# BASF – Fire Safety Technology

BASF
The Chemical Company

Test Report No.: 10661 / 36543 Date: 10.06.2013

BASF SE
Brandschutztechnik
G-PMF/EA - A521
D-67056 Ludwigshafen

**Test according to**

**DIN 5510 Part 2 : 2009-05**

**Preventive fire protection in railway vehicles - Part 2: Fire behaviour and fire side effects of materials and parts; Classification, requirements and test methods Test according to DIN 54837 : 2007-12 Testing of materials, small components and component sections for rail vehicles - Determination of burning behaviour using a gas burner**

Client:

Henkel AG & Co. KGaA Heidelberg
Standort Heidelberg
Henkel-Teroson-Strasse 57

69123 Heidelberg

The results refer exclusively to the tested samples.

As an accredited Test Laboratory, the BASF SE Fire Safety Technology Test Centre is authorized to conduct fire tests in accordance with DIN EN ISO/IEC 17025 : 2005.
DAkkS-Register-No.: D-PL-14121-07-00

DAkkS
Deutsche
Akkreditierungsstelle
D-PL-14121-07-00

ID number EBA (German Rail): EBA – 012 / 07 / 10 –

**Test according to DIN 5510 Part 2 : 2009-05**
**Preventive fire protection in railway vehicles - Part 2: Fire behaviour and fire side effects of materials and parts; Classification, requirements and test methods**
**Test according to DIN 54837 : 2007-12 Testing of materials, small components and component sections for rail vehicles - Determination of burning behaviour using a gas burner**

Test Report No.: 10661 / 36543

Receipt of order: 06.05.2013
Receipt of samples: 06.06.2013
Date of test: 10.06.2013

## 1. Material: (Information supplied by client)

Terophon- 129 (M2414-172)

Colour:

Field of application: Sound deadening

## 2. Summary of results and classification:

| | | | |
|---|---|---|---|
| **Length of damaged area** | **7,6 cm** | **Combustibility** | **S4** |
| **Afterflame time** | **0 s** | | |
| **Integral of smoke development** | **0 %•min** | **Smoke development class** | **SR2** |
| **Falling debris** | **no burning droplets / debris** | **Dripping class** | **ST2** |

**Remarks:**
Note: This report is valid for 3 years according to DIN 5510-2 (2009:05), if not differently regulated by the responsible authority.

**Any conclusions we draw about the fire safety of the materials we test are based exclusively on the results of the test under the conditions described.**
**The extent to which such conclusions can be applied to non-tested material under non-standard conditions is the sole responsibility of the customer and is done so at his own risk.**

**BASF Fire Safety Technology**

Dr. Henn
Head of Laboratory

**Ludwigshafen, 10.06.2013**

Lehr
Technician

Test Report No.: 10661 / 36543

## 3. Material:

**Information supplied by client**

Terophon- 129 (M2414-172)
Composition: product applied on aluminium sheet, layer thickness of dried product appr. 4mm

**Additional details from test laboratory**

Colour coated side: beige
Aluminium sheet thickness: 1.00mm

## 4. Samples:

**Sample size (determined by BASF test laboratory):**

| | | | | | |
|---|---|---|---|---|---|
| Length: | 500,00 | [mm] | Weight: | 591,45 | [g] |
| Width: | 190,50 | [mm] | Weigt per unit area: | 6,20 | [kg/m²] |
| Thickness: | 4,35 | [mm] | Density: | | [kg/m³] |
| Outer diameter: | | [mm] | Remarks: | | |
| Inner Diameter: | | [mm] | | | |

**Pre-conditioning:**

| | Conditions | Duration days |
|---|---|---|
| Client: (Information supplied by client) | | |
| Test Laboratory: | Standard 23/50-1 DIN 50014 | 4 |

**Sample preparation:**

**Exposed surface:** coated side

Test Report No.: 10661 / 36543

## 5. Test results:

| Test apparatus: DIN 50 050 | | Sample: | 1 | 2 | 3 | 4 | 5 | Avg. |
|---|---|---|---|---|---|---|---|---|
| Ignition | at | [min:s] | 0:40 | 0:42 | 0:23 | 0:19 | 0:35 | 0:32 |
| | Afterflame time | [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Glowing | at | [min:s] | 0:50 | 0:51 | 0:40 | 0:35 | 0:45 | 0:44 |
| | Afterglow time | [s] | 0 | 0 | 0 | 0 | 0 | 0 |
| Flame height | Maximum | [cm] | 10 | 10 | 10 | 10 | 10 | 10 |
| | at | [min:s] | 1:00 | 1:00 | 1:30 | 1:15 | 1:00 | 1:09 |
| Falling debris | at | [min:s] | --- | --- | --- | --- | --- | |
| | Burning duration | [s] | --- | --- | --- | --- | --- | --- |
| Smoke density | Maximum | (%) | 0,4 | 0,3 | 0,4 | 0,3 | 0,3 | 0 |
| | at | [min:s] | 3:06 | 3:06 | 3:06 | 3:05 | 3:05 | 3:06 |
| Integral of smoke development | | [% *min] | 0,3 | 0,5 | 0,3 | 0,2 | 0,2 | 0 |
| Max. length of damaged area | | [cm] | 7 | 8 | 8 | 8 | 7 | 7,6 |
| Termination by extinguishing at | | [min:s] | --- | --- | --- | --- | --- | |
| Burning or melting through the sample | | [yes/no] | no | no | no | no | no | |

**Observations:**

## 6. Test equipment:

| | | |
|---|---|---|
| Test apparatus | PK | 0011 |
| Sliding gauge | MB | 0036 |
| Balance | MW | 0003 |
| Light measurement system | ML | 0003 |
| Data aquisition | MC | 0007 |
| Burner nozzle | BN | 0024 |
| Mass flow meter | MG | 0045 |

Test Report No.: 10661 / 36543

## 7. Requirements:

| Standard | Criteria | Classification |
|---|---|---|
| DIN 5510 Part 2 | **Combustibility class** | |
| | Length of damaged area: ≤ 30 cm<br>Afterflame time: Burning to the end of test and extinguishing allowed | S2 |
| | Length of damaged area: ≤ 25 cm<br>Afterflame time: ≤ 100 s (no single value ≥ 120 s) | S3 |
| | Length of damaged area: ≤ 20 cm<br>Afterflame time: ≤ 10 s | S4 |
| | Length of damaged area: 0 cm<br>Afterflame time: 0 s | S5 |
| | **Smoke development class** | |
| | Integral of smoke development: > 100 %•min | SR1<br>not achieved |
| | Integral of smoke development: ≤ 100 %•min | SR1 |
| | Integral of smoke development: ≤ 50 %•min | SR2 |
| | **Dripping class** | |
| | Burning droplets / debris | ST1 |
| | No burning droplets / debris * | ST2 |

* A classification as ST2 can also be achieved in case of burning droplets/debris, provided that the average time of afterburning is ≤ 20 seconds

Test Report No.: 10661 / 36543

## 8. Pictures:

Test set-up:

**Test according to DIN 5510 Part 2 : 2009-05**
**Preventive fire protection in railway vehicles - Part 2: Fire behaviour and fire side effects of materials and parts; Classification, requirements and test methods**
**Test according to DIN 54837 : 2007-12 Testing of materials, small components and component sections for rail vehicles - Determination of burning behaviour using a gas burner**

Test Report No.: 10661 / 36543

Burned samples: