



Safety instruction.

Ozone, O₂



Oxygen O₂ (Industrial)

Features Gaseous oxygen is colourless, odourless and tasteless; it is slightly heavier than air. Liquid oxygen is odourless, light blue in colour and boils at -183°C. One litre of liquid oxygen yields about 840 litres of gaseous oxygen. Oxygen is essential to sustain life and readily combines with other elements. Its concentration in the air is 21%. Oxygen leaks can be detected in the welding industry using ODOROX® odorous oxygen (O₂ +DMS).

Security risks Oxygen is not a combustible gas, but it strongly sustains combustion. When there is more than 21% oxygen in the air, combustible materials ignite more easily and burn more violently. These effects become more pronounced as the oxygen concentration in the air increases. Many commonly used materials that do not normally burn in air may burn in pure oxygen or oxygen-enriched air. When liquid oxygen evaporates, the vaporised gas is very cold and much heavier than air. It can therefore accumulate in drains or basements, for example, and cause an increase in oxygen levels.

Frostbite Liquid oxygen and cold oxygen vapours can cause skin damage similar to burns. Contact of bare skin with uninsulated parts of the device may cause the skin to stick and tear when removed. If this happens, the damaged areas should be immediately rinsed with plenty of lukewarm water and not rubbed. Contact the medical staff.

Effect on respiration Pure oxygen at normal atmospheric pressure is not harmful provided that air with high oxygen concentrations is not breathed for more than 24 hours.

Material selection Certain steels, such as carbon steel and some other materials, are unsuitable for use at low temperatures because they lose their impact resistance and become very brittle. Materials normally suitable for use at low temperatures include stainless steel, aluminium, copper and their alloys. Where liquid oxygen is handled, care must be taken to ensure that it does not come into contact with unsuitable materials such as cold-hardened steel or vehicle tyres.

Security measures Smoking and open fires are prohibited in areas where oxygen is handled. Staff should not enter confined areas where there may be elevated oxygen levels. If you have been in an oxygen-enriched room, your clothes should be carefully aired. Tools and clothing must be oil- and grease-free. Any equipment used with oxygen must not come into contact with oil or grease. When handling liquid oxygen, wear suitable gloves, eye protection, safety shoes and body protection.

Restrictions on use Use oxygen only in equipment and objects designed for oxygen use. It is extremely dangerous to use oxygen as a substitute for nitrogen, inert gas or air in the following or similar applications:

- Starting internal combustion engines
- Use of pneumatic tools
- Pressurisation of tanks
- Spray painting
- Car tyre inflation
- Flushing tanks and pipelines for maintenance or inspection
- Enriching the air you breathe when there is not enough oxygen in the air

Fire prevention Since oxygen strongly supports combustion, rapid closure of oxygen valves may reduce the intensity of the fire. If possible, move the cylinders to a safe place. Protect cylinders from heating to avoid explosion.