

Storage and use of flammable and explosive materials



If a fire starts at your premises, the goods you store within it, and their potential to ignite or explode, will play a significant part in how quickly a fire spreads.

Beside liquids, dusts and solid materials, it's important to consider vapours released from unsealed, leaking or spilled containers and gases created during some processes, since they can produce an explosive atmosphere in your workplace.

The consequences can be severe, including life-changing injuries, fatalities, significant property damage and disruption for the business operating from the premises, as well as anyone living or working in neighbouring properties.

Key actions to keep storage of flammables and explosives safe

- Identify the fire and explosion hazards within your workplace and decide whether the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) apply. If it does, ensure you have a competent person to complete a risk assessment using the applicable Approved Codes of Practice (ACOPs) for guidance.
- Establish the materials (including liquids and gases) you use or store classed as 'dangerous substances' by DSEAR (i.e. they could harm people by igniting a fire or exploding). This is a complicated technical matter, so the risk assessment needs to be done by a competent person.
- Check containers regularly for damage, to ensure liquids and vapours can't escape. Vapours can spread quickly and be ignited by an ignition source some distance away.
- Keep flammable, highly flammable or extremely flammable liquids in a suitably marked fire-resistant cabinet or chest that meets the DSEAR ACOP if there is up to 50 litres on the premises
 - Containers should provide at least 30 minutes' fire resistance with high melting point (in excess of 750°C) supports and fastenings.

- Put the fire-resisting cabinet in a safe and suitable place. As far as possible, away from processing areas and sources of ignition, where it doesn't obstruct means of escape.
 - Note: [DSEAR ACOP \(HSE publication L138\)](#) gives further guidance on storage quantities in the context of flashpoint. HSE guidance also refers to standards for such cabinets including [BS EN 14470-1](#).
- If your quantity of dangerous substances is over 50 litres, store in a secure yard, within a marked external lockable fire-resisting chest, cabinet or storeroom, designed in accordance with HSE guidance (L138). This should be located as far away from buildings as possible, secured against unauthorised access, away from or protected against the risk of impact and drains or underground areas.
 - External storerooms should be at least 60 minutes' fire resistance.
 - If there's more than 50 litres but no suitable yard space is available, an internal, purpose-built store should be considered. The same design considerations for an external store apply, except that depending upon the quantities involved, 60 minutes' fire resistance should be regarded as a minimum and a longer period might be appropriate in some cases. Your risk assessment should confirm this.
- Provide secondary containment to contain leaks from (at least) the largest single container stored inside.
- Eliminate ignition sources in areas where dangerous substances are being stored or used. Only permit equipment (like electrical tools and heating appliances) that has been selected according to the requirements of DSEAR and the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations.
- Consider each gas you store in isolation. If you store more than one type, think about which gases can be safely stored together and which must be stored separately.
 - If you're not familiar with the criteria, check with your gas supplier.
 - Make sure LPG cylinders are stored separately from other gases.
- Put controls in place preventing uncontrolled releases or spillages of dangerous substances, like barriers to protect against impacts by workplace transport and racking inspections to reduce the likelihood of containers falling.
- Ensure the installation of fuel gas cylinders or associated equipment is only carried out by a Gas Safe™ registered firm or Gas Safe™ registered engineer.
 - If you're supplying gas in residential accommodation for which you are the landlord, ensure you arrange for annual gas appliances safety inspection and issue the 'landlord's gas safety certificate' to tenants – to comply with Gas Safety (Installation & Use) Regulations.
 - Have cylinders and associated equipment (especially hoses) checked regularly by a Gas Safe™ registered engineer, through a planned, preventative, maintenance programme.
- Confirm any new building (or room) for flammable or explosive materials, or any changes to equipment within an existing one is safe, according to a person competent in the field of explosion protection for your trade, before it's used for the first time. This is referred to as the 'verification' process.