TEST REPORT

2022EP7552

DATE OF RECEPTION
05/07/2022

DATE TESTS
Starting: 06/07/2022
Ending: 14/07/2022

APPLICANT

XM Textiles Europe UAB
Dariaus ir Gireno st. 42A Office 509
LT-02189 Vilnius
Lituania

Att. CERTIFICATION TEAM

IDENTIFICATION AND DESCRIPTION OF SAMPLES

REFERENCE	REFERENCE PROVIDED BY THE CUSTOMER	DESCRIPTION
2022EP7552-S01	Fabric ref. Poseidon-245	Fabric

TESTS CARRIED OUT

- ELECTRIC ARC TEST.
- PRE-TREATMENT FOR DOMESTIC WASHING AND DRYING PROCEDURES FOR TEXTILE TESTING.
- COLOUR FASTNESS TO DRY CLEANING.
- COLOUR FASTNESS TO BLEACHING.
- COLOUR FASTNESS TO HOT PRESSING.

The test was carried out: High Current Laboratory located at Electrical Materials Laboratory - Cr. Villaviciosa de Odón a Móstoles (M-856) Km. 1,5. 28935 Móstoles (Madrid).

Tests marked with * are not included within the scope of the ENAC accreditation.

Rev.1 This revision cancels and replaces the previous
Validated by mistake

DESCRIPTION OF SAMPLES

Reference by AITEX*:* 2022EP7552-S01

Reference provided by the customer*:*

Fabric ref. Poseidon-245

Sample description*:*

Acording to information supplied by customer:

Fabric ref. Poseidon-245
Composition and percentage 80% Cotton, 19% Polyester, 1% Antistatic, FR-Twill 2/2
Weight 245 gsm
Color Yellow Hi-Vis
Others (if any) FRL-361

Composition*:*

80% Cotton, 19% Polyester, 1% Antistatic, FR-Twill 2/2

Reference by AITEX	Reference provided by the customer
2022EP7552-S01.1	AFTER WASH

EXECUTIVE SUMMARY

	Reference	Test/Standard	Result
EN 61482-2:2020	2022EP7552-S01.1	ELECTRIC ARC (BOX TEST) FABRIC **IEC 61482-1-2:2014**	APC 1
EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016	**Reference**	**Test/Standard**	**Result**
	2022EP7552-S01	COLOUR FASTNESS TO DRY CLEANING **EN ISO 105-D01:2010**	PASS
		COLOUR FASTNESS TO BLEACHING **ISO 105-N01:1993**	PASS
		COLOUR FASTNESS TO HOT PRESSING **EN ISO 105-X11:1996**	PASS

REQUIREMENT SUMMARY

ELECTRIC ARC TEST

REQUIREMENT ACCORDING EN 61482-1-2:2014

a) Burning time ≤ 5 s.

b) No melting through to the inner side.

c) No hole bigger than max. 5 mm. in any direction in the innermost layer.

d) All four pairs of values (Eit - tmax) are below corresponding Stoll values, and all four heat curves Eit (t) of transmitted energy are at any moment of time “t” of the exposure period below Stoll curve.

COLOUR FASTNESS TO DRY CLEANING

REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016

The limit set by the StandardEN ISO 105-D01:2010, for testing of colour fastness to dry cleaning, is 4 for degradation and 4 for staining.

COLOUR FASTNESS TO BLEACHING

REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+Amd1:2016

The limit set by the StandardISO 105-N01:1993for degradation in testing of colour fastness to bleaching is 4.

COLOUR FASTNESS TO HOT PRESSING

REQUIREMENT ACCORDING EN ISO 20471:2013+EN ISO 20471:2013+AMD1:2016

The limit set by the Standard EN ISO 105-X11:1996 for testing of colour fastness to ironing, is 4-5 for degradation and 4 for staining

RESULTS

ELECTRIC ARC TEST

Standard	EN 61482-1-2: 2014 Pt 4.1 equivalent to IEC 61482-1-2: 2014 Pt 4.1
Principle of the Box test method for materials	Determine the behaviour of materials against to thermal risk when exposed to heat energy from electric arc with specific characteristics Materials performance for this procedure is determined from the amount of the heat transmitted through the specimen and other thermal parameters
Sample type	Woven fabric yellow colour, with a weight according to the customer of 245 g/m

Test conditions	
Class	1
Testing atmosphere	28,10 ºC 26,33% RH
Test current I_{class} for class 1	4 kA ± 5%
Calibration test current	4056,91 A
Average direct exposure incident energy E_{io}	139,12 kJ/m²
Arc duration	500 ms ± 5%
Average real arc duration	490,8 ms
Test voltage	400 V ± 5%
Average real test voltage	395,37 V
Average real Arc Energy W_{arc}	178,84 kJ

ELECTRIC ARC TEST

Test conditions	
Gap between electrodes	(30 ± 1) mm
Distance between the electrodes and sample	(300 ± 5) mm

Electrodes type
Electrodes Cu/Al

Measurement uncertainty

Temperature	17% of the measured value in ºC
Equivalent energy	17% of the measured value in kJ/m²
Time	± 0,390 s

Technician performing the test
David Lazaro

Person verifying the test report
Lucía Martinez

Pre-conditioning of the test specimens
24h. in indoor ambient conditions between (18-28)ºC and between (45-75)% RH

Starting and ending pre-conditioning date
13/07/2022 - 14/07/2022

Observation or deviation of the standard

ELECTRIC ARC TEST

Testing date
14/07/2022

Reference
2022EP7552-S01.1

VISUALLY OBTEINED DATA

Property	Measurement	Specimen 1	Specimen 2	Specimen 3	Specimen 4
	Class	1	1	1	1
Burning time	Video	0,00	0,00	0,00	0,00
Hole formation >5mm	Visual	No	No	No	No
Melting through to the inner side	Visual	No	No	No	No
Embrittlement	Visual	No	No	No	No
Damage on the outside	Visual	No	No	No	No
Charring on the outside	Visual	Yes	Yes	Yes	Yes
Dripping	Visual	No	No	No	No
Shrinkage	Calculated	No	No	No	No

ELECTRIC ARC TEST

Reference
2022EP7552-S01.1

COMPUTER OBTEINED DATA

Class 1				
Property	Specimen 1	Specimen 2	Specimen 3	Specimen 4
Transmitted incident energy E_{it}	54,83 kJ/m²	45,95 kJ/m²	46,03 kJ/m²	51,14 kJ/m²
Time to delta peak temperature t_{max}	29,62 s	29,96 s	29,87 s	29,96 s
Delta peak temperature ΔT_p	9,93 ºC	8,32 ºC	8,34 ºC	9,26 ºC
Differences ΔEi of the transmitted energy values to the Stoll limit value at t_{max}	-79,34 kJ/m²	-88,66 kJ/m²	-88,46 kJ/m²	-83,47 kJ/m²
Maximum difference between the transmitted energy E_{it} to the Stoll energy E_{iSTOLL} in t_i(1)	-27,64 kJ/m²	-34,18 kJ/m²	-34,05 kJ/m²	-34,82 kJ/m²
Excess of the Stoll curve by the heat curve of the transmitted incident energy E_{it} (t)	No	No	No	No

ELECTRIC ARC TEST

Remark

t_i is the time where the difference between the transmitted incident energy E_{it} and the Stoll Energy E_{iSTOLL} is maximum.

(1) Interpretation: In negative value, a higher difference implies a better behavior. In positive value, a less difference implies a better behavior, considering that the material fails the test.

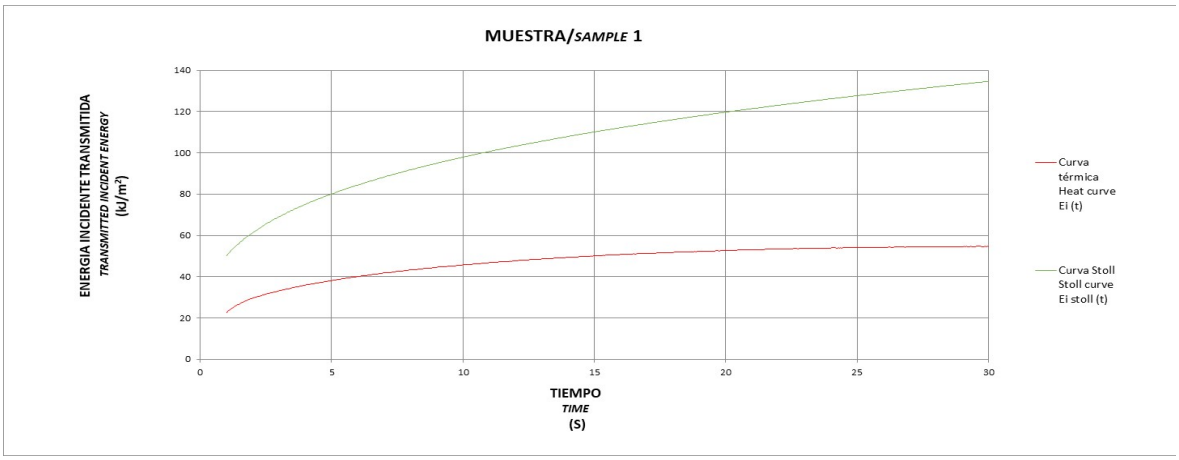
ELECTRIC ARC TEST

STOLL CURVES

Specimen 1

Reference

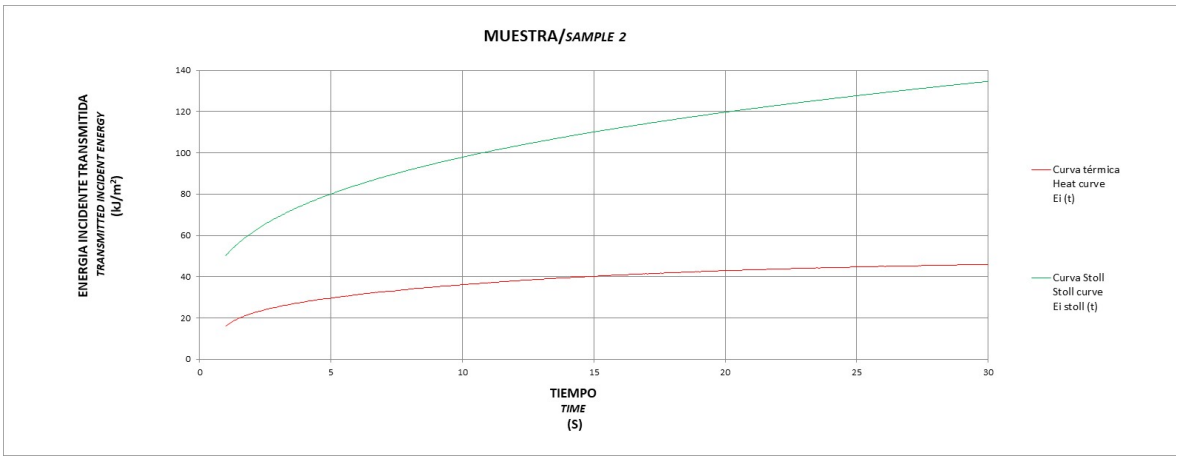
1- 2022EP7552-S01.1



Specimen 2

Reference

2- 2022EP7552-S01.1



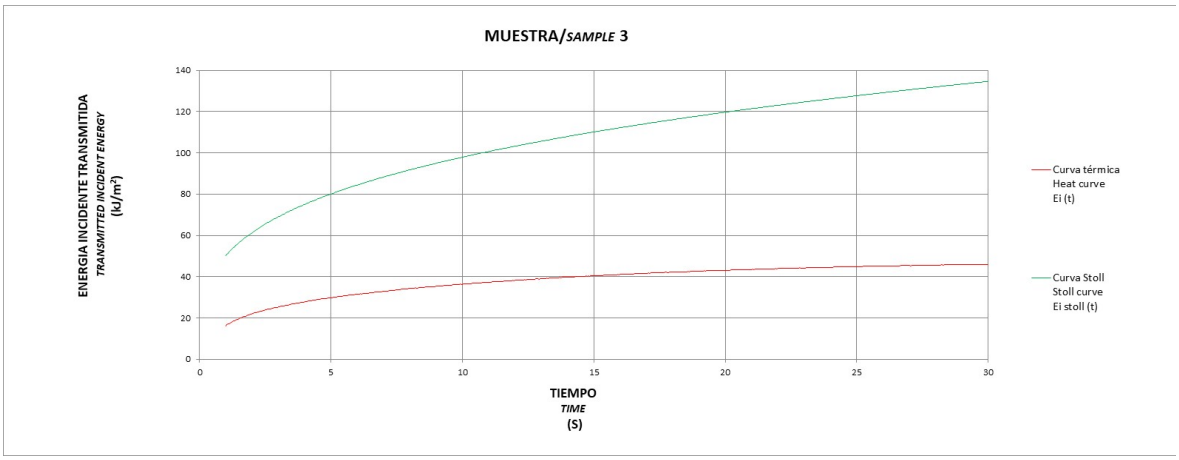
ELECTRIC ARC TEST

STOLL CURVES

Specimen 3

Reference

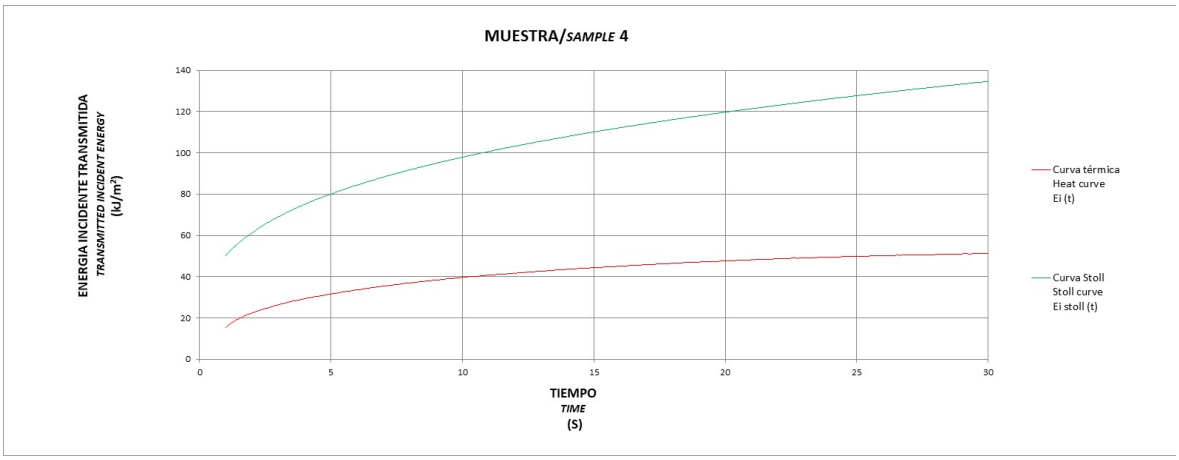
3- 2022EP7552-S01.1



Specimen 4

Reference

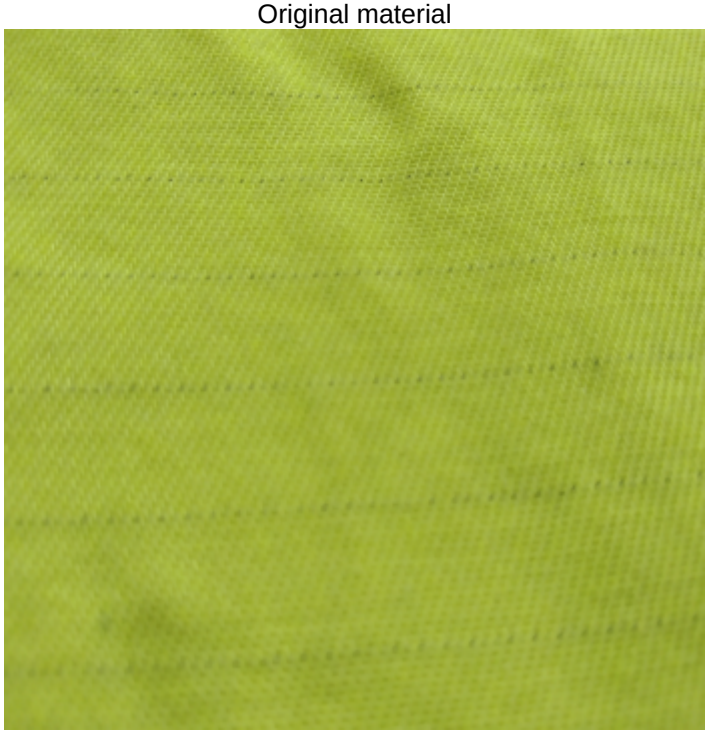
4- 2022EP7552-S01.1



ELECTRIC ARC TEST

Reference
2022EP7552-S01.1

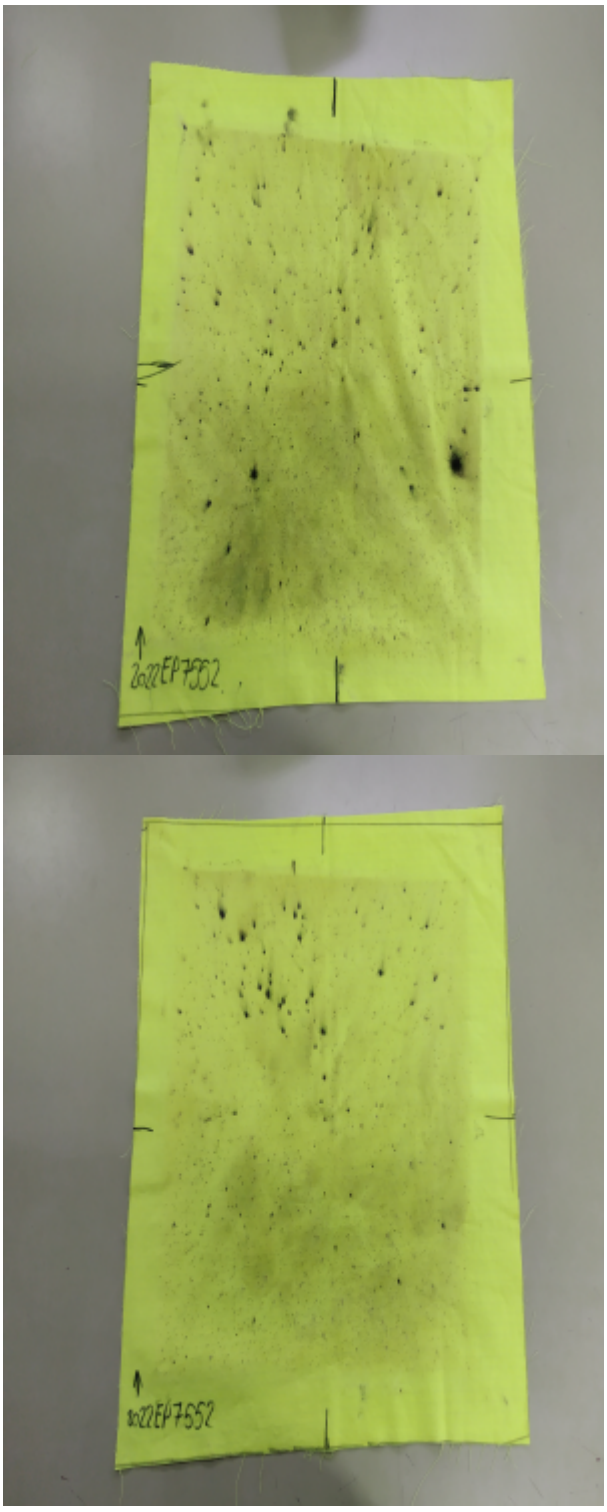
Original material



ELECTRIC ARC TEST

Reference
2022EP7552-S01.1

Tested material

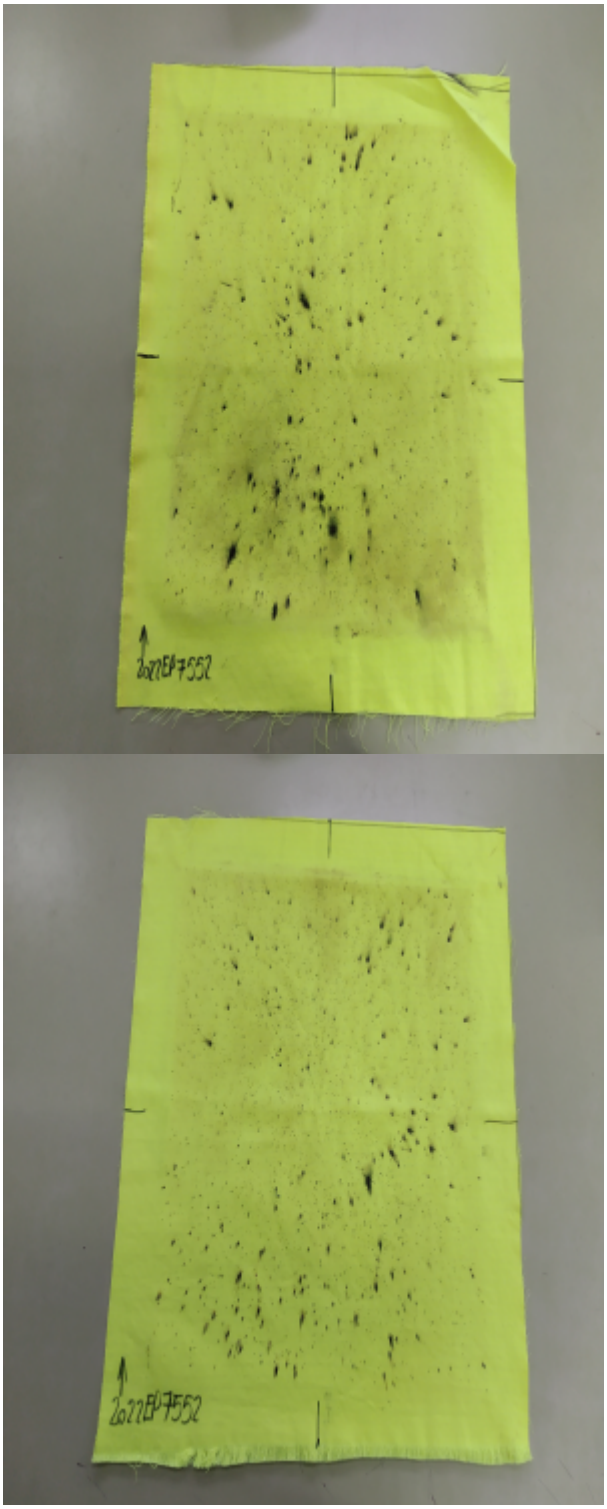


ELECTRIC ARC TEST

Reference

2022EP7552-S01.1

Tested material



Remark

The electric arc test is performed in: Cr. Villaviciosa de Odón a Móstoles (M-856) Km. 1,5 Móstoles 28935.

RESULTS

PRE-TREATMENT FOR DOMESTIC WASHING AND DRYING PROCEDURES FOR TEXTILE TESTING

Standard

EN ISO 6330:2012

Test date

Start date 06/07/2022 **End date** 07/07/2022

Washing procedure

6N

Washing temperature

60ºC

Washing cycles

5

Dryer type

JAMES HEAL 13473E05

Driying procedure

F (type A1 drum dryer)

Driying temperature

70ºC

Washing powder

Reference detergent 3

Reference
2022EP7552-S01

Units	Dry mass of the samples(Kg)	Counterweight mass Kg *Kg*	Counterweight type	Equipment
1	0.46	1.5	Type III */ Type III*	WASCATOR 13096E12

RESULTS

COLOUR FASTNESS TO DRY CLEANING

Standard

EN ISO 105-D01:2010

Equipment

Gyrowash

Test date

Start date 12/7/2022 **End date** 12/7/2022

Solvent

Perchloroethylene

Reference

2022EP7552-S01

Change in colour	Staining	
5	**Cotton** 4-5	**Polyester** 4-5

RESULTS

COLOUR FASTNESS TO BLEACHING

Standard

ISO 105-N01:1993

Test date

Start date	13/07/2022	**End date**	13/07/2022

Reference

2022EP7552-S01

Change in colour
4-5

RESULTS

COLOUR FASTNESS TO HOT PRESSING

Standard

EN ISO 105-X11:1996

Equipment

Fixotest

Test date

Start date 14/07/2022 **End date** 14/07/2022

Temperature

(150)ºC

2022EP7552-S01	**Inmediate appraisal after testing**		
		Change in colour	
	Dry	5	
	Damp	5	
	Wet Staining	5	
	Appraisal after 4 hours conditions		
		Change in colour	**Staining**
	Dry	5	---
	Damp	5	4-5
	Wet Staining	5	4-5

Lucia Martinez
Head of PPE and Ballistics department

Date: 22/07/2022 12:14:15
Digitally Signed by:ISABEL LLOPIS LUMBRERAS - NIF:21678551Q

LIABILITY CLAUSES

1.- AITEX is liable only for the results of the methods of analysis used, as expressed in the report and referring exclusively to the materials or samples indicated in the same which are in its possession, the professional and legal liability of the Centre being limited to these. Unless otherwise stated, the samples were freely chosen and sent by the applicant.
2.- AITEX shall not be liable in any case of misuse of the test materials nor for undue interpretation or use of this document
3.- The Offer and / or Order to which the applicant gives approval through signature and seal, constitutes the Legally Executable Agreement in which AITEX is responsible for safeguarding and guaranteeing the absolute confidentiality of the management of all the information obtained or created during the performance of the contracted activities.
4.- In the eventuality of discrepancies between reports, a check to settle the same will be carried out in the head offices of AITEX. Also, the applicants undertake to notify AITEX of any complaint received by them as a result of the report, exempting this Centre from all liability if such is not done, the periods of conservation of the samples being taken into account.
5.- AITEX will provide at the request of the person concerned, the treatment of complaints procedure. In the event that you want to make it, direct it to: calidad@aitex.es.
6.- AITEX is not responsible for the information provided by customers, which is reflected in the Report, and may affect the validity of the results.
7.- AITEX is not responsible for an inadequate state of the sample received that could compromise the validity of the results, expressing such circumstance, in the test reports.
8.- AITEX may include in its reports, analyses, results, etc., any other evaluation which it considers necessary, even when it has not been specifically requested.
9.- When a Declaration of Conformity is requested, if not indicated otherwise, the decision rule according to ILAC-G8: 2009 will be applied with a security zone of 1U and a Probability of False Acceptance <2.5%.
10.- The uncertainties of tests, which are made explicit in the Results Report, have been estimated for a k = 2 (95% probability of coverage). If not informed, they are available to the client in AITEX.
11. - The original materials and rests of samples, not subject to test, will be retained in AITEX during the twelve months following the issuance of the report, so that any check or claim which, in his case, wanted to make the applicant, should be exercised within the period indicated.
12.- This report may only be sent or delivered by hand to the applicant or to a person duly authorised by the same.
13.- The results of the tests and the statement of compliance with the specification in this report refer only to the test sample as it has been analyzed / tested and not the sample / item which has taken the test sample.
14.- The client must attend at all times, to the dates of the realization of the tests.
15.- According to Resolution EA (33) 31, the test reports must include the unique identification of the sample, and any brand or label of the manufacturer may be added. It is not allowed to re-issue test reports of untested sample names (references), they can only be re-issued for error correction or inclusion of omitted data that were already available at the time of the test. The laboratory can not assume responsibility for declaring that the product with the new trade name / trademark is strictly identical to the one originally tested; This responsibility belongs to the client.
16.- This report may not be partially reproduced without the written approval of the issuing laboratory.
17.- AITEX laboratories do not carry out sampling, so that the results of the test reports are applicable to the sample as it was received.