



## Safety and environmental information sheet (HSE-Guideline) "Working on oxygen systems<sup>\*</sup>"

### Note to the contractor:

- This HSE-guideline must always be used for work on oxygen systems (oxygen-conducting equipment) <sup>\*</sup> or in the manufacture or repair of components for use with oxygen<sup>\*</sup> (gaseous or liquid).
- Separate the "Confirmation of the Contractor" (last sheet of this HSE-guideline) and send it back to the Client completed and signed.
- Provide a copy of the HSE-guideline to the employees carrying out the Linde GmbH, Gases Division order.
- Your employees or employees of the subcontractor shall carry a copy of the confirmation at all times during the period of service delivery.

### 1. Scope

This safety note applies to third-party companies that receive orders from a client of the Linde GmbH, Gases Division. It's part of the order. The regulations of the general HSE-Guideline "Working of contractors" always apply in addition.

<sup>\*</sup>The term "oxygen" used in this HSE-guideline refers to pure oxygen and gas mixtures of inert gases and oxygen with more than 21 % oxygen.

### 2. Rules

The client is responsible for ensuring that the following specifications are reliably and proven to be met and implemented in the case of work on oxygen systems or during the manufacture or repair of components for use with oxygen:

- Information sheet "Oxygen" DGVU 213-073 of the German Accident Insurance Act 6/2010
- Information sheet "List of non-metallic materials" DGVU 213-075 of the German statutory accident insurances – as of 12/2022
- IGC document 33/97 "Cleaning of Equipment for oxygen service"
- IGC document 13/02/E "Oxygen Pipeline Systems" – as of 08/2020 (only applicable to the specified scope of work)

The DGVU leaflets can be obtained at <http://bgcshop.jedermann.de/shop>. The IGC documents of the EIGA are available at <http://eiga.org>.

The requirements of the Pressure Equipment Directive or Operational Safety Regulation remain unaffected.

### 3. Principles

Work on oxygen systems or the manufacture or repair of components for use with oxygen<sup>\*</sup> requires special safety expertise and measures as well as a high level of sensitivity.

Experience shows that failure to comply with the above rules can lead to serious property damage or accidents.

Deviations from the specifications are only permitted after consultation with the client and written confirmation.

### 4. Instruction

Before the start of the work, the Contractor must instruct its employees about the provisions of this HSE-guideline and the additional requirements mentioned.



## 5. Protective measures

### 5.1 Oils, fats and other impurities

Because of the risk of ignition, all components that come into contact with oxygen must be cleaned and clean for oxygen operation, as far as this is technically possible. That means they must be cleansed of

- loose or detachable parts such as slag, rust, welding residues and blasting material,
- Oil, fat and solvents,
- other foreign substances and particles such as packaging material, rust inhibitors and machining chips.

The cleaning procedures to be applied must be adapted to the plant parts to be cleaned, e.g. their application, type and size, and matched to the type of the contamination. Contact with oily cleaning cloths or greasy fingers should also be avoided. Clothing contaminated with oil or fat must not be worn.

For components charged with oxygen pressure of more than 30 bar, the permissible value for residual oil or residual fat content of 200 mg/m<sup>2</sup> must be maintained. The cleanliness must be proven in writing.

In the case of cleaned equipment, ensure that all impurities and residues of the detergents are completely removed before installation or commissioning, as far as technically possible.

### 5.2 Sealing materials and lubricant

In the case of oxygen-carrying systems and system parts, slip agents or lubricants should be avoided. If these are technically necessary, they must be used extremely sparingly.

Only tested sealing materials and lubricants found to be suitable may be used. Sealing materials and lubricant are suitable if they are listed in DGUV 213-075 "List of non-metallic materials".

Special attention should be paid to dangerous confusion, especially in the case of repair and assembly work.

### 5.3 Equipment

All equipment in oxygen-bearing plants must be demonstrably suitable according to type and material for oxygen, as well as the required pressures and temperatures.

Fittings, hoses and plant parts are suitable if they are listed in DGUV's "List of fittings, hoses and plant parts" DGUV 213-076. For pipelines special requirements must be observed depending on the operating pressure when selecting and laying them.

Insulation materials must not react dangerously with oxygen.

## 6. Tests

According to the classification according to the Pressure Equipment Directive or Operational Safety Regulation, tests must be carried out and documented by a "qualified person" or "approved monitoring body".

In any case, a leakage test is always required and documented at plants, plant parts and sections. The leakage test must be carried out with oil free inert gas, oil free air or oxygen at operating pressure.



## Confirmation

## of the Contractor

We have received and took note of the safety and environmental information sheet (HSE-Guideline) "Working on oxygen plants" from Linde Gas.

We commit ourselves to complying with the provisions of this HSE-Guideline and will also pass this information sheet on to our employees responsible for the execution of the order and oblige them to comply with the described regulations.

The executing staff shall carry a copy of this confirmation to the submission.

We refer to your SAP order number: 81.....

**We name as contact person:**

\_\_\_\_\_  
Company stamps

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name in block letters/signature

Important: Return to the buyer mentioned in the order.