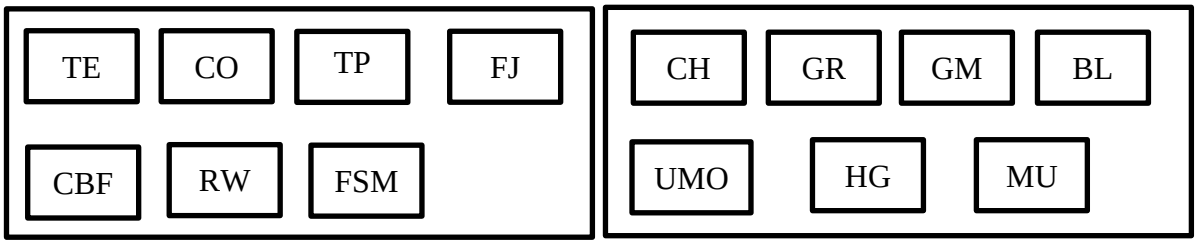

Figure 4. Fixed stains on the load (example)

Abbreviations stand for the type of soiling as indicated in Table 10.
Alternatively, the stains can be stitched together beforehand to make a full test strip. Then, this strip must be fixed on a hand towel before washing.
Other possibilities are to use a ready to use monitor[5]

3.6 Stains set size
(12x12) cm^2 (standard stains), 35x45cm AISE multiswatch monitors with 5x5cm swatches and 5 cm diameter (hand-made).

3.7 Soil
SBL 2004's can be fixed on the loads as the stains.

Table 3. SBL's use

HDD & CSD		LDD	
Stain removal & basic degree of whiteness	Colour maintenance	Stain removal & basic degree of whiteness	Colour maintenance
4 units of SBL 2004	2 units of SBL 2004	2 units of SBL 2004	2 units of SBL 2004

3.8 Dye donators and dye acceptors to determine dye transfer
3.8.1 Dye donators:
- E-132 cotton dyed with direct black 22 (weight 0,3g => 5x6 cm)
- E-134 cotton dyed with direct orange 39 (weight 0,3g => 5x6 cm)
- E-130 cotton dyed with direct red 83,1 (weight 0,3g => 4,5 x 4,5 cm)
- E-131 cotton dyed with acid blue 113 (weight 0,3g => 5x10 cm)

3.8.2 Dye acceptors:
- standard cotton according to ISO 2267 or DIN 53919, as for instance W-10A (size 5,5x16 cm)
- polyamide according to ISO 105 F03 (as for instance W-40 or T-ADJ polyamide) (size 6x16 cm)

3.9 Wash loads
Each series of tests shall be started with a new wash load. This load consists of:

a) Stain removal & basic degree of whiteness for HDD/CSD (powder and liquid)
1. A new all cotton ballast load for the normal cotton wash program to reach a total weight of 4,5 kg(.

Table 4. Ballast load for testing the whiteness for HDD/CSD (powder and liquid)

Total load (kg)	Pillowcases	Hand-towel
4,5 kg ± 0,1kg	12 units	Until weight

[5] Examples of ready to use monitors at the time of writing are:
- Multiwatch monitors from Empa (Swissatest), WFK or CFT
- Multistain monitors from Equest or CFT with the handmade stains directly applied on the fabric
- Multiswatch monitor with a combination of standard swatches in combination with handmade stains cut out and sewn as well.

2. 2 standard cotton cloths, according to ISO 2267 or DIN 53919 (size 20x20 cm)
3. 14 stain removal monitors included in the washes 6 to 11 x2 replicates
4. 4 pieces of soil ballast added to all washes

The total load per wash including ballast load, SBL 2004, cotton cloth and monitors shall be 4,5 ±0,1 kg.

Table 5. Wash load for HDD and CSD (powder and liquid). Test: stain removal and basic degree for whiteness

Test		Pre-treatment			Basic degree of whiteness					Stain removal & basic degree of whiteness						Basic degree of whiteness			
cycle		-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
loads	Cotton ballast load*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Cotton cloth according to ISO 2267**	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Stain set (14 stains x 2 sets per wash, cycle 6-11)									x	x	x	x	x	x				
	Soil: 4 units SBL2004				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*use the same wash load during all the test
** use the same cotton cloth during all the test

b) Colour maintenance for HDD/CSD (Powder and liquid)

1. A new all cotton ballast load for the normal cotton wash program to reach a total weight of 4,5kg.

Table 6. Ballast load for testing colour maintenance for HDD/SCD (powder and liquid)

Total load (kg)	Pillowcases	Hand-towel
4,5 kg ±0,1kg	12 units	Until weight

2. Colour maintenance monitor
3. 2 pieces of soil ballast added to all washes

The total load per wash including ballast load, SBL 2004, cotton cloth and monitors will be 4,5 ±0,1kg

Table 7. Wash load for HDD (only if claimed) and CSD (powder and liquid). Test: colour maintenance

Test		Pre-treatment			Colour maintenance														
Cycle		-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
loads	Cotton ballast load*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Colour maintenance monitor See Table **8****				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Soil: 2 units SBL2004				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*use the same wash load during the entire test
** use the same cloth during the entire test

The colour maintenance monitor sets are shown in Table 8:

Table 8. Monitor dye set

Fabric number of AISE Monitor dye set	Fabric number of AISE Dye set	Dye Class
AISE 1	1	Sulphur black
AISE 3	2	Vat green
AISE 5	3	Vat blue
AISE 8	4	Direct yellow + cationinc after-treatment (tinofix eco)

AISE 16	5	Reactive red
AISE 20	6	Reactive black (pale shade)
AISE 21	7	Reactive black (heavy shade)
AISE 22	8	Reactive orange
AISE 24	9	Reactive blue
AISE 26	10	Reactive violet
AISE 27	11	Reactive trichromatic combination
AISE 29	12	Reactive trichromatic combination
AISE 33	13	Disperse navy + heat set
AISE 39	14	Acidic red + syntan

c) Stain Removal & basic degree of whiteness for LDD

1. A new knitted polyester load for the normal delicate wash programs to reach a total weight of 2,5kg (see Table 2)
2. 2 standard cotton clothes, according to ISO 2267 or DIN 53919, (size 20x20 cm)
3. 14 stain removal monitors included in the washes 6 to 11 x2 replicates
4. 2 pieces of soil ballast added to all washes

The total load per wash including ballast load, SBL, cotton cloth and monitors will be 2,5 ± 0,1 kg

Table 9 Wash loads for LDD (Powder and liquid). Test: stain removal and basic degree of whiteness

Test		Pre-treatment			Basic degree of whiteness					Stain removal & basic degree of whiteness						Basic degree of whiteness			
Cycle		-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
loads	Polyester ballast load*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Cotton cloth according to ISO 2267**	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Stain set (14 stains x 2 sets per wash, cycle 6-11). See Table 10									x	x	x	x	x	x				
	soil: 2 units SBL2004				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*use the same wash load during all the test

** use the same cotton cloth during all the test

The stain sets are shown in Table 10.

Table 10. Set of stain

Figure 5	Stain	Standard stain			Hand-mad stains*	Stain classes**
TE	Tea		WFK 10J		WE5LTWKC	Drink/bleachable
CO	Coffee			CFT KC H109	WE5LCWKC	Drink/bleachable
RW	Red wine			CFT KC H026	WE5RWWKC	Drink/bleachable
FJ	Fruit juice			CFT CS15		Drink/bleachable
TP	Tomato puree				WE5TPWKC	Food/bleachable
CBF	Carrot baby food				WE5IACBWKC	Food/bleachable, enzymatic
FSM	French squeezy mustard				WE5FSMWKC	Food/bleachable, enzymatic,
CO	Chocolate		WFK 10Z	CFT CS44		Food/ enzymatic
GR	Grass	EMPA 164		CFT CS08		General soil /bleachable, enzymatic,
GR/ MU	Grass/mud				WE5GMWKC	Grease, oil / bleachable, enzymatic, particulate

BL	Blood				WE5DASBWKC	General soil / enzymatic
UMO	Unused motor oil	EMPA 106	WFK 10RM	CFT C-01		Grease, oil/ greasy, particulate
FF	Frying fat (hamburger grease)				Burnt beef WE5BBWKC (on white cotton)	Grease, oil/ greasy, enzymatic
MU	Make up	EMPA 143/2	WFK 10MU	CFT CS17		Cosmetics/ greasy, particulate

* (ex Warwick-Equest) All hand-made stains are also available in 2.5 cm diameter. Their code has "2.5" instead of "5"

** (consumer denomination / chemical nature)

d) Colour maintenance for LDD

1. A new knitted polyester load for the normal delicate wash programs to reach a total weight of 2,5kg (see, Table 2)
2. Colour maintenance monitor
3. 2 pieces of soil ballast added to all washes

The total load per wash including ballast load, SBL, cotton cloth and monitors will be 2,5 ±0,1 kg

Table 11. Wash loads for LDD (powder and liquid). Test: colour maintenance

Test		Pre-treatment			Colour maintenance														
Cycle		-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
loads	Polyester ballast load*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Colour maintenance monitor. See Table 8**				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	soil: 2 units SBL2004				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*use the same wash load during the whole test

** use the same cloth during the whole test

3.10 Dosage

In the case of powder detergents dose detergent in the dispenser machine device, and in the case of liquid detergents dose detergent in the tumble using a plastic dosage unit.

Table 12. Detergent dosage

Type of detergent to test	**Reference detergent**				**Market detergent** According to producer recommendation.
	Basic powder	**Sodium percarbonate**	**TAED**	**PVP***	
Powder HDD	70g	12,5g	2,5g	-	Medium soil/medium hard water recommendation. The dosage needs to comply with the Ecolabel criteria
Liquid HDD	70g			-	
Powder and liquid CSD	70g	-	-	1ml	
Powder and liquid LDD	35ml				Light soil/medium hard water recommendation. The dosage needs to comply with the Ecolabel criteria

* active substance: 45%, PVP IV, 30% (Sokolan HP 56K)

3.11 Reference detergent

Table 13. Reference detergents

<table>
<tr><th>Type of detergent</th><th>Reference detergent</th></tr>
<tr><td rowspan="2">HDD</td><td>Regular standard powder detergent IEC P (that can serve as reference for a detergent to wash white fabrics). This standard detergent is distributed as three separate components (because of stability of storage) with the following composition:
- 82% IEC P BASE powder with enzyme and foam inhibitor (= IEC-A* BASE powder see table below)
- 15% sodium percarbonate
- 3% bleach activator tetra-acetylethylenediamine (TAED)
<table>
<tr><th>Ingredient</th><th>% content</th><th>Tolerance (+/-)</th><th>CAS n.</th></tr>
<tr><td>linear sodium alkyl benzene sulfonate</td><td>11,4</td><td>0,5</td><td>25155-30-0</td></tr>
<tr><td>ethoxylated fatty alcohol $C_{12/14}$ (7EO)</td><td>6,1</td><td>0,3</td><td>68439-50-9</td></tr>
<tr><td>sodium soap (tallow soap)</td><td>4,2</td><td>0,2</td><td>308075-99-2</td></tr>
<tr><td>foam inhibitor concentrate, 12% silicon on inorganic carrier)</td><td>5,1</td><td>0,3</td><td>68989-22-0</td></tr>
<tr><td>sodium aluminium silicate zeolite 4A (80% active substance)</td><td>36,7</td><td>1</td><td>70955-01-0</td></tr>
<tr><td>sodium carbonate</td><td>15,1</td><td>1</td><td>497-19-8</td></tr>
<tr><td>sodium salt of a copolymer from acrylic and maleic acid (sokalan CP5)</td><td>3,1</td><td>0,2</td><td>60472-42-6</td></tr>
<tr><td>sodium silicate (SiO_2:Na_2O = 3.3:1)</td><td>3,9</td><td>0,2</td><td>1344-09-8</td></tr>
<tr><td>carboxymethylcellulose</td><td>1,6</td><td>0,1</td><td>9004-32-4</td></tr>
<tr><td>phosphonate (25% active acid)</td><td>3,6</td><td>0,2</td><td>22042-96-2</td></tr>
<tr><td>protease</td><td>0,5</td><td>0,5</td><td>9014-01-1</td></tr>
<tr><td>sodium sulfate</td><td>rest</td><td>rest</td><td>7757-82-6</td></tr>
</table></td></tr>
<tr><td>Homogenize powder detergent, better with a sample divider or if not shake the detergent gently.
The ingredients shall be mixed prior to use. The maximum storage time after mixing is 7 days
Dosage for powder HDD: 70g IEC P BASE + 12.5g sodium percarbonate (CAS 15630-89-4) + 2.5g TAED (CAS 10543-57-4)
Dosage for liquid HDD: 70g IEC P BASE</td></tr>
<tr><td>LDD</td><td>
<table>
<tr><th>Ingredient</th><th>% technical grade</th><th>Tolerance (+/-)</th><th>CAS n.</th></tr>
<tr><td>fatty alcohol ethoxylate $C_{12/14}$ (EO=7)[a]</td><td>35</td><td>0,5</td><td>68213-23-0</td></tr>
<tr><td>low foaming fatty alcohol $C_{12/14}$ with approx 4mol EO and approx 5 moles PO (ethyleneoxide/higher alkylene oxide -co-polymer)[b]</td><td>15</td><td>0,3</td><td>68439-51-0</td></tr>
<tr><td>sodium dodecyl sulfonate [c]</td><td>7,5</td><td>0,2</td><td>68411-30-3</td></tr>
<tr><td>modified polycarboxylate (suitable for liquid detergents)[d]</td><td>15</td><td>0,3</td><td></td></tr>
<tr><td>ethanol</td><td>5</td><td>0,1</td><td>64-17-5</td></tr>
<tr><td>distilled water add to 100%</td><td>rest</td><td></td><td></td></tr>
</table></td></tr>
</table>

	Manufacturing process: 1. Mix fatty alcohol ethoxylate C12/14 (EO=7) and sodium dodecyl sulfonate heating to 40 °C 2. When the mixture will be homogenized, add low foaming fatty alcohol ethoxylate. Mix and homogenize 3. Add ethanol 4. Add modified polycarboxylate and mix 5. Finally, add water (until 100%) The bottle shall be agitated before use Dosage, power or liquid LDD: 35ml/wash cycle
CSD	Reformulation of the IEC P BASE reference detergent according to IEC 60456 formulation
	Dosage: 70g IEC P BASE + 1ml PVP (PVP VI, Sokolan HP 56 K)

[a] example: dehydol LT-7 (BASF)
[b] example: dehypon LS 45 (BASF)
[c] example: maranil paste A55 (BASF)
[d] example: sokalan HP 25 (BASF)

3.12 Number of cycles

A set of 15 washing machine cycles for the determination of:

- stain removal testing from cycle nr 6 to cycle nr 11- final Y-value (HDD/CSD/LDD)
- basic degree of whiteness- final Y-value (HDD/CSD/LDD)

A separate set of 15 additional cycles, run separately for colour maintenance CSD and HDD/LDD (only in the case that colour care is claimed),
Grey scale determination.
Dye transfer inhibition: for CSD and HDD/LDD (only in the case that colour care is claimed), 3 replicates with new dyes donators and acceptors in each wash. Grey scale determination.

Table 14. Cycles for each type of products

	Colour claim	Stain removal	Basic degree of whiteness	Colour maintenance	DTI
HDD	Yes	✓	✓	✓	✓
	No	✓	✓	×	×
CSD		✓	✓	✓	✓
LDD	Yes	✓	✓	✓	✓
	no	✓	✓	×	×

3.13 Wash programme

Table 15 shows the different wash programmes for the Ecolabel performance test.
With low temperature and cold-water wash products, the washing performance will be determined at the lowest stated temperature at which the detergent is claimed to be effective. The reference detergent should be tested at 30 °C.

Table 15. Different wash programs

Test product	Temp efficient	Wash programme test product	Wash programme reference detergent	Water inlet temperature test product	Water inlet temperature reference detergent	Heating Element*
HDD/ CSD	30 °C	30 °C, normal cotton program, 1200rpm	30 °C , normal cotton program, 1200rpm	20,0 ± 2,0 °C	20,0 ± 2,0 °C °C	on
HDD/ CSD	20 °C	20 °C, normal cotton program, 1200rpm	30 °C, normal cotton program, 1200rpm	20,0 ± 2,0 °C	20,0 ± 2,0 °C	on
HDD/ CSD	15 °C	20 °C, normal cotton program, 1200rpm	30 °C, normal cotton program, 1200rpm	15,0 ± 2,0 °C	20,0 ± 2,0 °C	off

LDD	30 °C	30 °C, delicate program, 600rpm	30 °C, delicate program, 600rpm	20,0 ± 2,0 °C	20,0 ± 2,0 °C	on
LDD	20 °C	20 °C, delicate program, 600rpm	30 °C, delicate program, 600rpm	20,0 ± 2,0 °C	20,0 ± 2,0 °C	on
LDD	15 °C	20 °C, delicate program, 600rpm	30 °C, delicate program, 600rpm	15,0 ± 2,0 °C	20,0 ± 2,0 °C	off

* of the washing machine of the test product

3.14 Pre-treatment

- Pre-treatment of ballast load (cotton and polyester) and standard cotton fabric for HDD/CSD or LDD should be done in 3 washes at 60 °C, normal cotton programme without pre-wash.

The basic powder, optical brightener-free, of European Colour fastness Establishment (ECE) standard detergent for colour fastness (ISO 6330) of a dosage of 85g per 4,0 kg load is used (95,6 g of detergent per 4,5 kg load)

It is recommended to dry ballast load after pre-treatment.

3.15 Drying and flattening

No tumble drying for all textiles.

Stains: ironing after the wash cycle at 2 points (150 °C) without steam except for those whose colour will be affected (e.g. blood and tomato).

Standard cotton: line drying at the end of the day, no ironing.

AISE dyes: line drying at the end of the day – no ironing

4. Methods

4.1 Stain removal and basic degree of whiteness by using a spectrophotometer

4.1.1 Test procedure

The monitors used for the evaluation of the stain removal, must be chosen from the same production lot.

The appropriate amount is stored at low temperatures (according to the suppliers' recommendations) under the exclusion of light and oxygen. The material is cut into pieces of (12x12) or (5x5) cm and stored until ready for use in the dark and cold.

Two test monitors of each kind are used for every single wash and fixed on different huckaback towel carrier fabrics with the marked right side upwards.

An extra set of four carrier fabrics will be used for the next wash cycle in order to dry the first set in the meantime.

The prepared carrier fabric with the test swatches are evenly distributed in the wash load and washed in the respective programme parallel to washes at the same conditions using the reference detergent. After one wash they are removed from the machine. Afterwards the monitors are removed from the carrier and ironed (2 points, 150 °C without steam) after each wash cycle.

For stain removal, the whole procedure is repeated 6 times (for HDD/CSD and LDD washes 6 to 11).

The cotton fabrics used for the evaluation of basic degree of whiteness must be from the same production lot. The appropriate amount is stored according to the suppliers' recommendations, under exclusion of light and oxygen.

Two tests fabrics will be used for all the cycles (15 cycles).

4.1.2 Reflectance measurement

Final Y-value measurement for stain removal and basic degree of whiteness, and stain removers determination can be described as follows:

- Measuring geometry: d/8°
- D65/10° observer

- With UV-filter (420nm cut off)
- Measuring diameter: Minimum 20 mm
- Gloss: without
- Calibration: Measurements shall be carried out at the latest 8h after calibration with white tile and black trap

For each standard stain (12x12cm or 5x5cm) the mean of the 48 measurements (2 samples per soil x 4 readings x 6 wash cycles) is calculated. Standard deviation ought to be calculated from 6 washes.
For each natural stain (5 cm of diameter) the mean of the 24 measurements (2 samples per soil x 2 readings x 6 wash cycles) is calculated.
For each white cotton cloth the mean of 8 initial measurements (before first cycle) and 8 final measurements (after 15 cycles) is calculated (2 samples x 4 readings). It is necessary to bend the cotton cloth before starting with the measurements
Ganz-Griesser calculations are recommended.

4.2 Colour maintenance by using a spectrophotometer

Defined monitor set (see **Table 8**) and ballast load (see **Table 2**).
After 15 wash cycles the samples are measured using a spectrophotometer on a defined white background[6] at four defined spots. For all products in comparison a common calibration is used. The wash temperature shall be 30°C. The measurement for the colour maintenance test will be done according to EN ISO 105-J01:2000 "*Textiles. Tests for colour fastness, general principles for measurement of surfaced colour".* The measurement conditions will be as follows:

- Measuring geometry: d/8°
- D65/10° observer
- With UV-filter (420 nm cut off)
- Measuring diameter: minimum 20 mm
- Gloss: without
- Calibration: measurements shall be carried out at the latest 8h after calibration with white tile and black trap
- Results must be reported as "grey scale" figures

The colour differences are calculated according to EN ISO 105-J03: 2009 "*Textiles. Test of colour fastness. Calculation of colour differences*". The initial state of the colour is taken as a reference for determining the colour differences, the change in colour is instrumentally assessed as described in EN ISO 105-A05:1997 "*Textiles. Test of colour fastness. Instrumental assessment of change of colour for determination of grey scale rating*". Mean and standard deviation for each dye is calculated. Mean over the complete dye set is calculated. They are based on EN 20105-A02: 1995 "*Textiles. Test of colour fastness. Grey scale for assessing change in colour".*

4.3 Dye transfer inhibition by using a spectrophotometer

Laundering device: line-test tergotometer
The laundering device is described in EN ISO 105:C061997 "*Textiles. Test of colour fastness. Colour fastness to domestic and commercial laundering".* A water bath containing a routable shaft which supports, radially stainless steel containers (diameter 7,.5 ± 0,.5 cm, height 12.,0 ± 0,.5 cm) with 525 ± 50 ml capacity each), the bottom of the containers is being 4.5 ± 1 cm from the centre of the shaft. The shaft/container assembly is rotated at a frequency of 40 ± 2 rpm. The temperature of the water bath is thermostatically controlled to maintain the test solution at the prescribed temperature ±2 °C.

[6] A defined white background means the white background used by the laboratory. It should be the same for each measurement

The same liquor concentration and water hardness is used as in the washing machine. The product in test (amount for 1l) is dispersed in 1l of lukewarm water using a magnetic stirrer and then rapidly heated until the liquor reaches 40 °C.
Dye donator (0.3 g) and dye accepter (cotton and polyamide) are placed in the container (no addition of steel balls). Both textiles are not fixed to each other. The volume to give the correct liquor: fabric ratio 100:1 is added and the containers are placed in the preheated (40 °C) machine. Temperature raises 2 °C up to 60 °C and the wash is continued for 20 min at this temperature.

Table 16. DTI wash cycle composition (detergent: CSD (powder and liquid) /LDD

Cycle nr	1	2	3
Composition	Cotton + polyamide donator		

Both dye acceptors (CO and PA) are used for all 4 dye donators.
After washes the textiles are removed and rinsed twice for 1 min in running warm water and then in cold running water for 10 min (same hardness as the test). Textiles are dried hanging in the air (no direct sun)
To assess the dye transfer after one wash, colour differences between the standard cotton or polyamide piece washed without and with dye donator is determined by using a spectrophotometer.
Results must be reported as "grey scale" figures. The colour differences are calculated according to EN ISO 105-J03: 2009 "*Textiles. Test for colour fastness. Calculation of colour differences*". Measurements are taken at two defined areas of the dye acceptor using an appropriate device as described in CIE 15:2004 "colorimetry".
The instrumental assessments on colour fastness are done according to EN ISO 105-A04:1997 "*Textiles. Method for the instrumental assessment of the degree of staining of adjacent fabrics*". They are based on EN 20105-A03:1995 "*Textiles. Test for colour fastness. Grey scale for assessing staining".* The measurement for all products to be compared is performed using one common calibration under the same conditions.

- Measuring geometry: d/8°
- D65/10° observer
- With UV-filter (420nm cut off)
- Measuring diameter: minimum 20 mm
- Gloss: without
- Calibration: measurements shall be carried out at the latest 8h after calibration with white tile and black trap

4.4 Testing of stain removal, basic degree of whiteness, colour maintenance and dye transfer inhibition by using a multi-image analysis device.

A multi-image analysis device can be used to perform the above mentioned analyses. The multi-image analysis device should give similar output as a spectrophotometer.

5. Evaluation

Each product must achieve the following results

5.1 Stain removal

Each product category (HDD, CSD, LDD) follows the same procedure
All the stains must be evaluated separately (Y-final) and referred to the reference detergent and the statistical influence (σ) must be taken into account (3 failures are allowed)

$$\Delta Y = (\text{average reference} - \sigma) - (\text{average product} + \sigma)$$

$$\Delta Y \leq 10 \text{ to pass the test}$$

5.2 Basic degree of whiteness

Each product category (HDD, CSD, LDD) follows the same procedure.

$$\Delta Y = (\text{average reference} - \text{average product})$$

The product passes the test if:

- For HDD powder products: $\Delta Y < 2{,}0$
- For HDD liquid and CSD (powder and liquid) products: $\Delta Y < 3{,}0$
- For LDD products: $\Delta Y < 2{,}0$

5.3 Colour maintenance

Each product category (CSD and HDD/LDD) follows the same procedure.
All dyes must be evaluated separately and referred to reference detergent. The colour maintenance is measured as

$$(\Delta \text{ grey scale}) = \text{average reference} - \text{average product}$$

Each product category must achieve: Δ grey scale $\leq 1{,}0$ to pass the test (2 failures are allowed)

5.4 Dye transfer inhibition (DTI)

Each product category (CSD and HDD/LDD) follows the same procedure.
Each DTI data must be evaluated separately and compared to the reference detergent. The dye transfer inhibition is measured as

$$(\Delta \text{ grey scale}) = \text{average reference} - \text{average product}$$

Each product category must achieve: Δ grey scale $\leq 1{,}0$ to pass the test (1 failure is allowed on maximum 1 (out of 4) dye)
See Annex 1 for a complete example.

6. Results and reporting

An excelsheet template can be found on the EU Ecolabel website to report the data of the performance test of laundry detergents. The filled in template together with the requirements of the laboratory to conduct the performance test shall be provided by the applicant.

Annex 1. Example CSD liquid and template example

A template for reporting the description of the procedures and the results of the tests is available here (http://ec.europa.eu/environment/ecolabel/documents/performance%20test%20LD.xlsx).
This template is not mandatory to show compliance with criterion 6 Fitness for use

Revised EU Ecolabel protocol for testing stain removers[7]

Content

0. Background
1. Test criteria
2. Laboratory requirements to conduct the testing.
3. Materials and conditions
4. Methods
5. Evaluation
6. Results and reporting
Annex 1. Example

Abbreviations

HDD	Heavy duty detergent	DTI	Dye transfer inhibition
CSD	Colour safe detergent	SBL	Soil ballast load
LDD	Light duty detergent	PC	Sodium percarbonate
SR	Stain removal	TAED	Tetra acetyl ethylene diamine
BDW	Basic degree of whiteness	PVP	Polyvinylpyrrolidone
CM	Colour maintenance	CO	Cotton
PA	Polyamide	PES	Polyester
PES/CO	Polyester/cotton	WO	Wool
SI	Silk		

0. Background

This test protocol serves as a proof to show compliance with the criterion "fitness for use" of the Commission Decision (EU) 2017/1218 of 23 June 2017 establishing EU Ecolabel criteria for Laundry detergents. The product shall be fit for use, meeting the needs of consumers.

The test is for products that fall under the scope of the product group "Laundry detergents" as "pre-treatment stain removers" which means stain removers used for direct spot treatment of textiles before washing in the washing machine but do not include stain removers dosed in the washing machine and stain removers dedicated to other uses besides pre-treatment. This means, this protocol focuses on stain removers as specified in the section 3.1 "Range of application".

1. Test criteria

The intention is that the test should show that stain removers make a positive contribution to the washing result. This is achieved by performing a wash test for the standard reference and comparing this result with the result of an equivalent wash test for the standard reference with a stain remover added. The wash test shall be passed for all soil types that the product is claimed to have an effect on. If no specific types of soils are specified on the product at least five different soils must be tested and the reasons for the choice of these soils must be stated.

2. Laboratory requirements to conduct the testing.

The manufacturer's test laboratory or/and an external test laboratory can be approved to conduct testing to document effectiveness of hard surface cleaners if the following requirements are met:

[7] Not for industrial and institutional products

- it must be possible for EU Ecolabel competent bodies to monitor the performance of testing (e.g. on-site visits to the laboratory),
- the EU Ecolabel Competent Body must have access to all data on the product (e.g. technical data sheets),
- whenever possible, the samples must be made anonymous for the test laboratory (e.g. product A and product B).
- the test laboratories must be equipped with the devices described in the test method,
- performance of the effectiveness test as well as the test method must be described in the quality control system.

Competent bodies shall preferentially recognise attestations which are issued by bodies accredited in accordance with the relevant harmonised standard for testing and calibration laboratories and verifications by bodies that are accredited in accordance with the relevant harmonised standard for bodies certifying products, processes and services. Accreditation shall be carried out in accordance with Regulation (EC) No 765/2008 of the European Parliament and of the Council

3. Materials and conditions

The test institute must be able to prove the compliance with all test conditions laid down in the following paragraphs. The documentation of the compliance with all test conditions shall be part of the test report (section 6 Results and reporting).

3.1 Range of application:

In the context of the EU Ecolabel, this performance test can be applied to stain removers for clothing, for soaking as a wash enhancer or for pre-washes or other equivalent functions. Pre-treatment stain removers include stain removers used for direct spot treatment of textiles (before washing in the machine) but don't include stain removers dosed in the washing machine and stain remover dedicated to other uses besides pre-treatment.

3.2 Washing machine types:

Programmable electronic Miele[8] household washing machines which fulfil the following requirements

Table 17. Washing machine and wash programmes specifications

	Cotton wash program (at 30 °C, 20 °C[a], 15 °C[b])	Delicate program[c] (at 30 °C, 20 °C[a], 15 °C[b])
Duration main wash	50-70 min	30-40 min
Total program duration	100-120 min	55-65 min
Water quantity main wash	15±2 l	20±2 l
Total water quantity	55±5 l	64±5 l
Number of rinse cycles	3	3
Final spin speed	1200rpm[9]	600rpm

[a] for cold water products

[8] Miele machine was proposed as a reference machine due to its stable performance and regular quality of the outcomes. Another machine could be used as reference machine if it provides similar performance for a comparable programme.
For use in laboratories Miele launched a special line of machines where the fuzzy logic is already disabled (e.g. Miele 1935 WPS WTL).

[9] See footnote 2

[b] most of the older machines do not offer cold water programs. Those machines which offer cold water programmes normally heat up the entering water to 21 °C, which can be used for products that claim to be effective at 20 °C. For test runs at 15 °C the heating elements of the washing machine have to be disconnected to prevent the heat up

[c] some newer washing machines offer an equivalent synthetic program

3.3 Water conditions:

Water hardness: 2,5 ± 0,2mmol $CaCO_3$/l. The Ca/Mg ration will be 3 ± 0,5

Water inlet temperature: 20,0 ± 4,0 °C, but not for those product that claim to be effective at lower temperature. The water inlet temperature for products which are effective at lower temperature shall be 15,0 ± 4 °C

The amount of water shall be controlled along the washing process, if possible.

The water hardness and the water inlet temperature shall be reported for the test product and reference detergent or stain removal.

3.4 Ballast load:

Cotton ballast load: the base load of cotton shall consist of cotton pillowcases and cotton huckaback hand-towels conforming standard IEC 60456[3].

3.5 Stains sets

For non-specific products, the product must be tested on a minimum of five different stains. If the product claims a specific effect, the product must be tested on a minimum of five stains of the product claim[10]. In any case, the reason for the choice of the stains must be given to the competent body (Section 6 Results and reporting).

Two sets of stains per wash cycle (in the same batch) should be used. Mark with a water resistant pen each stain as the Figure 1. Fix the stains on the loads with a plastic staple with a gun on the load, as the example in Figure 2. Alternatively, the stains can be stitched together beforehand to make a full test strip or use a multiswatch monitor[5]. Then, this strip must be fixed on a hand towel before washing.

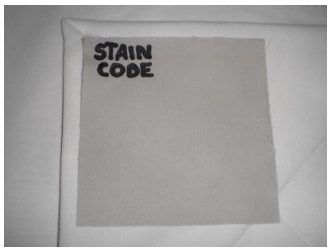

Figure 1 Marking of the stain sets

Figure 2 Marking of the stain sets

Figure 3 Marking of the stain sets

Figure 1-3. Marking of the stain sets

Table 18. Information on the different stains and suppliers

Stains	Fabric	Standard stains			Hand made	Type
Carbon black/ olive oil	CO	EMPA 101	WFK 10B	CFT C-02	125KC	Greasy
	PES/ CO	EMPA 104	WFK 20B	CFT PC-02	125PC	
	WO	EMPA 107	WFK 30B	CFT P-02	125PE	

[10] For example, if the stain remover claims to be effective in removing greasy stains, stains must be chosen from the following list: carbon black/olive oil, carbon black/mineral oil, sebum/pigment, lipstick, make-up, pigment/lanolin, pigment/olive oil

Carbon black/ mineral oil	CO	EMPA 106	WFK 10M	CFT C-01		Greasy
	PES/ CO		WFK 20M	CFT PC-02		
	PES		WFK 30M	CFT P-02		
Blood	CO	EMPA 111	WFK 10PBU WFK 90PBU		109KC	Enzymatic
	PES/ CO		WFK 20PBU		109PC	
	PES		WFK 30PBU		109PE	
Aged blood	CO		WFK 10PB	CFT C-S-01		Enzymatic
	PES/ CO		WFK 20PB	CFT PC-S-01		
	PES		WFK 30PB	CFT P-S-01		
Cocoa	CO		WFK 10MF WFK 90MF	CFT CS-02		Enzymatic
	PES/ CO		WFK 20MF	CFT PC-S-02		
	PES		WFK 30MF	CFT P-S-02		
Red wine	CO	EMPA 114	WFK 10LIU WFK 90LIU	CFT C-S-103	126KC	Bleachable
	PES/ CO		WFK 20LIU	CFT PC-S-103	126PC	
	PES		WFK 30LIU	CFT P-S-103	126PE	
	WO		WFK 60LIU	CFT W-S-103		
	SI		WFK 70LIU	CFT S-S-103		
Aged red wine	CO	EMPA 122	WFK 10LI WFK 90LI	CFT CS-03		Bleachable
	PES/CO		WFK 20LI	CFT PC-S-03		
	PES		WFK 30LI	CFT P-S-03		
	WO		WFK 60LI	CFT W-S-03		
	SI		WFK 70LIU	CFT S-S-03		
Blood/milk/ink	CO	EMPA 116		CFT C-05		Enzymatic
	PES/ CO	EMPA 117		CFT PC-05		
	PES			CFT P-05		
Sebum/pigment	CO	EMPA 118	WFK 10D WFK 90D	CFT C-S-132		Greasy
	PES/CO	EMPA 119	WFK 20D	CFT PC-S-132		
	PES		WFK 30D	CFT P-S-132		
	WO		WFK 60D	CFT W-S-132		
	SI		WFK 70D	CFT S-S-132		
Lipstick	CO	EMPA 141/1 EMPA 141/2 EMPA 141/3	WFK 10LS	CFT C-S-216 CFT CS-116	073KC	Greasy Particulate
	PES/ CO	EMPA 142/1 EMPA 142/2 EMPA 142/3	WFK 20LS	CFT PC-S-216 CFT PC-S-116	073PC	
	PES		WFK 30LS	CFT P-S-216 CFT P-S-116	073PE	
	WO		WFK 60LS	CFT W-S-216 CFT W-S-116		
	SI		WFK 70LS	CFT S-S-216 CFT S-S-116		
Make up	CO	EMPA 143/1 EMPA 143/2 EMPA 143/3	WFK 10MU	CFT C-S-17	075KC	Greasy Particulate

	PES/ CO	EMPA 144/1 EMPA 144/2 EMPA 144/3	WFK 20MU	CFT PC-S-17	075PC	
	PES		WFK 30MU	CFT P-S-17	075PE	
	WO		WFK 60MU	CFT W-S-17		
	SI		WFK 70MU	CFT S-S-17		
Chocolate cream	CO	EMPA 160		CFT C-S-68	CFT KC-H009	Enzymatic
Chocolate	CO		WFK 10Z	CFT C-S-44	033KC	Enzymatic
	PES/CO		WFK 20Z	CFT PC-S-44	033PC	
	PES		WFK 30Z	CFT P-S-44	033PE	
	WO		WFK 60Z	CFT W-S-44		
	SI		WFK 70Z	CFT S-S-44		
Cocoa, not temperature treated	CO	EMPA 112	WFK 10MFU WFK 90MFU		038KC	Enzymatic
	PES/CO		WFK 20MFU		038PC	
	PES		WFK 30MFU		038PE	
Corn starch	CO	EMPA 161	WFK 10R	CFT C-S-26		Enzymatic
	PES/CO	EMPA 162	WFK 20R	CFT PC-S-26		
	PES		WFK 30R	CFT P-S-26		
Potato starch	CO			CFT C-S-27		Enzymatic
	PES/CO			CFT PC-S-27		
	PES			CFT P-S-27		
Rice starch	CO			CFT C-S-28	CFT KC-H161	Enzymatic
	PES/ CO			CFT PC-S-28	CFT PC-H161	
	PES			CFT P-S-28	CFT P-H161	
Porridge	CO	EMPA 163			097KC	Enzymatic
Grass	CO	EMPA 164		CFT C-S-08	062KC	Bleachable Enzymatic
	PES/ CO			CFT PC-S-08	062PC	
	PES			CFT P-S-08	062PE	
Pudding (mananase sensitive)	CO	EMPA 165		CFT C-S-69	CFT C-H118	Enzymatic
Tea (responsive to bleach only due to special treatment)	CO			CFT C*BC-03	117KC	Bleachable
	PES/CO			CFT PC-BC-03	117PC	
	PES			CFT P-BC-03	117PE	
	SI					
Tea	CO	EMPA 167	WFK 10J	CFT C-S-97		Bleachable
	PES/ CO	EMPA 168	WFK 20J	CFT PC-S-97		
	PES		WFK 30J	CFT P-S-97		
Pigment/ lanolin	CO		WFK 10C			Greasy
	PES/ CO		WFK 20C			
	PES		WFK 30C			
	WO		WFK 60C			
	SI		WFK 70C			

3.6 Stains set size

(12x12) cm^2, (5x5) cm^2 standard stains and colour maintenance and 5 cm diameter (hand-made).

3.7 Soil

Introduce 4 sheets of SBL 2004 per wash. The supplier of SBL 2004 is WFK (http;//www.testgewebe.de). Fix the SBL sheets on the loads as the stains.

3.8 Wash loads

Each test series has to be started with a new wash load. This load consists of:

1. A new all cotton ballast load for the normal cotton wash program to reach a total weight of 4,5 kg.

Table 19. Total cotton loads (kg)

Total load (kg)	Pillowcases	Hand-towel
4,5 kg ±0,1kg	12 units	Until weight

2. 5 stain removal monitors x 2 replicates
3. 4 pieces of soil ballast

The total load per wash including ballast load, SBL, cotton cloth and monitors will be 4,5 ±0,1 kg.

3.9 Pre-treatment of cotton hand towels and ballast load

3 washes at 60 °C, normal cotton program without pre-wash. The basic powder, optical brightener-free, of ECE-2 standard detergent for colour fastness (ISO 6330) of a dosage of 85g per 4,0 kg load is used (95,6 g of detergent per 4,5 kg load)

It is recommended to dry ballast load after pre-treatment. A standard dryer can be used.

3.10 Reference detergent

Table 20. Reference detergent

Regular standard powder detergent IEC P (that can serve as reference for a detergent to wash white fabrics). This standard detergent is distributed as three separate components (because of stability of storage) with the following composition:

- 82% IEC P BASE powder with enzyme and foam inhibitor (= IEC A* BASE, see table below)
-15% sodium percarbonate
- 3% bleach activator tetra-acetylethylenediamine (TAED)

Ingredient	% content	Tolerance (+/-)	CAS n.
linear sodium alkyl benzene sulfonate	11,4	0,5	25155-30-0
ethoxylated fatty alcohol $C_{12/14}$ (7EO)	6,1	0,3	68439-50-9
sodium soap (tallow soap)	4,2	0,2	308075-99-2
foam inhibitor concentrate, 12% silicon on inorganic carrier)	5,1	0,3	68989-22-0
sodium aluminium silicate zeolite 4A (80% active substance)	36,7	1	70955-01-0
sodium carbonate	15,1	1	497-19-8
sodium salt of a copolymer from acrylic and maleic acid (sokalan CP5)	3,1	0,2	60472-42-6
sodium silicate (SiO_2:Na_2O = 3.3:1)	3,9	0,2	1344-09-8
carboxymethylcellulose	1,6	0,1	9004-32-4
phosphonate (25% active acid)	3,6	0,2	22042-96-2
protease	0,5	0,5	9014-01-1
sodium sulfate	rest	rest	7757-82-6

The ingredients shall be mixed prior to use. The maximum storage time after mixing is 7 days.
Dosage HDD: 70 g of powder base
Put detergent in dispenser machine device.

3.11 Test product for stain removers
The test product consists of a reference detergent with a stain remover added. The reference detergent is dosed as in 3.10. The stain remover is dosed according to the instructions provided on the product and taking onto account consumer habits.

3.12 Wash programme
30 °C, cotton normal program and final spin 1200rpm.

3.13 Procedures
- Pre-treatment of cotton and hand-towels and ballast load according to section 3.9.
- Washing: The following wash cycles are run, at least, 6 times with each product, using a new set of stains each time. For all the different products in

Table 21, 5x2 different stains (according to 2.5) must be tested and 2 standard cotton cloths in the same wash (according to 2.8)

Table 21. Washing conditions

Product	**Conditions**
Stain remover + reference detergent (IEC P BASE according to 60456)	In this case the stain remover following the recommendations from the producer and wash adding 70g of reference detergent (Table 20)
Reference detergent (IEC P BASE according to 60456)	In this case wash adding only 70g of reference detergent (Table 20)
Water	Wash without chemical products (detergents and additives)

- Drying (no tumble drying) and flattering: 2 points (150 °C) without steam after each wash cycle just the stains

4. Methods

4.1 Test procedure
The stain sets monitors used for the evaluation must be from the same production lot. The appropriate amount is stored at low temperatures (according to the recommendations of the suppliers) under exclusion of light and oxygen. The material is cut into pieces of 12x12cm and stored until ready to use in the dark and cold.
Two test monitors of each kind are used for every single wash and fixed on different huckaback towel carrier fabrics with the marked right side upwards.
An extra set of four carrier fabrics will be used for the next wash cycle in order to dry the first set in the meantime.
The prepared carrier fabric with the test swatches are evenly distributed in the wash load and washed in the run programme while to washes at the same conditions using the reference detergent. After one wash they are removed from the machine. Afterwards the monitors are removed from the carrier and dried in the dark at ambient conditions lying flat on a sieve.
For the test, the whole procedure is repeated 6 times.

4.2 Reflectance measurement

Final Y-value measurement for stain removal determination can be described as follows:

- Measuring geometry: d/8°
- D65/10° observer
- With UV-filter (420 nm cut off)
- Measuring diameter: minimum 20 mm
- Gloss: without
- Calibration: measurements shall be carried out at the latest 8h after calibration with white tile and black trap

For each soil monitor the mean of the 48 measurements (2 samples per soil x 4 readings x 6 wash cycles) are calculated. Standard deviation ought to be calculated from 6 washes.
The mean value (Y) for the above measurements is taken for each stain test. The normalized wash result is achieved by subtracting the result for water from both the reference detergent and the test product.

5. Evaluation

The product will be considered to have a satisfactory performance, at temperature tested, if it achieves the following results:
The general normalized cleaning effect must be greater than 110% compared to the reference detergent and the result for all soil types must be better than for water.

6. Results and reporting

An excelsheet template can be found on the EU Ecolabel website to report the data of the performance test of laundry detergents. The filled in template together with the requirements of the laboratory to conduct the performance test shall be provided by the applicant.

Annex 1: Examples for reporting

A template for reporting the description of the procedures and the results of the tests is available here (http://ec.europa.eu/environment/ecolabel/documents/performance%20test%20LD.xlsx).
This template is not mandatory to show compliance with criterion 6 Fitness for use

Testresultat EU-blomman utförda av testinstitutet SWEREA IVF.

	System DIRO	Referenstvättmedel	Resultat system DIRO	Passed/Fail
Te	46,52	44,79	-1,73	Passed
Kaffe	57,73	56,45	-1,28	Passed
Rödvin	67,7	61,39	-6,31	Passed
Juice	46,13	45,3	-0,83	Passed
Choklad	48,94	36,1	-12,83	Passed
Gräs	59,37	62,91	3,54	Passed
Blod	35,13	73,63	38,5	Fail
Motorolja (ny)	42,16	43,41	1,25	Passed
Make up	59,89	62,75	2,85	Passed
Tomatpuré	73,93	75,07	1,14	Passed
Morot	84,53	81,96	-2,57	Passed
Senap	66,79	73,12	6,32	Passed
Gräs/Lera	49,22	51,09	1,88	Passed
Stekfett	66,31	63	-3,31	Passed

Där det finns ett – minustecken framför siffrorna är vi bättre än referenstvättmedlet, upp till +10 är godkänt och man får ha 3 stycken Fail. Vi har ett Fail, blod. Man måste komma ihåg att detta blod är torkat i ugn, vakuumförpackat, fryst och har legat ett tag innan det testtvättats.

Fläckarna är gjorda av ett laboratorium I Schweiz, de smutsas ner, torkas i ugn, vakuumförpackas och fryses.

Referenstvättmedlet är ett specialblandat tvättmedel som är starkare än de i handeln vanligt förekommande.

Alla tester är gjorda på 30 grader.

Om man behandlar blodfläckar normalt d.v.s. att man tvättar textilierna inom rimlig tid från fläckens uppkomst är det inget problem för då går fläcken bort med vårt system. Naturligtvis kan fläckborttagningsmedel användas precis som vanligt.

DESSA TESTER ÄR GJORDA 2014. I dag har vi ett mycket, mycket bättre resultat.

Bilaga i mail 2019-04-26 som utgör formellt svar från RISE till David Wensbo Posaric

Angående tvättrapport

Testrapporten är ofullständig

Det är korrekt att bara två tester utförts (”Stain Removal DY” och ”Basic Degree of Whiteness”), vilket grundar sig i att det är dessa två tester som beställts.

Testrapporten visar att nödvändiga kriterier inte kunnat mötas

Rapporten och dess testresultat visar att ”Stain Removal DY” erhåller ”PASS”, medan ”Basic Degree of Whiteness” erhåller ”FAIL” enligt gällande kriterier.

Uttalandet ”*… vid dessa tester uppnådde vårt DIRO® filtersystem godkänd rengöringseffekt enligt EU-Ecolabel.”* är oförenligt med testrapporten

Uttalandet är korrekt då Rengöringseffekt/Stain Removal DY godkänts, men kan uppfattas som att hela EU-Ecolabel är uppfyllt. Endast ett av två testade kriterier har godkänts, dessutom ska ytterligare två tester/metoder (med godkänt resultat) genomföras enligt EU-Ecolabel.

SWATAB har brutit mot Swerea IVF:s villkor avseende hantering av utfärdad testrapport.

Energimyndigheten har kontaktat oss och diskuterat rapporten. Hur de väljer att gå vidare är deras beslut.

Vi kommer låta våra jurister titta på detta för att bedöma om/hur vi driver det vidare.

Mölndal 2019-04-26

Med vänliga hälsningar

Jonas Aspling

Avdelningschef Material