

Safety Advice.

19 – CO₂ / O₂ mixtures in packaging machines.



1. Introduction

Mixtures of CO₂ and O₂ are sold under the names of BIOGON OC 25 and BIOGON OC 30, etc. and are used to pack food.

2. Properties

BIOGON OC 25 is a gas mixture consisting of 25 % by volume of carbon dioxide and 75 % by volume of oxygen. BIOGON OC 30 consists of 30 % by volume of carbon dioxide and 70% by volume of oxygen. Both gas mixtures are fire-promoting. If they are used improperly with flammable materials (packaging film, foods containing fat, textiles, plastics, etc.), they may react with vigorous combustion. To avoid such risks, follow the Safety Advice below. Further details on the properties of both gas mixtures can be found in the Material Safety Data Sheet.

3. Suitability of the packaging machine

Use BIOGON OC 25 and OC 30 in packaging machines only if the manufacturer has explicitly declared that the machines are suitable for use with oxygen.

4. Suitability of the packaging film

- Use packaging film that has an ignition temperature in oxygen of at least 250°C. The ignition temperature must be at least 50°C higher than the temperature of the sealing tool.
- The packaging film should not be damaged so that no gas can emerge from the package.

5. Installation room for the packaging machine

- The installation room must have mechanical ventilation if gas emerges from the

machine during operation.

- The installation room should have mechanical or natural ventilation if gas can occasionally leak into the room.
- The air in the installation room should contain max. 0.5% by volume of carbon dioxide. Check that this value is maintained by measuring the CO₂ concentration.
- Keep at least two powder fire extinguishers in the installation room.
- The installation room should have an escape route into the open.
- Do not store any flammable materials such as paper or packaging material in the installation room.
- Do not smoke or allow open fire in the installation room.
- Display operating instructions for the packaging machine in the installation room.
- If there is an oxygen accumulation of more than 21% by volume in the installation room, ensure that all persons leave the room immediately and air their outer clothing to remove oxygen from the fabric. Air the installation room and do not re-enter the room until the oxygen accumulation has diminished.

6. Gas supply

- Store gas cylinders containing BIOGON outside the room with the machine either in the open or in a separate room. Secure gas cylinders to prevent them from falling over.
- Take gas from the gas cylinders through a pressure regulator and supply it to the machine through a permanently installed pipe.
- The pipe must be made of copper or stainless steel and should have permanent joints (brazed or welded). The flow rate of the gas in the pipe should not exceed 25 m/s.

- If flexible hoses are used for gas supply, they must be made of stainless steel.
- Ensure that the machine operator has the means of cutting off the gas supply to the machine from his workplace (manual valve or remote-controlled valve). Close this valve if gas leaks or if there is a fire in the installation room.

7. Fire protection during operation of the packaging machine

- Supply gas to the machine only if this is operating properly.
- If the machine stops or if the supply of packaging film is disrupted, cut off the supply of gas to the machine.
- The sealing tool should not be hotter than 200 °C.
- Check regularly that the heating coil of the sealing tool is properly sealed.

8. Fire protection for packed food

- As long as the gas is properly sealed in the packaging film, there is no increased risk of fire. This applies even if the film rips on a few packages.
- If the film rips in many packages, the emerging gas will cause oxygen accumulation and a risk of fire. In this case the room concerned must be aired intensively.
- Do not use open fire near the packages.
- Precautions for electrostatic sparks are not necessary.

9. Instructions for repair and maintenance work

- Prior to any repair and maintenance work, cut off the supply of gas to the machine.
- Repair leaks in the gas supply (pipe, hoses, fittings) immediately.

- For the vacuum pump use only vacuum pump oil that is approved of for oxygen.
- Keep oil and grease away from all parts of the machine that come into contact with the gas.



Creation of a protective atmosphere in reusable containers

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