

GUIDANCE NOTE No. 65

SAFE HANDLING AND USE OF ALCOHOL-BASED HAND SANITISERS

Introduction

The outbreak of the COVID-19 virus in 2019 has seen an increase in the number of companies entering the market to supply hand sanitisers to meet the hygiene demands of consumers and healthcare professionals. These products can contain ethanol, isopropanol or n-propanol, which are flammable liquids and should be manufactured using suitable approved packaging, Personal Protective Equipment (PPE) and have earthing procedures in place to prevent static discharge during handling.

This Guidance Note will highlight the legal and safety requirements for companies to produce and distribute these products. These include:

- Safe manufacturing processes and procedures to adhere to
- Appropriate packaging
- Transport and labelling requirements
- Regulatory requirements and links to relevant external guidance
- UK Customs requirements
- Advice for end-users and members of the public

Sanitiser Manufacture

The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) are in place for protection against risks from fire, explosion and similar events arising from dangerous substances used, or present in the workplace. Manufacturers of sanitiser products must familiarise themselves with the Regulations, which must be adhered to.

The requirements of the DSEAR Regulations are detailed on the UK Health & Safety Executive (HSE) website via the link below:

<https://www.hse.gov.uk/fireandexplosion/dsear.htm>

Before production of sanitisers using flammable liquids can commence, the DSEAR Regulations state that employers must:

- Ascertain what dangerous substances are in their workplace and what the risks are
- Put control measures in place to either remove those risks or, where this is not possible, control them
- Put controls in place to reduce the effects of any incidents involving dangerous substances
- Prepare plans and procedures to deal with accidents, incidents and emergencies involving dangerous substances

- Make sure employees are properly informed about and trained to control or deal with the risks from the dangerous substances
- Identify and classify areas of the workplace where explosive atmospheres may occur and avoid ignition sources (from unprotected equipment, for example) in those areas

The flammability hazards of alcoholic liquids are often underestimated and production areas must be intrinsically safe or ATEX rated, to avoid ignition of vapours through naked flames, sparks, static electricity or other sources.

Suitable earthing and bonding must be in place during manufacturing and filling processes to avoid static discharge.

The filling of containers must take place using an appropriate filling lance to bottom fill and thus avoid increased vapour and static generation from splash filling. Shear forces from the splashes increase the amount of static produced and therefore increase the possibility of ignition of the vapours.

Packaging

Sanitisers can contain as much as 85% alcohol, which means that the finished product is in fact highly flammable and the packaging used to transport them, from manufacturer to end user, must be appropriate to ensure safe carriage and handling.

To avoid the discharge of static electricity and ignition of flammable vapours, Intermediate Bulk Containers (IBCs) must, as a minimum requirement, be electrostatically protected. Steel drums rather than plastic are also recommended.

Further information on the use of IBCs with flammable liquids can be found in SIA Guidance Note 51 – Selection of IBCs for Handling Hydrocarbon and Oxygenated Solvents. Link below:

<https://www.solvents.org.uk/wp-content/uploads/2016/05/SIA-Guidance-Note-51-Selection-of-IBCs-May-2016.pdf>

Over-stacking of pallets is to be avoided and care must also be taken when stacking packages to prevent collapse. Please consult the packaging manufacturer if in doubt.

Use of Battery-Powered Dispensers in Working Areas

The use of battery-powered dispensers (some of which are contactless) has become widespread during the pandemic in retail environments, offices, factories, health centres, hospitals and in the hospitality industry. However, this type of dispenser is not to be used in production areas where flammable vapours are likely to be present, unless the equipment is ATEX certified for use in explosive atmospheres.

Transport and Labelling

End Use

There have been numerous examples during the COVID-19 crisis which have shown how industry has diversified and adapted quickly to ensure that the unprecedented demand for sanitiser products is met. However, it has become apparent from the guidance being sought by these companies, that many new producers lack experience in the field and have little or no knowledge of their Health and Safety obligations when handling flammable liquids.

In addition to the use of inappropriate packaging, a lack of understanding of ADR requirements and CLP labelling has highlighted the dangers to commercial drivers and other road users.

Drivers transporting alcohol-based sanitisers and cleaning products are required to be trained to carry hazardous substances and carry an ADR licence if the pack size and quantities exceed the quantity as detailed in ADR 2021, Section 1.1.3.6.3. The vehicles will display the correct hazard labelling and orange plates. Packages containing sanitisers must be correctly labelled according to EU and GB CLP guidelines.

In accordance with UK Health & Safety Executive Guidance,

Your label **must not** describe the biocidal product in any way which is misleading in relation to:

- The risks to human health
- The risks to animal health
- The risks to the environment
- Its efficacy

Phrases that are considered to be misleading and **must not** be used include:

- Low-risk
- Non-toxic
- Harmless
- Natural
- Environmentally friendly
- Animal friendly
- Any similar terms

Further detail on this guidance can be found here:

<https://www.hse.gov.uk/biocides/eu-bpr/packaging-labelling-requirements.htm>

The European Chemicals Agency document - Introductory Guidance on the CLP Regulation is available to assist:

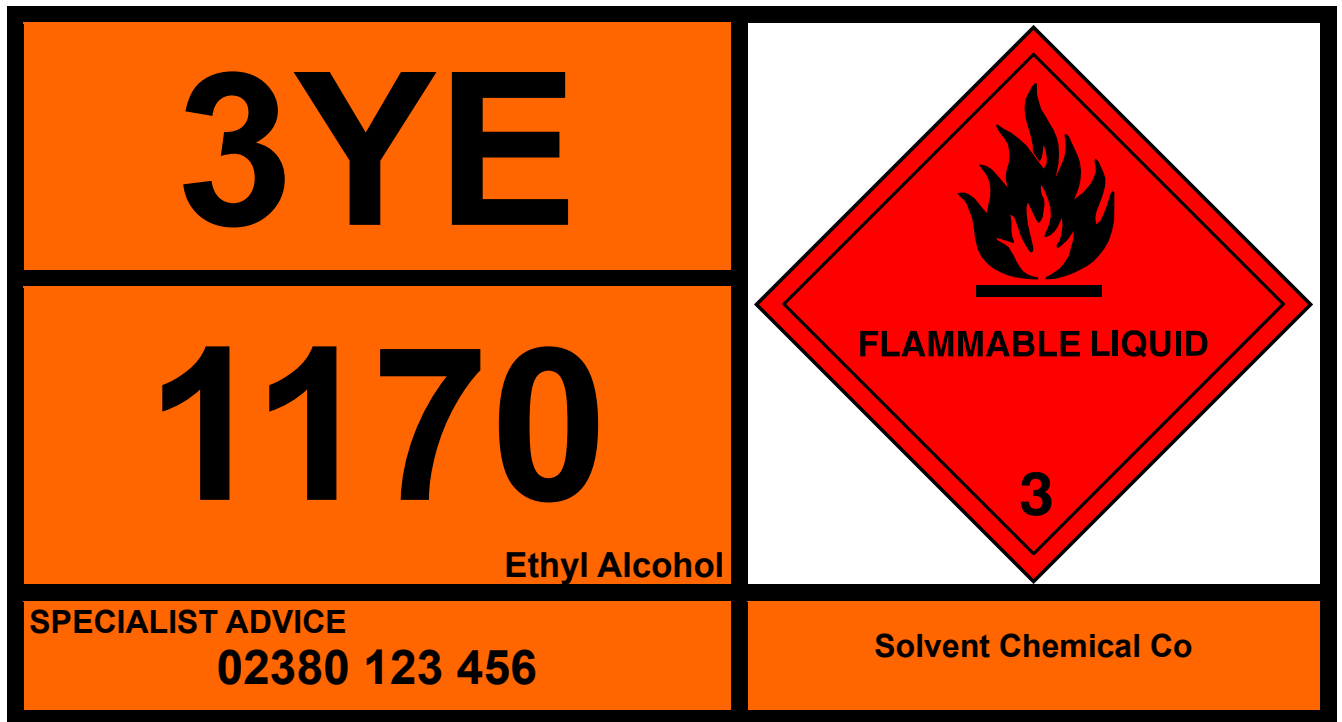
https://echa.europa.eu/documents/10162/23036412/clp_introductory_en.pdf/b65a97b4-8ef7-4599-b122-7575f6956027

Example - CLP Labelling requirements for packages containing alcohol-based (ethanol) products

Full details can be found in the Safety Data Sheet.



Example of a typical Carriage of Dangerous Goods (CDG) placard for a bulk tanker of ethanol (ethyl alcohol)



Regulatory Requirements

The UK Health and Safety Executive (HSE) has produced guidance on what producers need to do before manufacturing of sanitisers and surface cleaners can commence:

<https://www.hse.gov.uk/coronavirus/hand-sanitiser/index.htm>

<https://www.hse.gov.uk/coronavirus/assets/docs/hand-sanitiser-manufacture-supply-coronavirus.pdf>

<https://www.hse.gov.uk/coronavirus/assets/docs/surface-disinfectant-manufacture-supply-coronavirus.pdf>

The European Chemicals Agency (ECHA) has also produced a document to assist companies who intend to supply both inside and outside of the EU.

https://echa.europa.eu/documents/10162/28801697/q_a_covid_disinfectants_en.pdf/f380496a-d61a-1ff1-ee78-12d302c5d520

World Health Organisation (WHO) Formulation

The World Health Organisation (WHO) has produced a 2-part guide, used by many producers as the standard formulation for the safe supply of alcohol-based hand sanitisers to end users.

https://www.who.int/gpsc/5may/Guide_to_Local_Production.pdf

UK Customs Requirements (HMRC)

Potable (drinkable) grades of alcohol (ethanol) used in hand sanitiser is not subject to excise duty. However, it must be chemically denatured (making it undrinkable) to avoid diversion to the illicit market, except if for use in hospitals or care homes where undenatured duty-free spirits may be used. It is to be noted that ingestion of ethanol at the high concentrations present in sanitisers, can be fatal, even in small quantities.

- Producers, suppliers and users of both denatured alcohol and duty-free spirits must be authorised by HMRC, with users subject to annual usage limits. This applies to all persons in the supply chain. For example, if a hand sanitiser manufacturer sources its denatured alcohol from an external supplier, both the supplier and the manufacturer require prior HMRC approval.
- If potable ethanol is used in manufacturing without HMRC approval, then the duty due on the ethanol used is £28.74 per litre as 100% pure.
- Users will need to seek prior HMRC approval before making or using the alcohol, unless they are a licenced distiller or gin manufacturer.

- Organisations that do not already hold an existing approval for denatured alcohol or a distiller's licence will need to seek HMRC approval for making, using or handling ethanol without paying duty.

If users are in any doubt over what their obligations are, contact your local HMRC office, or the National Registration Unit at nru.alcohol@hmrc.gov.uk

- Full HMRC guidance, produced specifically for the Covid-19 Pandemic is available online: <https://www.gov.uk/guidance/producing-hand-sanitiser-and-gel-for-coronavirus-covid-19>

De-mystifying Hand Sanitiser perceptions to raise safety levels

Due to the increased exposure to the use of hand sanitiser and alcohol-based cleaning products during the pandemic, there has been an increase in the number of incidents related to the products, often due to a lack of understanding of the dangers that are associated with them.

Hand gels contain alcohol – Does that mean that you can drink it?

Hand gel products can contain up to 85% ethanol, which will, of course make a person drunk if consumed, even in small quantities. However, at these concentrations, the ethanol itself is toxic if ingested, and they also contain a range of other chemicals which are toxic or bitter tasting to prevent human consumption. Hand gels can also contain other alcohols such as isopropanol and n-propanol, which are not suitable for human consumption.

There have been a number of instances where people in the UK have broken into hand sanitiser stations to consume the product inside. The toxic additives (denaturants) can cause dizziness, blindness, permanent kidney and liver damage or even death.

The message is clear – **Do not consume hand sanitiser products under any circumstances.**

Hand sanitiser products are highly flammable

To highlight the dangers of flammability, ethanol solutions are flammable at concentrations of 24% and above, so hand gels can be ignited if the product or vapour from the product comes into contact with a spark, flame or even static electricity.

Smoking is to be avoided in the presence of open containers and hands must be completely dry of the product if a source of ignition is present. There have been cases of individuals receiving serious burns to hands from cooking on stoves where the product hasn't yet dried and even from the natural discharge of static from a metal surface after sanitising.

There have been some reports in the press of bottles of hand sanitiser catching fire when left in vehicles in hot weather. Sanitisers are indeed flammable at relatively low temperatures, as they can give off vapours when used, or are left in open containers. In order for this to be a realistic hazard, an unusual set of circumstances would need to be present. Specifically:

- A significant quantity of the sanitiser in open containers would need to be present
- External temperatures would need to be high enough to evaporate the alcohol
- No source of external air which would otherwise dilute the alcohol vapour
- An electrical fault or smoking materials which ignite the vapour

This combination would be highly unusual.

In conclusion, if the sanitiser is stored in small volumes e.g. 250ml bottles and kept sealed when not in use, they will be safe to use.

References

1. UK Health & Safety Executive - The Dangerous Substances and Explosive Atmospheres Regulations 2002 <https://www.hse.gov.uk/fireandexplosion/dsear.htm>
2. Solvents Industry Association – Guidance Note 51 – Selection of IBCs <https://www.solvents.org.uk/wp-content/uploads/2016/05/SIA-Guidance-Note-51-Selection-of-IBCs-May-2016.pdf>
3. UK Health & Safety Executive - Hand sanitiser products and surface disinfectants during the coronavirus pandemic – use, manufacture and supply <https://www.hse.gov.uk/coronavirus/hand-sanitiser/index.htm>
4. UK Health & Safety Executive - Coronavirus (COVID-19) manufacture and supply of hand sanitisers <https://www.hse.gov.uk/coronavirus/assets/docs/hand-sanitiser-manufacture-supply-coronavirus.pdf>
5. UK Health & Safety Executive - Coronavirus (COVID-19) manufacture and supply of surface disinfectants <https://www.hse.gov.uk/coronavirus/assets/docs/surface-disinfectant-manufacture-supply-coronavirus.pdf>
6. World Health Organisation - Guide to Local Production: WHO-recommended Handrub Formulations https://www.who.int/gpsc/5may/Guide_to_Local_Production.pdf
7. UK HM Revenue & Customs – Guidance for Producing Hand Sanitiser and Gel for Coronavirus Covid-19 <https://www.gov.uk/guidance/producing-hand-sanitiser-and-gel-for-coronavirus-covid-19>
8. European Chemicals Agency (ECHA) – Questions & Answers EU market disinfectants for the purpose of managing the Covid-19 pandemic https://echa.europa.eu/documents/10162/28801697/q_a_covid_disinfectants_en.pdf/f380496a-d61a-1ff1-ee78-12d302c5d520
9. The European Chemicals Agency - Introductory Guidance on the CLP Regulation https://echa.europa.eu/documents/10162/23036412/clp_introductory_en.pdf/b65a97b4-8ef7-4599-b122-7575f6956027
10. UK Health & Safety Executive – Packaging and Labelling Requirements for Biocidal Products <https://www.hse.gov.uk/biocides/eu-bpr/package-labeling-requirements.htm>