

The testing division is associated partner
of the nominated body for interoperability
of railway-systems.

Deutsche Bahn AG
Technik / Beschaffung
DB Systemtechnik
Prüfstelle
Pionierstraße 10
D – 32423 Minden

Test Report

Fire Testing pursuant to DIN 54 837



Test Report: 06-P-4010-TZF91-PR-127/05
Date: 27.04.06

Department: DB Systemtechnik
Instandhaltung, Betriebsfestigkeit,
Regelwerke
Instandhaltung, RAMS
Bahntechnikerring 74
14774 Brandenburg-Kirchmöser



249966 QM

Anwendung eines durch die DQS GmbH
Deutsche Gesellschaft zur Zertifizierung von Managementsystemen
zertifizierten Qualitätsmanagementsystems

The test results refer exclusively to the testobjects mentioned in the test report. This test report may not be published
without the commissioning party's written permission. A duplication of extracts of it has additionally to be approved by
the testing department.

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1 Details of the remit

- Assignment: Performance of fire-testing
- Reference: Your order N°: 030945/MB from 05.04.06
- Commissioning party: Adaptaflex Ltd.
Station Road Coleshill
Birmingham
B46 1 HT
- Testing department: DB Systemtechnik
Instandhaltung, Betriebsfestigkeit, Regelwerke
Instandhaltung, RAMS
Bahntechnikerring 74
D-14774 Brandenburg - Kirchmöser
- Pages: 6 pages of test Report
- Distribution list: 1 original Adaptaflex Ltd.
1 copy TZF 91

2 Description of the test object

- Reference number: 06-127-05/1275 (samples 1-5)
- Date of receipt: 10.04.2006
- Material designation: conduit **PAFH 13**
- Dimensions: length: 500 mm
outer diameter: 13,2 mm
inner diameter: 9,3 mm
- Retention time of the test samples: 1 year from date of this report on

3 Testing

3.1 Details of testing

- Test procedure: **DIN 54 837 (draft 09/2003)**
Testing of materials, small components
and component sections for rail vehicles
Determination of burning behaviour using
a gas burner
- Evaluation: **DIN 5510 part 2 (draft 09/2003)**
Preventive fire protection in railway vehicles
Part 2: Fire behaviour and fire side effects of
materials and parts;
Classifications, requirements and test methods

3.2 Performance of testing

- Conditioning: > 48h at 23°C ± 3°C / 50% rel. humidity
- Inflaming side: outside
- Date of testing: 24.04.2006
- Tester: Schiller

4 Results

Sample number	Einzelwert für Probe Nr.					Mean value
	1	2	3	4	5	
Inflaming of the sample point of time in [s]	10	10	10	10	10	10
Duration of burning in [s]	170	170	170	170	170	170
Duration of afterburn in after removal of external flame [s]	0	0	0	0	0	0
Duration of afterglow in after removal of external flame [s]	0	0	0	0	0	0
Maximum flame height in [cm]	13	13	13	13	13	13
Specimen parts not burning [yes/no]	yes	yes	yes	yes	yes	yes
falling off burning time [yes/no] [s]	yes 0	yes 0	yes 0	yes 0	yes 0	yes 0
Optical density of smoke	maximum in [%]	3	2	1	2	2
	reached after [s]	42	48	42	47	48
	integral in [%*min]	2.0	1,9	1,6	1,6	1,8
Destroyed area length in [cm]	18	19	16	16	16	17
Specimen extinguished [yes/no]	no	no	no	no	no	no
burn through [yes/no]	yes	yes	yes	yes	yes	yes
after [s]	41	38	42	45	47	43

- Observation: not one

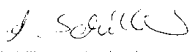
- Assessment pursuant to DIN 5510, part 2:

Flammability class:	S 4
Smoke-development class:	SR 2
Melt-drip class:	ST 2


- Remarks: not one

5 Signatures


Dr. Trockels, head TZF 91


Schiller, tester in charge

noticed:


testing department
TZF 91

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2 Description of the test object

- Reference number: 06-127-05/1276 (samples 1-5)
- Date of receipt: 10.04.2006
- Material designation: conduit **PACH 54**
- Dimensions: length: 500 mm
outer diameter: 54,3 mm
inner diameter: 46,4 mm
- Retention time of the test samples: 1 year from date of this report on

3 Testing

3.1 Details of testing

- Test procedure: **DIN 54 837 (draft 09/2003)**
Testing of materials, small components
and component sections for rail vehicles
Determination of burning behaviour using
a gas burner
- Evaluation: **DIN 5510 part 2 (draft 09/2003)**
Preventive fire protection in railway vehicles
Part 2: Fire behaviour and fire side effects of
materials and parts,
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3.2 Performance of testing

- Conditioning: > 48h at 23°C ± 3°C / 50% rel. humidity
- Inflaming side: outside
- Date of testing: 24.04.2006
- Tester: Schiller

4 Results

Sample number	Einzelwert für Probe Nr.					Mean value	
	1	2	3	4	5		
Inflaming of the sample point of time in [s]	6	5	6	6	6	6	
Duration of burning in [s]	174	175	174	174	174	174	
Duration of afterburn in after removal of external flame [s]	0	0	0	0	0	0	
Duration of afterglow in after removal of external flame [s]	0	0	0	0	0	0	
Maximum flame height in [cm]	17	17	17	17	17	17	
Specimen parts not burning [yes/no]	yes	yes	yes	yes	yes	yes	
falling off burning time [yes/no] [s]	yes 0	yes 1	yes 1	yes 0	yes 0	yes 0	
Optical density of smoke	maximum in [%]	1	4	3	5	3	3
	reached after [s]	44	50	45	47	45	46
	integral in [%*min]	1,8	2,3	2,1	2,4	2,3	2,2
Destroyed area length in [cm]	8	12	10	10	11	10	
Specimen extinguished [yes/no]	no	no	no	no	no	no	
burn through [yes/no]	yes	yes	yes	yes	yes	yes	
after [s]	49	38	43	43	39	42	

- Observation: not one

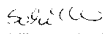
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Melt-drip class:	ST 2

- Remarks: not one

5 Signatures


Dr. Trockels, head TZF 91


Schiller, tester in charge

noticed:


testing department
12/2006