

CE Produkter AB
Hantverksgatan 2
314 52 UNNARYD

Fire test according to EN 13823 (SBI Method) and EN ISO 11925-2

(4 appendices)

Introduction

RISE has by request of CE Produkter AB performed a fire test according to EN 13823:2020+A1:2022 (SBI method) and EN ISO 11925-2. The purpose of the test is to form a basis for technical fire classification.

Product

According to the client:

Product called "Airfelt HP", consisting of a sound-absorbing polyester sheet. The product has a nominal density of 155.55 kg/m³, a nominal area weight of 1.4 kg/m² and a nominal thickness of 9.25 mm. The product has the colour white.

The product consists of the following:

	Composition/content
Layer 1	Polyethylene Terephthalate 95-100 %
Layer 2	2,2'-(1,2-Ethenediyl-di-4,1-phenylene)bisbenzoaxole 1-4 %
Layer 3	Titanium-dioxide < 0.4 %
Layer 4	Organic content < 0.3 %

Manufacturer

CE Produkter, Unnaryd, Sverige.

Sampling

The sample was delivered by the client. It is not known to RISE, Fire and Safety if the product received is representative of the mean production characteristics.

The sample was received March 20, 2023 at RISE, Fire and Safety.

Test results

The test results are given in appendix 1 – 2 and photographs are shown in appendix 3. An explanation of the SBI-test parameters is given in appendix 4.

RISE Research Institutes of Sweden AB

Postal address
Box 857
501 15 BORÅS
SWEDEN

Office location
Brinellgatan 4
504 62 Borås
SWEDEN

Phone / Fax / E-mail
+46 10-516 50 00
+46 33-13 55 02
info@ri.se

Confidentiality level
C3 - Sensitive

This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.



Accred. No. 1002
Testing
ISO/IEC 17025

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Note

The accreditation referred to is valid for EN 13823 and EN ISO 11925-2.

RISE Research Institutes of Sweden AB **Fire and safety - Reaction to Fire Medium Scale Lab**

Performed by



Susanne Blomqvist

Examined by



Anna Bergstrand

Appendices

1. Test results – EN 13823:2020+A1:2022
2. Test results – EN ISO 11925-2:2020
3. Photographs
4. Test parameter explanation

Appendix 1

Test results, EN 13823:2020+A1:2022**Product**

According to the client:

Product called “Airfelt HP”, consisting of a sound-absorbing polyester sheet. The product has a nominal density of 155.55 kg/m³, an area weight of 1.4 kg/m² and a nominal thickness of 9.25 mm. The product has the colour white.

The product consists of the following:

	Composition/content
Layer 1	Polyethylene Terephthalate 95-100 %
Layer 2	2,2'-(1,2-Ethenediyl-di-4,1-phenylene)bisbenzoaxole 1-4 %
Layer 3	Titanium-dioxide < 0.4 %
Layer 4	Organic content < 0.3 %

Mounting

See photo 1 – 2, appendix 3.

The product was mounted according to EN 13823:2020+A1:2022, 5.2.2 a. It was fixed mechanically with steel wires from behind on to a steel frame. The fixing was used only in order to keep the panel in place during testing. A distance of approximately 80 mm was used between backing board and product. The panels in accordance with EN 13823:2020+A1:2022, 4.4.11 were removed. No joints were used. The side with facing was exposed.

Test results

Test no	Test 1	Test 2	Test 3	Average
General information				
Test start, min:s	0:00	0:00	0:00	
Auxiliary burner ignited and adjusted, min:s	2:00	2:00	2:00	
Main burner ignited, min:s	5:00	5:00	5:00	
Main burner stopped, min:s	26:00	26:00	26:00	
Observations				
Flaming droplets or particles	No	No	No	
Burning droplets or particles, > 10 s	No	No	No	
Lateral flame spread until the edge, LFS	No	No	No	
Fire performance, see graph no 3 to 6				
<i>FIGRA</i> _{0,2MJ} , W/s	0.0	0.0	0.0	<u>0.0</u>
<i>FIGRA</i> _{0,4MJ} , W/s	0.0	0.0	0.0	<u>0.0</u>
<i>SMOGR</i> _A , m ² /s ²	0	0	0	<u>0</u>
<i>THR</i> _{600s} , MJ	0.2	0.3	0.1	<u>0.2</u>
<i>TSP</i> _{600s} , m ²	8.6	9.1	6.7	<u>8.1</u>

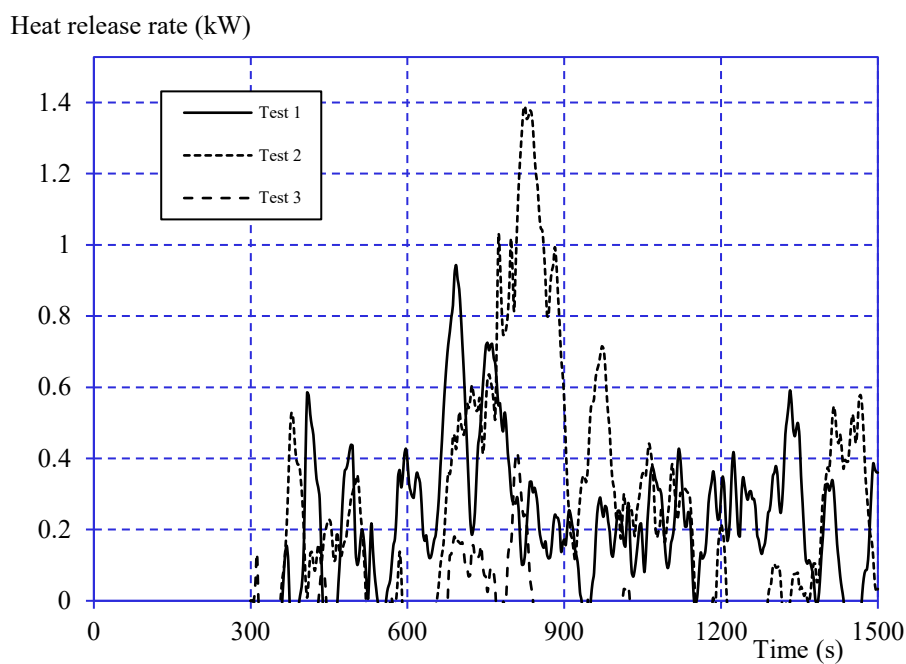
Appendix 1

Observations made during the tests

None.

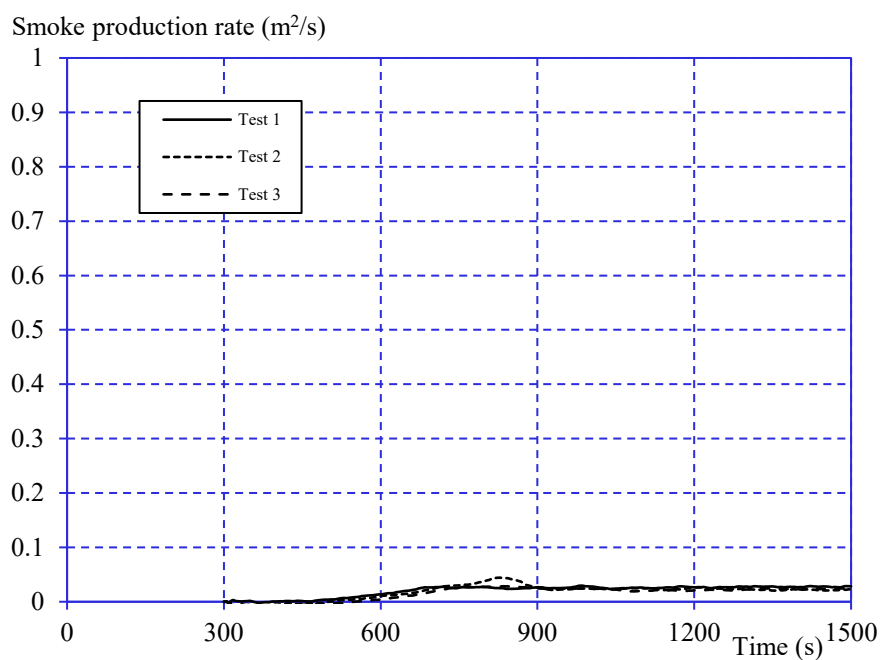
Method of smoke calculation

The smoke production rate, SPR, of the burner was calculated using data from the main (primary) burner according to EN 13823:2020+A1:2022.

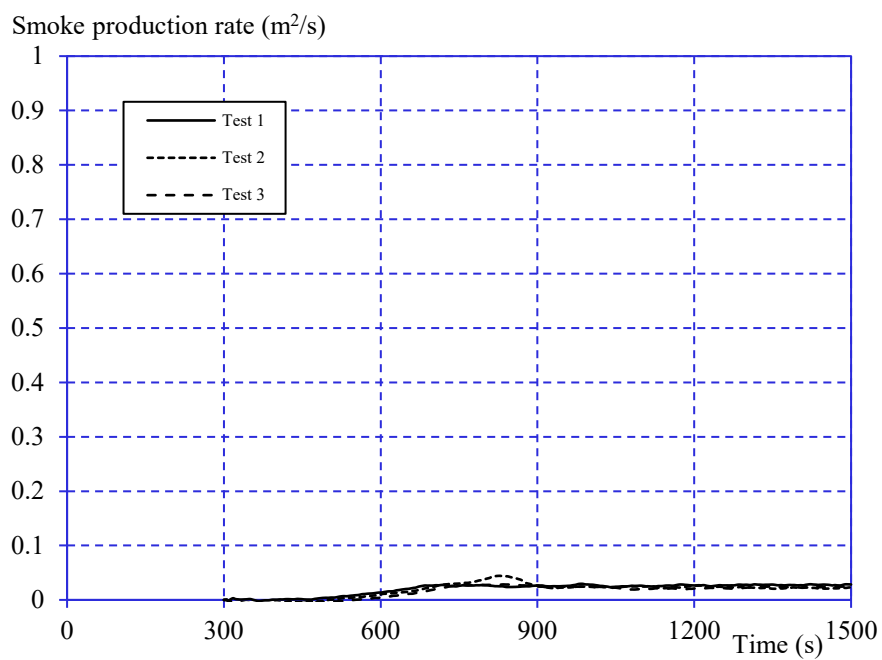
Graph of heat release rate (HRR_{av})

Graph 1 Heat release rate (burner excluded), 30 seconds running average value.

Appendix 1

Graph of smoke production rate (SPR_{av})

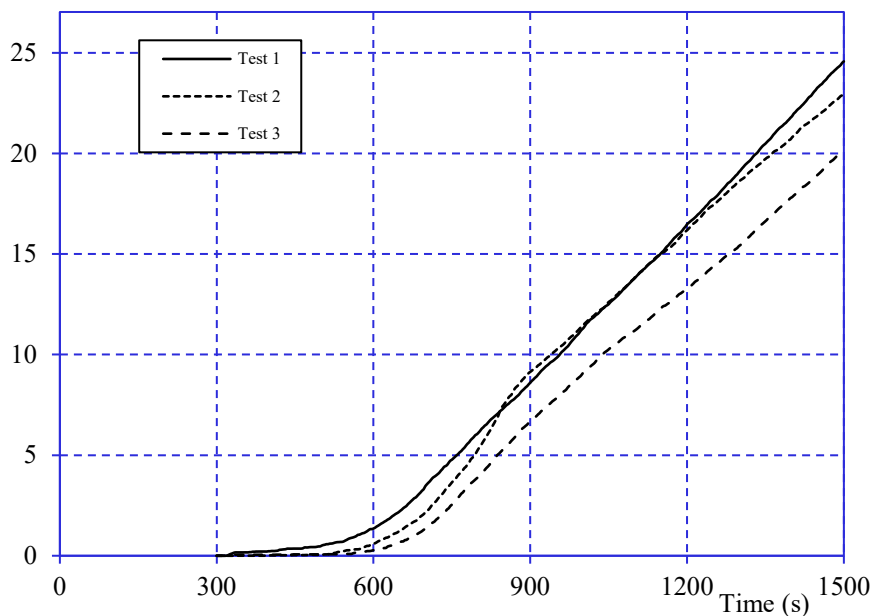
Graph 2 Smoke production rate (burner excluded), 60 seconds running average value.

Graph of total heat release (THR)

Graph 3 Total heat release (burner excluded).

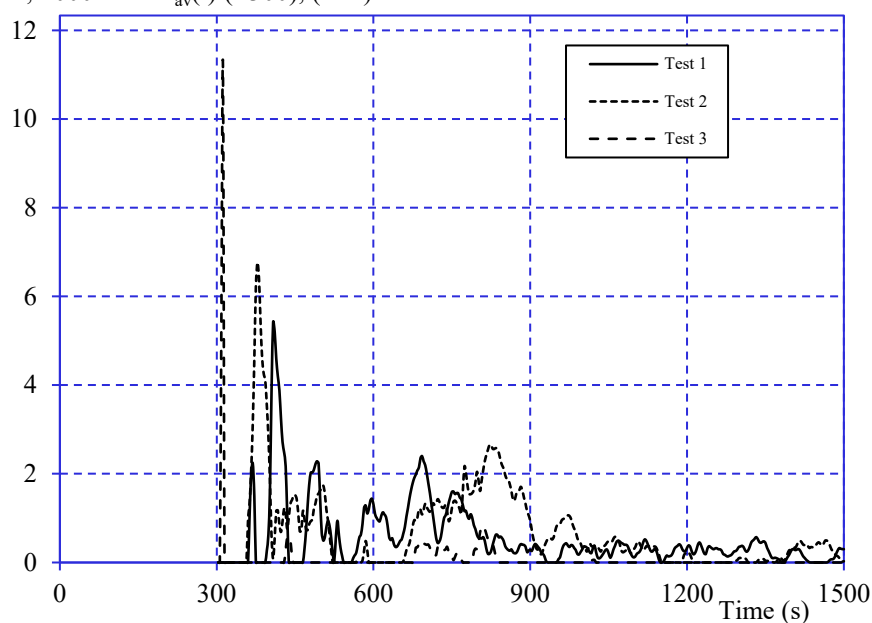
Appendix 1

Graph of total smoke production (TSP)

Total smoke production (m²)

Graph 4 Total smoke production (burner excluded).

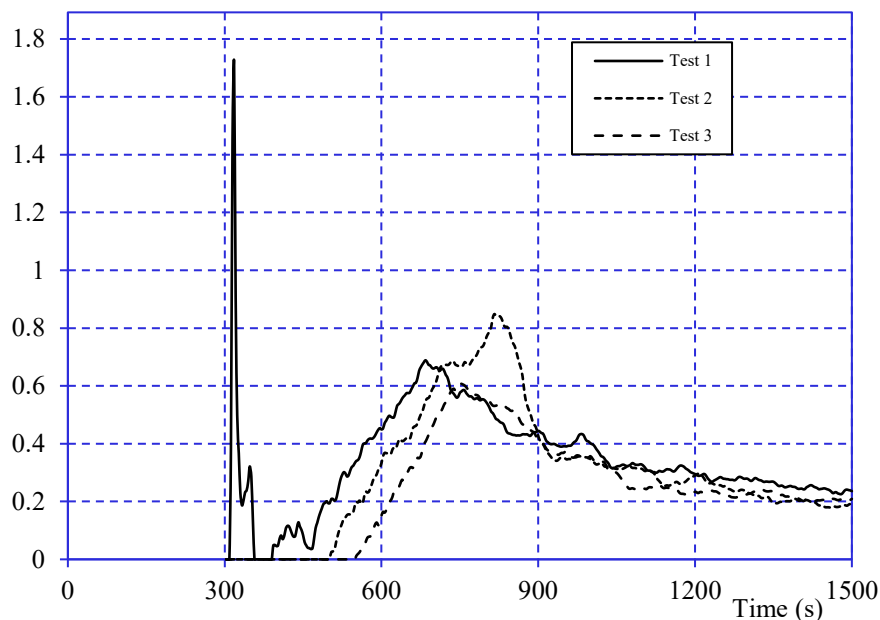
Graph of Fire Growth RATE index (FIGRA)

FIGRA, $1000 \times \text{HRR}_{\text{av}}(t)/(t-300)$, (W/s)

Graph 5 Fire growth rate index.

Appendix 1

Graph of SMOke Growth Rate index (SMOGRA)

SMOGRA, $10000 \times \text{SPR}_{\text{av}}(t)/(t-300)$, (m^2/s^2)

Graph 6 Smoke growth rate index.

Note

Graphs 5 and 6 show the time relationships of *FIGRA* and *SMOGRA* respectively without applying the threshold values, see EN 13823, paragraph A.5.3 and A.6.3. Therefore the reported single maximum values of *FIGRA*_{0,2MJ}, *FIGRA*_{0,4MJ} and *SMOGRA* may be smaller than shown in the graphs as the threshold values are applied in this case.

Measured data

Thickness 9 mm approximately.
Area weight 1.3 kg/m² approximately.
Density 150 kg/m³.

Conditioning

According to EN 13238 and EN 13823:2020+A1:2022.

Temperature (23 ± 2) °C.
Relative humidity (50 ± 5) %.

Constant mass:

Mass 1: 979 g
Mass 2: 979 g
Time : 24 h

Date of test

April 3 and 4, 2023.

Appendix 2

Test results – EN ISO 11925-2:2020**Product**

According to the client:

Product called “Airfelt HP”, consisting of a sound-absorbing polyester sheet. The product has a nominal density of 155.55 kg/m³, an area weight of 1.4 kg/m² and a nominal thickness of 9.25 mm. The product has the colour white.

The product consists of the following:

	Composition/content
Layer 1	Polyethylene Terephthalate 95-100 %
Layer 2	2,2'-(1,2-Ethenediyl-di-4,1-phenylene)bisbenzoxazole 1-4 %
Layer 3	Titanium-dioxide < 0.4 %
Layer 4	Organic content < 0.3 %

Note

The specimens were pre-cut by the client without any directional information.

Application

Edge exposure. Flame exposure time was 30 seconds.

Test results

Test no	1	2	3	4	5	6
The sample ignited, s	NI	NI	NI	NI	NI	NI
The flames reach 150 mm, s	-	-	-	-	-	-
Flaming droplets/particles	No	No	No	No	No	No
Time when filter paper ignited, s	-	-	-	-	-	-

NI = No ignition.

Appendix 2

Application

Surface exposure. Flame exposure time was 30 seconds.

Test results

Test no	1	2	3	4	5	6
The sample ignited, s	5	4	4	3	3	3
The flames reach 150 mm, s	-*	-*	-*	-*	-*	-*
Flaming droplets/particles	No	No	No	No	No	No
Time when filter paper ignited, s	-	-	-	-	-	-

*Flaming ceased before the flame tip reached 150 mm.

Measured data

Thickness 9 mm approximately.

Area weight 1.3 – 1.4 kg/m².

Density 140 – 150 kg/m³.

Conditioning

According to EN 13238:2010.

Temperature (23 ± 2) °C.

Relative humidity (50 ± 5) %.

Date of test

April 17, 2023.

Appendix 3

Photographs



Photo no 1

Prior to test

“Airfelt HP”

The exposed surface of the long wing.

Appendix 3

**Photo no 2**

Prior to test

“Airfelt HP”

The vertical outer edge of the long wing at a height of 500 mm above the floor of the trolley.

Appendix 3

**Photo no 3**

After test

“Airfelt HP”

Impact of flames in the burner corner.

Appendix 4

Test parameter explanation – EN 13823:2020+A1:2022 (SBI method)

Parameter	Explanation
Test start	Start of data collection.
End of test	26:00 (min:s) after test start.
HRR_{av} , maximum, kW	Peak Heat Release Rate of material between ignition of the main burner and end of test (burner heat output excluded), as a 30 seconds running average value.
SPR_{av} , maximum, m^2/s	Peak Smoke Production Rate of material between ignition of the main burner and end of test (burner heat output excluded), as a 60 seconds running average value.
$FIGRA_{0,2MJ}$, W/s	Fire Growth Rate index is defined as the maximum of the quotient $HRR_{av}(t)/(t-300s)$, multiplied by 1000. During $300 s \leq t \leq 1500 s$, threshold value 3 kW and 0.2 MJ.
$FIGRA_{0,4MJ}$, W/s	Fire Growth Rate index is defined as the maximum of the quotient $HRR_{av}(t)/(t-300s)$, multiplied by 1000. During $300 s \leq t \leq 1500 s$, threshold value 3 kW and 0.4 MJ.
$SMOGRA$, m^2/s^2	SMOke Growth Rate index is defined as the maximum of the quotient $SPR_{av}(t)/(t-300s)$, multiplied by 10 000. During $300 s \leq t \leq 1500 s$, threshold value 0.1 m^2/s and 6 m^2 .
THR_{600s} , MJ	Total heat release of the sample during $300 s \leq t \leq 900 s$.
TSP_{600s} , m^2	Total smoke production of the sample during $300 s \leq t \leq 900 s$.

Verifikat

Transaktion 09222115557491544479

Dokument

O100741-1181989 CE Produkter AB EN ISO 11925-2 and
EN 13823

Huvuddokument

13 sidor

Startades 2023-04-25 15:32:23 CEST (+0200) av Angela
Sabbagh (AS)

Färdigställt 2023-04-26 16:37:14 CEST (+0200)

Initierare

Angela Sabbagh (AS)

RISE Research Institutes of Sweden AB

Org. nr 556464-6874

angela.sabbagh@ri.se

+46 10 722 33 42

Signerande parter

Anna Bergstrand (AB)

RISE

anna.bergstrand@ri.se



Signerade 2023-04-25 15:47:04 CEST (+0200)

Susanne Blomqvist (SB)

RISE

susanne.blomqvist@ri.se



Signerade 2023-04-26 16:37:14 CEST (+0200)

Detta verifikat är utfärdat av Scrive. Information i kursiv stil är säkert verifierad av Scrive. Se de dolda bilagorna för mer information/bevis om detta dokument. Använd en PDF-läsare som t ex Adobe Reader som kan visa dolda bilagor för att se bilagorna. Observera att om dokumentet skrivs ut kan inte integriteten i papperskopian bevisas enligt nedan och att en vanlig papperutskrift saknar innehållet i de dolda bilagorna. Den digitala signaturen (elektroniska förseglingen) säkerställer att integriteten av detta dokument, inklusive de dolda bilagorna, kan bevisas matematiskt och oberoende av Scrive. För er bekvämlighet tillhandahåller Scrive även en tjänst för att kontrollera dokumentets integritet automatiskt på: <https://scrive.com/verify>

