CROSS INDUSTRY AGREEMENT

FAQ ON THE CIA TEST METHOD

A·I·S·E International Association for Soaps, Detergents and Maintenance Products

CIRFS EUROPEAN MAN-MADE FIBRES ASSOCIATION

EUROPEAN OUTDOOR GROUP

EURATEX THE EUROPEAN APPAREL AND TEXTILE CONFEDERATION

Federation of the European Sporting Goods Industry

What did the fibre fragmentation trial involve?

The trial involved sending four different fabric samples to participating labs, there were 10 labs in total (Aitex, Centrocot, Eurofins, Henkel, Hochschule Niederrhein, Hohenstein, RISE, TMC, Tüv Süd, UL, and the University of Leeds). Labs were selected upon their having the correct equipment to carry out the test, and also their ability to work within the specified time frames. The participating labs tested all of the fabric samples according to the method detailed in the CEN draft and submitted the results to us. The results were assessed according to 'BS ISO 5725-2:2019 Accuracy (trueness and precision) of measurement methods and results. Part 2: Basic method for determination of repeatability and reproducibility of a standard measurement method'.

What are the results that have been revealed from the fibre fragmentation trial?

Mandel's k and h statistics showed within-laboratory consistency, and between-laboratory consistency at the 95% and 99% confidence intervals, suggesting that the method is both reproducible and repeatable.

Can you explain how the harmonised test would work? What stages are involved?

The test method is a modified version of ISO 105-C06 and provides a way to systematically collect material loss from fabrics under standardized laundry conditions. The test specimen is subjected to a controlled accelerated laundering process. The resultant wash liquor is filtered and material loss is assessed gravimetrically.

When do you expect an ISO standard to be formally accepted?

The official CEN Enquiry and the parallel ISO DIS should start in October 2021.

What have been the biggest challenges to develop the test?

One of the biggest challenges has been the need to incorporate extra precision within the test method. Fibre fragmentation is something that happens on a very small scale, and during the test procedure the samples shed small amounts, as such the method needs to be able to measure small values with a high degree of accuracy. This creates a challenge as environmental conditions, especially humidity, need to be controlled very tightly and contamination reduced to the absolute minimum.

How does the CEN/ISO method relate to the AATCC and TMC methods?

The three methods are very similar, with the main difference that exists being around the conditions of use.

The aim has always been to try and harmonise global methods that assess fibre fragmentation from textiles and there has been regular communication between all stakeholders working on the standardisation of test methodologies for microfibre release. This has included the AATCC and TMC who have worked closely with the CIA and have been instrumental throughout the development of the CEN/ISO method, through the sharing of knowledge, experience and data.

All organisations independently developed very similar standards, based on the procedure for ISO 105-C06 tests for colour fastness and a collaborative approach has been employed throughout to align parameters.

Why do we need a globalised method?

Original research in the area showed disparities in shedding rates of up to four orders of magnitude that was related inappropriate methodologies or methods of analysis in the early research and at that time, the impact of small differences in test method parameters on the reliability of results was noted. For the industry to understand this phenomena and to find ways to mitigate microfibre release we knew from the beginning that global harmonisation was a necessity.

Microfibre Test Method Alignment Matrix

	AATCC	CIA / CEN / ISO	TMC
	This test determines the mass of fiber fragments released in an accelerated laundering testing machine. Accelerated laundering is expected to provide a relative approximation of fiber fragment release in full-scale home laundering, but an exact correlation has not been determined. Modified version of AATCC TM 61-2003, option 2A	The method provides a means of systematically collecting material loss from fabrics under standardized laundry conditions to achieve comparable and accurate results. The method is designed to assess both synthetic and natural material loss Modified version of ISO 105-C06	This method is intended for determining the quantity of textile material losses from fabrics under standard conditions which reflect those found in domestic laundering. Modification of ISO 105-C06
CONDITIONS FOR USE	Certified AATCC method (available)	Certified CEN / ISO method (not yet available)	To be carried out through a third party lab accredited by TMC (listed on website) or by an accredited member internal testing lab
SPECIMENS			
Sample size - pre hem	200 mm x 340 mm	150 mm x 290 mm	150 mm x 290 mm
Sample size - post hem	100 ± 10 mm × 240 ± 10 mm	100 ± 10 mm × 240 ± 10 mm	100 ± 10 mm × 240 ± 10 mm
Sample Makeup	Rectangular	Rectangular	Rectangular
Cutting	Scissors	Scissors	Scissors
Sealing	Rolled seam and lockstitch	Rolled seam and lockstitch	Rolled seam and lockstitch
Sample Pretreatment	Conditioned in oven (two options available)	Conditioned in oven	Conditioned in oven
Filter pretreatment	Pre-rinsed and oven dried/conditioned	Pre-rinsed and oven dried/conditioned	Oven conditioned
WASHING PROCEEDURE			
Apparatus	A laundering machine for rotating closed canisters in a thermostatically controlled water bath at 40 ± 2 rpm.	Suitable mechanical device, consisting of a water bath containing a rotatable shaft, which supports radially, stainless steel canisters lying horizontally on the shaft. The shaft/container assembly is rotated at a frequency of (40±2) min-1. The temperature of the water bath is thermostatically controlled to maintain the test solution at the prescribed temperature ± 2 °C.	Suitable laundering device1, consisting of a water bath with rotatable shaft which supports radially, stainless steel containers as described in 3.2, lying horizontally on the shaft. The shaft/container assembly is rotated at a frequency of (40 ± 2) min-1. The temperature of the water bath is thermostatically controlled to maintain the prescribed temperature ± 2°C.
Container Type	1200 ml stainless steel (Type II)	1200 ml stainless steel (Type II)	1200 ml stainless steel (Type II)
Liquor Quantity	360ml	360ml	360ml
Steel balls	50	50	50
Detergent	Optional, but must be reported	No	No
Detergent Type	AATCC High Efficiency (HE) Standard Reference Liquid Detergent WOB (without optical brightener)	N/A	N/A
Temperature	40°C	40°C	40°C
Time	45 min	45 min	45 min
Turns	40 +/- 2 rpm	40 +/- 2 rpm	40 +/- 2 rpm
Water Quality	Distilled/Deionized	Distilled	Distilled
ANALYSIS			
Fibre loss assesment method (Gravimetric/Weight Loss/Counting)	Gravimetric; loss listed as % of original specimen weight	Gravimetrically, as mass percentage of the original specimen	Gravimetrically, as mass percentage of the original specimen
Filtration	Yes	Yes	Yes
Filter Process	Vacuum filtration device	Vacuum filtration device	Vacuum filtration device
Filter	1.6µ glass fibre filter	1.6µ glass fibre filter	1.6µ glass fibre filter
Filter Diameter	47 mm	47 mm	47 mm
Filter Drying	2 options available: - Condition filters atmospherically at 21 ± 2°C (70 ± 4°F) and 65% ± 5% RH for at least 4 h, covered with foil, repeat if necessary until reach moisture equilibrium - Oven dry at 70 ± 2°C for at least 1 h, dessicate for 30 mins	Oven dry at 50°C until a constant mass is reached (minimum 4hrs), dessicate until cool	Oven dry at 50°C for 4hrs minimum