

Extract from:

Explosions and Fires in Aluminum Oxygen Regulators

FDA And NIOSH Public Health Advisory:
Explosions and Fires in Aluminium Oxygen Regulators
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Safe Practices for Handling and Operating Oxygen Equipment

Oxygen used in the medical profession can be very hazardous. Although oxygen does not burn, it does support combustion. A material, which will not burn in air may burn in high pressure pure oxygen - such as the metal in oxygen regulators or cylinders. Comprehensive guidelines and training on safe practices for handling oxygen are available from several sources listed at the end of this section. Some general guidelines for minimizing the chance of fire are provided below:

Storage, Maintenance and Handling:

- Do not allow smoking around oxygen.
- Store oxygen in clean, dry locations away from direct sunlight.
- Do not allow post valves, regulators, gauges, and fittings to come into contact with oils, greases, organic lubricants, rubber or any other combustible substance.
- Make sure that any cleaning, repair or transfilling of oxygen equipment is performed by qualified, properly trained staff.
- Do not work on oxygen equipment with ordinary tools. Designate special tools, clean them and store them for Use With Oxygen Equipment Only.
- Ensure that any components added to the regulator, e.g., gauge guards, are installed so that they do not block the regulator vent holes.
- Use plugs, caps and plastic bags to protect "off duty" equipment from dust and dirt.
- Particulate migration from the cylinder can be minimized by the installation of a standoff tube (bayonette) at the inlet of the post valve.

Use:

- Make sure that staff using oxygen equipment are adequately trained in its operation and in oxygen safety and have knowledge of manufacturers instructions for using the equipment.
- Visually inspect the post valve gasket and regulator inlet prior to installation. If they are not visually clean they should not be used.
- Momentarily open and close ("Crack") the post valve to blow out debris prior to installing a regulator.
- Ensure that the regulator is set with the flow knob in the off position before attaching it to the cylinder.
- Position the equipment so that valve is pointed away from the user and any other persons.

- Open the cylinder valve slowly and completely to minimize the heat produced and achieve the desired flow conditions within the equipment.
- Do not look at the regulator pressure gauge until the cylinder valve is fully opened.

Additional information, guidance and training regarding oxygen and fire safety can be obtained from a number of sources, including the following organizations:

- Compressed Gas Association, 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102 (www.cganet.com)
- National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269-9101 (www.nfpa.org)
- American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 (www.astm.org)
- Centres for Disease Control and Prevention National Institute for Occupational Safety and Health, Division of Safety Research. **Oxygen Regulator Flash Severely Burns One Fire Fighter - Florida**, Report Number 98-F23. This report is available on the NIOSH homepage at: (www.cdc.gov/niosh/firehome.html).