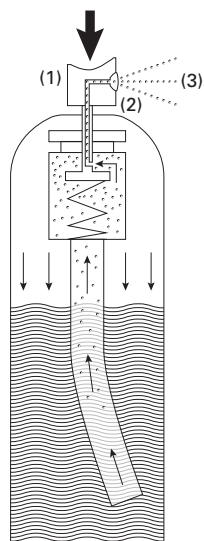


This article is applicable to the storage of self-pressurised flammable aerosol containers, with a focus on reducing the associated risks of fire initiation and spread.

Throughout this article the terms flammable; highly flammable and extremely flammable are interchangeable.

### What is an aerosol?

An aerosol is a suspension of fine particles (or liquid droplets) in a gas.



**Aerosol can (cutaway view). When the plunger (1) is pressed, a hole in the valve (2) allows a pressurised mixture of product and propellant (3) to flow through the plunger's exit orifice.**

### What is an aerosol container?

An aerosol container is a dispenser that holds a substance under pressure that is released as a fine spray (aerosol) when activated. The propellant gas is often flammable (propane, butane and isobutane).

Typically aerosol containers are used for the storage of substances including: insecticides, cleaning agents, deodorant, hair and personal care products, lubricants, paints, adhesives and sealants amongst other things. The substance itself is often flammable in addition to the propellant.

### Why are flammable aerosols dangerous?

Combustible packaging material (cardboard, plastic and timber) is normally ignited first. Flammable aerosol containers that subsequently become involved in a fire can produce intense heat and rocketing of ruptured containers, spreading fire over a wide area and making fire fighting extremely difficult.

Sprinkler systems are not designed to cope with multiple fire events such as those involving flammable aerosol containers, unless they are enclosed within a purposely designed metal cage.

Flammable aerosol containers have been directly involved in many large, costly and occasionally fatal fire incidents.

### How can the risks be controlled?

The fire hazards associated with flammable aerosol containers can be reduced by using the hierarchy of controls below:

1. **Remove** – Can the storage of flammable aerosol containers be removed off site e.g. to a specially licensed third party storage facility?
2. **Replace** – Is there a safer alternative? E.g. replacing flammable aerosol products with a water based, non-flammable substitute.
3. **Reduce** – Can the quantity of flammable aerosol containers be reduced e.g. by supply chain management? A significant quantity is considered to be 100 litres or more of flammable aerosol, as per the Australian Dangerous Goods Code. Can the storage height be reduced?
4. **Segregate or isolate** – Can flammable aerosol containers be segregated or isolated from other stock in a separate building or fire resisting enclosure? Alternatively, can they be totally enclosed within a stout steel mesh cage of appropriate size and strength, including self closing doors, to prevent projection of exploding aerosols?

5. **Control** – When consideration is being given to the storage of flammable aerosol containers, a risk assessment should be carried out in accordance with the Manufacturer's Safety Data Sheets, Factory Mutual (FM) Data Sheet 7-31, Australian Standard (AS) 4332:2004 and the Australian Dangerous Goods Code. It is also advisable to involve the local fire brigade, health and safety representative and Vero with this process.

This risk assessment should consider:

- ▼ Training and competency of employees in the storage and handling of flammable aerosol containers.
- ▼ Life safety and fire evacuation.
- ▼ Fire inception and spread hazards including hazardous area electrics.
- ▼ Control of contractors and work permits.
- ▼ The adequacy and design of fire protection systems and water supplies.
- ▼ Temperature and ventilation in the storage environment.
- ▼ Bunding and containment of resultant spillage from flammable aerosols.
- ▼ The prominent display of safety warning signs.

### Further information

Factory Mutual (FM) Data Sheet 7-31, January 2012, Storage of Aerosol Products

Australian Standard (AS) 4332:2004 – The Storage and Handling of Gases in Cylinders

Australian Dangerous Goods Code (ADGC) Version 7

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