

# Restrictions on Use of Non Metallic Materials in High Pressure Breathing Gas Systems

## Safety Concern

Many medical breathing systems contain halogenated polymers in valves, regulators and hoses as they generally offer greater resistance to ignition than non-halogenated polymers. However, such materials are not suitable for use in medical breathing systems because of the nature of their constituents.

The risk of ignition inherent in this use has been well known for many years and applies to any high-pressure oxygen application. As a consequence, toxic products could be released by ignition or thermal decomposition of non-metallic materials in high pressure oxygen breathing gas systems. Depending on the type of non-metallic material, application, quantity of toxic gases produced, concentration levels, and the duration of exposure, these gases could cause serious injury or death.

## ANZIGA Requirements

As part of a programme of harmonization of industry standards, the European Industrial Gases Association (EIGA) publication, EIGA Doc 73, *Use of non-metallic materials in high pressure oxygen breathing gas applications*, has been used as the basis of an internationally harmonized gas association's publication on this subject. This publication is freely available on the EIGA website [www.eiga.org](http://www.eiga.org).

**ANZIGA endorses this publication for application in Australia.**

The publication addresses high pressure oxygen breathing gas systems with pressures greater than or equal to 30 bar and with an oxygen content above 23.5% by volume. It applies in particular to non-metallic materials which if they ignite or decompose could contaminate the gas stream with toxic products.

The recommendation of this publication can be beneficially applied at pressures lower than 30 bar.

The publication is to be applied to high pressure customer breathing installations (for example, hospitals and other healthcare facilities where medical gases are reticulated), where the ignition of non-metallic materials creates an immediate risk of inhalation of toxic products. This includes all elements of that installation from cylinder valve to the point of use.

The publication is not intended to apply to cylinder filling centres though it is recommended that the toxicity issue is addressed by a risk assessment of the filling system design for the filling of breathable gases.

The publication is intended to help prevent incidents resulting from the inhalation of toxic products, either of sufficient quantity or significant toxicity that could be created by the ignition or decomposition of non-metallic materials.

The gas supplier can assist breathing gas customers on the potential hazards of non-metallic materials, particularly halogenated polymers, and assist with how to minimise the risk.



## ANZIGA

ANZIGA is the peak industry group for the manufacture and distribution of gases in Australia and New Zealand. As a leading industry association, ANZIGA promotes the highest standards of safety, quality and reliability.

### ANZIGA aims to:

- consult with government authorities and organisations that make policy or prepare regulations and standards which govern the production, transportation, storage, handling and use of gases.
- collaborate with other industry and trade organisations on safety and technical matters, including public programs that relate to the gases industry.
- produce information that promotes the safe storage, handling and use of gases.

The members of ANZIGA produce and distribute gases for the health and medical, manufacturing, food, scientific and hospitality industries.

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