

# Site and Storage Conditions for Aerosols

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## Introduction

This document sets out the site and storage conditions for flammable (class 2.1.2A) and non-flammable aerosols. Aerosols may also have toxic, corrosive and/or ecotoxic properties (HSNO classes 6, 8 and/or 9), but no other hazardous properties.

The conditions set out in this document are incorporated into a group standard by reference, and form part of that group standard. A substance must comply with the conditions in this document as part of the group standard approval.

This document has been compiled from the following:

- Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001; and
- Hazardous Substances (Emergency Management) Regulations 2001; and
- Hazardous Substances (Identification) Regulations 2001; and
- Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004.

Further information on the source of each condition is given in the section “Source Regulations and Controls”.

This document was published July 2006.

# Site and Storage Conditions

## Part 1 Flammability Conditions

### 1 Quantities

- (1) In determining whether the requirements for an approved handler, a hazardous substance location, a transit zone, or a test certificate are activated, the relevant quantity has been exceeded if the quantity-ratio sum is greater than one when determined in accordance with the following formula:

$$\text{quantity-ratio sum} = \Sigma [qp_i/qa_i]$$

where—

$\Sigma$  is the symbol for summation (in this case, summation of the calculated ratios for all flammable hazard classifications present for class 2, 3 and 4 substances)

$qp_i$  is the quantity of substance with a particular flammable hazard classification present

$qa_i$  is the quantity of substance of that flammable hazard classification that activates the relevant requirement

- (2) Where a quantity of gas is specified as cubic metres (m<sup>3</sup>), this volume is determined by taking the contents and conditions of the gas held in a container and then calculating the volume that the gas would occupy at 15°C and 101.3 kPa absolute pressure. Where the quantity of gas is specified in kilograms, this refers to the net weight of the gas in liquefied form as held in its container.
- (3) When considering quantities under subclauses (1) and (2) the quantities of all hazardous substances must be taken into account, howsoever those substances were approved under the Act.

### 2 Test certification

- (1) Where a test certificate is required for a hazardous substance location, that test certificate must be renewed at intervals of not more than 12 months, unless on request of the person or persons required to obtain the test certificate the Authority specifies a longer time limit for which the test certificate is valid.
- (2) The longer time limit specified by the Authority may not exceed 36 months.
- (3) When specifying the time limit, the Authority must take into account—
- (a) the maximum quantities and types of hazardous substances present or likely to be present at the relevant place; and
  - (b) the review and monitoring systems in place for the management of those substances; and

- (c) the compliance history of the organisation concerned and of the persons in charge of the substances.
- (4) Where there is a requirement to obtain more than one test certificate—
- (a) the test certifier may, on request of the person or persons required to obtain the test certificates, examine at the same time any or all of those matters that require test certification for which the certifier is competent to certify; and
  - (b) where more than one matter has been examined, the report provided by the certifier must indicate whether or not the respective requirements have been met and must give the reasons for any failure to meet those requirements; and
  - (c) a single test certificate may be issued for any or all of those matters where the requirements have been met.

### **3 General limits on flammable aerosols**

Where flammable aerosols are present at a place in a quantity that exceeds 3,000 L aggregate water capacity for more than 18 hours, they must be held at a hazardous substance location or, if applicable, at a transit depot.

### **4 Requirement to establish a hazardous atmosphere zone**

At any place containing flammable aerosols in quantities in excess of 3,000 L aggregate water capacity, the person in charge of the substances must ensure that a hazardous atmosphere zone is established that complies with—

- (a) AS/NZS 2430.3; or
- (b) AS/NZS 60079.10: 2004; or
- (c) a code of practice approved by the Authority that specifies hazardous zones equivalent to the requirements specified in subclauses (a) and (b) and takes into account the risk of the presence of flammable materials.

### **5 Application of legislation to electrical systems located in hazardous atmosphere zones**

- (1) Where any electrical installation or any electrical appliance within the scope of the Electricity Regulations 1997 is located within a hazardous atmosphere zone, the conditions imposed on that installation or appliance under the Act are the same as the controls that are included in those parts of the Electricity Act 1992, and regulations, codes and standards made or recognized under that Act, that relate to hazardous areas.
- (2) Where any electrical system is located within an underground mine, the conditions imposed on that electrical system under the Act are the same as the controls that are included in those parts of the Health and Safety in Employment (Mining-Underground) Regulations 1999 that relate to gassy mines.
- (3) Where electrical equipment is installed on a ship, vessel, or boat (other than a pleasure vessel containing connectible installations), the conditions imposed on that electrical equipment under the Act are the same as the controls that are included in those parts of

the Maritime Rules made under the Maritime Transport Act 1994 that relate to hazardous areas.

- (4) Where electrical equipment is installed on any train, locomotive, tram, or trolley bus, the conditions imposed on that electrical equipment under the Act are the same as the controls that are included in those parts of the Transport Services Act 1989 or the Railways Act 2005 or rules made under the Land Transport Act 1998 that relate to hazardous areas.
- (5) Where any electrical equipment is installed on an aircraft that is under the jurisdiction of the Civil Aviation Rules, the conditions imposed on that electrical equipment under the Act are the same as the controls that are included in those parts of the Civil Aviation Rules that relate to hazardous areas.
- (6) Where any electrical equipment is used within a hazardous atmosphere zone around an aircraft but is not installed on the aircraft, the conditions imposed on that electrical equipment under the Act are the same as the controls that are included in those parts of the Electricity Act 1992, and regulations, codes, and standards made or recognised under that Act, that relate to hazardous areas.
- (7) For the purposes of subclause (1), the terms electrical installation, electrical appliance, and hazardous area have the meanings given to them in the Electricity Act 1992.
- (8) For the purposes of subclause (2), the terms electrical system and gassy mine have the meanings given to them in the Health and Safety in Employment (Mining—Underground) Regulations 1999.

## **6 Requirements to reduce likelihood of unintended ignition of flammable aerosols**

- (1) Unless a flammable aerosol is intentionally burned, in circumstances where any air or oxygen is present with such a flammable aerosol the person in charge of the substance must—
  - (a) elect to manage the flammable aerosol under the sets of conditions specified in any one of clauses 7, 9, 11, 13, and 15; and
  - (b) where clause 7 is elected, manage the flammable aerosol under the provisions specified in subclause (2) or subclause (6) of that clause; and
  - (c) where clause 9 is elected, manage the flammable aerosol under the provision specified in either subclause (3) or subclause (4) of that clause; and
  - (d) where clause 11 is elected, manage the flammable aerosol under the provisions specified in either subclause (3) or subclause (4) of that clause; and
  - (e) ensure that the requirements of the chosen clause are complied with in full; and
  - (f) record which clause the substance is being managed under, and have that record available for inspection.
- (2) Despite the requirements of Part 3 (Approved Handler) of Schedule 1 to the Group Standard relating to a class 2.1.2A substance, any person handling a flammable aerosol under any of clauses 9(4), 11, 13 and 15 must be an approved handler for that flammable aerosol.

## **7 Circumstances involving control of ignition sources available to flammable aerosols**

- (1) Every person who elects to manage a flammable aerosol under clause 6(1), by controlling ignition sources (but not the proportion of flammable vapour or gas to air), must ensure that in any place the flammable aerosol is located the requirements of this clause are met.
- (2) Where a flammable aerosol is within any hazardous atmosphere zone—
  - (a) the temperature of the flammable aerosol and the temperature of any surface in contact with the flammable aerosol must not exceed 80% of the auto-ignition temperature in °C for that flammable aerosol; and
  - (b) any permanently fixed equipment or part of such equipment or containers must be effectively electrically bonded and earthed so that the maximum resistance to earth is—
    - (i) 1 M $\Omega$ , for components that have an electrical resistance greater than or equal to 1 M $\Omega$ ; and
    - (ii) 10  $\Omega$ , for components that have an electrical resistance of between 10  $\Omega$  and 1 M $\Omega$ ; and
  - (c) the flammable aerosol must be managed under one of the three sets of provisions set out in subclauses (3), (4), and (5) respectively.

### **(3) SET OF PROVISIONS 1**

There must be no ignition source present, unless it can be shown that any release of spark energy would transfer to the mixture of vapour or gas to air less than 10% of the minimum ignition energy of the flammable aerosol in air.

### **(4) SET OF PROVISIONS 2**

- (a) there must be no ignition source present, unless it can be shown that any release of spark energy would transfer to the mixture of vapour or gas to air less than 25% of the minimum ignition energy of the flammable aerosol in air; and
- (b) persons managing flammable aerosols in accordance with subclause (4)(a) must operate in accordance with a code of practice approved under section 78 of the Act as meeting the requirements of the subclause for the purposes of this subclause.

### **(5) SET OF PROVISIONS 3**

In any situation except situations covered by clause 5, any ignition source located in a hazardous atmosphere zone must be protected in such a way that, in the circumstances in which it is installed (including the presence of dust and particulate matter), it cannot ignite any gas/air mixture or vapour/air mixture formed from the flammable aerosols present.

- (6) At any place where the quantities of flammable aerosols present are not sufficient to require the establishment of a hazardous atmosphere zone but where—

- (a) the concentration of vapour or gas may exceed 25% of the LEL; and
- (b) flammable aerosols are present in quantities greater than 10% of that required to trigger the hazardous atmosphere zone requirements—

then the following requirements apply:

- (c) there must be no ignition source present, unless it can be shown that any release of spark energy would transfer to the mixture of vapour or gas to air less than 10% of the minimum ignition energy of the flammable aerosol in air; and
- (d) the temperature of the flammable aerosol, or the temperature of any surface in contact with the flammable aerosol must not exceed 80% of the auto-ignition temperature for that aerosol.

## 8 Methods of complying with clause 7

- (1) In the case of an electrical ignition source, compliance with one of, or where applicable a combination of, the explosion-protection techniques listed in Table 2.1 of AS 2380.1: 1989 meets the requirements of clause 7(5).
- (2) The requirements of clause 7(2)(a) are met if either—
  - (a) there is compliance with AS/NZS 2381.1: 2005 relating to the matters described in clause 7(2)(a); or
  - (b) any equipment and any surface in contact with the flammable aerosol conform to the temperatures given in Table 1, and the temperature of the flammable aerosol is kept below 40°C.
- (3) Compliance with AS/NZS 1020: 1995 meets the requirement of clause 7(2)(b) for the dissipation of static electricity from components that have an electrical resistance of between 10 Ω and 1 MΩ.

**Table 1. Maximum surface temperature of equipment that may contact flammable aerosols of known auto-ignition temperatures**

Auto-ignition temperature	Required temperature of surfaces in contact with mixture of flammable vapour evolving from substances and air
More than 562.5°C	<450°C
375 – 562.5°C	<300°C
250 – 375°C	<200°C
169 – 250°C	<135°C
125 – 169°C	<100°C
Less than 125°C	<85°C

## 9 Circumstances involving control of both proportion of vapour or gas to air and amount of energy available

- (1) Every person who elects to manage a flammable aerosol under clause 6(1), by controlling both the proportion of flammable vapour or flammable gas to air, and the amount of energy available, must ensure that in any place the aerosol is located the requirements of this clause are met.

- (2) A flammable aerosol must be managed under one of the two sets of provisions set out in subclauses (3) and (4) respectively.
- (3) SET OF PROVISIONS 1
- (a) The proportion of flammable vapour or flammable gas to air at all times must be below 25% of the LEL or above 4 times the UEL; and
- (b) either—
- (i) there must be no ignition source present, unless it can be shown that any release of spark energy would transfer to the mixture of vapour or gas to air less than 25% of the minimum ignition energy of the flammable aerosol in air; or
- (ii) in any situation except situations covered by clause 5, any ignition source located in an area where flammable vapour or gas is present at greater than 10% of the LEL must be protected in such a way that, in the circumstances in which it is installed (including the presence of dust and particulate matter), it cannot ignite any vapour/air mixture or gas/air mixture formed from the flammable aerosols present.
- (4) SET OF PROVISIONS 2
- (a) The proportion of flammable vapour to air must at all times be below 50% of the LEL; and
- (b) there must be a system in place to continuously monitor and control the concentration of vapour to meet the requirements of subclause (4)(a); and
- (c) persons managing flammable aerosols according to this subclause must operate in accordance with a code of practice approved under section 78 of the Act as meeting the requirements of this subclause; and
- (d) either—
- (i) there must be no ignition source present, unless it can be shown that any release of spark energy would transfer to the mixture of vapour or gas to air less than 50% of the minimum ignition energy of the flammable aerosol in air; and there is a system in place to continuously monitor and control the amount of ignition energy present to meet the requirements of this subclause; or
- (ii) in any situation except situations covered by clause 5, any ignition source located in an area where flammable vapour or gas is present at greater than 10% of the LEL must be protected in such a way that, in the circumstances in which it is installed (including the presence of dust and particulate matter), it cannot ignite any vapour/air mixture or gas/air mixture formed from the flammable aerosols present.
- (5) The temperature of the flammable aerosol and the temperature of any surface in contact with the flammable aerosol must not exceed 80% of the auto-ignition temperature for that flammable aerosol.

- (6) At any place where a flammable aerosol is present in quantities greater than 3,000 L aggregate water capacity, any permanently fixed equipment or container or part of any such equipment or container must be electrically bonded and earthed so that the maximum allowable resistance to earth is—
  - (a) 1 M $\Omega$ , for dissipation of static electricity from components that have an electrical resistance greater than or equal to 1 M $\Omega$ ; and
  - (b) 10  $\Omega$ , for the dissipation of static electricity from components that have an electrical resistance of less than 1 M $\Omega$ .

## **10 Methods of complying with clause 9**

- (1) In the case of an electrical ignition source, compliance with one of, or where applicable a combination of, the explosion-protection techniques listed in Table 2.1 of AS 2380.1: 1989 meets the requirements of clauses 9(3)(b)(ii) and 9(4)(d)(ii).
- (2) The requirements of clause 9(5) are met if either—
  - (a) there is compliance with AS/NZS 2381.1: 2005 relating to the matters described in clause 9(5); or
  - (b) any equipment and any surface in contact with the flammable aerosol conform to the temperatures given in Table 1 (see clause 8), and the temperature of the flammable aerosol is kept below 40°C.
- (3) Compliance with AS/NZS 1020: 1995 is a means of meeting the requirements of clause 9(6) for the dissipation of static electricity from components that have an electrical resistance of between 10  $\Omega$  and 1 M $\Omega$ .

## **11 Circumstances involving control of proportion of vapour or gas to air, but not level of energy**

- (1) Every person who elects to manage a flammable aerosol under clause 6(1), by controlling the proportion of vapour or gas to air (but not the level of energy) must ensure that, in any place such a flammable aerosol is located, the requirements of this clause are met.
- (2) A flammable aerosol must be managed under one of the two sets of provisions set out in subclauses (3) and (4).
- (3) SET OF PROVISIONS 1  

The proportion of vapour or gas to air must at all times be kept below 10% of the LEL or above 10 times the UEL.
- (4) SET OF PROVISIONS 2  

Where the proportion of vapour or gas to air may be greater than 10% of the LEL or less than 10 times the UEL—

  - (a) the proportion of vapour to air must at all times be kept either below 50% of the LEL or above 2 times the UEL; and

- (b) there must be a system in place to continuously monitor and control the concentration of vapour to meet the requirements of subclause (4)(a); and
- (c) persons managing flammable aerosols according to this subclause must operate in accordance with a code of practice approved under section 78 of the Act as meeting the requirements of this subclause.

## **12 Methods of complying with clause 11**

Compliance with sections 5-2 and 5-4 of NFPA 86, Standard for Ovens and Furnaces, 1999, National Fire Protection Association, USA, relating to the matters described in clause 11(4), is a means of meeting the requirements of clause 11(4).

## **13 Circumstances where flammable vapour or gas present in atmosphere where proportion of oxygen in atmosphere (by volume) greater than 20.9%**

- (1) Every person who elects to manage a flammable aerosol under clause 6(1), within an atmosphere where the proportion of oxygen is greater than 20.9% volume for volume, must ensure that, in any place where such a flammable aerosol is located, the requirements of this clause are met.
- (2) A  $RLEL_{(O)}$  and a  $RUEL_{(O)}$  applicable to the proportion of flammable gas or flammable vapour to oxygen present must be established by the person in charge of the substance, and—
  - (a) the  $RLEL_{(O)}$  and the  $RUEL_{(O)}$  must be available for inspection at any time; and
  - (b) at all times the proportion of vapour or gas to oxygen in the atmosphere must be either below 25% of the  $RLEL_{(O)}$  or above 4 times the  $RUEL_{(O)}$ ; and
  - (c) to meet the requirements of subclause (2)(b), there must be a system in place to continuously monitor and control—
    - (i) the proportion of oxygen present; and
    - (ii) the proportion of vapour or gas to oxygen present.
- (3) In a place where the substance is present in concentrations greater than 10%  $RLEL_{(O)}$ , the requirements of either of the following subclauses must be met:
  - (a) the person in charge must establish a revised minimum ignition energy for the maximum proportion of oxygen to air expected within the system; and—
    - (i) where such a revised minimum ignition energy is established, it must be available for inspection at any time; and
    - (ii) there must be no item capable of generating a flame or spark present unless it can be shown that any release of spark energy would transfer to the mixture of vapour or gas to oxygen-enriched air less than 25% of the revised minimum ignition energy; or
  - (b) in any situation except situations covered by clause 5, any ignition source located within the area where flammable vapour or gas is present must be protected in

such a way that, in the circumstances in which it is installed (including the presence of dust and particulate matter), it cannot ignite any vapour/air mixture or gas/air mixture formed from the flammable aerosol present.

- (4) A revised auto-ignition temperature must be established for the maximum proportion of oxygen to air expected to be experienced within the system, and—
  - (a) the revised auto-ignition temperature must be available for inspection at any time; and
  - (b) at all times the temperature of the flammable aerosol and of any surface in contact with the flammable aerosol must be below 80% of the revised auto-ignition temperature for that flammable aerosol and oxygen level; and
  - (c) there must be a system in place to continuously monitor and control the temperature of the flammable aerosol and of any surface in contact with the flammable aerosol to meet the requirements of subclause (4)(b).
- (5) At any place where a flammable aerosol is present in quantities greater than 3,000 L aggregate water capacity, any permanently fixed equipment or container at the place, or part of such equipment or container, must be electrically bonded and earthed so that the maximum allowable resistance to earth is—
  - (a) 1 M $\Omega$ , for gradual dissipation of static electricity from components that have an electrical resistance greater than or equal to 1 M $\Omega$ ; and
  - (b) 10  $\Omega$ , for the dissipation of static electricity from components that have an electrical resistance of less than 1 M $\Omega$ .
- (6) The flammable aerosol must be managed in accordance with a code of practice approved under section 78 of the Act as a method for meeting the requirements specified in subclauses (3) to (5).

#### **14 Methods of complying with clause 13**

Compliance with AS/NZS 1020: 1995 is a means of meeting the requirements of clause 13(5)(b).

#### **15 Circumstances where flammable aerosols may be present and proportion of oxygen in atmosphere (by volume) controlled so as to be below 20.9%**

- (1) Every person who elects to manage a flammable aerosol under clause 6(1), within an atmosphere where the proportion of oxygen present is controlled so as to be below 20.9% (by volume), must ensure that in any place where such a flammable aerosol is located the requirements of this clause are met.
- (2) In the place, the person in charge of the flammable aerosol must ensure that either—
  - (a) at all times the proportion of flammable vapour or gas to air, is either below 25% of the LEL or above 4 times the UEL; or
  - (b) an RLEL<sub>(O)</sub> and RUELEL<sub>(O)</sub> is established applicable to the range of proportions of flammable vapour or flammable gas to oxygen present, in which case—

- (i) that  $RLEL_{(O)}$  and  $RUEL_{(O)}$  must be available for inspection at any time; and
  - (ii) at all times the proportion of vapour or gas to oxygen in the atmosphere must be either below 25% of the  $RLEL_{(O)}$ , or above 4 times the  $RUEL_{(O)}$ ; and
  - (iii) there must be a system in place to continuously monitor and control both the proportion of oxygen to air present, and the proportion of vapour or gas to oxygen present, to meet the requirements of subclause (2)(b)(ii).
- (3) In the place, the person in charge of the flammable aerosol must ensure that—
- (a) there is no ignition source present unless it can be shown that any release of spark energy would transfer to the mixture of vapour or gas to air less than 25% of the minimum ignition energy; or
  - (b) in any situation except situations covered by clause 5, any ignition source located in the area where flammable vapour or gas is present is protected in such a way that, in the circumstances in which it is installed (including presence of dust and particulate matter), it cannot ignite any gas/air mixture or vapour/air mixture formed from the flammable aerosols present.
- (4) In the place, the person in charge of the flammable aerosol must ensure that either—
- (a) the temperature of the flammable aerosol and of any surface in contact with the flammable aerosol does not exceed 80% of the auto-ignition temperature for that flammable aerosol; or
  - (b) a revised auto-ignition temperature is established for the range of proportions of oxygen expected to be present, in which case—
    - (i) the revised temperature must be available for inspection at any time; and
    - (ii) at all times the temperature of the flammable aerosol and of any surface in contact with the flammable aerosol must be below 80% of the revised auto-ignition temperature; and
    - (iii) there must be a system in place to continuously monitor and control the proportion of oxygen to air present, and the temperature of the flammable aerosol and the temperature of any surface in contract with the flammable aerosol, to meet the requirements of subclause (4)(b)(ii).
- (5) At any place where a flammable aerosol is present in quantities greater than 3,000 L aggregate water capacity, any permanently fixed equipment or container at the place, or part of any such equipment or container, must be electrically bonded and earthed, so that the maximum allowable resistance to earth is—
- (a)  $1\text{ M}\Omega$ , for dissipation of static electricity from components that have an electrical resistance greater than or equal to  $1\text{ M}\Omega$ ; and
  - (b)  $10\ \Omega$ , for the dissipation of static electricity from components that have an electrical resistance of less than  $1\text{ M}\Omega$ .

## 16 Methods of complying with clause 15

- (1) In the case of an electrical ignition source, compliance with any one of the explosion-protection techniques, or a combination of explosion-protection techniques, listed in Table 2.1 of AS 2380.1: 1989 relating to matters described in clause 15(3)(b) are a means of meeting the requirements of clause 15(3)(b).
- (2) The requirements of clause 15(4) are met if either—
  - (a) there is compliance with AS/NZS 2381.1: 2005 relating to the matters described in clause 15(4); or
  - (b) any equipment and any surface in contact with the flammable aerosol conform to the temperatures given in Table 1 (see clause 8) and the temperature of the flammable aerosol is kept below 40°C.
- (3) Compliance with AS/NZS 1020: 1995 is a means of meeting the requirements of clause 15(5)(b).

## 17 Segregation requirements for incompatible substances

- (1) Except where the ignition of the flammable aerosol is intended, the person in charge of the flammable aerosol must ensure that—
  - (a) the flammable aerosol is not in contact with any substance or material with which it is incompatible; and
  - (b) packages of incompatible substances are held separately.
- (2) For the purposes of this clause, substances or materials specified in Table 2 are incompatible with flammable aerosols.

**Table 2. Substances and materials incompatible with flammable aerosols**

Incompatible substances and materials
Class 1 substances
Class 3 substances
Class 4 substances
Class 5 substances

- (3) This clause does not apply to substances that are—
  - (a) located on a vehicle, ship, or aircraft; and
  - (b) segregated in accordance with the Land Transport Rules, the Maritime Rules, or the Civil Aviation Rules, as the case may be.

## 18 Requirement to establish hazardous substance location

- (1) The person in charge of a place where flammable aerosols are located must establish in that place one or more hazardous substance locations where such flammable aerosols are to be situated if the flammable aerosol is present in a quantity exceeding 3,000 L aggregate water capacity for a period exceeding 18 hours.

- (2) The person in charge of the hazardous substance location must notify an enforcement officer responsible for the enforcement of the Act in the area where the hazardous substance location is located, at least 30 working days before the commissioning of the hazardous substance location as a place for accommodating these flammable aerosols, of—
  - (a) the street address of the place in which the hazardous substance location is located; and
  - (b) the maximum quantity of flammable aerosols that the hazardous substance location is designed or constructed to accommodate.
- (3) The person in charge of the hazardous substance location must ensure that, where a Group Standard requires a flammable aerosol to be under the control of an approved handler, the approved handler requirements of Part 3 (Approved Handler) of Schedule 1 to that Group Standard relating to class 2.1.2A substances are met.
- (4) The person in charge of the hazardous substance location must ensure that—
  - (a) where a test certificate is required under clause 19, a test certificate is obtained that certifies that the requirements of the relevant clause are met; and
  - (b) a site plan is available for inspection that shows the physical position, in relation to the legal boundary of the site in which the hazardous substance location or hazardous substance locations are located, of—
    - (i) all hazardous substance locations within the place that contain these flammable aerosols; and
    - (ii) all hazardous atmosphere zones and controlled zones within the place; and
  - (c) where required under clause 4, a hazardous atmosphere zone is established and maintained in accordance with that clause.

**19 Test certification requirements where a flammable aerosol is present at a hazardous substance location or in a hazardous atmosphere zone**

The person in charge of a hazardous substance location where flammable aerosols are present must ensure that the location or place has a current test certificate certifying that—

- (a) the notification requirement of clause 18 are complied with; and
- (b) where Part 3 (Approved Handler) of Schedule 1 to the Group Standard relating to class 2.1.2A substances, or clause 6(2), require flammable aerosols to be under the control of an approved handler—
  - (i) the person in charge of the hazardous substance location is an approved handler for such flammable aerosols, or can demonstrate that a person is available who is an approved handler for such substances; and
  - (ii) the flammable aerosols can be secured so that a person cannot gain access to the flammable aerosols without tools, keys, or any other device used for operating locks; and

- (c) if a hazardous atmosphere zone is required by clause 4, a hazardous atmosphere zone has been established in accordance with that clause, and the extent of the hazardous atmosphere zone is documented; and
- (d) the requirements of clause 17 are complied with; and
- (e) the hazardous substance location has signage in place as required by Part 5 of the Site and Storage Conditions; and
- (f) where the quantity of the flammable aerosols requires it, Part 4 of the Site and Storage Conditions is complied with; and
- (g) the requirements of clause 18(4) are complied with; and
- (h) the requirements of Parts 2 and 3 of the Site and Storage Conditions are complied with.

## **20 Requirements to be met by transit depot**

- (1) At any transit depot where the quantity of flammable aerosols exceeds 3,000 L aggregate water capacity, the person in charge of the transit depot must—
  - (a) at least 30 working days before the commissioning of the transit depot as a place for accommodating these flammable aerosols, notify an enforcement officer responsible for enforcement of the Act in the area where the transit depot is situated of—
    - (i) the street address of the transit depot; and
    - (ii) the maximum quantity and the hazard classification of each of the substances that the depot is designed to accommodate; and
  - (b) ensure that the approved handler requirements of Part 3 (Approved Handler) of Schedule 1 to the Group Standard relating to class 2.1.2A substances are met; and
  - (c) ensure that any road vehicle loaded with containers of these flammable aerosols is—
    - (i) not less than 3 m from any other vehicle that is loaded with compatible substances; and
    - (ii) not less than 5 m from any other vehicle that is loaded with incompatible substances; and
    - (iii) not less than 3 m from any place where containers of compatible substances not on a vehicle are located; and
    - (iv) not less than 5 m from any place where containers of incompatible substances not on a vehicle are located; and
  - (d) ensure that any containers of these substances held in the transit depot but not loaded onto a vehicle are not less than 5 m from the containers of incompatible substances; and

- (e) ensure that all substances located at the transit depot remain within their containers, and that the containers remain closed; and
  - (f) ensure that any electrical equipment at the transit depot is designed and constructed so that in the event of failure of the electrical equipment no resulting ignition source will contact either the substance or its package; and
  - (g) designate and clearly identify with signs that meet the requirements of Part 5 of the Site and Storage Conditions, areas for containment, pending disposal, of any leaked or spilled material or damaged packages.
- (2) Compliance with those parts of the Electricity Act 1992 and regulations made under that Act, the Health and Safety of Employment (Mining Underground) Regulations 1999, or the Civil Aviation Rules that relate to the matter described in subclause (1)(f) are a means of meeting the requirements of subclause (1)(f).

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## **Part 2**

### **Conditions Relating to the Unintended Ignition of Flammable Aerosols not Located at Hazardous Substance Location**

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#### **21 Person in charge of flammable aerosol must comply with this Part**

The person in charge of a flammable aerosol must ensure that the adverse effects of unintended ignition of the flammable aerosol are controlled in accordance with this Part.

#### **22 Separation of building holding flammable aerosols from area of high intensity land use**

- (1) This clause applies to a building that holds flammable aerosols, at a location that is not a hazardous substance location, the capacity of which exceeds 3,000 L aggregate water capacity.
- (2) A building to which this clause applies must be separated from an area of high intensity land use by not less than 3 m.

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## **Part 3**

### **Conditions Relating to the Unintended Ignition of Flammable Aerosols Present at Hazardous Substance Location**

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#### **23 Person in charge of flammable aerosol must comply with this Part**

The person in charge of a flammable aerosol must ensure that the adverse effects of unintended ignition of the flammable aerosol are controlled in accordance with this Part.

## **24 Requirement to establish controlled zone**

- (1) The person in charge of a hazardous substance location at which flammable aerosols are present must—
  - (a) establish a controlled zone around the hazardous substance location that complies with this Part; and
  - (b) exclude all non-authorised personnel from that controlled zone.
- (2) Subclause (1)(b) does not apply if the controlled zone—
  - (a) includes one or more areas for the retail sale of flammable aerosols to which the public have access; and
  - (b) warning signs are provided that are visible to persons in the controlled zone that specify that no ignition source may be brought within that controlled zone.

## **25 Separation of building holding flammable aerosols from boundary of controlled zone**

- (1) This clause applies to a building that holds flammable aerosols, at a hazardous substance location, the capacity of which exceeds 3,000 L aggregate water capacity.
- (2) If the controlled zone containing a building to which this clause applies abuts an area of high intensity land use, the building must be separated from the boundary of the controlled zone by not less than 3 m.

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## **Part 4 Emergency Management**

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## **26 Fire extinguishers required**

Every place must have one fire extinguisher if the quantity of flammable aerosols present, or likely to be present, exceed 3,000 L aggregate water capacity.

## **27 Location of fire extinguishers**

- (1) In the case of a motor vehicle transporting flammable aerosols the fire extinguishers required by clause 26 must be in or on the vehicle.
- (2) In any other case, every fire extinguisher required by clause 26 must be so located that the distance of travel between it and the flammable aerosols concerned is no more than 30 m.

## **28 Capability of fire extinguishers**

Each fire extinguisher required by clause 26 must be able, when used by one person, to put out a fully ignited pool, 50 m deep and at least 6 m<sup>2</sup> in area, of a flammable liquid with properties equivalent to those of n-heptane.

## **29 Duties of person in charge of places in respect of emergency response plans**

- (1) This clause applies to a place if—
  - (a) there is held in it, or reasonably likely to be held in it on occasion, an aggregate quantity of greater than 3,000 L aggregate water capacity of a flammable or non-flammable aerosol; and
  - (b) it is not an aircraft subject to the Civil Aviation Act 1990 or a ship subject to the Maritime Transport Act 1994.
- (2) A person in charge of a place to which this clause applies must ensure that the requirements of clauses 30 to 37 are complied with.

## **30 When emergency response plans required**

A place to which clause 29 applies must have in it a single emergency response plan relating to all the hazardous substances held in it or reasonably likely to be held in it on occasion.

## **31 Plans to warn of likely emergencies**

An emergency response plan must describe all of the reasonably likely emergencies that may arise from the breach or failure of the conditions on substances of the hazard classifications concerned.

## **32 Contents of plans**

An emergency response plan must, for each reasonably likely emergency—

- (a) describe the actions to be taken to—
  - (i) warn people at the place, and in surrounding areas that may be adversely affected by the emergency, that an emergency has occurred; and
  - (ii) advise those people about the actions they should take to protect themselves; and
  - (iii) help or treat any person injured in the emergency; and
  - (iv) manage the emergency so that its adverse effects are first restricted to the area initially affected, then as soon as practicable reduced in severity, then if reasonably possible eliminated; and
  - (v) if any of the substances concerned remain, re-establish the conditions imposed on it when it was approved; and
- (b) identify every person with responsibility for undertaking any of the actions described in subclause (a) (or any part of any of those actions) and give information on—

- (i) how to contact the person; and
  - (ii) any skills the person is required to have; and
  - (iii) any actions that person is expected to take; and
- (c) specify—
- (i) how to obtain information about the hazardous properties of and means of controlling the substance or substances that may be involved; and
  - (ii) actions to be taken to contact any emergency service provider; and
  - (iii) the purpose and location of each item of equipment or material to be used to manage the emergency; and
  - (iv) how to decide which actions to take; and
  - (v) the sequence in which actions should be taken.

### **33 Extra information required in some cases**

An emergency response plan must specify the type and location of the fire extinguishers provided under clause 26, and any extra firefighting equipment, materials, and systems provided, if any of the reasonably likely emergencies identified in the plan is a fire.

### **34 Availability of equipment, materials, and people**

All equipment and materials described in an emergency response plan, and all responsible people described in an emergency response plan who are on duty, must—

- (a) be present at the location concerned; or
- (b) be available to reach the location of the substance within the times specified in the plan; or
- (c) in the case of a trained person, be available to provide the advice or information specified in the plan within a time specified in the plan.

### **35 Availability of plans**

- (1) An emergency response plan must be available to every person identified under clause 32(b) as being responsible for executing the plan or a specific part of it, and to every emergency service provider identified in it.
- (2) The information in an emergency response plan must meet the standards of presentation required for information imposed by clause 1 of Part 1 (Information Requirements) of Schedule 1 to the Group Standard.

## **36 Testing plans**

- (1) An emergency response plan must be tested at least every 12 months; and the test must demonstrate that every procedure or action in the plan is workable and effective.
- (2) If there is a change to the persons, procedures, or actions specified in an emergency response plan, the plan must be tested within 3 months of the change; and the test must demonstrate that—
  - (a) the changed persons can perform their functions under the plan; and
  - (b) each changed procedure of action is workable and effective.
- (3) The carrying out and the results of every test must be documented; and the documentation must be retained for at least 2 years.

## **37 Plan can be part of other management documentation**

An emergency response plan can be part of any other management documentation for an emergency whether—

- (a) required by the Hazardous Substances and New Organisms Act 1996 or some other Act; or
- (b) undertaken by a person or organisation for some other reason.

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## **Part 5 Signage**

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## **38 Duties of persons in charge of places in respect of signage**

- (1) This clause applies to a place if—
  - (a) there is held in it, or reasonably likely to be held in it on occasion, an aggregate quantity of hazardous substances of a particular hazard classification greater than 3,000 L aggregate water capacity; and
  - (b) it is not an aircraft subject to the Civil Aviation Act 1990 or a ship subject to the Maritime Transport Act 1994 or a vehicle subject to the Land Transport Act 1998.
- (2) A person in charge of a place to which this clause applies must ensure that—
  - (a) signage required by clause 39 is provided; and
  - (b) its content, presentation and positioning comply with that clause; and
  - (c) it meets the general information requirement imposed by clause 1 of Part 1 (Information Requirements) of Schedule 1 to the Group Standard.

### **39 Signage requirements**

- (1) If hazardous substances are located in a building (but not a particular room or compartment within it) there must be positioned at every vehicular and pedestrian access to the building, and every vehicular and pedestrian access to land where the building is located, signage that—
  - (a) states that hazardous substances are present; and
  - (b) describes the general type of hazard of each of them; and
  - (c) advises the action to be taken in an emergency.
- (2) If hazardous substances are located in a particular room or compartment within a building, there must be positioned at each entrance to the room or compartment signage complying with subclause (4).
- (3) If hazardous substances are located in an outdoor area, there must be positioned immediately next to that area signage complying with subclause (4).
- (4) Signage required by subclauses (2) or (3) must—
  - (a) state that hazardous substances are present; and
  - (b) describe the general type of hazard of each of them; and
  - (c) describe, if the aerosols include flammable aerosols, the precautions necessary to prevent unintended ignition of a flammable aerosol; and
  - (d) advise the action to be taken in an emergency.

## Interpretation

**Act** means the Hazardous Substances and New Organisms Act 1996

**approved handler** means a person who has a test certificate that certifies that the person meets the competency requirements for approved handlers specified in the Hazardous Substances and New Organisms (Personnel Qualifications) Regulations 2001

**area of high intensity land use**, in relation to an area beyond the boundary of a place where a hazardous substance location is sited, includes an area of regular habitation, any other hazardous substance location, and a high density traffic route, but does not include a small office constructed of non-combustible materials associated with a hazardous substances location that is used by persons authorised to be at the location by the person in charge of that location

**area of regular habitation** includes any dwelling, hospital, school, airport, commercial premises, office, or other area where people regularly congregate

**AS** refers to the Australian Standard

**AS 2380.1: 1989** means the Australian standard on: Electrical equipment for explosive atmospheres—Explosion protection techniques, Part 1: General requirements

**AS/NZS** refers to the Joint Australian and New Zealand Standard

**AS/NZS 1020: 1995** means the standard on: The control of undesirable static electricity

**AS/NZS 2381.1: 2005** means the standard on: Electrical equipment for explosive gas atmospheres – Selection, installation and maintenance – General requirements

**AS/NZS 2430.3** refers to the following:

- (a) AS/NZS 2430.3.1: 2004 Classification of hazardous areas: examples of area classification: General:
- (b) AS/NZS 2430.3.2: 2004 Classification of hazardous areas: examples of area classification: Vehicle workshops, vehicle parking, fuel dispensing stations and aircraft hangars:
- (c) AS/NZS 2430.3.3: 2004 Classification of hazardous areas: examples of area classification: Flammable liquids:
- (d) AS/NZS 2430.3.4: 2004 Classification of hazardous areas: examples of area classification: Flammable gases:
- (e) AS/NZS 2430.3.5: 2004 Classification of hazardous areas: examples of area classification: Refineries and major installations:
- (f) AS/NZS 2430.3.6: 2004 Classification of hazardous areas: examples of area classification: Laboratories including fume cupboards and flammable medical agents:

- (g) AS/NZS 2430.3.7: 2004 Classification of hazardous areas: examples of area classification: Landfill gas, sewage treatment and sewage pumping plants:
- (h) AS/NZS 2430.3.8: 2004 Classification of hazardous areas: examples of area classification: Surface coatings and adhesives:
- (i) AS/NZS 2430.3.9: 2004 Classification of hazardous areas: examples of area classification: Miscellaneous

**AS/NZS 60079.10: 2004** means the standard on: Electrical apparatus for explosive gas atmospheres – Classification of hazardous areas

**ASTM, when followed by numbers**, means the document identified by those numbers that is published by the American Society of Testing and Materials

**auto-ignition temperature** means the minimum temperature at which a mixture of flammable vapour and air, or gas and air, is marginally self-igniting when tested in accordance with—

- (a) ASTM Standard E 659-78 (1978; reconfirmed 1994) Standard test method for Autoignition Temperature of Liquid Chemicals; or
- (b) AS 1896 (1976) Gas vapour ignition: Ignition Temperature; or
- (c) IEC 79-4 (1975) Method of test for ignition temperature

**compatible** means that the substance—

- (a) is chemically inert if brought into contact with any other substance for the range of temperatures and pressures at which the substances are brought into contact; or
- (b) if it is chemically reactive when brought into contact with any other substance, it does not—
  - (i) cause combustion; or
  - (ii) generate an explosion; or
  - (iii) generate a new hazardous substance of a different class, subclass or category

**condition** means any obligation or restriction imposed upon a substance by a Group Standard

**controlled zone** means an area abutting a hazardous substance location that is regulated so that—

- (a) within the zone, the adverse effects of a hazardous substance are reduced or prevented; and
- (b) beyond the zone, members of the public are provided with reasonable protection from those adverse effects

**general type**, in relation to a hazardous substance, means a general indication of its subclass (for example, “dangerous when wet”) whether given in words or by any other means

**Group Standard** means an approval for a hazardous substance issued by the Authority under Part 6A of the Act

**hazardous substance location** in relation to a flammable aerosol—

- (a) means an area where greater than 3,000 L aggregate water capacity of the flammable aerosol is located for more than 18 hours:
- (b) does not include a vehicle, ship, or aircraft while it remains under the direct control of its driver, master, or pilot and under the jurisdiction of the Land Transport Rules, the Maritime Rules, or the Civil Aviation Rules, as the case may be

**high density**, in relation to a public traffic route, means greater than medium density

**IEC**, when followed by numbers, means the document identified by those numbers that is published by the International Electrotechnical Commission; and **IEC 79-4:1975** means the document on the Method of test for ignition temperature

**ignition source**—

- (a) means any agency or agent (including any item, product, part of a facility structure, or piece of equipment) capable of igniting a flammable gas, vapour, or other form of combustible substance; and
- (b) includes a fire, flame, or spark, or anything capable of producing a fire, flame, or spark

**inspection** means inspection under Part 7 of the Act

**LEL** means lower explosive limit, being the concentration of flammable gas, vapour, or mist in standard air, below which an explosive gas atmosphere will not be formed at 20°C and at 101.3 kPa absolute pressure

**low density**, in relation to a public traffic route, means up to an average per 24 hours of—

- (a) 1,000 vehicles on a road; or
- (b) 50 rail wagons on a railway; or
- (c) 400 people on a waterway; or
- (d) 200 people along a public right of way

**medium density**, in relation to a public traffic route, means greater than low density and up to an average per 24 hours of—

- (a) 5,000 vehicles on a road; or
- (b) 250 rail wagons on a railway; or

- (c) 1,800 people on a waterway; or
- (d) 900 people along a public right of way

**NFPA** refers to documents published by the National Fire Protection Association, Quincy, Massachusetts, USA; and **NFPA 86 (1999)** refers to the Standard for ovens and furnaces

**NZS** refers to the New Zealand Standard published by the Standards Association of New Zealand

**person in charge**, in relation to a place, a hazardous substance location, a transit depot, or a place of work, means a person who is—

- (a) the owner, lessee, sublessee, occupier, or person in possession of the place, location, or depot, or any part of it; or
- (b) any other person who, at the relevant time, is in effective control or possession of the relevant part of the place, location, or depot

**place** includes any vehicle, ship, aircraft, or other means of transport

**quantity-ratio** has the same meaning given to it by regulation 6 of the Hazardous Substances (Classes 1 to 5 Controls) regulations 2001

**revised minimum ignition energy** means the minimum amount of ignition energy required to ignite a mixture of flammable gas, vapour, or mist in an atmosphere containing a different proportion of oxygen than standard air, when that mixture is within a flammable range

**revised auto-ignition temperature** means the minimum temperature required to ignite a mixture of flammable gas, vapour, or mist in an atmosphere containing a different proportion of oxygen than standard air, when that mixture is within a flammable range

**RLEL<sub>(O)</sub>** means revised lower explosive limit, being the concentration of flammable gas, vapour, or mist in an atmosphere containing a different proportion of oxygen than standard air, below which an explosive gas atmosphere will not be formed

**RUEL<sub>(O)</sub>** means revised upper explosive limit, being the concentration of flammable gas, vapour, or mist in an atmosphere containing a different proportion of oxygen than standard air, above which an explosive gas atmosphere will not be formed

**standard air** means air containing 20.9% oxygen (by volume)

**transit depot** means, in the case of 2.1.2 flammable aerosols, a permanent place (excluding a means of transport, and excluding any place where the substances are held for sale or supply) used as a transport depot that is designed to hold flammable aerosols in containers that remain unopened during the time that they are present at the depot for periods that—

- (a) are more than 18 hours; but
- (b) are in no case more than 3 days

**UEL** means upper explosive limit, being the concentration of flammable gas, vapour, or mist in standard air, above which an explosive gas atmosphere will not be formed

**UN Manual of Tests and Criteria** means the fourth revised edition of the *Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria*, published in 2003 by the United Nations (New York and Geneva)

**UN Model Regulations** means the 14<sup>th</sup> revised edition of the *Recommendations on the Transport of Dangerous Goods Model Regulations*, published in 2005 by the United Nations

**vehicle** means a motorised land transport vehicle

## Source Regulations and Controls

This section links each clause specified in this document to the source regulation or transfer notice from which the clause is based. The requirements of these regulations and controls have been incorporated as conditions verbatim, save for simplification to remove redundant text that does not apply to aerosols.

Clause in this document	Relevant regulation/transfer notice
1	Classes 1 to 5 Controls <sup>1</sup> – Regulation 6
2	Classes 1 to 5 Controls – Regulation 7
3	Classes 1 to 5 Controls – Regulation 55
4	Classes 1 to 5 Controls – Regulation 58
5	Classes 1 to 5 Controls – Regulation 59
6	Classes 1 to 5 Controls – Regulation 60
7	Classes 1 to 5 Controls – Regulation 61
8	Classes 1 to 5 Controls – Regulation 62
9	Classes 1 to 5 Controls – Regulation 63
10	Classes 1 to 5 Controls – Regulation 64
11	Classes 1 to 5 Controls – Regulation 65
12	Classes 1 to 5 Controls – Regulation 66
13	Classes 1 to 5 Controls – Regulation 67
14	Classes 1 to 5 Controls – Regulation 68
15	Classes 1 to 5 Controls – Regulation 69
16	Classes 1 to 5 Controls – Regulation 70
17	Classes 1 to 5 Controls – Regulation 76
18	Classes 1 to 5 Controls – Regulation 77
19	Classes 1 to 5 Controls – Regulation 81
20	Classes 1 to 5 Controls – Regulation 83
21	Dangerous Goods Transfer Notice <sup>2</sup> – Schedule 10, Clause 4
22	Dangerous Goods Transfer Notice – Schedule 10, Clause 9
23	Dangerous Goods Transfer Notice – Schedule 10, Clause 4
24	Dangerous Goods Transfer Notice – Schedule 10, Clause 18
25	Dangerous Goods Transfer Notice – Schedule 10, Clause 22
26	Emergency Management <sup>3</sup> – Regulation 21
27	Emergency Management – Regulation 22
28	Emergency Management – Regulation 23
29	Emergency Management – Regulation 25
30	Emergency Management – Regulation 27
31	Emergency Management – Regulation 28
32	Emergency Management – Regulation 29
33	Emergency Management – Regulation 30
34	Emergency Management – Regulation 31
35	Emergency Management – Regulation 32
36	Emergency Management – Regulation 33
37	Emergency Management – Regulation 34

Clause in this document	Relevant regulation/transfer notice
38	Identification <sup>4</sup> – Regulation 51
39	Identification – Regulation 52; Emergency Management – Regulation 42

1. Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001.
2. Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004.
3. Hazardous Substances (Emergency Management) Regulations 2001.
4. Hazardous Substances (Identification) Regulations 2001.