

The Application of AS 1940-2004: Storage and Handling of Flammable and Combustible Liquids

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1. PURPOSE

AS 1940-2004: *the Storage and Handling of Flammable and Combustible Liquids* contains elements which are not acceptable to Fire Rescue Victoria (FRV). This guideline provides consistent guidance to address these elements relating to the application of AS 1940-2004.

2. SCOPE

AS 1940 (*the Storage and Handling of Flammable and Combustible Liquids*) was formally revised in 2004. FRV, in conjunction with the Australasian Fire and Emergency Service Authorities Council (AFAC) Hazardous Materials Working Group (HMWG), has identified various areas of concern which include:

- installation of horizontal tanks
- installation of double-walled tanks
- capacity of cabinet
- the use of non-flameproof forklift trucks and vehicles in flammable liquids package stores
- cooling water requirement calculation
- spill containment.

The scope of this guideline is limited to these areas of concern.

3. OTHER CONSIDERATIONS

In any event, the application of AS 1940-2004 shall not compromise the intent of FRV's statutory obligations. The dangerous goods related statutory obligations include the achieving of, but are not limited to, the following objectives:

- all occupants of the premises can safely evacuate
- safe temporary refuge is provided if safe evacuation is not achievable
- emergency responders can approach the affected site safely to conduct search and rescue, to assist with the evacuating of occupants from the temporary refuge and to contain the incident
- the minimisation of environmental impact is addressed.

4. RECOMMENDATIONS

FRV agrees with the application of AS 1940-2004, other than the areas stipulated in the scope of this guideline. The position expressed in this guideline must be adhered to by all FRV personnel who act for the organisation, irrespective of whether the activities are conducted within the FRV district or otherwise.

4.1 INSTALLATION OF HORIZONTAL TANKS (SUB-SECTION 5.7.6)

FRV agrees with Parts (a) and (b) of Sub-Clause 5.7.6. The application of Part (c) of Sub-Clause 5.7.6 shall be substituted with the following requirements and conditions:

- horizontal tanks shall not be arranged so that they are end-to-end
- horizontal tanks may be arranged side-by-side (in parallel) in a row
- the distance from the first tank to the last tank of the row of horizontal tanks shall not exceed 20m
- the relevant fire services shall be consulted if more than one row of horizontal tanks are to be installed on the same site or any alternate arrangement is proposed.

4.2 INSTALLATION OF DOUBLE-WALLED TANKS (SUB-SECTION 5.9.2)

All tanks with integral secondary containment, including double-walled tanks, must comply with Parts (a) to (r) of Sub-Clause 5.9.2. In addition, the following requirement is applicable:

- provisions must be made to allow spills or leaks to be removed from the space between the walls.

4.3 THE USE OF NON-FLAME PROOF FORKLIFT TRUCKS AND VEHICLES IN FLAMMABLE LIQUIDS PACKAGE STORES (APPENDIX D)

The proponent to use non-flame proof forklift trucks and vehicles in flammable liquids package stores must first successfully demonstrate that the use can be conducted safely. Compliance with Appendix D does not imply adequate demonstration.

4.4 COOLING WATER REQUIREMENT CALCULATION (APPENDIX J)

Appendix J has been found to significantly under-estimate the water requirement for cooling of fire exposed tanks in various circumstances. This is due to the broad range of heat emission characteristics which results from the ignition of different types of flammable liquids which are subjected to the application of this Standard.

FRV consider the scenario based approach be adopted, where possible conservative fire scenarios should be identified and assessed to determine associated wind assisted incident radiant heat fluxes, then determine discharge densities and application areas for all effected tanks that are required to be managed by these exposures. FRV views Appendix J as an '*informative*' part of AS1940-2004.

Consequently, the following specific sub-clauses are affected:

- 5.7.2 (c)
- 5.8.6 (e)
- 11.13.3
- 11.13.4.1(e) (i)
- 11.15.1

The affected sub-classes shall be read in conjunction with the intent expressed in this guideline.

4.5 SPILL CONTAINMENT (SECTION 4.4.3) AND BUND AND COMPOUNDS (SECTION 5.8)

FRV considers that the requirements for containment may be non-conservative and therefore considers that owners/operators of facilities should ensure that sufficient secondary (bund) and tertiary (site) containment is available to contain all spills, fire water, foam solution etc. that are required to manage nominated loss of containment and fire scenarios .

5. REFERENCES

Looi, A., *Recommended Changes to Draft Australian Standards DR 03221 – Rev. 02*, File Number CSA03/13, Document Number ADD04/10893, Fire Rescue Victoria, Melbourne, 2003

Standards Australia, *AS 1940-2004: The Storage and Handling of Flammable and Combustible Liquids*, Standards Australia, Sydney, 2004

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