

The Key Changes

AS1940-2017 - The storage and Handling of flammable and combustible liquids

Chair Overview

As the current Chair of AS1940 -2017 “The storage and Handling of flammable and combustible liquids” and having worked and been part of this Australia Standard for over 30 years while working with the Victorian Health and Safety Regulator. The current 2017 edition represents the state of knowledge in this area of safe storage and handling of flammable and combustible liquids.

During the committee work and public review period, the area of classification of what is a flammable and combustible liquid proved to be most challenging for the committee when trying to merge in harmony two separate systems for classification, one being the Australian Code for the Transport of Dangerous Goods (ADG Code) and the other being the Globally Harmonised System of Classification and Labelling of Chemicals (GHS). To assist the many people who have called me asking for a summary of changes between the 2004 edition of this standard. The following is my summary of the key changes in the new 2017 edition.

Peter Vitali
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Initial Committee Scope

- > Minor review to deal with GHS and ADG Code classification criteria and alignment.
- > New terminology under the national model regulations
- > Buncefield recommendations

The Process

- > The chair in consultation with the full committee allowed the scope to be broadened greatly from a minor to medium plus review
- > Over 2 years with several committee meetings
- > First review attracted some 540 public comments received
- > Second public draft review attracted some 130 comments

All public comments were reviewed.

GHS Alignment

> The classification of chemicals using Globally Harmonised System of Classification and Labelling of Chemicals (GHS) has been now incorporated into AS1940.

> Key change being that a comparison of the classification of flammable liquids using the Australian Dangerous Goods Code and GHS is now provided.

> Also, the upper flashpoint for C1 combustible Liquid is now 93C (instead of 150C), thereby reducing the fire protection and separation distance requirements for some liquids and this definition now aligned with GHS Flammable Category 4. Liquids with flash point 93-150°C are now C2 instead of C1. (1.4.9)

Safety Data Sheets

Work Health & Safety Act Legislation Safety data sheets terminology now in AS1940. (1.4.43)

Plastic Tanks for Combustible Liquids

Polyethylene and other composite materials can now be used to store combustible liquids in minor storage quantities (except on construction sites) are now permitted with conditions: -

- 10,000L limit
- Static and venting provisions required
- Stored outside with 15m distance clearance
- Bund must be of non-combustible material

Not at construction sites



Fire Protection – (Section 11)

Fire protection requirements for **package stores** for flammable and combustible liquids (including IBCs stored as packages) has increased with fire hydrants required for package stores with at lower storage quantity triggers (Table 11.3)

> One key change is the need for a fire hydrant with 10L/s water supply.

- > Mutual aid for shared firefighting water supplies now allowed subject to fire authority approval (11.3.4)
- > Operator exposure to radiant heat flux for access to fire monitors has now reduced from **4.7 kW/m² to 3 kW/m²**. (11.5.7)
- > Provisions in standard for operator to secure agreement from fire services for heat flux levels greater than 3 kW/m²
- > Fire hose reel required on the shore for marine refuelling berths (11.9.2)
- > A fire hydrant system is now required for a tank of any size within a building (11.11.1) that is not in a tank chamber.
- > All outdoor storage tanks of any size (containing flammable or C1) must have a fire hydrant system (11.11.3)
- > Hydrants can no longer be used for cooling water – permitted options being monitors and cooling rings (11.13.4 and 11.15)
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Bunds & Spill Management – (Section 5)

Self-Bunded Tanks

- > The capacity of self bunded tanks has now been increased to 200,000L for combustible liquids stored at **mine sites**. (5.9.2)

Tank Bunds

- > New bund capacity has been increased to 110% from previous 100% of the largest tank or 25% of total stored in all tanks whichever is the greater. (5.8.2)
- > The use of buried polyethylene liners in earthen bunds is now allowed, this should allow easier storages at remote or temporary sites. (5.8.3)
- > Greater detail is provided for control joints and penetrations in concrete bunds; joint fillers must be fire resistant and have metal liquid stops. (5.8.3)
- > Bunds for flammable tanks filled via Ship or Refinery pipeline to have a vapour sensor and consideration given to an overfill pipe to grade (5.8.3)

- > Separate bund capacity provision required for “containment of fire water resulting from the management of a site emergency.” (not 20 minutes as it was in the 2004 version) (5.8.7)
- > Interceptors or separators must hold minimum **50L spill for any vehicle being refuelled** (7.3.3)

Liquid Levels in Tanks

- > AS1940 now limits a tank’s Safe Fill Level to be no greater than 95% of the tank capacity.
- > For above ground flammable liquid tanks over 5000L (25,000L for combustible liquid), a high-level alarm is now required. (5.3.3)
- > New definitions for normal fill level, tank capacity and tank rated capacity (1.4.6)
- > Site constructed vertical tanks (category 6) must have independent high-high level alarm with setting based on risk assessment and should not provide less than 10 minutes response time. (5.3.3)
- > All above ground or underground tanks must have a high-level alarm set at 97% capacity (5.3.3)

Other Changes

- > All above ground or underground tanks must have a high-level alarm set at 97% capacity (5.3.3)
 - Where tanks contain differing classes of liquid, all section five provisions shall apply to the lowest flash liquid point (5.1)
 - Horizontal tanks (above ground) shall be internally inspected at least every 15 years (9.17.1)
 - Continuity testing for earthing between tank vehicle and structure shall be carried out every 12 months (9.18.3)
 - API600 gate valves accepted as fire rated without certificate (6.3.3)

Intermediate Bulk Container “IBC”

- > The IBC has now been placed in section 5 of the standard once they are **used as storage tanks**. (5.10)
- > New clause provision to specific the life cycle of an IBC when used as a storage tank that compliance with the ADG Code and compatibility of the stored liquid - clause 5.10 (a)

