

**Ordinance**  
**relating to**  
**Work in Compressed Air**  
(Compressed Air Work Regulations)

of 4<sup>th</sup>. October 1972  
as amended on 18<sup>th</sup>. December 2008

issued by the

**TBG**

**Tiefbau-Berufsgenossenschaft**  
-Statutory Accident Insurance Association -

Obtainable from the:  
Tiefbau-Berufsgenossenschaft, Technischer Aufsichtsdienst,  
Landsberger Strasse 309, 80687 München, Germany  
Reference No.781  
(ZH 1/479)

## Compressed Air Ordinance

---

<b>CONTENT</b>	<b>§</b>	<b>Page</b>
Scope	1	4
Definition of Terms	2	4
Notification	3	4
General Requirements	4	5
Further Requirements	5	6
Exemption Permit	6	6
Testing by Experts	7	6
Official Decision	8	7
Prohibition of Employment	9	7
Preventive Medical Examinations	10	7
Other Preventive Medical Actions	11	8
General Responsibilities and Accessibility of the Authorized Physicians	12	8
Authorised Medical Physicians	13	9
Arrangement of Medical Actions	14	9
(deleted)	15	9
(deleted)	16	9
Decompression Chambers, Waiting Rooms and Sanitary Facilities	17	10
Appointment of Qualified Personnel	18	10
Supporting Documents	19	11
Instruction of Employees	20	12
Lockout- and Waiting Time	21	12
Criminal and Regulatory Offences According to the Labour Protection Law	22	12
Regulatory offences in Accordance with the Hours of Employment Law	23	13
(deleted)	24	13
(deleted)	25	13
Effective Date	26	13

## Compressed Air Work Regulations

---

	<b>Pages</b>
Appendix 1: (Sections 4 and 17. subsection 2 of the Ordinance relating to Work In Compressed Air)	14 - 20
Appendix 2: (to § 21 subsection 1) Decompression and Waiting Times	21 - 40
Table 1: Decompression with oxygen under normal operating conditions	22 - 27
Emergency Table 1: Decompression with compressed air upon technical failure of the oxygen apparatus	28 - 33
Emergency Table 2: Decompression with oxygen in emergencies when the permissible working time is exceeded	34 - 35
Emergency Table 3: Decompression with compressed air upon technical failure of the oxygen apparatus and when the permissible working time is exceeded	36 - 40
Appendix 3: (In accordance with section 18 subsection 1 No. 4 of the Ordinance Relating to Work In Compressed Air) Instructions for Air-lock Attendants	41 - 42

**Ordinance relating to Work in Compressed Air  
(Compressed Air Work Regulations)**

**Reference No.781**

**dd. 4<sup>th</sup> October 1972 as amended on 19<sup>th</sup> June 1997 latest change on the 18<sup>th</sup> December 2008**

Pursuant to:

1. section 18 of the Labour Protection Law (Arbeitsschutzgesetz) of 71h August 1996 (Federal Law Gazette 1, p. 1246)
2. section 1 clause 1 of the Hours of Employment Law (Arbeitszeitgesetz) of 61h June 1994 (Federal Law Gazette 1, p. 1170), the Federal Government decrees that:

**§1**

**Scope**

- (1) This Ordinance shall apply to work in compressed air insofar as this is performed on a commercial basis by an employer.
- (2) This Ordinance shall not apply to work in diving bells without air-locks and to diving work.

**§2**

**Definition of Terms**

- (1) Within the meaning of this Ordinance
  1. **Working chambers** are deemed to be rooms in which work is performed in compressed air
  2. **Personnel air-locks** are deemed to be access ways through which solely persons are transferred into or out of working chambers
  3. **Material air-locks** are deemed to be access ways through which solely material is transferred into or out of working chambers
  4. **Combined air-locks** are deemed to be access ways through which employees and material are transferred into or out of working chambers
  5. **Treatment chambers** are deemed to be rooms which, irrespective of the working pressure of a working chamber, are used for treating persons suffering from the effects of compressed air as well as for trial transfer through an air-lock according to medical instructions.
- (2) Within the meaning of this Ordinance, compressed air is deemed to be air with an overpressure of more than 0.1 bar. The working pressure is the overpressure which exceeds the atmospheric pressure.

**§3**

**Notification**

- (1) Should an employer wish to perform work in compressed air, he must notify the competent authorities of same, at the latest, two weeks in advance.
- (2) The notification in accordance with subsection 1 shall include:
  1. the name or company and the address of the employer and, should several employers have joined forces to form a partnership under civil law (joint venture) to execute a specific project and do not jointly manage the affairs, the name and the address of the employer who has been entrusted with the management

2. the name of the person who will be in charge of the work in compressed air and his deputy (section 18 subsection 1 No.1)
3. the name and address of the medical physicians commissioned in accordance with section 12 subsection 1
4. the number of employees expected to be engaged in the work in compressed air
5. the expected duration of the work in compressed air
6. the expected highest working pressure
7. the soil conditions to be expected
8. (deleted)

As additional documents have to be enclosed:

1. an officially certified copy of the certificates of qualification in accordance with section 18 subsection 2 and the instruction sheet stipulated in section 20 subsection 2
  2. a location plan of the job site
  3. a description of the working method when working in compressed air
  4. a description and layout drawings of the working chambers, the air-locks and the compressor units
  5. data regarding the equipment in accordance with section 17 subsection 1.
- (3) Should, since notification, changes have occurred or be intended regarding the content of the notification or the supporting documents, the competent authorities are to be notified immediately in writing of same.

### **§4**

#### **General Requirements**

- (1) The working chambers and the equipment used for the operation of same, must be structured, designed and operated according to numbers 1 and 2 of Appendix 1 to this Ordinance and, for the rest, according to the generally accepted rules of technology.
- (2) Insofar as working chambers and the equipment used for the operation of same are also subject to regulations which incorporate Community Directives into German law, the requirements in accordance with such regulations shall apply with respect to the structure and design of same; conformity with such requirements must be determined and confirmed in accordance with the procedures stipulated in said regulations. In so far, within the framework of the notification in accordance with section 3, as well as the inspections prior to start-up in accordance with section 7, a verification of the observance of such requirements with respect to the structure and design shall be dispensed with.
- (3) In the case of working chambers and equipment used for the operation of same which are legally manufactured and marketed in accordance with the regulations or requirements applicable in another member state of the European Community or in another state party to the Agreement relating to the European Economic Area and which ensure the same degree of safety, it shall be assumed that the requirements in accordance with subsection 1 regarding the structure and design in terms of safety have been met. In justified individual cases proof that the requirements in accordance with subsection

1 have been met are to be furnished upon request by the competent authorities. Standards of the German Institute for Standardisation or other technical rules shall apply by way of example and shall not exclude other solutions which are at least equally safe and which, in particular, have also found expression in standards or technical regulations or requirements of other member states of the European Community or other states party to the Agreement relating to the European Economic Area. Insofar as this Ordinance provides for the submission of expert opinions of German bodies as proof that the safety requirements within the meaning of subsection 1 have been met, test reports from accredited bodies in other member states of the European Community or in other states party to the Agreement on the European Economic area will also be taken into consideration provided the technical requirements, tests and test procedures on which the test reports of such bodies are based are equivalent to those of the German bodies. Such bodies are, in particular, those which meet the requirements to be placed on them, which are, in particular, laid down in harmonized European Standards, the source of which has been made known by the Federal Minister for Labour and Social Affairs in the Federal Labour Gazette. Provisions of this Ordinance for the purpose of incorporating legal instruments of the Council of the European Union or the Commission of the European Community shall remain unaffected.

### **§5**

#### **Further Requirements**

The working chambers and the equipment used for the operation of same must be in conformity with the requirements going beyond the provisions in section 4 subsection 1, which are placed by the competent authority in the individual case to avert particular risks for the employees.

### **§6**

#### **Exemption Permit**

The competent authority may permit exemptions from the provisions in section 4 subsection 1, section 9, subsection 1, section 21, subsection 4 and from the prohibition of employment of employees who have attained the age of 50 years (section 9 subsection 2 No.1) should there be special reasons for same and protection of the employee is ensured in another way.

The exemption authorisation must be applied for in writing. Should there be deviations from the provisions in section 4 subsection 1, a report of an officially recognised expert must be enclosed to the application form. In case of deviations from the provisions described in section 9 subsection 1, 2 or section 21 subsection 4, a report of the authorised physician has to be attached. By means of these two reports it shall be documented if the protection of the employee is guaranteed. It must be decided on the application within a period of time of four weeks after the responsible authority has received it. This period of time may be prolonged in justified cases. The authorisation is regarded as granted, if the responsible authority does not prohibit the employment within the aforementioned period of time.

### **§7**

#### **Testing by Experts**

- (1) The working chambers may be operated only when
  1. the air-locks and shaft cylinders of a chamber in which a higher working pressure than 0.5 bar may prevail and
  2. the electrical systems have been tested by an officially recognised expert in accordance with subsections 2 and 3 and said expert has found that same meet the requirements of the Ordinance and he has issued a test certificate to this effect.

- (2) The following tests must be performed
1. Air-locks and shaft cylinders
    - a) prior to their Initial start-up
    - b) recurrently, prior to their start-up after they have been reinstalled for the third time, at least, however, prior to the end of three years from completion of the last test by an officially recognised expert
    - c) after major modifications,
  2. the electrical systems prior to start-up of the working chamber and after major modifications.
- (3) The inspection of the air-locks and shaft cylinders comprises,
1. prior to the initial start-up:
    - a) a building inspection
    - b) a water-pressure test with a test pressure which must be 1.5 times the maximum permissible working pressure
    - c) an acceptance test
  2. in the case of recurrent tests prior to start-up, comprises:
    - a) an internal inspection
    - b) a water-pressure test with a test pressure which must be 1.5 times the maximum permissible working pressure
    - c) an external inspection.
- Should the air-lock system be part of the structure and a water-pressure test in accordance with number 1 letter b and number 2 letter b not, therefore, be technically possible, another test equivalent thereto is to be performed. The water-pressure test in accordance with number 2 letter b is dispensed with should there be concern that, during same, permanently installed devices and installed components will be damaged and should an atmospheric- pressure test with 1.1 times the highest permissible operating pressure be performed.
- (4) In cases of damage or for a special reason, the competent authority may require supplementary tests in the individual case. This shall also apply with respect to working chambers with a maximum permissible working pressure of less than 0.5 bar.

## **§8**

### **Official Decision**

(deleted since 07/2005)

## **§9**

### **Prohibition of Employment**

- (1) Employees may not be employed in compressed air with an overpressure of more than 3.6 bar.
- (2) The following persons may not be employed in compressed air:
  1. Employees under 18 or over 50 years of age.
  - (2. deleted since 07/2005)

**§ 10**  
**Preventive Medical Examinations**

For the range of the work medical precautions the prescription is valid to the work medical precautions of December 18th 2009 (BGBL. I S. 2768), this one in the appendix part 3 contains a cause for compulsory medical examinations in the respectively current version.

**§11**  
**Other Preventive Medical Actions**

- (1) Employees who
  1. became ill as a result of working in compressed air (decompression sickness)
  2. have interrupted their work for more than one day due to other illnesses or
  3. are suffering from a cold or otherwise do not feel well, may only continue to be employed in compressed air after they have presented themselves to the authorised medical Physicians and same has found that, in terms of health, there are no reservations regarding continued employment.
- (2) Upon request by the employer or employee, the medical physicians shall issue a certificate concerning his diagnosis in accordance with subsection 1. Section 8, subsection 2 of the prescription to the work medical precautions is correspondingly valid

**§ 12**  
**General Responsibilities and Accessibility of the  
Authorised Medical Physicians**

- (1) The employer shall delegate responsibility for arranging for implementation of the measures necessary to prevent health risks for employees who are engaged in work in compressed air, for advising the employees in the field of industrial medicine and for treating employees suffering from decompression sickness to a medical physicians authorised in accordance with section 13, who is physically fit in terms of compressed air. The employer shall ensure that said medical physicians can be contacted at all times during working hours and attendance waiting times and is available at the work site within a reasonable period of time, being continuously at the work site when work is being performed at a working pressure of more than 2.0 bar.

The employer shall oblige the medical Physicians to inform himself, through the specialist appointed in accordance with section 18 subsection 1 No.1, of the work-specific and local conditions of the work site and to familiarise himself with same by means of regular inspections.

The competent authority may, in well-founded individual cases, allow exemption from the obligation to ensure that, with a working pressure of more than 2.0 bar, a medical physician is constantly available at the work site.

The application for authorisation shall include indications by which other measures the initial treatment of employees suffering from compressed-air disease is guaranteed. It must be decided on the application within a period of time of four weeks after the responsible authority has received it. This period of time may be prolonged in justified cases. The authorisation is regarded as granted, if the responsible authority does not prohibit the employment within the aforementioned period of time.



- (2) The employer shall display the name, address and telephone number of the authorised medical physicians at the work site at an appropriate place accessible to all employees, in particular in the personnel air-lock and the waiting room, and shall keep the notice in a clearly legible state.

**§ 13**

**Authorised Medical Physicians**

Medical physicians who are employed in accordance with this Ordinance must be qualified in occupational medicine as well as have knowledge with regard to work in compressed air and be authorised by the local authority.

**§ 14**

**Arrangement of Medical Actions**

- (1) The employer shall, at his expense, arrange for the medical actions in accordance with sections 11 and 12, subsection 1.
- (2) He shall inform the medical practitioner of the maximum working pressure under which the employee will be working and of the work which he is to carry out.

**§15**

**Official Decision**

(deleted)

**§ 16**

**Health Record**

(deleted)

**§ 17**

**Recompression Chambers, Waiting Rooms and Sanitary Facilities**

- (1) The employer shall ensure that the following facilities are available at the place where the working chamber is operated:
1. In the case of a working pressure of 0.7 bar or more, a treatment chamber, which must be designed for a working pressure of at least 5.5 bar
  2. a room for medical examinations and treatment
  3. a rest-room
  4. a changing room
  5. a drying room
  6. the necessary sanitary facilities, in particular washrooms and lavatories
  7. rescue equipment for recovering injured or ill persons from the working chamber.
- Should the number of employees be low, the competent authority may allow a room to be used simultaneously as rest and change room.
- (2) The facilities listed in subsection 1 must be furnished in accordance with No.3 of Appendix 1 and, in other respects, with the generally accepted engineering standards, section 4 subsection 2 and 3, as well as sections 5 and 6, are to be applied analogously.
- (3) The employer shall ensure that the decompression chamber is inspected by an officially recognised expert to determine whether it meets the requirements of subsection 2, and this
1. prior to its being placed at disposal at the work site

2. in each case, prior to the end of three years from the last examination by an expert
3. following major modifications.

He shall request the expert to issue test certificates in this respect. Section 7 subsection 3 and section are to be applied analogously.

## § 18

### Appointment of Qualified Personnel

- (1) The employer shall appoint
  1. a specialist, who directs the work in compressed air and constantly monitors operation of the working chamber, as well as the permanent replacement of same,
  2. a competent person, who checks the pressure pipe network, the personnel and material air-locks and the decompression chambers prior to the commencement of each shift under an atmospheric pressure corresponding to the working pressure, to determine whether same are tight,
  3. a competent person who constantly monitors the electrical systems during operation of the working chamber and the decompression chamber,
  4. an air-lock attendant who constantly monitors air-lock operation according to the instructions contained in Appendix 3,
  5. two competent persons, who constantly remain at the worksite, one of these in the working chamber, and who are constantly in the position to fight a fire as it occurs,
  6. two operating assistants, who constantly remain at the worksite, one of these in the working chamber, and who are constantly in the position to render first-aid in case of accidents and decompression sickness.
- (2) Solely a person who is in possession of an official certificate of qualification to perform such work may be appointed as specialist or as the permanent representative of same within the meaning of subsection 1 No.1. Upon application, the competent authority will issue a certificate of qualification to a person who has
  1. had adequate practical experience in work in compressed air and
  2. has adequate knowledge of the risks occurring during work in compressed air and of the measures to be taken to avert such risks.The certificate of qualification is, as a rule, issued for a period of three years.
- (3) It is permissible for several duties in accordance with subsection 1 to be performed by one person; however, the specialist and the permanent representative of same (subsection 1 No.1) may not be appointed to perform the duties in accordance with subsection 1 No.4, 5 or 6, nor the attendant (subsection 1 No.4) for the duties in accordance with numbers 5 or 6.
- (4) Solely a person who has the expert knowledge necessary for checking the pressure-pipe network and the air-locks may be appointed as competent person within the meaning of subsection 1 No.2.
- (5) Solely a person who has the expert knowledge necessary for monitoring the electrical systems may be appointed as competent person within the meaning of subsection 1 No. 3.
- (6) Solely a person who is reliable and has had adequate practical experience in monitoring air-lock operation may be appointed as air-lock attendant within the meaning of subsection 1 No.4.
- (7) Solely a person who has the knowledge necessary for fighting fires in compressed air may be appointed as competent person within the meaning of subsection 1 No.5.
- (8) Solely a person who has submitted a certificate that he

1. has successfully participated in a first-aid course and
  2. has been instructed by an authorised medical physicians in first-aid under pressure for those suffering from decompression sickness may be appointed as operating assistant within the meaning of subsection 1 No.6.
- (9) The employer shall ensure that the persons appointed by him in accordance with subsection 1 performed the duties assigned to them in a proper manner.
- (10) The provisions in sections 9 to 11 shall apply analogously in respect of the persons stated in subsection 1.

## **§ 19**

### **Supporting Documents**

The employer shall hold ready at the worksite

1. a list of the persons, material and combined air-locks, shaft cylinders and decompression chambers employed at the worksite, stating the utilization to date and the test certificates in accordance with sections 7 and 17 subsection 3, referring thereto.
2. the precautions card index according to section 4, subsection 3, of the prescription to the work medical precautions for those on the job side employed compressed air workers and
3. a list of the specialists appointed in accordance with section 18, stating the name and address.

## **§ 20**

### **Instruction of Employees**

- (1) The employer shall ensure that the specialist who directs the work in compressed air (section 18 subsection 1 No.1) and the medical physicians commissioned in accordance with section 12 subsection 1 instruct those employed in the operation of the working chamber, prior to the commencement of employment, regarding the accident and health risks to which they are exposed during employment, as well as regarding the facilities and measures to avert such risks. The instruction is to be repeated at appropriate intervals, at least at intervals of six months.
- (2) In addition the employer shall hand over to each employee, prior to the commencement of employment in work in compressed air I an instruction sheet in which the content of the instructions in accordance with subsection 1 is contained. The instruction sheet is to be prepared in the language of the employee.

## **§ 21**

### **Decompression and Waiting Times**

- (1) The employer shall ensure that the rules contained in Appendix 2 are observed.
- (2) One lock-in only may be carried out during the shift for work assignments the duration of which exceeds 50 per cent of the maximum sojourn; for the rest, a break of at least one hour in normal atmosphere must be observed between lock-out and lock-in transfer. The total permissible sojourn time may not be exceeded and the lock-out transfer time must be referred, in each case, to the sum of the sojourn times and the maximum working pressure.
- (3) There must be a work-free period of at least 12 hours between two work shifts.
- (4) Employees may be employed in compressed air for a maximum of eight hours per day and a maximum of 40 hours per week, including lock-in and lock-out transfer times.

- (5) Should the sojourn time in the working chamber exceed four hours, the employees are to be allowed breaks for a total period of at least half an hour.

**§ 22**

**Criminal and Regulatory Offences According to  
the Labour Protection Law (Arbeitsschutzgesetz)**

- (1) A regulatory offence within the meaning of section 25 subsection 1 No.1 of the Labour Protection Law shall be deemed to be committed by any person who, wilfully or negligently,
1. contrary to section 3 subsection 1, 2 clause 1 or subsection 3, does not report, does not report correctly, does not report completely, does not report in the prescribed manner. Or does not report within the prescribed period
  2. contrary to section 3 subsection 2 clause 2, does not enclose a document correctly, does not enclose a document completely, or does not enclose a document within the prescribed period
  3. contrary to section 7 subsection 1, operates a working chamber
  4. contrary to section 9 subsection 1, employs an employee
  5. contrary to section 9, subsection 2, employs an employee in compressed air who has obtained the age of 50 years
  6. (deleted)
  7. contrary to section 11, subsection 1, further employs and employee
  8. contrary to section 12, subsection 1, clause 2, does not ensure that the authorized medical practitioner is contactable
  9. contrary to section 12, subsection 2, does not display the name, address and telephone number of the authorized medical practitioner
  10. (deleted)
  11. contrary to section 17, subsection 1, clause 1, does not ensure that the facilities stated therein are available at the operating site,
  12. contrary to section 17, subsection 3, clause 1, does not ensure that the decompression chamber is inspected by an expert,
  13. contrary to section 18, subsection 1, does not appoint a specialist or the representative of same, the competent person stated therein, an air-lock attendant or the operating assistants stated therein or does not appoint such persons within the prescribed period.
  14. contrary to section 19 does not hold ready the supporting documents stated therein,
  15. contrary to section 20, subsection 1, clause 1, does not ensure that the specialist and the medical practitioner instruct the employees,
  16. contrary to section 20, subsection 2, does not hand over, or does not hand over within the prescribed period, the instructed sheet stated therein or
  17. contrary to section 21, subsection 1, does not ensure that the rules stated therein are observed.
- (2) Any person who, as a result of a wilful act described in subsection 1, endangers the life or health of an employee, shall be liable to prosecution in accordance with section 26, No.2 of the Labour Protection Law.

**§ 22a**

**Regulatory Offences according to the Youth Labour Protection Law  
(Jugendarbeitsschutzgesetz)**

- (1) A regulatory offence within the meaning of section 58 subsection 1 No. 26 letter “a” of the Youth Labour Protection Law shall be deemed to be committed by any employer who wilfully or negligently, contrary to section 6 subsection 2, employs an employee in compressed air who does not yet have attained the age of 18.

**§ 23**

**Regulatory Offences in Accordance with the Hours of Employment Law  
(Arbeitszeitgesetz)**

A regulatory offence within the meaning of section 22 subsection 1 clause 4 of Hours of Employment Law shall be deemed to be committed by any person who, as employer, wilfully or negligently

1. contrary to section 21, subsection 4, employs an employee in compressed air or
2. contrary to section 21, subsection 5, does not allow breaks of the prescribed minimum length or does not allow breaks within the prescribed period.

**§ 24**

**Regulation governing Regulatory Fines and Reference to the Application of Penal  
Provisions of the Maternity Protection Act (Mutterschutzgesetz)**

(deleted)

**§ 25**

**Berlin Clause**

(deleted)

**§ 26**

**Effective Date**

- (1) This Ordinance comes into effect on the first day of the 6th calendar month following on the pronouncement.
- (2)

**Complimentary close**

The Federal Minister for work and social system

**Appendix 1:  
(Sections 4 and 17, subsection 2 of the  
Ordinance relating to Work in Compressed Air)**

1. Structure and design at the working chambers and the equipment used for the operation of same
  - 1.1 Working chambers
    - (1) Working chambers are to be so high that the employees can stand upright therein during work and can operate the devices without risk.
    - (2) Shafts for entering and exiting must be protected at their upper end against tools, devices and materials slipping into same. The space between the ladder rungs and the wall of the shaft, as well as the width of the ladders, are to be designed in such a way that both feet next to each other are firmly supported.
  - 1.2 Personnel air-locks, material air-locks, combined air-locks
    - (1) Personnel air-locks must be at least 1.60 m high and be designed in such a way that an air-space of at least 0.75 cubic metres is allocated to each person. The maximum number of persons for whom the air-lock is designed must be permanently and legibly stated in the air-lock at a clearly visible point.
    - (2) The doors of the personnel and material air-locks must be attached in such a way that they are pressed against the seal by the air pressure.
    - (3) A seat of heat-insulating material, with a back, and a dry warming blanket are to be at disposal for each person in the personnel air-lock.
    - (4) The provisions in respect of personnel airlocks shall apply in respect of combined air-locks. The provision in number 2.3 subsection 2 shall not apply in respect of such air-locks.
    - (5) The inner valve of a conveying or concrete hose of the combined air-lock may only be able to be opened provided the outer valve is closed; this applies analogously in respect of the outer valve.
    - (6) Personnel airlocks which are provided with oxygen for Decompression must be equipped with an oxygen breathing apparatus, including oxygen masks. No oxygen may escape into the air-lock atmosphere from the oxygen breathing apparatus.
  - 1.3 Measuring instruments
    - (1) A pressure gauge is to be installed in the working chamber and the compressor stations, as well as in and in front of personnel air-locks and combined air-locks. The pressure gauge is to be installed in personnel air-locks in such a way that the air-lock attendant can later operate the air cocks. The pressure gauge in the compressor station must indicate the working pressure in the working chamber. Pressure gauges must at least be equivalent to Quality Class 1 and have a minimum diameter of 160 mm; they are first to be tested for accuracy prior to the commencement of the work in compressed air and regularly during such work, at least every four months.
    - (2) In case of a working pressure in the working chamber of more than 0.7 bar, the pressure characteristic in the personnel air-lock must be automatically recorded via a recording manometer as a function of the time. The recordings are to be presented to the authorised medical practitioner and are to be preserved together with the health record.
    - (3) In addition to the pressure gauge, a clock is to be installed in and in front of the personnel air-lock in such a way that the air-lock attendant can later operate the air cocks.

(4) One each calibrated mercury thermometer, the measuring range of which is + 50°C to -30°C, is to be installed in the working chamber and in the open air at an appropriate place. The thermometers must correspond in terms of their design and graduation and be protected against damage.

### 1.4 Electrical systems and operational equipment

(1) Electrical systems and operational equipment must be suitable for wet and impregnated rooms and be protected against dust deposits and jet-water.

(2) Electrical systems and operational equipment may be operated in working chambers, personnel and material air-locks only when they are protected against too high touch-voltage by means of total insulation, protective extra-low voltage, residual-current circuit-breakers (maximum tripping current intensity 30 mA) or by means of electrical separation. Electrical lighting systems in working chambers are to be protected against too high touch-voltage by means of protective extra-low voltage.

(3) The electrical systems in the working chamber must be able to be all-pole disconnected via a conspicuously marked master-switch. The position must be perceptible.

### 1.5 Lighting

Working chambers, as well as personnel and material air-locks and their access ways, are to be electrically illuminated.

### 1.6 Ventilation

(1) At least 0.5 m<sup>3</sup> of fresh air are to be blown into the working chambers for each employee.

(2) Which is blown into working chambers and personnel air-locks is to be purified using oil-filters and oil-separators and must meet the requirements to be placed on respiratory air.

(3) The working chambers must be provided with a device for venting spent air.

### 1.7 Air temperature

(1) The air temperature in working chambers is not to be lower than 10°C and not higher than 25°C.

(2) The air temperature in personnel air-locks is not to be lower than 15°C: it should not exceed 28°C.

### 1.8 Telephone connection, communication

Communication via a telephone system must be possible at all times between the working chamber, the personnel and material air-lock, the air-lock attendant, the site office, the physicians room and the machinery house.

### 1.9 Compressors

(1) At least two sources of energy, independent of each other, must be at disposal to produce the volume of air required to generate and maintain the working pressure necessary to supply the working chamber and the personnel air-lock with fresh air. In case of disturbances in the energy supply, the second source of energy must start operating immediately and automatically.

(2) At least one operative and one emergency compressor must be available for each working chamber. Should only one operative and one emergency compressor be available for a working chamber, each operative and each emergency compressor must be independently capable of supplying the volume of air required in accordance with subsection 1.

## Compressed Air Ordinance

---

(3) Should more than two compressors be available for a working chamber, two thirds of the compressors selected at random must be capable of supplying the volume of air required in accordance with subsection 1. This regulation shall apply only when all compressors are electrically driven and an emergency generating set is available as emergency energy source or when all compressors are directly driven via internal combustion engines. Should the operative compressors be driven via electrical motors and the emergency compressors directly driven via internal combustion engines. The capacity of said compressors and their drives must be adequate to supply the total volume of air required in accordance with subsection 1.

### 1.10 Compressed air feed, pressure vessels, valves

(1) An adjustable safety valve is to be installed as close as possible to each compressor, which can vent at least half the delivery air. There is to be no shut-off device between the compressor and the safety valve.

(2) Each compressor is to be connected to a pressure vessel to compensate for fluctuations in volume and pressure; several compressors may be connected to a common compressor vessel.

(3) By connecting the compressed air lines and installing shut-off devices, it is to be ensured that the required volume of air is also fed to the working chambers upon rupture of a line at any point or upon failure of a compressor.

(4) The compressed air must be able to be fed to the working chambers via at least two separate lines. The ends of each line must be provided with a non-return valve.

### 1.11 Emergency generating set for lighting and cooling water

The contractor shall place at disposal an emergency generating set which automatically switches on in case of power failure and supplies the energy required for the lighting and the cooling water. The emergency generating set may be dispensed with when air-cooled internal combustion engines and battery operated emergency lighting are used.

### 1.12 Fire protection

(1) At least two fire extinguishers, which are capable of functioning below the maximum permissible working pressure of the chamber, must be available in the working chamber.

(2) Combustible and fire-promoting substances, as well as high I y and readily inflammable liquids, may only be used in work in compressed air when special precautions are taken. No more than the daily requirement of said substances and liquids may be stored in the working chamber.

### 1.13 Notice at the entrance of the personnel air-lock

A notice with the following wording is to be affixed at the entrance of the personnel air-lock:

#### **CAUTION!**

Only persons whose fitness has been medically certified may be locked in!

The decompression time and the sojourn time at the individual pressure stages are to be precisely observed!

Any person who is ill, particularly who is suffering from a cold, or who otherwise does not feel well, may not be inwardly transferred!



The consumption of alcoholic beverages or beverages containing carbon dioxide, as well as the consumption of larger meals and smoking, are prohibited from the start of compression until the end of decompression!

The instructions of the air-lock attendant are to be followed immediately.

The air-lock attendant is .....

### 1.14 Air-lock Register

The employer shall ensure that an air-lock book is available at the air-lock, in which the air-lock attendant enters the following data in respect of each transfer operation through the air-lock:

- Date
- Name of the persons transferred through the air-lock
- Beginning and end of transfer through the air-lock
- Pressure in the working chamber
- Beginning of decompression with oxygen
- Unusual occurrences.

## 2. Operation of the Working Chambers

### 2.1 Behaviour of the Employees

- (1) The employees are to wear safety helmets provided by the employer in the working chamber .
- (2) The drinking of alcoholic beverages or beverages containing carbon dioxide, as well as the consumption of larger meals and smoking, are prohibited from the commencement of inward transfer until the end of Decompression.
- (3) An employee may not remain alone in the working chamber.
- (4) The instructions of the air-lock attendant are to be followed immediately.

### 2.2 General Operating Instructions for Working Chambers

- (1) Working chambers are to be kept clean and free of odours, as well as of gases, vapours and dusts hazardous to health.
- (2) Air-pressure fluctuations are to be avoided as long as persons remain in the working chamber.
- (3) While material is being transported through the shaft which is used for inward and Decompression, said shaft and the area under the shaft opening is to be closed to persons.
- (4) In working chambers which are lowered, only the persons who are needed to conduct the lowering process may remain in working chambers during lowering.
- (5) Supervisory personnel in the working chamber are to carry an electric torch.
- (6) Only as many employees may simultaneously remain in the working chamber as can be simultaneously decompressed.

### 2.3 Use of Air-locks

- (1) During the time in which personnel air-locks are needed to recompress persons suffering from decompression sickness, said personnel air-locks may not be used for other purposes.

(2) Material air-locks may not be used to transfer persons. Personnel air-locks may not be used to transfer materials.

(3) Treatment chambers may only be used for recompression and the treatment of persons suffering from decompression sickness as well as pressure tests in accordance with medical instructions.

(4) In the case of Decompression with oxygen, the oxygen respirators and breathing masks described in No. 1.2 subsection 6 are to be used. Oxygen respiration may only begin when the operating pressure in the lock has dropped to 1.0 bar.

### 2.4 Blasting in the Working Chamber

(1) When blasting in the working chamber, electric detonation only is permitted.

(2) Explosives and detonating agents must be locked in and brought into the working chamber separately from each other.

(3) The working chamber must be left by personal prior to blasting. After blasting, it may only be re-entered when the blast fumes have been removed.

### 2.5 Welding and Cutting in the Working Chamber

(1) The employer shall ensure that operating instructions are available for welding and cutting work in over-pressure.

(2) Hose pipes for fuel gas and oxygen are to be equipped with a leakage gas seal. .

(3) Compressed gas cylinders may be brought into the working only for the duration of welding and cutting work.

### 2.6 Hot Beverages

Hot tea or hot coffee is to be supplied to those employed in compressed air .

## 3. Structure and Design of Treatment Chambers, Rest, Changing and Drying Rooms, as well as of Sanitary Facilities

### 3.1 Treatment Chambers

(1) Treatment chambers must be at least 1.85 m high and comprise a sick- chamber as well as entrance chamber for inward and Decompression.

(2) Treatment chambers must be equipped with

1. Devices for operating the decompression chambers including their heating and lighting systems, as well as their systems to control the intake and exhaust air internally and externally
2. a two-way intercom system
3. at least two observations windows
4. a medication air-lock
5. two identical pressure gauges of Quality Class 0.6 with a minimum diameter of 160 mm, one of which is to be installed internally and the other externally
6. a pressure recorder
7. an oil and water separator in the compressed air line
8. a sound absorber for the air supply
9. several pipe sockets sealed with blind flanges for later installation
10. a seat and an upholstered couch which may have no sharp edges

### 11. a portable W.C. with deodorising chemicals

(3) In order to be able to ensure availability at any time of the pressure required for medical treatment, an air supply unit must be available with which the maximum treatment pressure can be attained within a short time.

#### (4) The provisions in

Number 1.2 subsection 1 clause 2;  
Number 1.2 subsection 2;  
Number 1.2 subsection 3;  
Number 1.3 subsection 1 clause 2;  
Number 1.3 subsection 1 clause 4, second half of clause (zweiter Halbsatz);  
Number 1.3 subsection 2;  
Number 1.3 subsection 3;  
Number 1.3 subsection 4;  
Number 1.4 subsection 2 clause 1 ;  
Number 1.5;  
Number 1.6;  
Number 1.7 subsection 2;  
Number 1.8;  
Number 1.10 subsection 4 and  
Number 1.11

applicable in respect of working chambers and personnel air-locks shall apply analogously to decompression chambers.

3.2 Rooms for medical examinations and treatment must be provided with a flooring which is easy to clean, they must be bright and heatable and must have a telephone outlet, three socket-outlets and a washbasin with running hot and cold water. They must at least be fitted with a lockable cabinet for instruments and medication, a ceiling light, a standard lamp with flexible lighting element, a couch, a chair, a stool and a hand-towel dispenser and soap.

### 3.3 Waiting-rooms

(1) Rest-rooms must be heatable; the temperature must be at least 20°C.

(2) In the rest-rooms, each employee must have a place to sit of heat-insulating material and a place at a table, as well as the possibility to heat food.

### 3.4 Changing rooms

(1) Changing rooms must be heatable; the temperature must be at least 20°C.

(2) In the changing rooms, a lockable clothing container is to be made available for each employee.

### 3.5 Drying rooms

Drying rooms must be heatable and must be equipped with devices for drying wet work clothing.

### 3.6 Washrooms and lavatories

(1) Washrooms and lavatories must meet the requirements in respect of hygiene and must be spatially connected with the changing room.

## Compressed Air Ordinance

---

- (2) A water tap connection with wash basin and a shower must be available in the washrooms for every three employees in a shift. The tap connections and showers must be fitted for cold and hot water.
- (3) No floor coverings of wood or similar organic materials are to be used in washrooms and lavatories.
- (4) Washrooms must be heatable. The temperature must be at least 20°C.

**Appendix 2:  
(to § 21 subsection 1 )  
Decompression and Waiting Times**

- (1) The Decompression of employees in compressed air is to be carried out with oxygen in accordance with Table 1.
- (2) Should more than 24 hours elapse between the sojourns in compressed air and should the sojourn time of the employee in compressed air not exceed 50% of the sojourn time in accordance with Table 1, the competent authority may, upon application, grant exemptions from the obligation of transferring outward with oxygen in the case of working pressures of up to 1.8 bar. Emergency Table 1 shall apply with respect to such emergencies.
- (3) In emergencies in which the decompression with oxygen is not possible due to technical failure of the equipment for decompression with oxygen (oxygen apparatus), a decompression with compressed air may be effected in accordance with Emergency Table 1 in agreement with the authorized medical Physicians.
- (4) Should, in emergency situations, the permissible sojourn time in accordance with Table 1 have to be exceeded, Decompression with oxygen is to be effected in accordance with the emergency table in agreement with the authorized medical physicians. Should such an emergency situation not allow decompression with oxygen due to technical failure of the oxygen apparatus, decompression may be effected with compressed air in accordance with Emergency Table 3.
- (5) After finishing work in compressed air, the following waiting times are to be observed in the case of a working pressure of more than 1 bar:
  - After decompression with one pressure stage 30 minutes
  - After decompression with several pressure stages 60 minutes
  - Prior to leaving the work site for more than 12 hours 90 minutes
- (6) The employer shall ensure that the employees are advised by the authorized medical physicians regarding setting off on journeys by air.

## Compressed Air Ordinance

---

**Table 1: Oxygen Decompression during Normal Operation**

Attention: Oxygen Breathing is only allowed, when the pressure in the personnel lock is lowered down to 1,0 bar.  
The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.

Working Pressure	Exposure Period (without time of decompression )	Time to First Stop	Time at Stop Pressures during Decompression in minutes				Total Decompression Time
			1,5 bar	1,2 bar	1,0 bar	0,5 bar	
Oxygen							
bar	hrs. min.	min.	1,5 bar	1,2 bar	1,0 bar	0,5 bar	hrs. min.
0,7	7:30	1				5	0:06
0,7	7:00	1				4	0:05
0,7	6:00	3					0:03
0,8	7:30	1				11	0:12
0,8	7:00	1				10	0:11
0,8	6:00	1				7	0:08
0,8	5:00	1				5	0:06
0,8	4:00	3					0:03
0,9	7:30	2				18	0:20
0,9	7:00	2				16	0:18
0,9	6:00	2				13	0:15
0,9	5:00	2				10	0:12
0,9	4:00	2				7	0:09
0,9	3:00	3					0:03
1,0	7:00	2				24	0:26
1,0	6:00	2				19	0:21
1,0	5:00	2				15	0:17
1,0	4:00	2				11	0:13
1,0	3:00	2				5	0:07
1,0	2:00	4					0:04
1,1	7:00	1			9	29	0:39
1,1	6:00	1			8	20	0:29
1,1	5:00	1			6	16	0:23
1,1	4:00	1			5	12	0:18
1,1	3:00	1			3	8	0:12
1,1	2:00	1			5		0:06
1,1	1:00	4					0:04
1,2	7:00	1			15	42	0:58
1,2	6:00	1			13	24	0:38
1,2	5:00	1			10	19	0:30
1,2	4:00	1			8	14	0:23
1,2	3:00	1			6	9	0:16
1,2	2:00	1			6		0:07
1,2	1:00	1			4		0:05
1,2	0 30	4					0:04
1,3	6:30	1			21	42	1:04
1,3	6:00	1			19	31	0:51
1,3	5:00	1			16	21	0:38
1,3	4:00	1			12	16	0:29
1,3	3:00	1			9	11	0:21
1,3	2:00	1			8		0:09
1,3	1:00	1			5		0:06
1,3	0:30	5					0:05

## Compressed Air Work Regulations

---

**Table 1: Oxygen Decompression during Normal Operation (Cont.)**

Attention: Oxygen Breathing is only allowed, when the pressure in the personnel lock is lowered down to 1,0 bar.  
The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.

Working Pressure	Exposure Period (without time of decompression )	Time to First Stop	Time at Stop Pressures during Decompression in minutes				Total Decompression Time
			1,5 bar	1,2 bar	1,0 bar	0,5 bar	
<b>Oxygen</b>							
bar	hrs. min.	min.	1,5 bar	1,2 bar	1,0 bar	0,5 bar	hrs. min.
1,4	6:30	2			28	56	1:26
1,4	6:00	2			26	40	1:08
1,4	5:00	2			21	25	0:48
1,4	4:00	2			17	18	0:37
1,4	3:00	2			12	13	0:27
1,4	2:00	2			8	4	0:14
1,4	1:30	2			9		0:11
1,4	1:00	2			6		0:08
1,4	0:30	5					0:05
1,5	6:00	2			32	53	1:27
1,5	5:00	2			26	28	0:56
1,5	4:00	2			21	19	0:42
1,5	3:00	2			15	14	0:31
1,5	2:00	2			9	7	0:18
1,5	1:30	2			10		0:12
1,5	1:00	2			7		0:09
1,5	0:30	5					0:05
1,6	6:00	2			39	65	1:46
1,6	5:00	2			32	33	1:07
1,6	4:00	2			26	21	0:49
1,6	3:00	2			19	15	0:36
1,6	2:00	2			12	8	0:22
1,6	1:30	2			12		0:14
1,6	1:00	2			8		0:10
1,6	0:30	2			5		0:07
1,7	6:00	3			47	77	2:07
1,7	5:30	3			43	57	1:43
1,7	5:00	3			39	39	1:21
1,7	4:00	3			31	23	0:57
1,7	3:00	3			23	16	0:42
1,7	2:00	3			15	9	0:27
1,7	1:30	3			14		0:17
1,7	1:00	3			10		0:13
1,7	0:30	3			6		0:09
1,8	5:30	3			49	69	2:01
1,8	5:00	3			44	50	1:37
1,8	4:30	3			39	34	1:16
1,8	4:00	3			35	26	1:04
1,8	3:30	3			31	21	0:55
1,8	3:00	3			26	17	0:46
1,8	2:30	3			21	14	0:38
1,8	2:00	3			16	10	0:29
1,8	1:30	3			15		0:18
1,8	1:00	3			10		0:13
1,8	0:30	3			6		0:09

## Compressed Air Ordinance

**Table 1: Oxygen Decompression during Normal Operation (Cont.)**

Attention: Oxygen Breathing is only allowed, when the pressure in the personnel lock is lowered down to 1,0 bar.  
The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes				Total Decompression Time
			1,5 bar	1,2 bar	1,0 bar	0,5 bar	
							Oxygen
bar	hrs. min.	min.	1,5 bar	1,2 bar	1,0 bar	0,5 bar	hrs. min.
1,9	5:00	3			50	61	1:54
1,9	4:30	3			45	40	1:28
1,9	4:00	3			40	29	1:12
1,9	3:30	3			35	23	1:01
1,9	3:00	3			30	18	0:51
1,9	2:30	3			24	15	0:42
1,9	2:00	3			19	11	0:33
1,9	1:30	3			14	5	0:22
1,9	1:00	3			11	2	0:15
1,9	0:30	3			6		0:09
2,0	4:45	4			54	59	1:57
2,0	4:30	4			51	48	1:43
2,0	4:00	4			45	33	1:22
2,0	3:30	4			39	25	1:08
2,0	3:00	4			34	19	0:57
2,0	2:30	4			28	15	0:47
2,0	2:00	4			22	12	0:38
2,0	1:30	4			15	6	0:26
2,0	1:00	4			13		0:17
2,0	0:30	4			7		0:11
2,1	4:15	4			53	45	1:42
2,1	4:00	4			50	37	1:31
2,1	3:30	4			43	27	1:14
2,1	3:00	4			37	21	1:02
2,1	2:30	4			30	17	0:51
2,1	2:00	4			24	12	0:40
2,1	1:30	4			17	7	0:28
2,1	1:15	4			17		0:21
2,1	1:00	4			15		0:19
2,1	0:45	4			10		0:14
2,1	0:30	4			7		0:11
2,2	4:00	4			55	42	1:41
2,2	3:30	4			48	29	1:21
2,2	3:00	4			41	22	1:07
2,2	2:30	4			34	17	0:55
2,2	2:00	4			27	13	0:44
2,2	1:30	4			19	9	0:32
2,2	1:15	4			16	4	0:24
2,2	1:00	4			15		0:19
2,2	0:45	4			12		0:16
2,2	0:30	4			8		0:12
2,3	3:45	5			57	39	1:41
2,3	3:30	5			53	32	1:30
2,3	3:00	5			45	24	1:14
2,3	2:30	5			37	19	1:01
2,3	2:00	5			29	15	0:49
2,3	1:30	5			22	9	0:36
2,3	1:15	5			18	5	0:28
2,3	1:00	5			17		0:22
2,3	0:45	5			13		0:18





## Compressed Air Ordinance

---

**Table 1: Oxygen Decompression during Normal Operation (Cont.)**

Attention: Oxygen Breathing is only allowed, when the pressure in the personnel lock is lowered down to 1,0 bar.  
The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes				Total Decompression Time
			1,5 bar	1,2 bar	1,0 bar	0,5 bar	
							Oxygen
bar	hrs. min.	min.	1,5 bar	1,2 bar	1,0 bar	0,5 bar	hrs. min.
2,9	2:45	6		4	62	32	1:44
2,9	2:30	6		2	57	26	1:31
2,9	2:00	7			45	19	1:11
2,9	1:30	7			33	13	0:53
2,9	1:15	7			27	10	0:44
2,9	1:00	7			21	6	0:34
2,9	0:45	7			18		0:25
2,9	0:30	7			12		0:19
3,0	2:45	6		9	65	35	1:55
3,0	2:30	6		6	59	29	1:40
3,0	2:15	6		3	54	23	1:26
3,0	2:00	6		1	48	19	1:14
3,0	1:45	7			42	16	1:05
3,0	1:30	7			34	14	0:55
3,0	1:15	7			28	11	0:46
3,0	1:00	7			22	6	0:35
3,0	0:45	7			19		0:26
3,0	0:30	7			12		0:19
3,1	2:30	7		10	62	31	1:50
3,1	2:15	7		7	56	25	1:35
3,1	2:00	7		4	50	21	1:22
3,1	1:45	7		1	44	17	1:09
3,1	1:30	7			37	14	0:58
3,1	1:15	7			30	11	0:48
3,1	1:00	7			24	6	0:37
3,1	0:45	7			20		0:27
3,1	0:30	7			13		0:20
3,2	2:30	7	3	12	65	32	1:59
3,2	2:15	7		9	58	27	1:41
3,2	2:00	7		6	52	22	1:27
3,2	1:45	7		4	46	18	1:15
3,2	1:30	7			39	15	1:01
3,2	1:15	8			32	12	0:52
3,2	1:00	8			25	7	0:40
3,2	0:45	8			21		0:29
3,2	0:30	8			14		0:22
3,3	2:15	6	3	11	61	29	1:50
3,3	2:00	6	1	9	54	23	1:33
3,3	1:45	7		6	47	20	1:20
3,3	1:30	7		2	41	15	1:05
3,3	1:15	8			33	12	0:53
3,3	1:00	8			26	8	0:42
3,3	0:45	8			21		0:29
3,3	0:30	8			14		0:22

## Compressed Air Work Regulations

---

**Table 1: Oxygen Decompression during Normal Operation (Cont.)**

Attention: Oxygen Breathing is only allowed, when the pressure in the personnel lock is lowered down to 1,0 bar.  
The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes				Total Decompression Time
			1,5 bar	1,2 bar	1,0 bar	0,5 bar	
			Oxygen				
bar	hrs. min.	min.	1,5 bar	1,2 bar	1,0 bar	0,5 bar	hrs. min.
<hr/>							
3,4	2:15	7	6	13	63	32	2:01
3,4	2:00	7	4	10	56	25	1:42
3,4	1:45	7	1	8	49	21	1:26
3,4	1:30	8		4	43	16	1:11
3,4	1:15	8		2	35	13	0:58
3,4	1:00	8			27	9	0:44
3,4	0:45	8			23		0:31
3,4	0:30	8			15		0:23
<hr/>							
3,5	2:00	7	5	11	58	27	1:48
3,5	1:45	7	3	9	51	22	1:32
3,5	1:30	8		6	44	17	1:15
3,5	1:15	8		2	37	13	1:00
3,5	1:00	9			29	9	0:47
3,5	0:45	9			24		0:33
3,5	0:30	9			16		0:25
<hr/>							
3,6	2:00	7	8	12	61	28	1:56
3,6	1:45	7	5	9	53	23	1:37
3,6	1:30	7	2	8	45	18	1:20
3,6	1:15	8		4	38	14	1:04
3,6	1:00	8		1	30	10	0:49
3,6	0:45	9			21	4	0:34
3,6	0:30	9			16		0:26

## Compressed Air Ordinance

---

### Emergency Table 1: Decompression on Compressed Air by Technical Problems with Oxygen Supply

– only allowed in accordance with the compressed air doctor! –

**Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
0,7	7:30	2					5	0:07
0,7	7:00	2					4	0:06
0,7	6:00	3						0:03
0,8	7:30	2					13	0:15
0,8	7:00	2					12	0:14
0,8	6:00	2					8	0:10
0,8	5:00	2					5	0:07
0,8	4:00	3						0:03
0,9	7:30	2					24	0:26
0,9	7:00	2					21	0:23
0,9	6:00	2					17	0:19
0,9	5:00	2					13	0:15
0,9	4:00	2					9	0:11
0,9	3:00	3						0:03
1,0	7:00	3					34	0:37
1,0	6:00	3					25	0:28
1,0	5:00	3					19	0:22
1,0	4:00	3					12	0:15
1,0	3:00	3					5	0:08
1,0	2:00	4						0:04
1,1	7:00	3					55	0:58
1,1	6:00	3					38	0:41
1,1	5:00	3					27	0:30
1,1	4:00	3					20	0:23
1,1	3:00	3					12	0:15
1,1	2:00	3					4	0:07
1,1	1:00	4						0:04
1,2	6:00	3					54	0:57
1,2	5:00	3					39	0:42
1,2	4:00	3					27	0:30
1,2	3:00	3					16	0:19
1,2	2:00	3					7	0:10
1,2	1:00	4					3	0:06
1,2	0:30	4						0:04
1,3	6:00	4					75	1:19
1,3	5:00	4					55	0:59
1,3	4:00	4					38	0:42
1,3	3:00	4					22	0:26
1,3	2:00	4					8	0:12
1,3	1:00	4					4	0:08
1,3	0:30	4						0:04

## Compressed Air Work Regulations

---

### Emergency Table 1: Decompression on Compressed Air by Technical Problems with Oxygen Supply (Cont.)

– only allowed in accordance with the compressed air doctor! –

Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
1,4	6:00	3				8	93	1:44
1,4	5:00	4					74	1:18
1,4	4:00	4					55	0:59
1,4	3:00	4					35	0:39
1,4	2:00	4					16	0:20
1,4	1:30	4					10	0:14
1,4	1:00	4					6	0:10
1,4	0:30	5						0:05
1,5	5:30	3				19	95	1:57
1,5	5:00	3				14	83	1:40
1,5	4:00	3				2	66	1:11
1,5	3:00	4					41	0:45
1,5	2:00	4					22	0:26
1,5	1:30	4					13	0:17
1,5	1:00	4					7	0:11
1,5	0:30	4					3	0:07
1,6	5:30	4				37	111	2:32
1,6	5:00	4				29	95	2:08
1,6	4:00	4				16	72	1:32
1,6	3:00	5					54	0:59
1,6	2:00	5					24	0:29
1,6	1:30	5					14	0:19
1,6	1:00	5					7	0:12
1,6	0:30	5					4	0:09
1,7	5:00	4				45	110	2:39
1,7	4:30	4				36	91	2:11
1,7	4:00	4				28	79	1:51
1,7	3:30	4				19	69	1:32
1,7	3:00	4				7	62	1:13
1,7	2:30	5					47	0:52
1,7	2:00	5					31	0:36
1,7	1:30	5					18	0:23
1,7	1:00	5					10	0:15
1,7	0:30	5					6	0:11
1,8	4:30	4				49	104	2:38
1,8	4:00	4				39	86	2:10
1,8	3:30	4				29	74	1:48
1,8	3:00	4				18	65	1:28
1,8	2:30	4				3	55	1:03
1,8	2:00	5					37	0:43
1,8	1:30	5					21	0:26
1,8	1:00	5					12	0:17
1,8	0:30	5					6	0:11

## Compressed Air Ordinance

### Emergency Table 1: Decompression on Compressed Air by Technical Problems with Oxygen Supply (Cont.)

– only allowed in accordance with the compressed air doctor! –

**Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
1,9	5:00	5				87	155	4:07
1,9	4:30	5				66	117	3:08
1,9	4:00	5				51	96	2:32
1,9	3:30	5				40	80	2:05
1,9	3:00	5				28	69	1:42
1,9	2:30	5				12	60	1:17
1,9	2:00	5				3	42	0:50
1,9	1:30	6					27	0:33
1,9	1:00	6					14	0:20
1,9	0:30	6					5	0:11
2,0	4:45	4			9	92	162	4:27
2,0	4:30	4			6	82	140	3:52
2,0	4:00	5				65	106	2:56
2,0	3:30	5				51	87	2:23
2,0	3:00	5				38	73	1:56
2,0	2:30	5				22	63	1:30
2,0	2:00	5				7	47	0:59
2,0	1:30	5				3	30	0:38
2,0	1:00	6					17	0:23
2,0	0:30	6					7	0:13
2,1	4:15	4			13	84	143	4:04
2,1	4:00	4			9	74	120	3:27
2,1	3:30	4				59	94	2:40
2,1	3:00	5				47	77	2:09
2,1	2:30	5				31	65	1:41
2,1	2:00	5				11	53	1:09
2,1	1:30	5				5	33	1:09
2,1	1:15	5				3	24	0:32
2,1	1:00	6					18	0:24
2,1	0:45	6					12	0:18
2,1	0:30	6					7	0:13
2,2	4:00	5			19	85	143	4:12
2,2	3:30	5			11	65	105	3:06
2,2	3:00	5			4	53	83	2:25
2,2	2:30	6				40	68	1:54
2,2	2:00	6				18	57	1:21
2,2	1:30	6				7	37	0:50
2,2	1:15	6				5	27	0:38
2,2	1:00	6				3	19	0:28
2,2	0:45	7					14	0:21
2,2	0:30	7					9	0:16
2,3	3:45	5			24	85	139	4:13
2,3	3:30	5			19	73	116	3:33
2,3	3:00	5			11	57	90	2:43
2,3	2:30	5			1	47	72	2:05
2,3	2:00	6				26	60	1:32
2,3	1:30	6				10	40	0:56
2,3	1:15	6				7	30	0:43
2,3	1:00	6				5	20	0:31
2,3	0:45	7					16	0:23
2,3	0:30	7					10	0:17

## Compressed Air Work Regulations

### Emergency Table 1: Decompression on Compressed Air by Technical Problems with Oxygen Supply (Cont.)

– only allowed in accordance with the compressed air doctor! –

**Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
2,4	3:30	5			28	82	133	4:08
2,4	3:15	5			23	72	112	3:32
2,4	3:00	5			17	62	98	3:02
2,4	2:45	5			13	57	86	2:41
2,4	2:30	5			7	50	77	2:19
2,4	2:15	5			3	45	68	2:01
2,4	2:00	6				33	63	1:42
2,4	1:45	6				20	56	1:22
2,4	1:30	6				13	42	1:01
2,4	1:15	6				8	33	0:47
2,4	1:00	6				6	22	0:34
2,4	0:45	6				2	16	0:24
2,4	0:30	7					10	0:17
2,5	3:00	6			24	68	106	3:24
2,5	2:30	6			14	53	81	2:34
2,5	2:15	6			7	49	72	2:14
2,5	2:00	6			3	39	65	1:53
2,5	1:45	7				26	59	1:32
2,5	1:30	7				16	45	1:08
2,5	1:15	7				11	35	0:53
2,5	1:00	7				7	24	0:38
2,5	0:45	7				3	17	0:27
2,5	0:30	8					11	0:19
2,6	3:15	5		6	34	89	145	4:39
2,6	3:00	5		4	29	74	117	3:49
2,6	2:45	5		1	24	65	99	3:14
2,6	2:30	6			20	56	87	2:49
2,6	2:15	6			13	45	76	2:25
2,6	2:00	6			7	43	67	2:03
2,6	1:45	6			3	31	61	1:41
2,6	1:30	6			2	18	50	1:16
2,6	1:15	7				13	38	0:58
2,6	1:00	7				9	26	0:42
2,6	0:45	7				5	17	0:29
2,6	0:30	8					12	0:20
2,7	3:00	5		8	33	83	132	4:21
2,7	2:45	5		5	28	70	108	3:36
2,7	2:30	5		3	22	61	92	3:03
2,7	2:15	5		1	17	53	81	2:37
2,7	2:00	6			10	47	70	2:13
2,7	1:45	6			5	36	63	1:50
2,7	1:30	6			2	21	55	1:24
2,7	1:15	6			1	14	41	1:02
2,7	1:00	7				10	28	0:45
2,7	0:45	7				5	19	0:31
2,7	0:30	8					13	0:21

## Compressed Air Ordinance

### Emergency Table 1: Decompression on Compressed Air by Technical Problems with Oxygen Supply (Cont.)

– only allowed in accordance with the compressed air doctor! –

Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
2,8	3:00	6		14	36	93	152	5:01
2,8	2:45	6		10	31	76	119	4:02
2,8	2:30	6		7	25	65	100	3:23
2,8	2:15	6		4	21	56	85	2:52
2,8	2:00	6		2	14	49	74	2:25
2,8	1:45	7			9	40	65	2:01
2,8	1:30	7			4	26	57	1:34
2,8	1:15	7			3	16	43	1:09
2,8	1:00	8				12	30	0:50
2,8	0:45	8				7	19	0:34
2,8	0:30	8				1	13	0:22
2,9	2:45	6		16	34	85	134	4:35
2,9	2:30	6		12	28	70	108	3:44
2,9	2:00	6		5	17	52	78	2:38
2,9	1:45	6		2	11	44	67	2:10
2,9	1:30	7			7	30	60	1:44
2,9	1:15	7			4	18	45	1:14
2,9	1:00	7			2	12	33	0:54
2,9	0:45	8				9	20	0:37
2,9	0:30	8				2	14	0:24
3,0	2:45	6		19	37	94	152	5:08
3,0	2:30	6		15	31	76	117	4:05
3,0	2:15	6		11	25	64	97	3:23
3,0	2:00	6		7	20	54	83	2:50
3,0	1:45	6		4	13	47	70	2:20
3,0	1:30	6		1	8	34	62	1:51
3,0	1:15	7			5	20	48	1:20
3,0	1:00	7			2	13	35	0:57
3,0	0:45	8				9	21	0:38
3,0	0:30	8				3	14	0:25
3,1	2:30	7		20	34	83	129	4:33
3,1	2:15	7		15	28	68	104	3:42
3,1	2:00	7		11	22	57	87	3:04
3,1	1:45	7		7	15	49	74	2:32
3,1	1:30	7		3	10	38	64	2:02
3,1	1:15	7		1	6	21	53	1:28
3,1	1:00	8			4	13	38	1:03
3,1	0:45	9				11	22	0:42
3,1	0:30	9				4	14	0:27
3,2	2:30	6	3	22	37	92	146	5:06
3,2	2:15	7		20	30	73	112	4:02
3,2	2:00	7		14	24	60	92	3:17
3,2	1:45	7		10	18	51	77	2:43
3,2	1:30	7		6	11	41	66	2:11
3,2	1:15	7		3	6	25	56	1:37
3,2	1:00	8			5	14	40	1:08
3,2	0:45	8			2	10	24	0:44
3,2	0:30	9				5	15	0:29



## Compressed Air Work Regulations

---

### Emergency Table 1: Decompression on Compressed Air by Technical Problems with Oxygen Supply (Cont.)

– only allowed in accordance with the compressed air doctor! –

**Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
3,3	2:15	6	3	21	33	78	122	4:23
3,3	2:00	6	1	16	26	64	97	3:30
3,3	1:45	7		12	20	53	81	2:53
3,3	1:30	7		8	11	45	68	2:19
3,3	1:15	7		3	7	28	59	1:44
3,3	1:00	7		1	5	16	41	1:10
3,3	0:45	8			2	11	26	0:47
3,3	0:30	9				5	15	0:29
3,4	2:15	7	6	22	36	86	135	4:52
3,4	2:00	7	4	18	28	68	104	3:49
3,4	1:45	7	1	14	22	56	85	3:05
3,4	1:30	8		10	14	47	70	2:29
3,4	1:15	8		5	8	32	60	1:53
3,4	1:00	8		2	6	17	43	1:16
3,4	0:45	9			3	11	28	0:51
3,4	0:30	10				6	16	0:32
3,5	2:00	7	6	20	31	72	111	4:07
3,5	1:45	7	3	16	23	59	89	3:17
3,5	1:30	8		13	16	49	73	2:39
3,5	1:15	8		7	10	35	62	2:02
3,5	1:00	8		4	6	18	46	1:22
3,5	0:45	9			4	12	29	0:54
3,5	0:30	10				7	17	0:34
3,6	2:00	7	8	21	33	75	121	4:25
3,6	1:45	7	5	17	25	45	104	3:23
3,6	1:30	7	2	13	18	51	76	2:47
3,6	1:15	8		2	7	30	82	2:09
3,6	1:00	8		4	3	15	54	1:24
3,6	0:45	9			3	8	29	0:49
3,6	0:30	10				7	17	0:34

## Compressed Air Ordinance

### Emergency Table 2: Decompression on Oxygen in Case of Emergency at Transgression of Permitted Working Time

– only allowed in accordance with the compressed air doctor! –

Attention: Oxygen Breathing is only allowed, when the pressure in the personnel lock is lowered down to 1,0 bar.  
The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes				Total Decompression Time
			1,5 bar	1,2 bar	1,0 bar	0,5 bar	
							Oxygen
bar	hrs. min.	min.	1,5 bar	1,2 bar	1,0 bar	0,5 bar	hrs. min.
0,7	9:30	1				11	0:12
0,7	9:00	1				9	0:10
0,7	8:00	1				6	0:07
0,8	9:30	1				16	0:17
0,8	9:00	1				14	0:15
0,8	8:00	1				12	0:13
0,9	9:00	2				33	0:35
0,9	8:00	2				20	0:22
1,0	9:00	2				60	1:02
1,0	8:00	2				36	0:38
1,0	7:30	2				29	0:31
1,1	8:30	1			11	64	1:16
1,1	8:00	1			11	51	1:03
1,2	8:00	1			17	69	1:27
1,3	8:00	1			26	84	1:51
1,3	7:00	1			22	58	1:21
1,4	7:30	2			33	85	2:00
1,4	7:00	2			30	72	1:44
1,5	7:30	2			40	99	2:21
1,5	7:00	2			37	85	2:04
1,6	6:00	2			39	65	1:46
1,7	6:00	3			47	77	2:07
1,8	5:30	3			49	69	2:01
1,9	5:00	3			50	61	1:54
2,0	4:45	4			54	59	1:57
2,1	4:15	4			53	45	1:42
2,2	4:00	4			55	42	1:41
2,3	3:45	5			57	39	1:41
2,4	3:30	5			57	36	1:38
2,5	3:30	5			62	40	1:47
2,6	3:15	6			62	36	1:44

**Emergency Table 2: Decompression on Oxygen in Case of Emergency at Transgression of Permitted Working Time (Cont.)**

– only allowed in accordance with the compressed air doctor! –

**Attention: Oxygen Breathing is only allowed, when the pressure in the personnel lock is lowered down to 1,0 bar. The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes				Total Decompression Time
			1,5 bar	1,2 bar	1,0 bar	0,5 bar	
					Oxygen		
bar	hrs. min.	min.	1,5 bar	1,2 bar	1,0 bar	0,5 bar	hrs. min.
2,7	3:00	6			60	32	1:38
2,8	3:00	6			64	36	1:49
2,9	2:45	6		4	62	32	1:44
3,0	2:45	6		9	65	35	1:55
3,1	2:30	7		10	62	31	1:50
3,2	2:30	7	3	12	65	32	1:59
3,3	2:15	6	3	11	61	29	1:50
3,4	2:15	7	6	13	63	32	2:01
3,5	2:00	7	5	11	58	27	1:48
3,6	2:00	7	8	12	61	28	1:56

## Compressed Air Ordinance

### Emergency Table 3: Decompression on Compressed Air during Technical Problems at the Oxygen Supply and at Transgression of Permitted Working Time (Cont.)

– only allowed in accordance with the compressed air doctor! –

**Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
0,7	9:30	2					14	0:16
0,7	9:00	2					11	0:13
0,7	8:00	2					7	0:09
0,8	9:30	2					21	0:23
0,8	9:00	2					19	0:21
0,8	8:00	2					15	0:17
0,9	9:00	2					46	0:48
0,9	8:00	2					29	0:31
1,0	9:00	3					87	1:30
1,0	8:00	3					53	0:56
1,0	7:30	3					41	0:44
1,1	8:30	3					106	1:49
1,1	8:00	3					87	1:30
1,2	8:00	3					124	2:07
1,2	7:00	3					80	1:23
1,3	8:00	3				2	143	2:28
1,3	7:00	4					104	1:48
1,3	6:30	4					88	1:32
1,4	7:30	3				28	158	3:09
1,4	7:00	3				18	132	2:33
1,4	6:30	3				12	109	2:04
1,5	7:30	3				60	193	4:16
1,5	7:00	3				48	168	3:39
1,5	6:00	3				25	112	2:20
1,6	6:30	4				64	173	4:01
1,6	6:00	4				49	142	3:15
1,7	6:00	4				76	172	4:12
1,7	5:30	4				59	138	3:21
1,8	5:30	4				83	166	4:14
1,8	5:00	4				64	129	3:18
1,9	5:00	5				87	155	4:07
1,9	4:30	5				66	117	3:08
1,9	4:00	5				51	96	2:32
1,9	3:30	5				40	80	2:05
1,9	3:00	5				28	69	1:42
1,9	2:30	5				12	60	1:17
1,9	2:00	5				3	42	0:50
1,9	1:30	6					27	0:33
1,9	1:00	6					14	0:20
1,9	0:30	6					5	0:11

## Compressed Air Work Regulations

### Emergency Table 3: Decompression on Compressed Air during Technical Problems at the Oxygen Supply and at Transgression of Permitted Working Time (Cont.)

– only allowed in accordance with the compressed air doctor! –

**Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
2,0	4:45	4			9	92	162	4:27
2,0	4:30	4			6	82	140	3:52
2,0	4:00	5				65	106	2:56
2,0	3:30	5				51	87	2:23
2,0	3:00	5				38	73	1:56
2,0	2:30	5				22	63	1:30
2,0	2:00	5				7	47	0:59
2,0	1:30	5				3	30	0:38
2,0	1:00	6					17	0:23
2,0	0:30	6					7	0:13
2,1	4:15	4			13	84	143	4:04
2,1	4:00	4			9	74	120	3:27
2,1	3:30	4			3	59	94	2:40
2,1	3:00	5				47	77	2:09
2,1	2:30	5				31	65	1:41
2,1	2:00	5				11	53	1:09
2,1	1:30	5				5	33	0:43
2,1	1:15	5				3	24	0:32
2,1	1:00	6					18	0:24
2,1	0:45	6					12	0:18
2,1	0:30	6					7	0:13
2,2	4:00	5			19	85	143	4:12
2,2	3:30	5			11	65	105	3:06
2,2	3:00	5			4	53	83	2:25
2,2	2:30	6				40	68	1:54
2,2	2:00	6				18	57	1:21
2,2	1:30	6				7	37	0:50
2,2	1:15	6				5	27	0:38
2,2	1:00	6				3	19	0:28
2,2	0:45	7					14	0:21
2,2	0:30	7					9	0:16
2,3	3:45	5			24	85	139	4:13
2,3	3:30	5			19	73	116	3:33
2,3	3:00	5			11	57	90	2:43
2,3	2:30	5			1	47	72	2:05
2,3	2:00	6				26	60	1:32
2,3	1:30	6				10	40	0:56
2,3	1:15	6				7	30	0:43
2,3	1:00	6				5	20	0:31
2,3	0:45	7					16	0:23
2,3	0:30	7					10	0:17

## Compressed Air Ordinance

### Emergency Table 3: Decompression on Compressed Air during Technical Problems at the Oxygen Supply and at Transgression of Permitted Working Time (Cont.)

– only allowed in accordance with the compressed air doctor! –

**Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
2,4	3:30	5			28	82	133	4:08
2,4	3:15	5			23	72	112	3:32
2,4	3:00	5			17	62	98	3:02
2,4	2:45	5			13	57	86	2:41
2,4	2:30	5			7	50	77	2:19
2,4	2:15	5			3	45	68	2:01
2,4	2:00	6				33	63	1:42
2,4	1:45	6				20	56	1:22
2,4	1:30	6				13	42	1:01
2,4	1:15	6				8	33	0:47
2,4	1:00	6				6	22	0:34
2,4	0:45	6				2	16	0:24
2,4	0:30	7					10	0:17
2,5	3:00	6			24	68	106	3:24
2,5	2:30	6			14	53	81	2:34
2,5	2:15	6			7	49	72	2:14
2,5	2:00	6			3	39	65	1:53
2,5	1:45	7				26	59	1:32
2,5	1:30	7				16	45	1:08
2,5	1:15	7				11	35	0:53
2,5	1:00	7				7	24	0:38
2,5	0:45	7				3	17	0:27
2,5	0:30	8					11	0:19
2,6	3:15	5		6	34	89	145	4:39
2,6	3:00	5		4	29	74	117	3:49
2,6	2:45	5		1	24	65	99	3:14
2,6	2:30	6			20	56	87	2:49
2,6	2:15	6			13	50	76	2:25
2,6	2:00	6			7	43	67	2:03
2,6	1:45	6			3	31	61	1:41
2,6	1:30	6			2	18	50	1:16
2,6	1:15	7				13	38	0:58
2,6	1:00	7				9	26	0:42
2,6	0:45	7				5	17	0:29
2,6	0:30	8					12	0:20
2,7	3:00	5		8	33	83	132	4:21
2,7	2:45	5		5	28	70	108	3:36
2,7	2:30	5		3	22	61	92	3:03
2,7	2:15	5		1	17	53	81	2:37
2,7	2:00	6			10	47	70	2:13
2,7	1:45	6			5	36	63	1:50
2,7	1:30	6			2	21	55	1:24
2,7	1:15	6			1	14	41	1:02
2,7	1:00	7				10	28	0:45
2,7	0:45	7				5	19	0:31
2,7	0:30	8					13	0:21

## Compressed Air Work Regulations

### Emergency Table 3: Decompression on Compressed Air during Technical Problems at the Oxygen Supply and at Transgression of Permitted Working Time (Cont.)

– only allowed in accordance with the compressed air doctor! –

**Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	bar	hrs. min.	min.	
bar	hrs. min.	min.	1,5 bar	1,2 bar	bar	hrs. min.	min.	1,5 bar
2,8	3:00	6		14	36	93	152	5:01
2,8	2:45	6		10	31	76	119	4:02
2,8	2:30	6		7	25	65	100	3:23
2,8	2:15	6		4	21	56	85	2:52
2,8	2:00	6		2	14	49	74	2:25
2,8	1:45	7			9	40	65	2:01
2,8	1:30	7			4	26	57	1:34
2,8	1:15	7			3	16	43	1:09
2,8	1:00	8				12	30	0:50
2,8	0:45	8				7	19	0:34
2,8	0:30	8				1	13	0:22
2,9	2:45	6		16	34	85	134	4:35
2,9	2:30	6		12	28	70	108	3:44
2,9	2:00	6		5	17	52	78	2:38
2,9	1:45	6		2	11	44	67	2:10
2,9	1:30	7			7	30	60	1:44
2,9	1:15	7			4	18	45	1:14
2,9	1:00	7			2	12	33	0:54
2,9	0:45	8				9	20	0:37
2,9	0:30	8				2	14	0:24
3,0	2:45	6		19	37	94	152	5:08
3,0	2:30	6		15	31	76	117	4:05
3,0	2:15	6		11	25	64	97	3:23
3,0	2:00	6		7	20	54	83	2:50
3,0	1:45	6		4	13	47	70	2:20
3,0	1:30	6		1	8	34	62	1:51
3,0	1:15	7			5	20	48	1:20
3,0	1:00	7			2	13	35	0:57
3,0	0:45	8				9	21	0:38
3,0	0:30	8				3	14	0:25
3,1	2:30	7		20	34	83	129	4:33
3,1	2:15	7		15	28	68	104	3:42
3,1	2:00	7		11	22	57	87	3:04
3,1	1:45	7		7	15	49	74	2:32
3,1	1:30	7		3	10	38	64	2:02
3,1	1:15	7		1	6	21	53	1:28
3,1	1:00	8			4	13	38	1:03
3,1	0:45	9				11	22	0:42
3,1	0:30	9				4	14	0:27
3,2	2:30	6	3	22	37	92	146	5:06
3,2	2:15	7		20	30	73	112	4:02
3,2	2:00	7		14	24	60	92	3:17
3,2	1:45	7		10	18	51	77	2:43
3,2	1:30	7		6	11	41	66	2:11
3,2	1:15	7		3	6	25	56	1:37
3,2	1:00	8			5	14	40	1:08
3,2	0:45	8			2	10	24	0:44
3,2	0:30	9				5	15	0:29

## Compressed Air Ordinance

---

### Emergency Table 3: Decompression on Compressed Air during Technical Problems at the Oxygen Supply and at Transgression of Permitted Working Time (Cont.)

– only allowed in accordance with the compressed air doctor! –

**Attention: The work pressure corresponds to the excess pressure going beyond the atmospheric pressure.**

Working Pressure	Exposure Period (without time of decompression)	Time to First Stop	Time at Stop Pressures during Decompression in minutes					Total Decompression Time
			1,5 bar	1,2 bar	0,9 bar	0,6 bar	0,3 bar	
bar	hrs. min.	min.						hrs. min.
3,3	2:15	6	3	21	33	78	122	4:23
3,3	2:00	6	1	16	26	64	97	3:30
3,3	1:45	7		12	20	53	81	2:53
3,3	1:30	7		8	11	45	68	2:19
3,3	1:15	7		3	7	28	59	1:44
3,3	1:00	7		1	5	16	41	1:10
3,3	0:45	8			2	11	26	0:47
3,3	0:30	9				5	15	0:29
3,4	2:15	7	6	22	36	86	135	4:52
3,4	2:00	7	4	18	28	68	104	3:49
3,4	1:45	7	1	14	22	56	85	3:05
3,4	1:30	8		10	14	47	70	2:29
3,4	1:15	8		5	8	32	60	1:53
3,4	1:00	8		2	6	17	43	1:16
3,4	0:45	9			3	11	28	0:51
3,4	0:30	10				6	16	0:32
3,5	2:00	7	6	20	31	72	111	4:07
3,5	1:45	7	3	16	23	59	89	3:17
3,5	1:30	8		13	16	49	73	2:39
3,5	1:15	8		7	10	35	62	2:02
3,5	1:00	8		4	6	18	46	1:22
3,5	0:45	9			4	12	29	0:54
3,5	0:30	10				7	17	0:34
3,6	2:00	7	8	21	33	75	121	4:25
3,6	1:45	7	5	17	25	45	104	3:23
3,6	1:30	7	2	13	18	51	76	2:47
3,6	1:15	8		2	7	30	82	2:09
3,6	1:00	8		4	3	15	54	1:24
3,6	0:45	9			3	8	29	0:49
3,6	0:30	10				7	17	0:34



### **Appendix 3 (in accordance with § 18 Section 1 No. 4 of the Work in Compressed Air Regulations) Instructions for Lock Attendants**

- (1) The lock attendant may only leave his/her post once he/she has been relieved by another attendant or after all persons have vacated the lock.
- (2) The lock attendant may only compress/decompress workers who have passed a physical examination conducted by the appointed doctor and are in possession of a written certificate stating that they are fit for such work. The lock attendant must ensure that the worker is in possession of such a certificate. The lock attendant must give workers who are being compressed for the first time instructions on all aspects of the necessary procedures and rules.
- (3) Workers who are under the influence of intoxicating liquor must not be permitted to enter the airlock. If, after the compression procedure has begun, the attendant notices that intoxicating liquor has been consumed, he/she must immediately halt the compression, decompress and eject such persons.
- (4) The lock attendant is responsible for ensuring that unauthorized persons do not operate the valves and that only the maximum number of occupants as posted inside the airlock are permitted to enter the airlock for compression/decompression.
- (5) The lock attendant is responsible for ensuring that the regulations for compression and decompression procedures are precisely followed. He/she must pay particular attention to the following:
  - (a) The compression time must be based on the time required by the lock occupant who takes longest to attain pressure equalisation. During compression the lock attendant must observe the occupants at all times. If an occupant experiences discomfort or exhibits symptoms of illness, then the pressure in the airlock must be reduced immediately and subsequently increased again at a slower rate. If the discomfort or symptoms persist, then the person should be decompressed and should leave the airlock. The incident should be reported to the expert (as appointed under the terms of § 18 Section 1 No. 1 of the Work in Compressed Air Regulations) or his deputy.
  - (b) Oxygen should always be used when decompressing workers from pressures of 0.7 bar and above. Table 1 of Appendix 2 should be adhered to. All occupants of the airlock should receive oxygen through tight-fitting face masks.
  - (c) If it is impossible to decompress the occupants with oxygen due to a technical failure of the oxygen system, then decompression should be performed with compressed air following Emergency Table 2 in Appendix 2.
  - (d) Workers forced to exceed the maximum time in the working chamber due to an emergency should be decompressed with oxygen following Emergency Table 2 in Appendix 2.
  - (e) If it is not possible to decompress the workers with oxygen in emergency situations as indicated in item d), then they should be decompressed with compressed air following Emergency Table 3 in Appendix 2.
  - (f) If the time spent exposed to pressure in the working chamber falls between two values shown in the body of the tables, then the higher value of exposure time should be applied as decompression time.
  - (g) If the pressure in the working chamber fluctuates regularly, e.g., due to the tides, or temporarily, then the decompression time must follow the values for the highest pressure to which the workers were exposed during the shift.
  - (h) The airlock must be well ventilated with fresh air during decompression.
- (6) The lock attendant may only deviate from the decompression values shown in the tables in Appendix 2 if there is a danger to the health and lives of the occupants. If this occurs, the supervisor for compressed air work or his deputy and the appointed doctor must be notified immediately. All workers subjected to shortened emergency decompression must be treated in the medical lock as soon as possible; if the site is not equipped with a medical lock, then the workers should be recompressed to the pressure in the working chamber and then gradually decompressed according to the times shown in the tables in Appendix 2.

## Compressed Air Ordinance

---

- (7) If, due to a leakage, the pressure in the airlock decreases faster than specified in the tables in Appendix 2 although the outlet valve is closed, then the lock attendant must let in sufficient quantities of compressed air to ensure that the pressure levels and decompression times shown in the tables are complied with.
- (8) If any occupant of the airlock complains of feeling unwell or exhibits symptoms of illness, then the lock attendant must interrupt the decompression procedure immediately and should remain at the current pressure level until the symptoms have cleared. If the symptoms persist after a few minutes have elapsed, then the pressure in the airlock should be increased again to the previous working pressure level. The lock attendant must notify the appointed doctor immediately and then decompress the worker very carefully and slowly unless given other instructions by the doctor.
- (9) The appointed doctor must always be notified before decompression is started if a compressed air worker has fallen ill or has had an accident. The appointed doctor's instructions and orders must be followed when decompressing sick workers or casualties.
- (10) The lock attendant must always report the names of sick workers or workers involved in an accident to his/her supervisor or the supervisor's deputy.
- (11) If the lock attendant becomes ill, then he/she must immediately notify his/her immediate superior and request a substitute.
- (12) The lock attendant must report any damage to the airlock or lock equipment (doors, valves, pressure gauges, pressure chart recorder, clock, telecommunications systems etc.) immediately to the site superintendent or his deputy.

The translation is sponsored by:



HOCHTIEF Construction AG, Civil Engineering and Tunneling  
Kruppstrasse 74, D-45145 Essen, Germany  
Tel.: +49 201 824-0; Fax: +49 201 8243833  
E-Mail: [tunneling@hochtief.de](mailto:tunneling@hochtief.de); Internet: [www.hochtief-construction.de](http://www.hochtief-construction.de)



NORDSEETAUCHER GmbH, Bramkampweg 9, D-22949 Ammersbek, Germany  
Tel.: +49 4102 2318 0; Fax: +49 4102 231820  
E-Mail: [info@nordseetaucher.de](mailto:info@nordseetaucher.de); Internet: [www.nordseetaucher.de](http://www.nordseetaucher.de)



Hyperbaric Training Center Deutschland e.V., Wolfgangsweg 6, D-20459 Hamburg  
Tel.: +49 40 31793607; Fax: +49 40 31793608  
E-Mail: [info@htcd.de](mailto:info@htcd.de); Internet: [www.htcd.de](http://www.htcd.de)