

TFI Report 470151-03

Reaction to fire test

For the classification according to EN 13501-1:2010

Customer

TAVUS YÜN HALI VE IPLIK San.Tic.A.S.
Istiklal Mah. Dolmabahçe Cad.No:9
34762 Ümraniye-Istanbul
TURKEY

Product

textile floor covering
TAVUS YÜN HALI

This report includes 3 pages and 2 annex(es).

This report is a translation of test report no. 470151-01.

Responsible at TFI

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Aachen, 20 March 2017



Dr. Alexander Siebel

head of the testing laboratory

The present document is provided with an advanced electronic signature.

This report only applies to the tested samples and has been established to the best of our knowledge. Only the entire report shall be reproduced. Under no circumstances, extracts shall be used. Furthermore, we apply the "General Terms and Conditions for the Execution of Contracts" of the TFI Aachen GmbH, also with regard to the order execution.

1 Transaction

| | |
|------------------------|---|
| Test order | Reaction to fire test for construction products according to EN ISO 9239-1:2010 |
| Order date | 11 November 2016 |
| Your reference | Erol Tavus |
| Product designation | TAVUS YÜN HALI |
| TFI sample number | 17-01-0205 |
| Date of manufacture | not specified |
| Date of sample receipt | 23 January 2017 |
| Sampling performed by | Customer |

2 Product Specification

| | |
|--|--------------------------|
| Type of manufacture | woven |
| Type of surface | cut pile |
| Backing | finish |
| Pattern | multicoloured, patterned |
| Colour | green, red, brown, beige |
| Use surface | 100 % wool* |
| Total thickness [mm] | 16.4 |
| Total mass per unit area [g/m ²] | 4112 |
| Type of delivery | wall-to-wall |

* customer information

3 Results

Burning behaviour using a radiant heat source according to EN ISO 9239-1:2010

| | |
|---|--------------------|
| Average critical heat flux [kW/m ²] | 8.5 |
| Integrated smoke density [% x min] | 75 |
| Adhesion | none |
| Substrate according to EN 13238:2010 | fibre cement board |

This test report is the basis for a classification report according to EN 13501-1:2010.

The test results relate to the behaviour of the test specimens of a construction 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 construction product in use.



4 Annexes

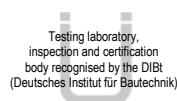
Photographs F 470151-03

Reaction to Fire ^a RP 470151-03

The annexes marked ^a are based on tests accredited in accordance with EN ISO/IEC 17025.



Notified Body
No. 1658



Testing laboratory,
inspection and certification
body recognised by the DIBt
(Deutsches Institut für Bautechnik)



Deutsche
Akkreditierungsstelle
D-PL-17152-01-00

Accredited for the methods indicated
in the annex to the DAkkS certificate

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Dr.-Ing. Dipl.-Wirt.-Ing.
Thomas Gries

Annex F - Photographs

1 Transaction

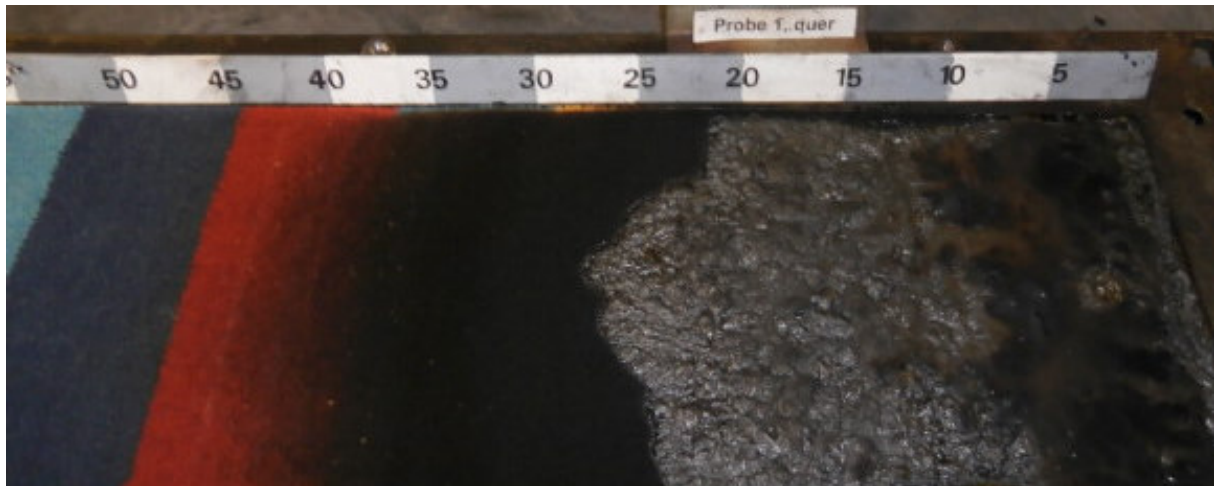
| | |
|---------------------|--------------------------------|
| Product designation | TAVUS YÜN HALI |
| TFI sample number | 17-01-0205 |
| Testing period | 24 February 2017-15 March 2017 |

2 Test Method / Requirements

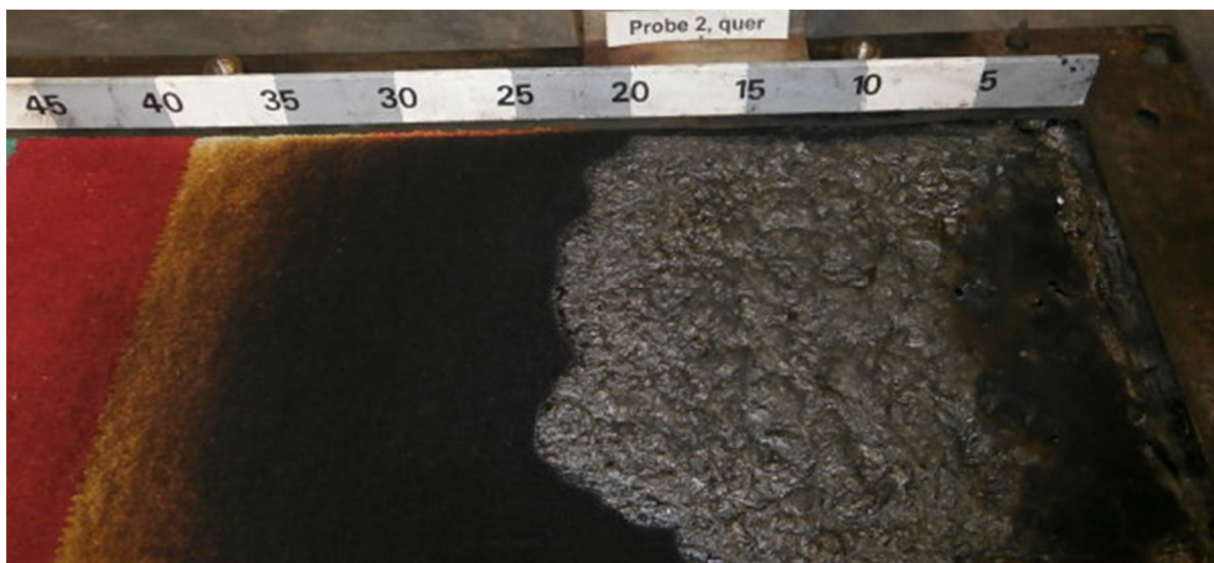
-not specified-

3 Results

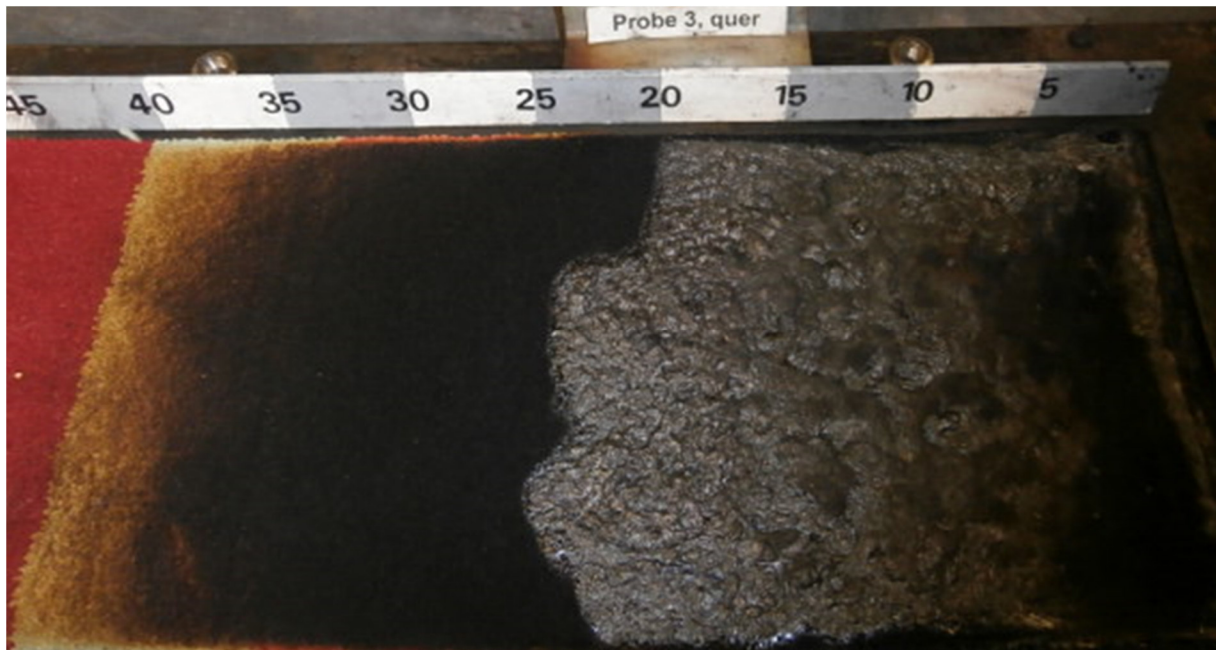
3.1. Specimen 1, cross production direction



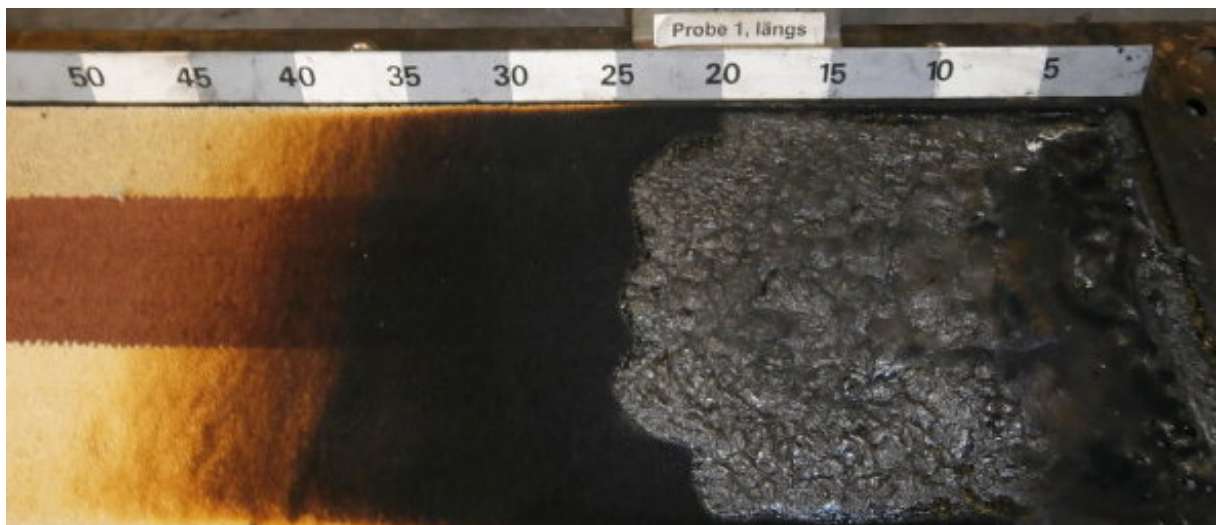
3.2. Specimen 2, cross production direction



3.3. Specimen 3, cross production direction



3.4. Specimen 4, in production direction



Annex RP – Reaction to Fire

1 Transaction

| | |
|---------------------|--------------------------------|
| Product designation | TAVUS YÜN HALI |
| TFI sample number | 17-01-0205 |
| Testing period | 24 February 2017-15 March 2017 |

2 Test Method / Requirements

| | |
|---------------------------------------|--|
| EN ISO 9239-1:2010 Part 1 | Determination of the burning behaviour using a radiant heat source |
| Substrate according to EN 13238:2010 | Fibre cement board |
| Adhesion | -none - |
| Joint according to EN ISO 9239-1:2010 | No |
| Washing and cleaning method | No |
| Conditioning | Conditioning according to EN 13238:2010 |
| Deviation | -none- |

3 Results

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Annex RP - Burning behaviour

Sample designation 17-01-0205

Sample

Sample No.: 1
 Direction: cross production direction

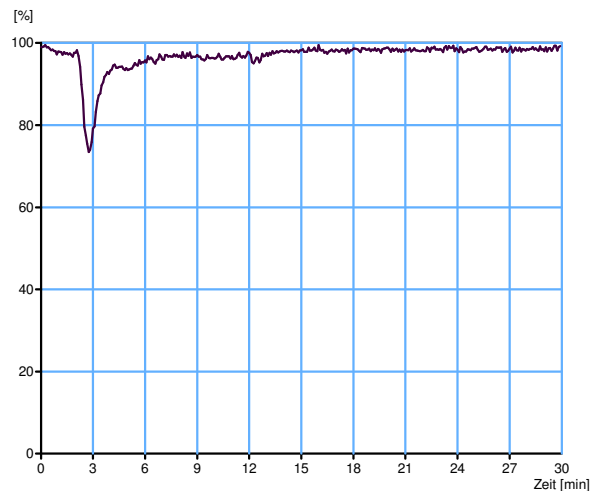
Observation

| | |
|--|--------|
| molten/singed during pre-radiation up to | 150 mm |
| buckled/contracted from pilot flame area up to | 0 mm |
| penetration of flame through substrate | - |
| transitory flaming | - |
| blistering | - |
| glowing, after flame has extinguished | - |

Results

| Position [mm] | Time [min:s] | Heat Flow [kW/m ²] |
|---------------|--------------|--------------------------------|
| 50 | 02:03 | 12.42 |
| 100 | 02:09 | 11.47 |
| 150 | 02:24 | 10.52 |
| 200 | 02:40 | 9.57 |
| 250 | 03:11 | 8.49 |
| 300 | - | - |
| 350 | - | - |
| 400 | - | - |
| 450 | - | - |
| 500 | - | - |
| 550 | - | - |
| 600 | - | - |
| 650 | - | - |
| 700 | - | - |
| 750 | - | - |
| 800 | - | - |
| 850 | - | - |
| 900 | - | - |
| 950 | - | - |
| 1000 | - | - |

Smoke density



| Time [min:s] | Position [mm] | Heat Flow [kW/m ²] |
|--------------|---------------|--------------------------------|
| 10:00 | 272 | 8.00 |
| 20:00 | 272 | 8.00 |
| 30:00 | 272 | 8.00 |

| | |
|----------------------------------|-------|
| CHF [kW/m ²] | 8.00 |
| HF_30 [kW/m ²] | 8.00 |
| Smoke density integral [%*min] | 95.6 |
| Flame extinguished after [min:s] | 13:01 |
| max. burnt distance [mm] | 272 |
| max. light attenuation [%] | 26.5 |



Annex RP - Burning behaviour

Sample designation 17-01-0205

Sample

Sample No.: 2
 Direction: cross production direction

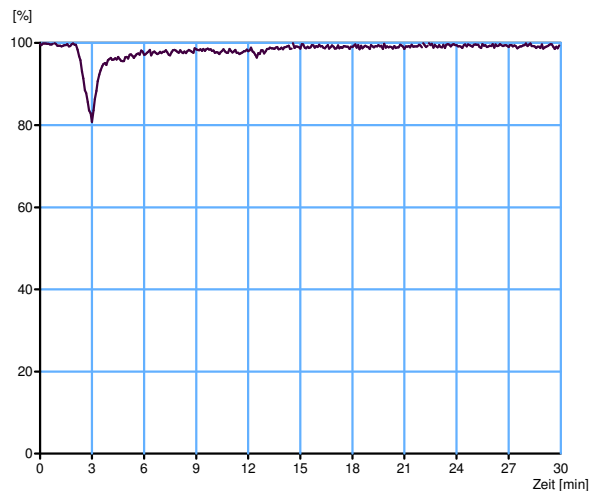
Observation

| | |
|--|--------|
| molten/singed during pre-radiation up to | 150 mm |
| buckled/contracted from pilot flame area up to | 0 mm |
| penetration of flame through substrate | - |
| transitory flaming | - |
| blistering | - |
| glowing, after flame has extinguished | - |

Results

| Position [mm] | Time [min:s] | Heat Flow [kW/m ²] |
|---------------|--------------|--------------------------------|
| 50 | 02:06 | 12.42 |
| 100 | 02:24 | 11.47 |
| 150 | 02:40 | 10.52 |
| 200 | 03:20 | 9.57 |
| 250 | - | - |
| 300 | - | - |
| 350 | - | - |
| 400 | - | - |
| 450 | - | - |
| 500 | - | - |
| 550 | - | - |
| 600 | - | - |
| 650 | - | - |
| 700 | - | - |
| 750 | - | - |
| 800 | - | - |
| 850 | - | - |
| 900 | - | - |
| 950 | - | - |
| 1000 | - | - |

Smoke density



| Time [min:s] | Position [mm] | Heat Flow [kW/m ²] |
|--------------|---------------|--------------------------------|
| 10:00 | 238 | 8.76 |
| 20:00 | 238 | 8.76 |
| 30:00 | 238 | 8.76 |

| | |
|----------------------------------|-------|
| CHF [kW/m ²] | 8.76 |
| HF_30 [kW/m ²] | 8.76 |
| Smoke density integral [%*min] | 53.7 |
| Flame extinguished after [min:s] | 12:14 |
| max. burnt distance [mm] | 238 |
| max. light attenuation [%] | 19.2 |



Annex RP - Burning behaviour

Sample designation 17-01-0205

Sample

Sample No.: 3
 Direction: cross production direction

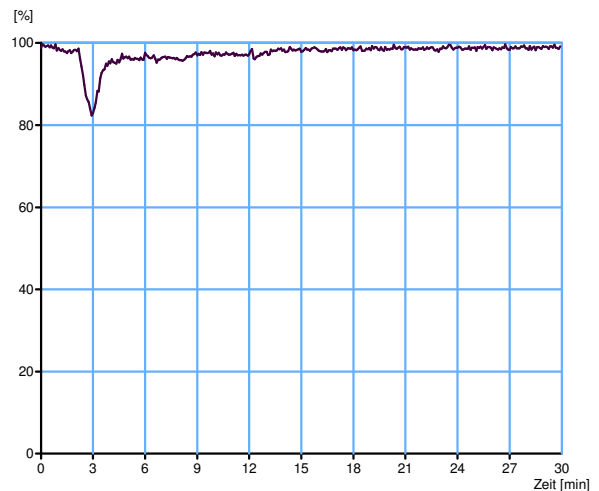
Observation

| | |
|--|--------|
| molten/singed during pre-radiation up to | 150 mm |
| buckled/contracted from pilot flame area up to | 0 mm |
| penetration of flame through substrate | - |
| transitory flaming | - |
| blistering | - |
| glowing, after flame has extinguished | - |

Results

| Position [mm] | Time [min:s] | Heat Flow [kW/m ²] |
|---------------|--------------|--------------------------------|
| 50 | 02:07 | 12.42 |
| 100 | 02:22 | 11.47 |
| 150 | 02:51 | 10.52 |
| 200 | 03:11 | 9.57 |
| 250 | - | - |
| 300 | - | - |
| 350 | - | - |
| 400 | - | - |
| 450 | - | - |
| 500 | - | - |
| 550 | - | - |
| 600 | - | - |
| 650 | - | - |
| 700 | - | - |
| 750 | - | - |
| 800 | - | - |
| 850 | - | - |
| 900 | - | - |
| 950 | - | - |
| 1000 | - | - |

Smoke density



| Time [min:s] | Position [mm] | Heat Flow [kW/m ²] |
|--------------|---------------|--------------------------------|
| 10:00 | 243 | 8.64 |
| 20:00 | 243 | 8.64 |
| 30:00 | 243 | 8.64 |

| | |
|----------------------------------|-------|
| CHF [kW/m ²] | 8.64 |
| HF_30 [kW/m ²] | 8.64 |
| Smoke density integral [%*min] | 74.3 |
| Flame extinguished after [min:s] | 12:11 |
| max. burnt distance [mm] | 243 |
| max. light attenuation [%] | 17.6 |



Annex RP - Burning behaviour

Sample designation 17-01-0205

Sample

Sample No.: 1
 Direction: in production direction

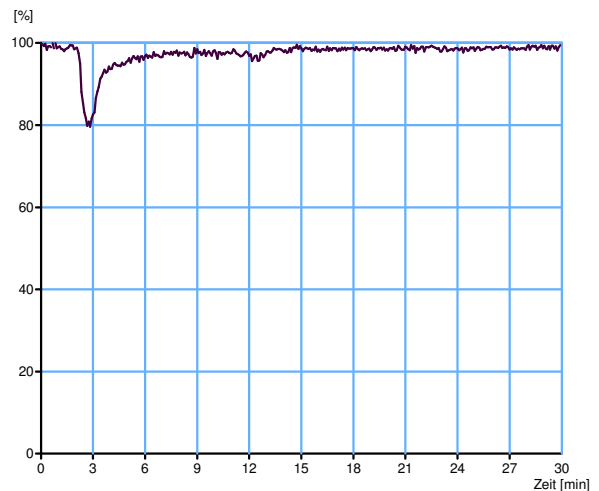
Observation

| | |
|--|------|
| molten/singed during pre-radiation up to | 0 mm |
| buckled/contracted from pilot flame area up to | 0 mm |
| penetration of flame through substrate | - |
| transitory flaming | - |
| blistering | - |
| glowing, after flame has extinguished | - |

Results

| Position [mm] | Time [min:s] | Heat Flow [kW/m ²] |
|---------------|--------------|--------------------------------|
| 50 | 02:03 | 12.42 |
| 100 | 02:08 | 11.47 |
| 150 | 02:30 | 10.52 |
| 200 | 02:52 | 9.57 |
| 250 | 03:34 | 8.49 |
| 300 | - | - |
| 350 | - | - |
| 400 | - | - |
| 450 | - | - |
| 500 | - | - |
| 550 | - | - |
| 600 | - | - |
| 650 | - | - |
| 700 | - | - |
| 750 | - | - |
| 800 | - | - |
| 850 | - | - |
| 900 | - | - |
| 950 | - | - |
| 1000 | - | - |

Smoke density



| Time [min:s] | Position [mm] | Heat Flow [kW/m ²] |
|--------------|---------------|--------------------------------|
| 10:00 | 250 | 8.49 |
| 20:00 | 250 | 8.49 |
| 30:00 | 250 | 8.49 |

| | |
|----------------------------------|-------|
| CHF [kW/m ²] | 8.49 |
| HF_30 [kW/m ²] | 8.49 |
| Smoke density integral [%*min] | 76.0 |
| Flame extinguished after [min:s] | 12:50 |
| max. burnt distance [mm] | 250 |
| max. light attenuation [%] | 20.4 |