



## Supplement to the Technical Regulations of Deutsche Messe AG governing the use of hydrogen

With regard to the use of hydrogen, the following regulations must be observed:

- Ordinance regulating pressure vessels, pressurized gas containers and filling plants (*Pressure Vessel Ordinance*) of 21 April 1989 (*BGBI. 1*, page 843) in its currently valid version.
- Recommendation for pressurized equipment, Recommendation 97/23/EG of the European Parliament and Council of 29 May 2001 to align the statutory regulations of member states governing pressurized equipment (*ABl. EG No.: L 181* (page 1) of 9 July 1997).
- Technical Regulations for Pressure Vessels (*TRB*) in the currently valid versions.
- Technical Regulations for Pressurized Gases (*TRG*) in the currently valid versions.
- Accident Prevention Regulations – “Gases” (*BGV B 6*, previously referred to as *VBG 61*) in the version of 1 January 1997 with the accompanying Implementation Instructions of April 1997.
- Accident Prevention Regulations – “Work on Gas Pipes “ (*BGV D2*, previously referred to as *VBG 50*) in the version of 1 April 1988 with the accompanying Implementation Instructions of April 1988.
- Instruction Sheet: “Hydrogen”, Instruction Sheet M 055, *BGI 612* (previously referred to as *ZH 1/288*), issued in July 1991.

### Stand construction regulations

1. During the stand design stage and when selecting stand construction materials, please observe the structural requirements stipulated in the above-mentioned technical regulations.

2. All stand construction and decoration materials as well as fittings must be certified to comply with fire classification B 1 in accordance with DIN 4102, Part 1.

In the event that it is not possible to provide certification of fire safety, all floor areas below the respective stands must be made of non-combustible materials, e.g. sheet steel.

3. Inflammable materials and substances such as combustible liquids, wood, paper, packaging material, rubber or plastics must not be stored or made available for use within a radius of 5 m surrounding pressurized gas containers.
4. All pressurized gas containers must be surrounded by a safety area. These safety areas correspond to Zone 2 in accordance with § 2, Section 4, No. 1, Letter c ElexV. Electrical equipment without explosion protection must not be located in these areas.

The safety areas for hydrogen are:

Radius = 2 m (cylindrical space surrounding the pressurized gas containers)

Height = 2 m (hemispherical region above the bottle valve).

5. In the event that the prescribed safety area cannot be complied with, pressurized gas bottles must be stored in appropriate safety cabinets for bottled gas.
6. Indication of the existence of the safety areas and the explosion hazard must be given in the form of warning signs, in several languages where necessary. For fire prevention reasons it also necessary to provide appropriate warning signs prohibiting open flames and smoking. These must be clearly legible and also in several languages, where necessary.
7. Stand personnel must ensure that persons in the vicinity of plant or machine components consuming hydrogen refrain from smoking and from handling open flames.
8. At each stand, at least one properly functioning fire extinguisher with fire classification B approval must be available, which must be easily and quickly accessible at all times. The performance rating of fire extinguishers should be equivalent to at least 6 extinguishing units (6 kg) in accordance with *BGR 133* (previously referred to as ZH 1/201) The fire brigade responsible reserves the right to stipulate further requirements where necessary.

The locations of the available fire extinguishers must be clearly signposted.

9. Stand personnel must be made acquainted with the handling of fire extinguishers, e.g. by means of fire drills.
10. Pressurized gas containers filled with hydrogen must be installed at stands in such a way that they are not exposed to any fire load, i.e. inflammable objects must be located at least 5m from container walls. In the event that

the aforementioned stipulation cannot be met, at least one person familiar with the fire safety installations must be assigned to each pressurized gas container, whose task it is to immediately implement safety measures such as valve shut-off etc. in the event of any leakage of hydrogen.

11. In the case of two-story stands the use of hydrogen is not permitted on either the ground floor or the upper floor.

## Technical safety regulations and accident prevention

1. Whenever any use of hydrogen is intended, prior written notification of this intent must be given to Deutsche Messe AG, including details on the proposed location.
2. You are urgently advised not to bring your own pressurized gas containers. We recommend that you order hydrogen gas according to your needs from the local supplier stated below, such that only the amount of gas you require each day (maximum volume 50 l) is on hand at your stand at any given time.
3. The provision of pressurized gas containers is only permissible on the stand area rented by the user.
4. Pressurized gas containers must be prevented from falling over, e.g. by securing them with chains or similar.
5. The storage of hydrogen within the halls is not permitted.
6. Written verification must be provided (e.g. in the form of manufacturer certifications) to the effect that the proposed equipment is functionally suitable for the intended purpose and is properly safeguarded against any possible exceeding of permissible operating overpressures of plant and machine components which are exposed to hydrogen, such as containers, fuel cells, fittings, safety devices, pipelines and hoses.

Devices for safeguarding against excessive operating overpressure include, for example, component-tested safety valves, component-tested rupture disks and component-tested safety pressure control valves.

*Pressure control devices must not be used as pressure safety devices.*

7. All plant or machine components used in connection with hydrogen must be checked for leaks twice each day, once before and once after opening hours, by a technically qualified person using suitable foaming agents.
8. At times when display stands are not supervised by qualified technical staff, plant or machine components used in connection with hydrogen must be cordoned off to avoid tampering by unauthorized persons, and organizational measures such as the posting of security staff must be implemented to ensure that unauthorized persons have no access to such stand areas.
9. Empty pressurized gas containers may only be replaced outside of the opening hours of the exhibition.
10. The emptying of pressurized gas containers (which must comply with the requirements of the "Pressure Vessel Ordinance") at individual stands is only permissible provided the following measures are adhered to:

Exhibits may only be filled with hydrogen provided a verification of suitability and safety is submitted, e.g. a manufacturer certification, certification of initial testing in accordance with the "Pressure Vessel Ordinance" or Recommendation R 97/23/EG.

Pressurized gas containers for hydrogen may only be emptied using extraction devices which are: a) are suitable for hydrogen; b) guarantee a safe and gas-tight connection to the pressurized containers; and c) which are free of defects.

Pressurized gas containers must be emptied in such a way that no backflow of foreign substances into the containers can occur.

After connecting a new pressurized gas bottle, proper connection must be certified by a professionally qualified person by means of a leakage test.

11. Pressurized gas containers for hydrogen are subject to an approval test by a Technical Consultant in accordance with § 9 of the "Pressure Vessel Ordinance", which must be confirmed by an approval certificate. This certificate must be retained at the stand for inspection on request by Deutsche Messe AG.
12. Staff employed at the exhibition stands must be informed of the possible hazards involved with handling hydrogen, and must receive detailed instruction on the safety measures to be taken.
13. Any occurrences of hydrogen leakage must be immediately reported to the works fire brigade of Deutsche Messe AG, tel. +49 (0)511 - 89-112.
14. In addition to observing and complying with all the above-mentioned points, we recommend that machine and plant components be checked before the trade fair by the technical inspection authority (see below).

**Deutsche Messe AG**  
Services for Exhibitors

<b>Technical inspection authority:</b>  TÜV Hannover/Sachsen-Anhalt Niederlassung Hannover Am TÜV 1 30519 Hannover / Germany  Tel. +49 - (0)511 - 986-0 Fax +49 - (0)511 - 986-1632	<b>Hydrogen supplier:</b>  Linde Gas AG Entenfangweg 6 30149 Hannover / Germany  Tel. +49 - (0)511 - 27993-42 Fax +49 - (0)511 - 27993-11
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