TEST REPORT

2019EP1464

DATE OF RECEPTION
27/05/2019

DATE TESTS
Starting: 31/05/2019
Ending: 12/06/2019

APPLICANT

ARITEKS BOYACILIK TICATET VE SANAYI AS
Hekimsuyu Cad No:36
TR-34250 ISTANBUL
KUCUKKOY

Att. IbrahimSusin

IDENTIFICATION AND DESCRIPTION OF SAMPLES

REFERENCES
FABRIC REF. ARAMID D1 210-4837

TESTS CARRIED OUT

- PRE-TREATMENT FOR DOMESTIC WASHING AND DRYING PROCEDURES FOR TEXTILE TESTING.
- ELECTRIC ARC TEST.

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

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RESULTS

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

Standard
ISO 6330:2012

Standard deviation

Reference
Sample1 FABRIC REF. ARAMID D1 210-4837

Units 1

Equipment Wascator 13371E12

Dryer machine ELECTROLUX 13427E12

Washing procedure 3N **Washing cycles** 5

Drying procedure
F (tumble dryer)

Washing powder
ECE detergent 98 + sodium perborate + TAED

Units	Dry mass of the samples	Counterweight mass	Equipment
1	0,58 Kg	1,40 Kg of Polyester	Wascator 13371E12

Start and finish data test
31/05/2019 - 31/05/2019

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RESULTS

ELECTRIC ARC TEST

Standard	EN 61482-1-2:2014 equivalent to IEC 61482-1-2:2014
Principle of the Box test method	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, navy blue colour with a weight according to the customer of 210 (±10) g/m²

Test conditions	
Class	Class 1
Testing atmosphere	23,10 ºC 27,10 % RH
Test current I_{class} for class 1	4 kA ± 5%
Calibration test current	4053,53 A
Average direct exposure incident energy E_{io}	148,11 kJ/m^2
Arc duration	500 ms ± 5%
Average real arc duration	484,75 ms
Test voltage	400 V ± 5%
Average real test voltage	393,9225 V
Average real Arc Energy W_{arc}	173,465 kJ

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RESULTS

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/m^2
Time	± 0,390 s

Technician performing the test
David Lázaro

Person verifying the test report
Lucía Martínez

Pre-treatment
5 washing cycles at 30ºC, according to standard ISO 6330:2012, method 3N; and F drying

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
11/06/2019 - 12/06/2019

Observation or deviation of the standard

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RESULTS

ELECTRIC ARC TEST

Testing date 12/06/2019
Reference FABRIC REF. ARAMID D1 210-4837

VISUALLY OBTEINED DATA

Property	Measurement	Specimen 1	Specimen 2	Specimen 3	Specimen 4
	Class	1	1	1	1
Burning time	Video	0,00 s	0,00 s	0,00 s	0,00 s
Hole formation > 5 mm	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

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RESULTS

ELECTRIC ARC TEST

Reference
FABRIC REF. ARAMID D1 210-4837

COMPUTER OBTEINED DATA

Class 1				
Property	**Specimen 1**	**Specimen 2**	**Specimen 3**	**Specimen 4**
Transmitted incident energy E_{it}	66,11 kJ/m^2	66,25 kJ/m^2	72,89 kJ/m^2	80,69 kJ/m^2
Time to delta peak temperature t_{max}	29,71 s	29,87 s	29,58 s	29,79 s
Delta peak temperature ΔT_p	11,98 ºC	12,00 ºC	13,20 ºC	14,62 ºC
Differences ΔEi of the transmitted energy values to the Stoll limit value at t_{max}	-68,17 kJ/m^2	-68,24 kJ/m^2	-61,22 kJ/m^2	-53,70 kJ/m^2
Maximum difference between the transmitted energy E_{it} to the Stoll energy E_{iSTOLL} in t_i (1)	-29,06 kJ/m^2	-29,47 kJ/m^2	-27,31 kJ/m^2	-26,07 kJ/m^2
Excess of the Stoll curve by the heat curve of the transmitted incident energy E_{it} (t)	No	No	No	No

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RESULTS

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.

IN ACCORDANCE WITH THE ACEPTANCE CRITERIA ACCORDING TO EN 61482-1-2:2014, FOR CLASS 1

PASS

Requirement for the standard compliance 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 (E_{it} - t_{max}) are below corresponding Stoll values, and all four heat curves E_{it} (t) of transmitted energy are at any moment of time “t” of the exposure period below Stoll curve.

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RESULTS

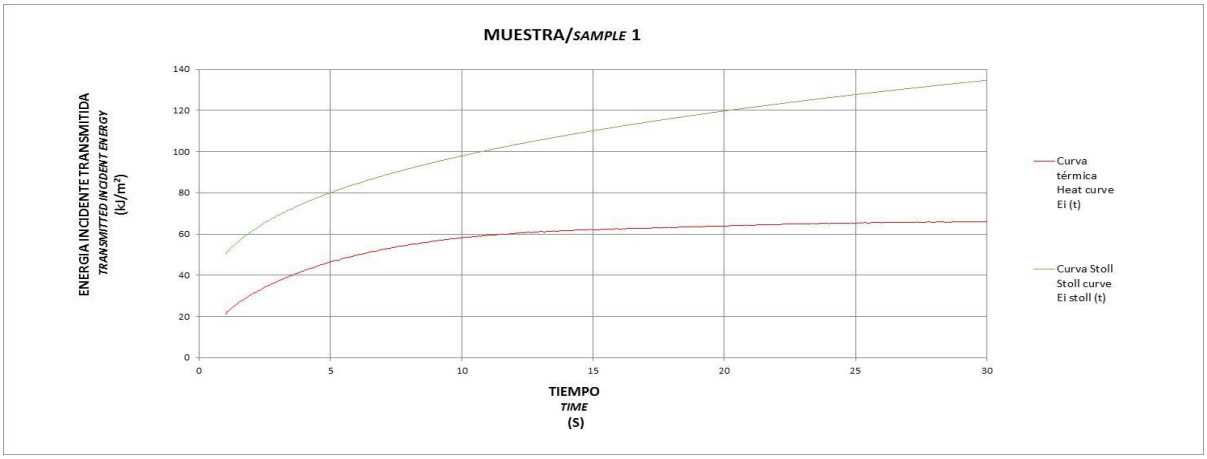
ELECTRIC ARC TEST

STOLL CURVES

Specimen 1

Reference

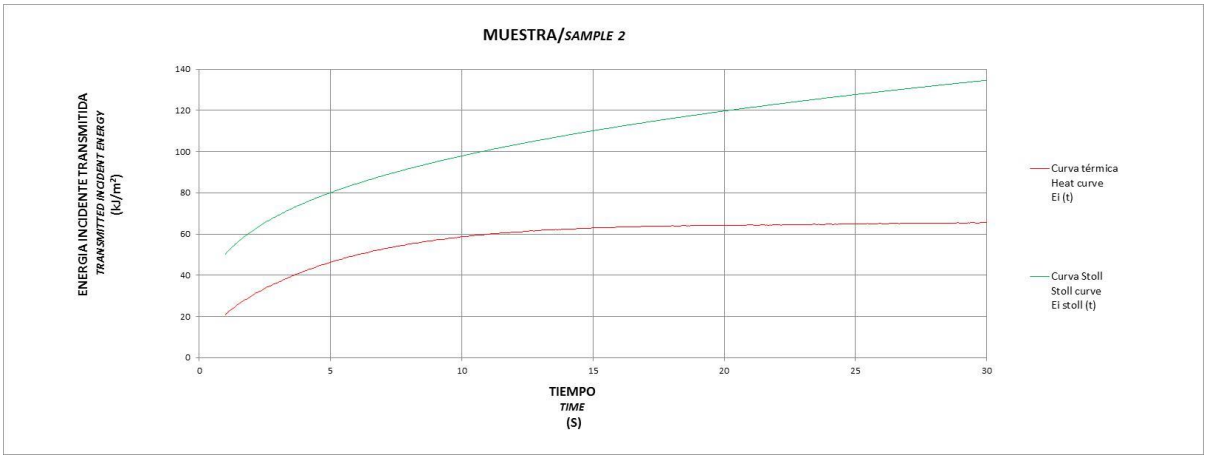
1- FABRIC REF. ARAMID D1 210-4837



Specimen 2

Reference

2- FABRIC REF. ARAMID D1 210-4837



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RESULTS

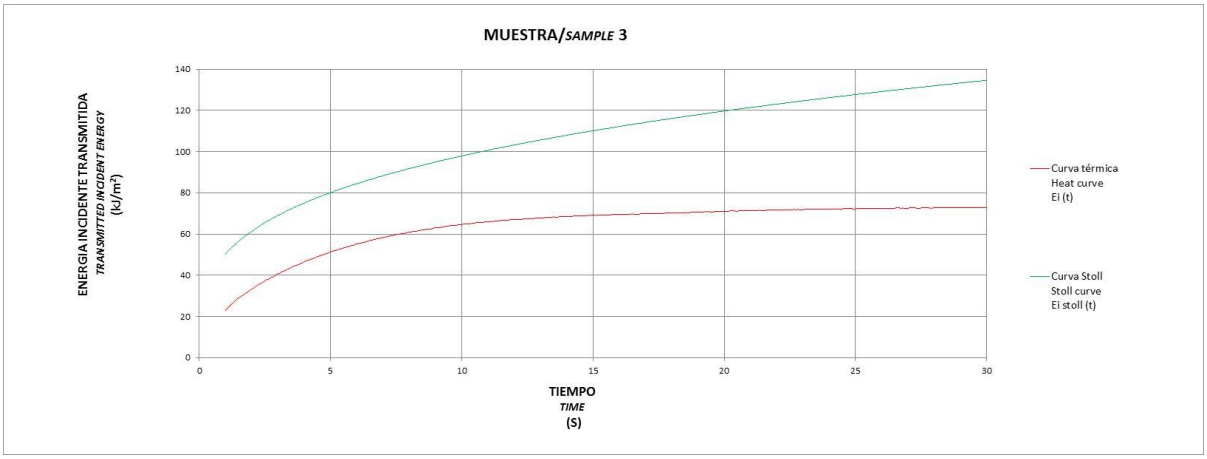
ELECTRIC ARC TEST

STOLL CURVES

Specimen 3

Reference

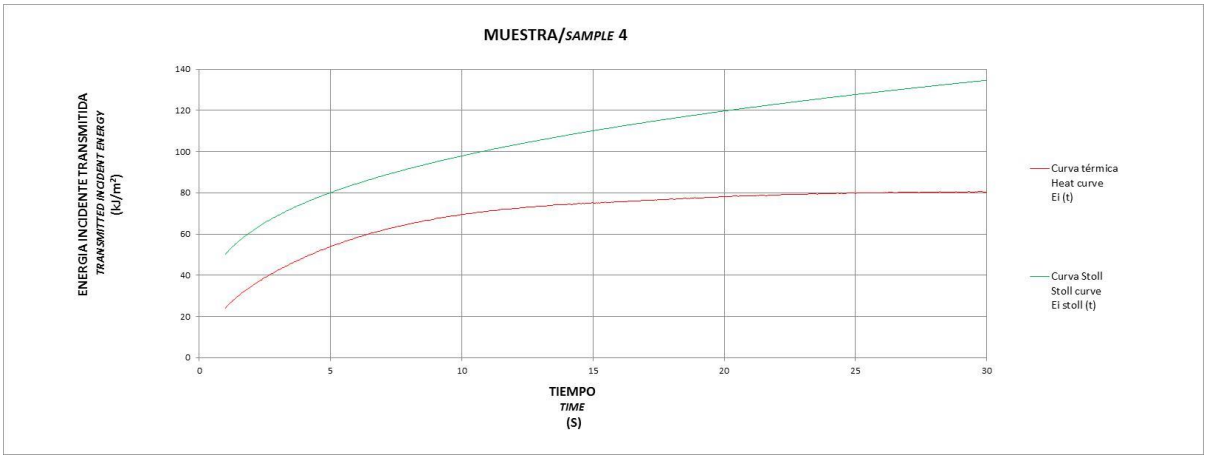
3- FABRIC REF. ARAMID D1 210-4837



Specimen 4

Reference

4- FABRIC REF. ARAMID D1 210-4837



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RESULTS

ELECTRIC ARC TEST

Reference

FABRIC REF. ARAMID D1 210-4837

Original material

Tested material

Remark

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

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Lucia Martinez
Head of PPE and Ballistics department

Digitally signed by DAVID LAZARO LLORENS - NIF:22568381E
Date: 2019.06.12 14:05:24 +02:00
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