SIEMENS

Acceptance test fire

Guidelines

Fire & Security Products

Siemens Building Technologies Group

1 Acceptance test fire

1.1 Introduction

Application tests are designed to determine detector locations, detector types and parameter sets in difficult situations. The normal fire detection control unit is not adequate for this. In most cases an extensive laboratory set-up is required.

Acceptance test fires are carried out with the installed control unit. Remote transmission is switched off. Normally we check the response behavior of the detector. Detector locations need not be checked as long as they have been determined in accordance with the regulations or guidelines.

Acceptance test fires, which are described below, are considerably easier to carry out than application tests.

Acceptance test fires call for special know-how and a great deal of experience. Any „failure“ results in customers asking awkward questions and makes them uneasy. Furthermore, in addition to the necessary combustion gases, most test fires also produce soot, toxic gases, stench etc. which in residential premises can be annoying or even cause damage to fixtures and fittings and the building itself.

Therefore whenever possible avoid acceptance test fires !

However, if one is forced to carry out tests fires, they must be carefully planned. This document shows how to deal with the problem and which points have to be given special consideration. As, however, each room and system looks different, there is no universal procedure and this document should be regarded as guidelines which must be adapted to local conditions.

1.2 Realization

If acceptance test fires are called for, the following points must be taken into account:

- Never carry out acceptance test fires with unknown combustibles. Always employ a known test fire procedure.
- Whenever possible use the CERBERUS aerosol generator SG3000.
- Where possible avoid the following tests fires as they generate pollutants and partly toxic gases:
  - Open plastic fires (polyurethane mats)
  - Pyrolitic smoldering fires (wooden sticks)
- If possible, carry out preliminary tests without spectators -> specify the fire location and fire size.
- Locate the test fire as close as possible to a detector so that as little combustible as possible has to be burnt.
- Before the test fire, explain to spectators the operating principle of the detector.
- A continuous commentary should be given during the test, e.g. the development of the fire, possible air currents, spread of smoke etc. This enables the layman to understand the test better and prevents misunderstandings.
- If a test proves unsuccessful, only ***one test modification should be made***, e.g. location, fire size, detector setting etc.

1.3 Choice of acceptance test fire

When choosing an acceptance test fire, compare the fire characteristics with the fire detection principles of the fire detector. The following table shows which acceptance test fires are suitable for testing which detectors.

Acceptance test fire	Combustible	Poly Rex	Opto Rex	Thermo Rex	Linear smoke detector	Flame-detector
Aerosol-Generator SG3000	Paraffin	●	●	--	●	--
Pyrolitic smoldering fire EN54-9 / TF2	Beech wood sticks	●	●	--	●	--
Open plastic fire EN54-9 / TF4	Polyurethane mats	❍	❍	--	●	❍
Open liquid fire EN54-9 / TF6	Ethyl alcohol	❍	--	●	--	●
Electrical smoldering fire PYS100	Insulated wires	--	●	--	--	--
Legend:		● suitable		❍ possible		-- unsuitable

Tab. 1 Suitability of the acceptance test fire

In addition to its suitability, when choosing an acceptance test fire, the side effects such as the generation of toxic gases and soot, the stench etc. must be taken into account. Furthermore, a fire must be chosen to which detectors react as quickly as possible. A detector which reacts late gives the customer a negative impression.

The following statements should be taken into account when choosing an acceptance test fire:

Aerosol generator SG3000
Demonstrating the function of a fire detection system using a “paraffin aerosol generator“ is very useful. There is no trouble with smoke and yet optical detectors react without difficulty to the clearly visible “smoke”. *-> For point-type detectors, whenever possible choose this acceptance test fire.*

Pyrolitic smouldering fire (TF2)
For normal high rooms in which smoke may be generated this is a very suitable test fire.

Open plastic fire (TF4)
Optical detectors react rather poorly to this acceptance test fire. The customer experiences a large fire and the late reaction of the smoke detector. *-> Wherever possible avoid this acceptance test fire.*

Open liquid fire (TF6)
Open liquid fires are dangerous and must only be presented by trained personnel
-> Whenever possible this acceptance test fire should be avoided (dangerous).

Electrical smoldering fire with PYS100
This „Acceptance test fire“ is particularly suitable for testing fire detection systems for equipment (e.g. computers) and for highly sensitive volumetric surveillance systems (ASD).

1.4 Location

- Basically, acceptance test fires should be located on the floor of a room beneath a detector or another place to achieve rapid fire detection..
- The location must be at a sufficiently safe distance from heat-sensitive or easily combustible materials.

The following point frequently determines the success or failure of a test:

The smoke or heat must reach the detector!

1.5 Safety precautions

Acceptance test fires may only be carried out if:

- the system or building owner agrees to the test being carried out.
- every fire risk in the vicinity can be excluded.
- light soiling from the smoke is accepted and the room can be ventilated.
- suitable extinguishing equipment is available.
- no automatic extinguishing systems (including those in adjacent rooms) can be unintentionally actuated.

In order to prevent smoke poisoning do not expose people unnecessarily to the smoke.

Symptoms of smoke poisoning:
Burning eyes, headache, dizziness, shortage of breath or palpitation of the heart during or after the fire test are early signs of smoke poisoning. If such symptoms arise leave the room immediately and if they do not abate within 10 minutes call a doctor.

1.6 Practical experience

The information in this document is based mainly on experience gained in Switzerland. As almost exclusively interactive AlgoRex systems have been installed in Switzerland, the values for AnalogPlus and collective detectors have been obtained from separate tests. The number of acceptance test fires realized in the field is not very large so that certain data regarding fire size must be interpreted linearly.

This document should, therefore, be regarded as guidelines. The information concerning fire size can be used taking into account such factors as room dimensions and exchange of air. When this document is revised at some time it will be important to incorporate experience from other countries.

We are interested in what experience you have had ! We should be pleased to receive your comments and any data which varies from our own for inclusion in the revised version of this document. Please use the application database on the Cerberus Intranet (Application DB, Services, Remarks, Acceptance test fire) to present your experience to a wider public.

2 Specification and test

2.1 Aerosol generator SG3000

2.1.1 The equipment

The aerosol generator was developed by Cerberus France and is manufactured in France. The equipment has been tested in the „Centre National de Prévention et de Protection“ (CNPP) and has been approved by „l’Assemlée Plénière des Sociétés d’Assurances Dommages“ (APSAD).
Smoke is generated by vaporizing paraffin oil in a compression-proof chamber at approximately 400 C and the necessary transport energy is generated by overpressure using CO_2. The required upthrust is produced by a chimney with a heating output of 1,000W. Paraffin aerosols are passed through the chimney. The intensity of the aerosol production is electronically controlled and increases with the length of the test.

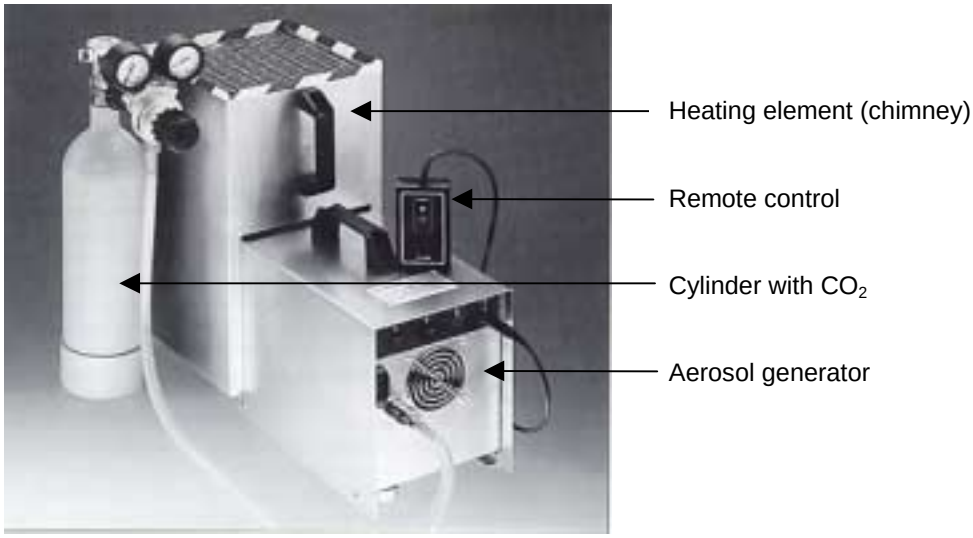

Fig. 1 SG3000

The great advantage of the SG3000 over the standard acceptance test fire is that it does not generate toxic smoke or cause soiling. The equipment can be used in a clean environment without any difficulty. The oil used has no effect on foodstuffs and is absolutely non-toxic.

2.1.2 Equipment required

- Material: SG3000, Paraffin oil M82 and cylinder with CO_2
  Order from: Cerberus SA / ZI-617, rue Fourny-Bp 20
  78531 Buc cedex / France
- Additional material: none
- Safety: no precautions necessary

2.1.3 Carrying out the test

- Check whether the equipment has sufficient oil (if not top it up)
- Connect remote control to aerosol generator
- Connect CO_2 to the generator using the rapid closure and set pressure to 0.75 bar
- Connect aerosol generator and heating element (chimney) to the mains and switch on (Remote control LED lights up red)
- Wait until the LED changes to green (approx. 15 min.) – the equipment is ready for operation
- The test is started by pressing the key on the remote control unit – LED flashes
- After an alarm has been actuated, end the test by pressing the key on the remote control unit (the maximum possible test duration is 6 min.)
- Ventilate room
- Disconnect the heating element from the mains supply, disconnect the remote control unit (the generator remains connected to the mains for cooling by the ventilator). After cooling (10-20min.) disconnect the equipment from the mains.

2.1.4 Duration of test

As no test duration has to be specified for this acceptance test fire and as adequate combustible (paraffin oil) is available, it is not necessary to define the test duration. Normally the test lasts until the detectors actuate an alarm. However, it should be noted that the maximum test duration is restricted to 6 min. by the equipment.
Nevertheless, in order to get an idea of the test duration, a number of tests were carried out in a room 10x6x4m (WxLxH). The following table shows the times at which the individual detectors actuated an alarm.

Alarm actuation in a room 10x6x4m (WxLxH)			
Detector			**Alarm actuation**
Group	**Type**	**Setting**	**Time**
Smoke det. **(OptoRex)**	**DO1151/52**	APS005	2.5 minutes
		APS006	2.0 minutes
		APS007	1.5 minutes
	DO1131	Standard	1.5 minutes
		Increased	1.2 minutes
	DO1101/02	-	1.5 minutes
Multi-criteria detector **(PolyRex)**	**DOT1151/52**	APS005	5.0 minutes
		APS006	4.0 minutes
		APS007	3.0 minutes
	DOT1131	Standard	3.0 minutes
		Increased	2.5 minutes
Linear smoke detector	**DLO1191**	Standard	1.5 minutes

Tab. 2 Alarm actuation with the aerosol generator SG3000

2.1.5 Important information

- The equipment has been approved by the „Centre National de Prévention et de Protection“ (CNPP) for rooms up to 5m in height, but it can also be used in higher rooms.
- For tests in rooms higher than 7m an additional heat sources is required such as a hotplate with an output of at least 2,000W.
- Realistic tests in a room 10x10x10m without any exchange of air have shown that with a test duration of 6 min. the detectors DO1151/52 with APS007 and 006, DO1131, DO1101 as well as the DOT1151/52 with APS007 and the DOT1131 with increased sensitivity can be brought to alarm state without an additional heating source.
- In rooms in which the air is changed > 7-times/h, test fires in rooms higher than 5m are hardly feasible (possibly generate additional thermal uplift) -> *Aerosol must penetrate the detector.*
- When testing fire detectors in floor voids, the aerosol generator is operated without heating element -> remove chimney.
- Individual test fires must be specified for those detectors which are not listed in the table (a general idea of the test duration to be expected can be obtained by comparing smoke sensitivities).

2.2 Pyrolytic smoldering fire (TF2)

2.2.1 General

For this acceptance test fire, several beech wood sticks are burnt on a hotplate. The result is weak heat development with largely light, visible smoke.

2.2.2 Equipment required

- Combustible: Dry beech wood sticks 10 x 20 x 35mm
- Heat source: An approx. 220mm ∅ hotplate with a heating output of 2,000W without built-in thermostat
- Additional material: Bad-combustible supporting base, metal shovel and bucket of water
- Safety: Extinguishing device

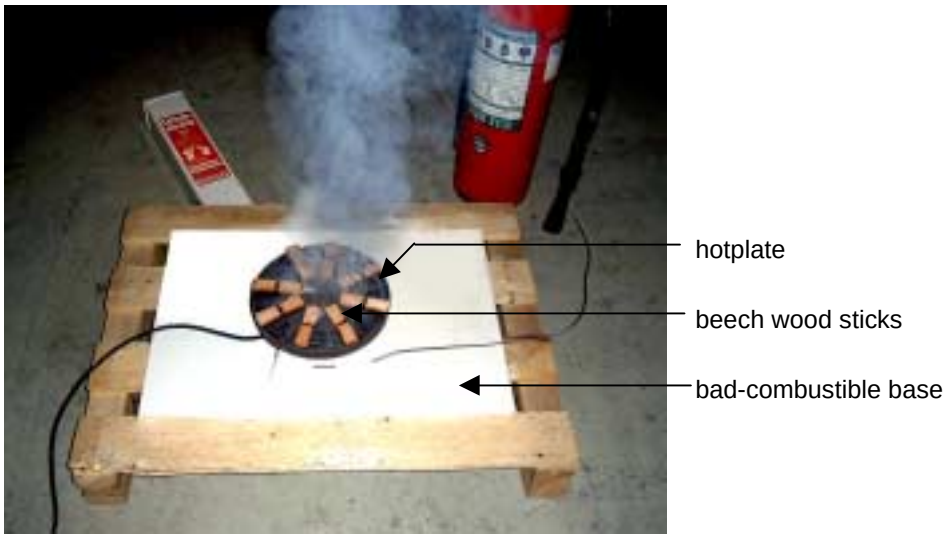

Fig. 2 Acceptance test fire (TF2)

2.2.3 Carrying out the test

- Specify the number of wooden sticks (see next section)
- Place bad-combustible supporting base under the hotplate
- Place the wooden sticks in a star pattern on the cold hotplate
- Check that the test is carried out at a safe distance from combustible material and have the extinguishing equipment ready
- Switch on the hotplate to reach a temperature of 500°C – 600°C after about 10min.
- After an alarm has been actuated, switch off the hotplate and using the shovel place the remains of the wood in the bucket of water
- Ventilate room

2.2.4 Calculating the number of wooden sticks

Firstly, using figure 3, determine the zone factor on the basis of the room area (not to be confused with the monitoring area per detector) and room height. By means of this zone factor it is possible to read off the number of sticks required in table 3.

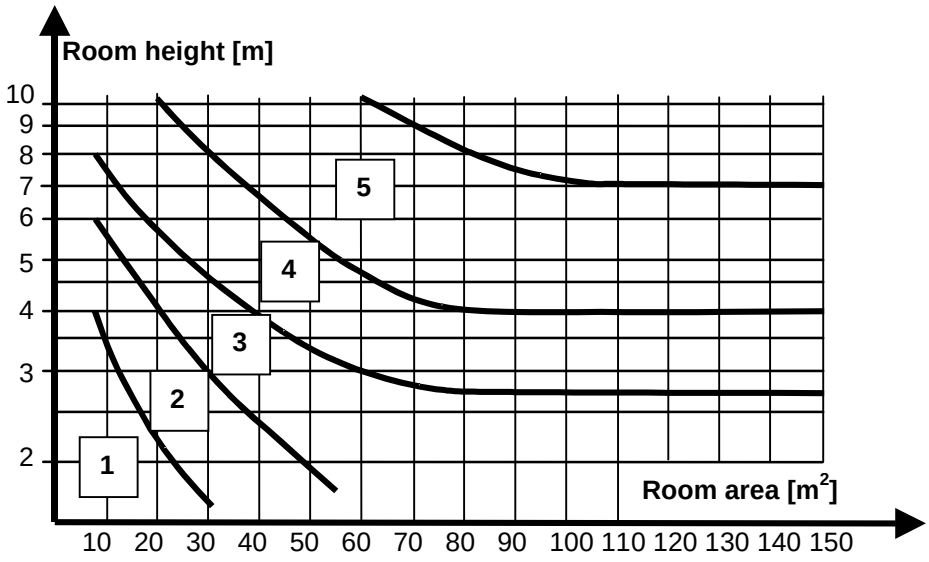

Fig. 3 Zone factors for **air exchange < 7 times/h**

Number of beech wood sticks (10 x 20 x 35mm)							
Detector			Zone factor				
Group	Type	Setting	1	2	3	4	5
Smoke det. (OptoRex)	DO1151/52	APS005	6	9	12	18	24
		APS006	6	9	12	18	24
		APS007	3	6	9	12	18
	DO1131	Standard	6	9	12	18	24
		Increased	6	9	12	18	24
	DO1101/02	-	6	9	12	18	24
Multi-criteria Detector (PolyRex)	DOT1151/52	APS005	9	12	18	24	36
		APS006	9	12	18	24	36
		APS007	6	9	12	18	24
	DOT1131	Standard	9	12	18	24	36
		Increased	6	9	12	18	24
Linear smoke detector	DLO1191	Standard	9	9	18	18	18

Tab. 3 Number of beech wood sticks for TF2

Example: Room height 3.5m
Room area 80m^2
Air exchange 5-times/h
Detector installed = DOT1151 with APS005

1. Zone factor according to Figure 3 -> 4
2. Number of beech wood sticks according to Table 3 -> 24

Result: A hotplate with 24 beech wood sticks is required

2.2.5 Important information

- In case where more than 24 beech wood sticks are required, a second hotplate is necessary – the number of wooden sticks are divided evenly between the two hotplates.
- In rooms higher than 10m test fires must be planned individually. In addition to increasing the amount of combustible, a much higher heating output is required in order to generate the required thermal uplift (see Note / Tip). In addition, the ceiling construction, the positioning of detectors and especially the ambient temperature in the vicinity of the detector play a major role.
- In rooms in which the air is exchanged >7 times/h, test fires must be planned individually (with air exchanges of >7 times/h to < 20 times/h the number of beech wood sticks must be doubled).
- Individual test fires must be specified for those detectors which are not listed in the table (a general idea of the number of wooden sticks required can be obtained by comparing smoke sensitivities)

Note / Tip:
Lighting a number of polyurethane mats is a suitable way of generating additional thermal uplift. Realistic tests in rooms with heights of 10 – 14 m have shown that by lighting two polyurethane mats, after a test duration of about 8 minutes, smoke is transported to the detector.
Furthermore, the customer can be given a plausible explanation that this test is very close to reality because after a smoldering fire, it changes to open fire.

2.3 Open plastics fire (TF4)

2.3.1 General

In this acceptance test fire polyurethane mats are ignited resulting in powerful heat development with partly dark, visible smoke.

2.3.2 Equipment required

- Combustible: Polyurethane soft foam without flame-resistant additives, Density 20kg/m3, foamed on the basis of etherpolyolene, Mat size 500x500x20mm.
- Heat source: Not required – ignition by means of matches
- Additional material: Bad-combustible supporting base min. 700x700x100mm and aluminum foil
- Safety: Extinguishing equipment

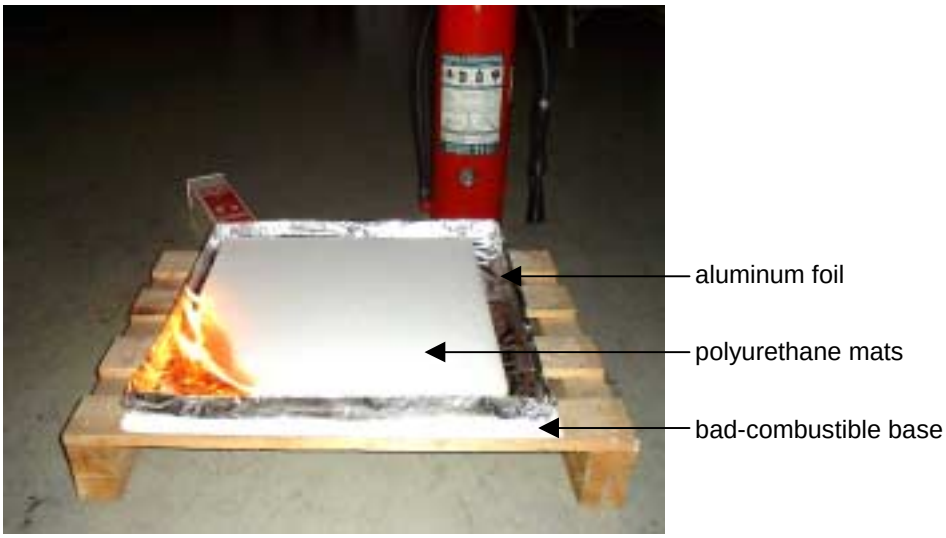

Fig. 4 Acceptance test fire TF4

2.3.3 Carrying out the test

- Specify the number of mats (see next section)
- Shape with the aluminum foil a high rim so that no liquefied combustible can flow on to the floor.
- Place the aluminum foil on the bad-combustible supporting base to protect the floor.
- Place the required number of polyurethane mats on the prepared aluminum foil. Always place at least two mats on top of each other. If only one mat is required, cut it into two pieces and place one on top of the other.
- Check that the test is carried out at a safe distance from combustible material and have the extinguishing equipment handy
- Ignite the mats at a corner with a match

- Always leave the acceptance test fire to burn out even after an alarm has been actuated
- Ventilate room
- Replace the aluminum foil before the next test

2.3.4 Working out the number of polyurethane mats

Firstly, using Figure 5, determine the zone factor on the basis of the room area (not to be confused with the monitoring area per detector) and room height. By means of this zone factor it is possible to read off the number of mats required in Table 4.

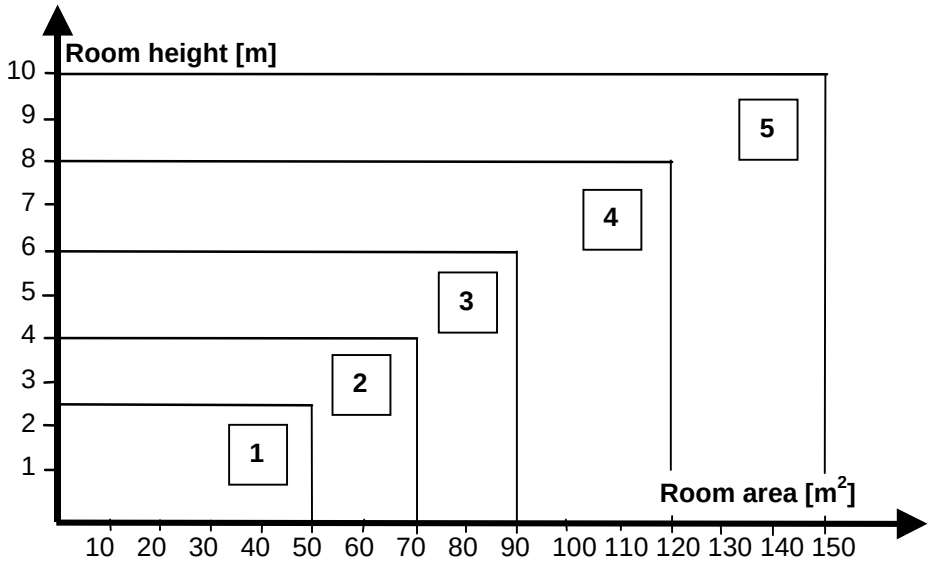

Fig. 5 Zone factor for air exchange < 7 times/h

Number of polyurethane mats (500x500x20mm)							
Detector			Zone factor				
Group	Type	Setting	1	2	3	4	5
Smoke det. (OptoRex)	DO1151/52	APS005	2	4	6	7	8
		APS006	2	3	5	6	7
		APS007	2	2	3	4	5
	DO1131	Standard	2	3	5	6	7
		Increased	2	3	4	5	6
	DO1101/02	-	2	3	5	7	8
Multi-criteria detector (PolyRex)	DOT1151/52	APS005	2	4	6	7	8
		APS006	2	3	5	6	7
		APS007	2	2	4	5	6
	DOT1131	Standard	2	3	5	6	7
		Increased	2	3	4	5	6
Linear smoke detector	DLO1191	Standard	1	2	3	3	4
Flame detector	DF1191/92	Standard	1	2	3	4	4

Tab. 4 Number of polyurethane mats for TF4

Example: Room height 7m
Room area 80m^2
Air exchange 5-times/h
Detector installed = DOT1151 with APS007

1. Zone factor according to Figure 5 -> 4
2. Number of polyurethane mats according to Table 4 -> 5

Result: 5 polyurethane mats are required

2.3.5 Important information

- In rooms in which the air is exchanged >7 times/h test fires must be planned individually (with air exchanges of >7 times/h to < 20 times/h the number of mats must be increased by 50%).
- In rooms higher than 10m test fires must be planned individually (ceiling constructions, positioning of the detectors and especially the ambient temperature in the vicinity of the detector play an important role).
- Test fires must be planned individually for those detectors which are not listed in the table (An idea of the required number of mats can be obtained by comparing smoke sensitivities).

Never let test mats smolder because this generates toxic gases!

Optical detectors react relatively poorly to this type of acceptance test fire. The customer sees a lot of fire but the smoke detector reacts late !

2.4 Combustible liquid fire (TF6)

2.4.1 General

A certain amount of spirit (ethyl alcohol) is ignited for this acceptance test fire. The result is a smokeless fire with powerful heat development.

2.4.2 Equipment required

- Combustible: Spirit with at least 90% ethyl alcohol (C_2H_5OH)
- Heat source: Not required – ignition with matches
- Additional material: Steel sheet container 2mm thick, steel sheet protective container and supporting base
- Safety: Portable dry powder extinguisher

Fig. 6 Acceptance test fire TF6

2.4.3 Carrying out the test

- Specify the size of the container and the amount of ethyl alcohol (see next section)
- Place the protective container on a supporting base; then place the steel sheet container in the protective container (this prevents spirit running out and damaging the floor).
- For acceptance test fires with heat detectors, as far as possible position the test fire **not** directly beneath the detector. When carrying out acceptance fire tests with flame detectors, make sure there is „Line of sight“ from the detector to the test fire.
- Check safety precautions before pouring in the spirit. In particular make sure that the dry powder extinguishers are handy.
- Only pour the ethyl alcohol into a **cold** tray shortly before ignition (avoid risk of deflagration !)
- In a small container, light the spirit with an extra-long match. For containers of 0.5m^2 and larger, only ignite the spirit with a rod to which a spirit-soaked ball of cotton waste has been attached.

- Always leave the combustible liquid to burn out even after an alarm has been actuated. Smothering the flames leads to the formation of combustible vapors.
- Ventilate room

2.4.4 Calculating the size of the container

With a combustible liquid fire, the size of the fire is directly related to the surface area and therefore the size of the container. In other words:

- The surface area determines the size of the fire
- The quantity of liquid combustible is determined by the duration of the fire (taking into account the surface area)

Size of fire for heat detectors

The point-type detectors supplied by CERBERUS actuate an alarm between approx. 60°C and 85°C. In addition, depending on the parameter set, the DT1152 and DOT1151/52 react to a rapid increase in temperature.
With the TF6, the variables such as ceiling construction, ambient temperature, ventilation and many other things have a very great influence on heat development at the ceiling. Due to this fact and the recommendation „only to carry out such acceptance fire tests for very specific situations“ we do not divide up the size of the fire between the individual detectors with the corresponding parameter sets.

The following table shows the size of fire required to actuate an alarm in the point-type detector which reacts at 85°C. The values are based on the following conditions:

- Temperature at the ceiling must always be below 125°C
- Duration of fire approx. 5 minutes
- The sides of the room are roughly 1.5 times longer than the height
- Airflow approx. 0.5m/s

Amount of ethyl alcohol for heat detectors		
Room height [m]	**Container size** [m^2]	**Amount of ethyl alcohol** [l] (filled to a height of 10mm)
4	0.2	2
7	0.5	5
10	1.0	10

Tab. 5 Amount of ethyl alcohol for TF6

Whenever possible do not use test fire 6 in order to avoid the risk of damage !

Heat detectors can be performance-tested quickly and without danger with the RE6T detector tester.

Size of fire for flame detectors

In addition to the distance between the detector and fire, the size of fire that can be detected by a flame detector depends very much on the detection principle, the evaluating device and the level of sensitivity to which the detector has been set. The required size of fire for the DF1191/92 is calculated as follows:

$A = 0.25 \times (D / C)^2$

A = surface area of the container [m^2]
D = distance from detector to fire [m]
C = constant for detector sensitivity
(standard = 23 / increased = 46)

Table 6 can be used to determine the required fire size (surface area of the container) and the amount of ethyl alcohol. The next section describes what is meant by „Minimum room height".

Amount of ethyl alcohol for flame detectors DF1191/92				
Maximum distance detector to fire [m]		**Tray size (surface area)** [m^2]	**Amount of ethyl alcohol** [l] (5mm high)	**Minimum room height** [m]
Standard	Increased			
5	10	0.025	0.125	1.5
15	30	0.1	0.5	3.0
23	46	0.25	1.25	5.0
32	65	0.5	2.5	7.0
46	92	1.0	5	10
65	-	2.0	10	14
92	-	4.0	20	20

Tab. 6 Amount of ethyl alcohol for TF6

Example: Distance detector to test fire 20m
Detector installed = DF1191 set to „Standard" sensitivity

Working out the size of container (surface area) and amount of ethyl alcohol from Table 6 -> 0.25 m^2 and 1.25 l

Result: A container with a surface area of 0.25m^2 is required filled with 1.25 liters of ethyl alcohol.

2.4.5 Important information

Acceptance test fires for heat detectors:

- In order to avoid danger, wherever possible do not use this acceptance test fire (Test point-type detectors with the RE6T detector tester)
- When testing heat detectors, the ceiling construction and the positioning of detectors play a major role. Heat must reach the detector.
- In rooms higher than 7m the installation of mere heat detectors is highly questionable and they only react to very large fires.
- In rooms with a high air exchange rate, test fires must be individually planned.

Acceptance test fires for flame detectors:

- When testing flame detectors ensure that there is line of sight between the detector and the acceptance test fire
- For flame detectors DF1191/92 the maximum distance between detector and fire is limited to 100m
- For other flame detectors, test fires must be planned individually. (Detector sensitivities can be compared to obtain a general idea of the required size of test fire).

The meaning of „Minimum room height"

Test fires which are too large can cause damage. This is why a defined acceptance test fire must only be carried out if the specified, minimum room height is complied with. Figure 7 gives information on minimum room height.

In addition to the minimum room height, the required distance from the fire to the walls and combustible must be taken into account..

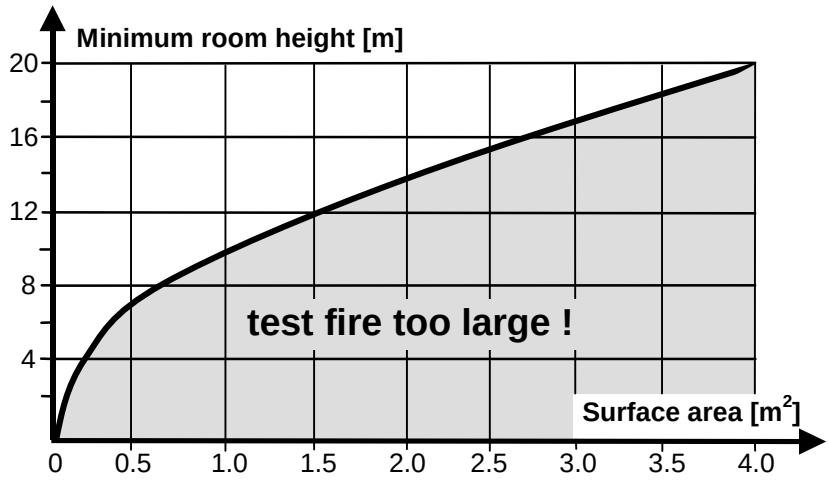

Fig. 7 Maximum permissible surface area / fire size in relation to room height

Only entrust reliable and experienced personnel with such fires !

These personnel must be trained to handle extinguishing equipment in order to extinguish combustible liquid fires !

2.5 Electrical smoldering fire with PYS100

The PYS100 pyrolysis system from the Wagner company generates defined amounts of smoke or the typical products of pyrolysis as they occur in real fires.
By applying a voltage, a pyrolysis wire is heated exactly to a precisely specified temperature so that a defined amount of pyrolysis products are released into the ambient air. The temperature of the wire is electronically controlled throughout the test and maintained at a defined curve irrespective of the ambient conditions. The desired starting and end temperatures can be freely selected. In addition to the temperature selected, the smoke intensity is determined by the length of the wire used.

Fig. 8 Pyrolysis System PYS100

As exclusively halogen-free wires are used in the tests, the device can be employed in clean rooms such as for EDP systems. Neither toxic nor corrosive gases are produced.

The device can be used for testing volumetric and unit surveillance systems. Where necessary, the products of pyrolysis can be fed into the unit to be monitored, where they would be expected in a fire, by means of a flexible tube.

More detailed information on operation and application can be found in the PYS100 operating instructions. The device can be ordered from the following address:

WAGNER GmbH
Schleswigstrasse 5
30853 Langenhagen / Germany

3 Recording the fire test

3.1 Test record

A record must be made of each acceptance test fire with the following points:

- Location, date and time of the test
- Test participants
- Purpose of test
- Test set-up with system data
- Test result, assessment
- Conclusions from the test

A copy must be deposited in the system file with the customer.

3.2 Assessment of test results

The system actuates an alarm during or immediately after the acceptance test fire

➔ The system is operating correctly !

The system is unable to actuate an alarm during the acceptance test fire

➔ The system does not comply with the specifications ! -> The causes must be checked carefully ! -> Possibly repeat the test with measuring detectors (Analog signal).

The moment of alarm is only of secondary importance !
Far more important are the fire phenomena required to actuate an alarm.

3.3 Example of a record of an acceptance test fire

System: _____ Place: _____ Date: _____

Test room: _____ Test supervisor: _____

Participants: _____

Purpose of test: _____

_____

Test set-up:

Type of acceptance test fire and size: _____

Sketch of test set-up with room conditions and test fire location: on the reverse side

System data:

General:
Total room area: _____ m^2
Monitoring area: _____ m^2
Room height: _____ m
Number: _____

Detection system:
❑ Collective
❑ AnalogPLUS
❑ Interactive

Detectors used:
❑ PolyRex
❑ OptoRex
❑ ThermoRex
❑ Linear smoke detectors

Ceiling construction:
❑ Flat
❑ Gable
❑ Shed
❑ Special (sketch on reverse)
❑ Joists _____cm

Detector setting:
AnalogPLUS
❑ Standard
❑ Sensitive
❑ Integration ON

Interactive
Parameter set no. _____

Ventilation conditions:
❑ without change of air
❑ with change of air _____ times/h

Test result:

Alarm (yes/no): _____

Moment of alarm: _____
(after start of acceptance test fire)

Assessment
of results: _____

Consequences: _____

_____

Comments: _____

_____

Signature of test supervisor: _____

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