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<b>Technical Rules for Hazardous Substances</b>	<b>Fire Protection Measures</b>	<b>TRGS 800</b>
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The Technical Rules for Hazardous substances (TRGS) reflect the state of technology, occupational health and occupational hygiene as well as other sound knowledge for activities involving hazardous substances including their classification and labeling.

The

### **Committee on Hazardous Substances (AGS)**

compiles or adapts the rules and they are announced by the Federal Ministry of Labour and Social Affairs (BMAS) in the Joint Ministerial Gazette (GMBI).

The TRGS concretizes within its scope the requirements of the Hazardous Substances Ordinance. Provided the Technical Rules are complied with, the employer may assume that the relevant requirements of the Ordinance have been met. If the employer chooses a different solution, he must at least attain the same degree of safety and health protection for the workers.

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## 1 Scope

- (1) This TRGS 800 applies to activities involving combustible or oxidizing hazardous substances, where fire risks may arise.
- (2) This TRGS also considers the identification and evaluation whether the substances, preparations or articles during activities may lead to a risk of fire, also taking account of the substance properties, the work equipment, the processes and the work environment as well as their possible interactions.
- (3) The measures are intended to ensure the safety and health of workers and others as well as protection of the environment (e.g. against consequential damage due to fire gases, extinguishing agents etc.). In order to fulfil more extensive protective goals, such as the protection of material assets or safeguarding against operational interruptions, it may be necessary to take additional measures.
- (4) This does not affect any more extensive statutory requirements, such as hazardous incidents law or the Explosives Act.
- (5) If there is in addition to the risk of fire also a risk of explosion this must be considered in the light of the specific regulations. (see for example TRGS 720 ff/TRBS 2152 "Hazardous explosive atmosphere – General –" and subsequent parts).

## 2 Definitions

- (1) Combustible hazardous substances within the meaning of this TRGS are
  1. flammable substances and preparations/mixtures, labelled R10, R11 or R12,
  2. flammable gases, labelled H220 or H221,
  3. flammable aerosols, labelled H222 or H223,
  4. flammable liquids and vapours, labelled H 224, H 225 or H226,
  5. flammable solids, labelled H228,
  6. pyrophorus liquids and solids, labelled H250 and/or R17,
  7. self-heating substances and mixtures, labelled H251 or H252, and/or R11,
  8. substances or mixtures that in contact with water liberate extremely flammable gases, labelled H260 or H261 and/or R15,
  9. spontaneously decomposing substances/organic peroxides, labelled H240, H241 or H242 and/or R5
  10. explosive substances/mixtures labelled H200, H201, H202, H203, H204, H205 or EUH 001 and/or R1 to R4 or R15,
  11. ammonium nitrate and preparations containing ammonium nitrate given in the groups A to C and the subgroups DI and DII of Annex I No. 5 GefStoffV,
  12. combustible liquids with a flashpoint of > 60 °C,
  13. solids which experience shows are combustible (including paper, wood, polyethylene, polystyrene) and their dusts which are whirled up,
  14. other hazardous substances which do not come under Nos. 1 to 13, but which

experience still shows that they are combustible.

The following are equivalent to combustible hazardous substances:

- a) hazardous substances with physicochemical properties which exhibit the hazard statement H290, EUH006, EUH014, EUH018, EUH019, EUH044, EUH209 or 209A under CLP Regulation or transitionally the corresponding hazard feature R phrase R6, R7, R14, R16, R18, R 19, R 30 or R44 according to Directive 67/548/EEC,
  - b) articles from which substances according to Nos. 1 to 14 are released during activities.
- (2) Oxidizing hazardous substances are
1. substances and preparations/mixtures which have a classification in the hazard class "oxidizing gases", "oxidizing liquids" or "oxidizing solids" according to the CLP Regulation (H270, H271, H272) or transitionally exhibit the corresponding hazard feature "may cause fire" (R7, R8, R9) according to Directive 67/548/EEC,
  2. articles from which during activities substances according to No. 1 can be released.
- (3) A risk of fire within the meaning of this TRGS is the possibility that the safety or health of workers, other persons or the environment will be adversely affected because of the development or spread of a fire and related consequences such as heat or smoke.

### **3 Information gathering and risk assessment**

#### **3.1 Conduct of the risk assessment**

- (1) The assessment the risk of fire must be conducted within the framework of the risk assessment according to § 5 Occupational Safety and Health Act and Article 6 Hazardous Substances Ordinance (see also TRGS 400).
- (2) Annex 1 contains a catalogue of knowledge which the knowledgeable person must have – in addition to the requirements according Number 3.1 of TRGS 400 – when assessing the risk of fire. This knowledge can also be contributed by a number of persons.

#### **3.2 Information gathering**

##### **3.2.1 General information**

- (1) It must be determined whether activities with combustible or oxidizing hazardous substances are carried out or whether these can arise or be released during activities.
- (2) Prior to the commencement of the activity the following aspects must be checked as part of the information gathering:

1. the possibility of substitution of the combustible or oxidizing hazardous substances (see TRGS 600 "Substitution") and
  2. the possibility of changing the procedure adopted in the process in the direction of lower risk.
- (3) The risk assessment must take into account all factors that are relevant for the development, spread and impact of a fire. Hazards for workers or other persons arise in particular from smoke, other (toxic) products produced by a fire, heat and failure of components.
- (4) To assess the risk of fire it must be determined at which locations, in what quantities and in what condition combustible or oxidizing hazardous substances are present or may arise. The following must be taken into account in particular:
1. the existing hazardous substances and their dangerous properties, the spread of the fire in the initial phase, the fire products arising, e.g. particles, fumes and fire residues,
  2. work equipment used including installations,
  3. the mode of operation of the installations,
  4. working procedures involving a naked flame or high temperatures,
  5. structural, local and operational circumstances,
  6. working conditions, work organization and environment and
  7. possible interactions.
- (5) The assessment must be carried out taking into account the different operating states. Measures must be adapted as necessary to changing circumstances. In particular the following operating states must be considered:
1. normal operation including all the related activities of workers or other persons,
  2. start-up and shut-down of installations or work equipment,
  3. operational disturbances,
  4. foreseeable, unscheduled operation (e.g. incorrect application of work equipment which can be expected).
- (6) Operating states which necessitate special measures must always be assessed separately, e.g.
1. maintenance (servicing, inspection, repair, improvement) and
  2. start-up and shut-down of safety devices.
- (7) Aspects to be considered in addition include, for example
1. the presence and number of workers or other persons, especially persons not familiar with the local circumstances,
  2. accessibility for other persons and unauthorized intervention,
  3. persons with restricted mobility or perceptive capacity,
  4. special working conditions (long or confused escape routes, work on scaffolding),
  5. help period and equipment available to the fire brigade.

### 3.2.2. Identification of relevant characteristics/properties

(1) Information must be gathered on the relevant physicochemical properties of existing combustible or oxidizing hazardous substances and their assessment with regard to the risk of fire. Safety characteristics can be taken from, among other things, safety data sheets. In individual cases a special investigation may be necessary.

(2) In the evaluation of the safety characteristics it must be considered that, regardless of the testing procedure, deviating ambient parameters may be the basic factor.

### 3.2.3 Identification of ignition sources

(1) It must be identified whether relevant ignition sources are present or may arise due to unscheduled operating states and whether they may become effective under the given conditions.

(2) Consideration must be given to ignition sources due to the effect of:

1. thermal energy,
2. electric energy,
3. mechanical energy,
4. chemical energy.

Examples of known effective ignition sources are given in Annex 2. See also TRBS 2152 Part 3 and TRBS 2153.

### 3.2.4 Consideration of statutory licensing and other requirements

In the context of information gathering the following must be considered:

1. requirements under building law with respect to precautionary and preventive fire protection,
2. existing fire protection measures or where relevant existing measures from fire protection expert reports and fire protection plans in accordance with the construction permit or other permits,
3. where relevant results available from the risk assessment according to § 5 ArbSchG, Article 6 GefStoffV and § 3 BetrSichV, e.g. explosion protection documents according to § 6 BetrSichV,
4. where relevant available safety reports in accordance with § 9 of the Hazardous Incidents Ordinance,
5. where relevant existing protective measures based on more extensive protective goals, e.g. concerning environmental protection or the protection for material assets or safeguarding against operational interruptions.

### 3.3 Assessment of the fire risk

(1) The risk of fire must be assessed if combustible or oxidizing hazardous substances may be present in the areas to be assessed with the operating states to be assessed. Where a risk of explosion is possible this must be assessed according to the relevant regulations.

(2) The level of the risk of fire mainly depends on

1. the physicochemical properties and safety characteristics of the combustible hazardous substances
  - a) e.g. for solids/dusts:  
minimum ignition temperature of a layer of dust (smouldering temperature), ignition point, spontaneous ignition temperature, combustion factor, ignition temperature;
  - b) e.g. for liquids:  
flashpoint, combustion point, ignition temperature;
  - c) e.g. for gases:  
flammability (combustibility), explosion limits, minimum ignition energy, combustion rate),
2. their quantity, degree of dispersion (e.g. wood billets/woodchips) and distribution,
3. the effectiveness of the ignition source,
4. the physical parameters (e.g. temperature, air flows, air humidity, space volume, space area, space height) and other parameters (e.g. surface structures, wick effects).

(3) Normal risk of fire applies if classified combustible or oxidizing hazardous substances are only present in small quantities, and the probability of a fire developing, the speed of fire propagation and the related risk to workers and other persons from smoke or heat are comparatively small, such as in the use of offices<sup>1</sup>.

(4) High risk of fire applies if combustible or oxidizing hazardous substances are present not only in small quantities, if the development of a fire can be expected with a high probability, and a fast and uncontrollable propagation of fire or a large release of smoke or heat can be anticipated. High risk of fire may apply, for example, in working areas in:

1. petrochemical plants,
2. installations for chemical synthesis,
3. processes with and storage of hazardous substances with elevated risk of spontaneous ignition,
4. electroplating shops,
5. light metal working,
6. print shops,

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<sup>1</sup> The probability of a fire developing, the speed of fire propagation and the related risk to workers and other persons from smoke or heat is also described by the term fire potential.

7. tyre manufacture, rubber processing,
  8. chipboard works,
  9. sawmills,
  10. veneering shops,
  11. textile plants,
  12. mills,
  13. asphalt production,
  14. painting installations and paint driers that are operated with combustible solvents,
  15. cleaning installations which work with combustible solvents,
  16. large-scale chip fryers and deep fryers for commercial use,
  17. thermal oil heating installations,
  18. store for combustible or oxidizing hazardous substances in not only small quantities,
  19. activities with oxidizing, readily flammable, highly flammable or spontaneously flammable hazardous substances in not only small quantities in enclosed spaces, especially when they are located in the immediate vicinity of people or
  20. building sites with open-flame operations under special local and operating conditions.
- (5) Increased risk of fire applies if a criterion for the normal risk of fire is not fulfilled or not all criteria for a high risk of fire are fulfilled.
- (6) According to the fire risk identified measures must be fixed in accordance with Number 4.

## **4 Establishment of measures**

### **4.1 General, basic obligations**

- (1) Based on the evaluation according to Number 3.3 the measures are to be taken with the following order of priority:
1. Under the substitution order of the Hazardous Substances Ordinance preference must be given to the use of non-combustible or non-oxidizing hazardous substances.
  2. If substitution according to 1 is not possible in view of the state of the art, the risk of fire must be limited to a degree which is compatible with the protection of workers or other persons (see Number 4.2).
- (2) If, with an increased or high risk of fire further fire protection measures in addition to the requirements under building and workplaces law are needed for activities involving combustible or oxidizing hazardous substances, they must be selected and laid down by the employer within the framework of a risk assessment and adjusted to the operating circumstances (see also Annex 3).

(3) In addition to the general protective measures described in the present TRGS sector-specific aids can be referred to on a case-by-case basis. If the employer establishes the protective measures by referring to a sector-specific aid, he must satisfy himself that this will achieve the protective level of the present TRGS.

## **4.2 Fire protection measures**

(1) If the assessment reveals that only a normal risk of fire applies, under this rule no additional measures are required. This assumes that the protection of workers and other persons through measures taken under the Workplaces Ordinance, Plant Safety Ordinance and building law is sufficient. If, in areas with normal risk of fire, activities involving an increased or high risk of fire are performed from time to time in addition to those already assessed, the measures required must be laid down in each individual case (e.g. by means of a work release procedure).

(2) In the case of increased or high risk of fire, measures which go beyond paragraph 1 must be taken. These can be chosen taking account of the examples for measures with increased or high risk of fire referred to in Table 1. The examples for measures involving increased or high risk of fire as given in the table partly build up on one another and describe the protection level of the measures to be taken. The measures for high risk of fire may also replace the measures for increased risk of fire.



**Table 1: Examples of protective measures**

			Normal risk of fire Basic obligations according to ArbStättV, BetrSichV and building law	Increased risk of fire – in addition to the basic obligations –	High risk of fire – in addition to the basic obligations and to the obligations in the case of an increased risk of fire –	
1	Reduction of risk of fire	a	Reduction or limitation of the quantity of combustible or oxidizing hazardous substances as well as prevention of uncontrolled release	No additional measures. The following is assumed: regular cleaning and immediate removal of deposits and product escapes.	Use of hazardous substances which involve a lower fire risk, Reduction of quantity, Use of a tight enclosure with increased resistance (e.g. packaging permissible under hazardous goods law). Spatial separation, e.g. safety or protective distances. Shut-down of feed flows into and out of the risk areas if this reduces the risk of fire.	Division of the substances involving fire risk into areas/safety cubicles separated by fire-resistant means. Fire protection dimensioning of the enclosures as part of the installation. Leak detection Double-walled systems Collection rooms, retention system, drainage to a safe area.
		b	Avoidance of the development of fire	No additional measures. The following is assumed: Regular checks, use of products which have been placed on the market according to the statutory provisions, e.g. according to the German Equipment and Product Safety Act (GPSG) or ordinances under the GPSG and are suitable for the intended use.	Avoidance of ignition sources, Use of tight enclosures with increased resistance (e.g. packaging permissible under hazardous goods law) Spatial separation, e.g. protective distances. Use of instrumentation and control equipment, e.g. temperature monitoring, automatic disconnection Special requirements for equipment, e.g. IP protection. Appropriate lightning and excess voltage protection (internal, external) Labelling with the warning sign W 001 "Flammable material" Application of work release procedures (e.g. in activities involving naked flame,	Avoiding the input of ignition sources into the interior of installations by means of technical measures Inertization Oxygen reduction

				Normal risk of fire Basic obligations according to ArbStättV, BetrSichV and building law	Increased risk of fire – in addition to the basic obligations –	High risk of fire – in addition to the basic obligations and to the obligations in the case of an increased risk of fire –
					working with pure oxygen) Guaranteeing appropriate supervision Use of personal protective equipment to avoid ignition sources Prohibition of fire and naked light Prohibition of smoking	
		c	Limitation of fire and smoke propagation	No additional measures. It is assumed that there is a basic stock of fire extinguishers available.	Structural separation dimensioned ade- quately for the purpose of fire protection. Suitable fire detection and prompt orga- nizational fire protection measures and extinguishing measures Smoke extraction system, formation of smoke sections If necessary special extinguishing agents Training of a greater number of workers for fire fighting	Blanket coverage or object-related fire alarm system with fire control and alarming of fire brigade. Extinguishing system Co-ordinated company fire-fighting measures (e.g. company or works fire brigade)
2	Self- rescue of workers or others	a	Early detection of a fire	No additional measures; (needed in the case of special structures accord- ing to building regulations of the fed- eral states)	Inspection (CCTV, rounds, presence of personnel) Suitable fire detection	Blanket-coverage or object-related fire alarm system alerting workers or other persons, organizational measures alone are normally not sufficient.
		b	Facilitate es- cape from a fire	No additional measures; requirements according to ArbStättV and building regulations of the federal states. Es- cape routes must be kept clear. It is assumed that there is a suitable alarm system (organizational meas- ure, manual sirens etc).	Shortening of escape routes, additional emergency exits, additional escape route Evacuation practices	Giving of alarm (by technical installation such as optical-acoustic alarm system) etc.) Delegation of individuals to organize escape from the building Special aids, e.g. escape hoods

				Normal risk of fire Basic obligations according to ArbStättV, BetrSichV and building law	Increased risk of fire – in addition to the basic obligations –	High risk of fire – in addition to the basic obligations and to the obligations in the case of an increased risk of fire –
3	External rescue of persons who are shut in and/or in- jured	a	Minimization of the number of persons who rely on external rescue	No additional measures	No additional measures.	Creation of protection areas (e.g. res- cue cabins) Regulation of access
		b	Facilitate res- cue of endan- gered persons	No additional measures; regulated by building law, strategy of second res- cue route.	Design of escape routes or rescue equipment. Prohibition of working alone Establishment of collection points	Special aids (e.g. articulated masts, long-term respiration equipment)
		c	Adequate sta- bility of support structure	No additional measures. Minimum stability regulated by build- ing law.	Stability must be increased where neces- sary Smoke and heat extraction systems	Stability must be increased (e.g. by increasing the fire resistance, cooling, spray systems)

## **5 Check of the effectiveness of protective measures**

- (1) The effectiveness of the protective measures taken or to be taken must also be checked as part of the risk assessment. It must thus be ensured that during the time of the activity the risk to workers or other persons due to the development or propagation of a fire is reduced to the required level. If necessary the protective measures must be adapted to fit the state of the art.
- (2) In general it is not possible to check the effectiveness of the technical protective measures taken prior to the onset of a fire. It must therefore be determined as part of a plausibility check whether the technical and organizational protective measures taken can be expected to produce the desired success individually or in combination. The protective measures selected must be examined with respect to possible interactions and if necessary adjusted and adapted. Counterproductive interactions are to be avoided.
- (3) The individual technical protective measures must be checked for the first time and then regularly with respect to their adequate functioning, reliability and effectiveness in accordance with the appropriate inspection, maintenance or installation regulations or the relevant regulations. This must be done at least every third year if shorter intervals are not required as a result of the risk assessment according to § 5 ArbSchG/safety evaluation. The information given by the manufacturers and the statutory specifications (e.g. GefStoffV, BetrSichV and building law) must be adhered to.
- (4) The results of the checks must be documented in a suitable form.
- (5) If circumstances change (e.g. changes of use) the measures must be checked and where necessary adapted.

## **6 Documentation**

- (1) The documentation must be conducted according to Article 6 GefStoffV and is part of the documentation according to § 6 ArbSchG.
- (2) Minimum information on the documentation is given in TRGS 400 Number 8 and TRBS 1111.
- (3) Existing sets of documentation can be used or supplemented.

### **Literature**

#### **EU Regulations and Directives, German Acts and Ordinances**

- [1] Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (CLP Regulation) and ATP Regulations

- [2] Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (Dangerous Substances Directive) (Official Journal of the European Communities No. L 196 p. 1 and amending or ATP Directives
- [3] Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packing and labelling of dangerous preparations (Dangerous Preparations Directive) (OJ L 200, 30.7.1999, p. 1) and amending or ATP Directives
- [4] Act on the performance of occupational safety and health measures to improve the safety and health protection of worker at work (Occupational Safety and Health Act – ArbSchG) of 7 August 1996 (BGBl. I p. 1246)
- [5] Ordinance on safety and health protection in the provision of work equipment and its use at work, on safety in the operation of plants subject to mandatory inspection and on the organization of occupational safety and health (Plant Safety Ordinance – BetrSichV) of 27 September 2002 (BGBl. I p. 3777), last amended Art. 8 V of 18.12.2008 I 2768
- [6] Ordinance on protection against hazardous substances (Hazardous Substances Ordinance – GefStoffV) of 23 December 2004 (BGBl. I p. 3758)

**Technical Rules, Announcements on Hazardous Substances (BekGS), glossary of terms (at <http://www.baua.de>) and standards**

- [1] TRGS 200 "Classification and labelling of substances, preparations and articles"
- [2] TRGS 201 "Labelling for activities involving hazardous substances" (in preparation)
- [3] BekGS 220 "Safety Data Sheet"
- [4] TRGS 510 "Storage of hazardous substances in non-stationary containers"
- [5] TRGS 721 "Dangerous explosive atmosphere – Assessment of the risk of explosion"
- [6] TRGS 722 "Avoidance or containment of dangerous explosive atmosphere "
- [7] Glossary of terms for the regulations of the Plant Safety Ordinance (BetrSichV), Biological Agents Ordinance (BioStoffV) and der Hazardous Substances Ordinance (GefStoffV)
- [8] TRBS 1111 Risk assessment and safety evaluation
- [9] TRBS 2152 Part 3 Dangerous explosive atmosphere – Avoidance of ignition of dangerous explosive atmosphere
- [10] Workplace Rule ASR A2.3 Escape routes, emergency exits, escape and rescue plan
- [11] EN 1127-1:2007 Explosive atmospheres. Explosion prevention and protection. Part 1: Basic concepts and methodology
- [12] EN 14 378:2001 "Safety of machinery, fire protection "

## Annex 1 to TRGS 800

### Knowledge needed to ensure the knowledgeable conduct of the risk assessment

(1) The conduct of the risk assessment for activities involving hazardous substances which give rise to a risk of fire demands the following in accordance with Number 3.1 of the present TRGS, knowledge of

1. chemical and physical processes during combustion (fire and extinguishing theory),
2. the risks due to the combustible substances used,
3. the relevant activities involving hazardous substances in the respective sector,
4. the relevant statutory regulations,
5. substitutions of hazardous substances,
6. protective measures according to Number 4,
7. rescue,
8. check of the effectiveness of protective measures according to Number 5.

(2) The extent and depth of the knowledge needed may vary according to the areas and operating states to be assessed.

(3) In the following list the major basics are given:

1. Occupational Safety and Health Act, Hazardous Substances Ordinance, Plant Safety Ordinance, Workplaces Ordinance, building regulations of the federal states and other statutory building regulations,
2. classification of dangerous substances and preparations, in particular if a classification by the employer is necessary under Number 3.2.2 (TRGS 200, TRGS 201),
3. labelling of hazardous substances,
4. structure and content of the Safety Data Sheet,
5. procedure to be adopted for information gathering according to Number 3,
6. procedure to be adopted in the assessment of physicochemical risks (in particular TRGS 400, TRGS 720 – 722),
7. protective measures (TRGS 500),
8. procedure to be adopted in the checking of substitutes according to TRGS 600,
9. Technical Rules for Plant Safety (TRBS), in particular TRBS 1111,
10. Technical Rules for Workplaces, in particular ASR A 2.3 "Escape routes, emergency exits, escape and rescue plan",
11. possibilities for checking the effectiveness of protective measures according to Number 5,
12. documentation obligations according to Number 6.

(4) The risk assessment in the area where there is a risk of fire may be relatively simple, but can also be extremely complex, and hence the requirements regarding the depth of specialist knowledge may vary considerably. It therefore often makes sense to obtain the necessary knowledge by assigning a number of people. The knowledge can be made available by combination of personnel (e.g. specialist for occupational safety and health with additional knowledge in fire protection or a fire protection officer with additional knowledge on risk assessment and hazardous substances, or other combinations).

## Annex 2 to TRGS 800

### Possible ignition sources according to Number 3.2.3

See also TRBS 2152 Part 3/EN 1127-1 No. 5.3 and EN 13 478 – Safety of machinery – fire protection – Number 4.4

#### 1. Heat energy

This group of ignition sources is assigned, for example, to:

- a) heating systems,
- b) internal combustion engines,
- c) naked light or flame and the related radiated heat,
- d) hot surfaces,
- e) welding splashes,
- f) laser or other powerful radiation sources.

#### 2 Electric energy

This group of ignition sources is assigned, for example, to:

- a) electric lighting devices such as lamps,
- b) electromagnetic radiation,
- c) electric short circuit,
- d) electric arcs,
- e) earthing faults,
- f) conductor fault,
- g) operation-related earth leakage currents,
- h) equalization currents,
- i) lightning strike,
- j) discharge of static electricity,
- k) loose contact,
- l) excessive warming due to overload,
- m) inductive warming,
- n) unadjusted electric connection.

#### 3. Mechanical energy

This group of ignition sources is assigned, for example, to:

- a) friction (e.g. as bearing running hot),
- b) ultrasound,
- c) impact, shock,
- d) scraping,
- e) compression (including adiabatic compression).

#### 4. Chemical energy

This group of ignition sources is assigned, for example, to:

- a) self-heating,
- b) spontaneous ignition,
- c) catalytic reactions (lowering of activation energy),
- d) continuous exothermic reactions.



## Annex 3 to TRGS 800

### Checklist for check of protective measures according to Number 5 (2) (plausibility check of the results of risk assessments [see also Number 4.1 (2)])

The following questions serve to conduct a structured check for the plausibility of protective measures with an increased or high risk of fire. The depth of detail of the required information depends on the specific case.

1. Is there a description of the activity or installation and the local situation?
2. Are all anticipated operating states assessed?
3. Is the type of use of the combustible or oxidizing hazardous substances described?
4. Is the area to be assessed exactly defined (delimitation in relation to other areas)?
5. Does the use of the room/building conform to the use permitted under building law?
6. Is the number of workers or other persons known? Are there persons present who have restricted mobility or perception?
7. Are all effective ignition sources identified and evaluated?
8. Has the possibility of substituting the combustible or oxidizing hazardous substance been checked (substitution)?
9. Is the combustible or oxidizing hazardous substance only present in the required quantity?
10. Have the escape and rescue routes (length, number) been evaluated with a view to their safe use and alarm for evacuation of the building?
11. Are additional measures (e.g. accessibility for the fire brigade, supply of extinguishing agent) required for effective fire fighting?
12. Are fire alarm systems or extinguishing systems needed because of a high risk of fire?
13. Are additional measures (e.g. emergency power supply) needed because of a high risk of fire?
14. Has the need for additional qualifications and course of instruction for workers been checked?
15. Has the need for a restriction of access to the area being assessed been checked?
16. Has the need for special work clothing been checked?