



Dangerous Goods Safety Bulletin No. 0220

Safety considerations when manufacturing alcohol-based hand sanitisers

Background

During the COVID-19 pandemic, most people are practising good hand hygiene by regular washing with soap and water and supplementing it with the use of hand sanitisers.

Hand sanitisers are in short supply and several businesses, such as chemical formulators or distillers, are assisting with the increase in demand by manufacturing sanitiser products.

On 28 March 2020, the Therapeutic Goods Administration issued a determination that hand sanitisers manufactured in accordance with specified formulations were exempt from regulation if they contain particular ingredients and comply with advertising and labelling conditions.

The formulation specifies the use of either 80 per cent (v/v) ethyl alcohol (ethanol) or 75 per cent (v/v) isopropyl alcohol (isopropanol), both of which are dangerous goods.

This formulation, as well as other sanitiser formulations, are currently being manufactured within Western Australia by a variety of businesses and individuals, many of whom have limited or no experience in using these chemicals.

Summary of hazard



Alcohol-based hand sanitisers contain very high percentages of ethanol or isopropyl alcohol. These types of alcohol are classified as flammable liquids, so they both present a fire hazard.

Contributory factors

Some businesses are unaware that alcohol-based hand sanitisers contain flammable ingredients and may not take the right precautions for safe storage and handling of materials prior to, during and after the manufacturing process.

Safe storage and transport of the raw and final products must also be considered by businesses.

Actions required

Employers and persons in control of a workplace have a general duty of care to provide a working environment in which employees are not exposed to hazards under the *Occupational Safety and Health Act 1984*. There is also a duty to minimise risk to people, property and the environment from dangerous goods under s. 8 of the *Dangerous Goods Safety Act 2004*.

A dangerous goods risk assessment should be conducted and appropriate risk controls put in place before alcohol-based hand sanitisers are manufactured and distributed.

Australian Standard AS1940 provides guidance on the storage and handling of flammable and combustible liquids in relation to controlling risks from dangerous goods adequately.

The following items should be considered:

Raw material and finished product storage

1. Location – the storage area must be adequately separated from on-site and off-site protected places, either by open air distance or use of fire walls. Protected places include places where people assemble or are employed, such as dwellings, public buildings, offices, workshops, warehouses etc.
2. Segregation – incompatible dangerous goods must be kept apart so they do not react dangerously and cause an incident.
3. Hazardous areas in and around the location need to be correctly classified beforehand, with explosion and fire risks controlled before commencing storage.
4. Control of ignition sources – do not smoke near or bring mobile phones (unless hazardous area rated) into a storage area for flammable liquid. Staff should wear garments made entirely from cotton to reduce the risk of static ignition.
5. Spill containment – storage areas must be provided with spill containment to capture and contain spills.
6. Ventilation – flammable liquid storage areas need to be ventilated adequately.
7. Electrical equipment in hazardous areas (EEHA) – lights, light switches, electrical wiring, forklifts and ventilation fans must be suitable for use in hazardous areas.
8. Fire protection – adequate fire protection must be provided.
9. Operational safety – staff working in flammable liquids storage or handling areas need to be trained to work in those areas safely. Ensure staff are provided with appropriate personal protective equipment (PPE).
10. Placarding – storage areas must have placards if storing above 1,000 L of Class 3 packing group II or III dangerous goods.
11. Labelling and packaging – the hand sanitiser packaging and labelling must comply with the Australian Dangerous Goods Code (ADG Code) and the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)/Approved Criteria for Classifying Hazardous Substances, as required by relevant State laws.

Manufacturers and suppliers should ensure that hand sanitiser packaging does not resemble consumable or household products and should be clearly labelled as hand sanitiser; i.e. do not use water bottles or food pouches as packaging.

12. Safety Data Sheets (SDS) – manufacturers, suppliers and importers have duties under legislation to disclose information on their products, on their labels and in SDS.

Sanitiser manufacturing areas

1. Location – the manufacturing area must be adequately separated from on-site and off-site protected places.
2. Pumps and valves must be suitable for handling flammable liquids.
3. Control of ignition sources – do not smoke near or bring mobile phones (unless hazardous area rated) into the manufacturing areas. Staff should wear garments made entirely of cotton to reduce the risk of static ignition.
4. Spill containment – mixing and blending vats or vessels must be provided with spill containment to capture and contain spills.
5. Ventilation – the manufacturing areas must be adequately ventilated.
6. Hazardous areas around the manufacturing facility must be correctly classified beforehand with explosion and fire risks controlled before commencing operations, refer to AS/NZS60079.10.1.
7. Electrical equipment in hazardous areas (EEHA) – electrically operated pumps, switches, general power outlets, fans etc. must be suitable for use in hazardous areas. This may also include the use of hazardous area rated forklifts for moving or removing raw materials and finished products to and from the manufacturing areas.
8. Additional safety controls may be required as a result of the risk assessment. This may include a flammable vapour detector interlocked with a shutdown system for the manufacturing plant.
9. Ensure safe transfer of raw materials and finished products by confirming that correct hoses are used and that mixing vessels and associated equipment are suitably bonded and earthed to minimise electrostatic discharge hazards.
10. Fire protection – adequate fire protection must be provided.
11. Operational safety – staff working in the sanitiser mixing area need to be trained adequately so that they can work in those areas safely. Ensure staff members are provided with appropriate PPE to handle the sanitiser mixes and raw materials.
12. Placarding – manufacturing areas must be adequately placarded.

Additional information

If a site is storing or handling more than 10,000 L of flammable liquids of packing groups II or III, including raw materials (alcohols), finished product and mixing or process tanks, a Dangerous Goods Site Licence is required under the Dangerous Goods Safety (Storage and Handling of non-explosives) Regulations 2007.

For information on dangerous goods risk assessments, send a blank email to ra@dmirs.wa.gov.au.

Further information

- Western Australia Legislation, www.legislation.wa.gov.au
Dangerous Goods Safety Act 2004
Dangerous Goods Safety (Storage and Handling of non-explosives) Regulations 2007
Occupational Safety and Health Act 1984
Occupational Safety and Health Regulations 1996
- Standards Australia, www.standards.org.au
AS 1940 *Storage and handling of flammable and combustible liquids*
AS/NZS60079.10.1 *Explosive atmospheres Classification of areas - Explosive gas atmospheres*
- World Health Organization, www.who.int
WHO-recommended Handrub Formulations,
www.who.int/gpsc/5may/Guide_to_Local_Production.pdf
Alcohol-Based Handrub Risks/Hazards, www.who.int/gpsc/tools/faqs/abhr2/en/
- Therapeutic Goods Administration, www.tga.gov.au
Hand sanitisers and COVID-19, www.tga.gov.au/hand-sanitisers-and-covid-19
- National Transport Commission, www.ntc.gov.au
Australian Dangerous Goods Code 7.6
Road and rail transport checklist for alcohol-based hand sanitiser,
www.ntc.gov.au/sites/default/files/assets/files/Road-rail-transport-checklist-for-alcohol-based-hand-sanitiser.pdf
- ACCORD Information sheet – Safe production and transport rules for alcohol-based hand sanitisers, www.accord.asn.au/wp-content/uploads/2020/04/Alcohol-Hand-sanitiser-safety-DG-Final-V1.0-7Apr20.pdf
- Australian Competition and Consumer Commission
COVID-19: Supplying hand sanitiser, www.productsafety.gov.au/news/covid-19-supplying-storing-using-hand-sanitiser
COVID-19: Safer packaging and labelling guidance for hand sanitiser suppliers,
www.productsafety.gov.au/news/covid-19-safer-packaging-and-labelling-guidance-for-hand-sanitiser-suppliers

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