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Storage of hazardous substances

Control Strategy Level 1, Minimum standards

Settings and operations in workplaces

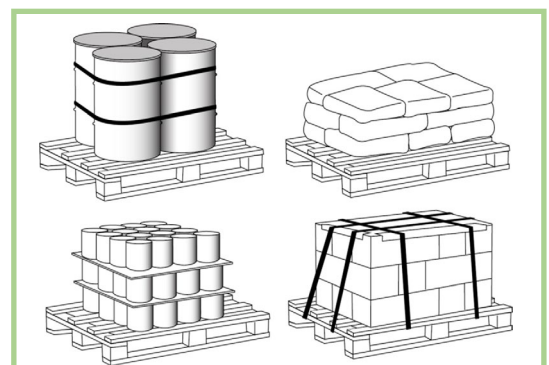
- Hazardous substances are stored in a storage facility depending on the substance property and quantities. Hazardous material storage facilities are e.g. storage room, safety cabinet or container.
- Quantities that may be stored outside of storage facilities are shown in the table.
 - Hazardous substances are stored in an organised and easily accessible manner.
- Storage equipment, e.g. shelves, cabinets, etc.
 - are statically loadable and stable,
 - and are assembled according to the assembly instructions.
- Free-standing storage facilities and containers (e.g. racks, IBC containers) are protected against leakage by a collision guard.
- Shelves are placed on a level surface with sufficient solidity.
- In the event of a leakage, liquids should be collected by chemical-resistant collecting trays or basin and not drains, pits, sewers or basements.
- The capacity of the collecting basin is at least the volume of the largest container.
- Floors and collecting basins are suitable for the stored goods, e.g. electrostatically dissipative for flammable liquids.

Organisation of work

- Hazardous substances are stored in original packaging, if possible.
- Only the amount of hazardous substance required for the day's or shift's needs is provided at the workplace.
- For regular activities with small quantities, the smallest container size is used.
- Flammable liquids (H224, H225, H226) are stored in non-fragile containers whenever possible.
- Storage of flammable liquids in safety cabinets is recommended.
- Outside the storage facility, flammable liquids may be stored
 - in non-breakable containers up to a maximum capacity of 10 l per container,
 - in fragile up to 2.5 l capacity per container,
 - and up to 20 l may be stored in containers approved under regulations for dangerous goods.
- Collecting basins are emptied regularly and do not lead to additional pollution of the breathing air.
- The allowed loading of e.g. racks and pallets is taken into account.
- The load on a pallet is secured by stacking in a formation, securing with intermediate layers, strapping or stretching.
- Containers and packaging are only stored at heights where safe removal is possible. Lifting and transport aids are available.

Quantity	These quantities may be stored outside storage facilities The total amount stored must not exceed 1500 kg	
1000 kg	All hazardous substances not covered by the following rules Flammable liquids, without classification as flammable	
	Labeling according to CLP regulation	According to EC Directive
200 kg	H228	R11 (Solid) Highly flammable
	H251, H252	No comparable classification
	H260, H261	R15 Highly flammable
100 kg	H226	R10 Flammable
	H242	R11 Highly flammable
	H250	R17 Highly flammable
50 kg	H206, H207, H208 <i>If not under explosives law</i>	No comparable classification
	H300, H310, H330, H301, H311, H331	R28, R27, R26, R25, R24, R23 (Very) toxic
	H370, H372	R39, R48 (Very) toxic
	H340, H350, H350i, H360, H360F, H360D, H360FD	R46, R45, R49, R60, R61, R60-61 (Very) toxic
	H272	R8 Oxidizing
50 kg and* 1 cylinder	H220, H221	R12 Extremely flammable
	H270	R8 Oxidizing
	H280, H281	No comparable classification
20 kg or* 50 pieces	H220, H221 <i>for Compressed gas cartridges</i>	R12 Extremely flammable Highly flammable
	H222, H223 <i>for aerosol packages</i>	R11, R12
	H229 <i>for aerosol packages</i>	No comparable classification
20 kg	H224 and H225	R11, R12 Extremely flammable Highly flammable
10 kg	H224	R11, R12 Extremely flammable Highly flammable
1 kg	H271	R9 Oxidizing
0,5 kg or 1 l	H330, H331 in combination with H280 or H281	R26, R23 (Very) toxic No comparable classification

Rules for storage of explosive substance and mixtures are to be determined according to the Second Ordinance to the Explosives Act (H200, H201, H202, H203, H204, H205, H206, H207, H208, H240, H241) or (R1, R2, R3).
* and = both limits apply, or= employer may choose one of the limits



- Containers and packaging stand straight and are secured against falling out or over.
 - Hazardous substances are not stored in traffic routes. This includes stairwells, escape and rescue routes, passageways, thoroughfares and narrow courtyards.
 - Hazardous substances are not kept or stored in break rooms, stand-by rooms, sanitary rooms, first-aid rooms or day shelters. This does not apply to household quantities intended for use there.
 - Hazardous substances are not stored near pharmaceuticals, food or feed.
 - Compressed gas cartridges (e.g. for gas burners) and aerosol packages (e.g. spray cans) are not exposed to sunlight or other heat sources.
 - Compressed gas cartridges and aerosol packages are not displayed in shop windows.
 - Effective ignition sources are avoided in the immediate vicinity of flammable hazardous substances.
 - The following hazardous substances must be kept under lock and key and accessible only by competent persons:
 - acutely toxic hazardous substances, Cat. 1, 2 and 3, H300, H301, H310, H311, H330, H331,
 - carcinogenic hazardous substances, Cat. 1A and 1B, H350, H350i,
 - mutagenic hazardous substances, Cat. 1A and 1B, H340 and
 - specific target organ toxic hazards (single exposure and repeated exposure), Cat. 1, H370, H372
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Employees are instructed and trained

- Forklift drivers are instructed in the transport of hazardous substances and have driving experience.
 - Employees are trained in behavioral measures, e.g.
 - Keep passages and accesses clear.
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Efficiency control, maintenance and servicing

- Storage areas are inspected at least once a week for signs of leaks or damage (e.g., dripping stopcocks or corroded containers, leaking drip pans).
 - Flat pallets and box pallets are regularly checked for defects. Damaged, moldy or chemically contaminated pallets are replaced.
 - Shelves are checked regularly, at least annually, for
 - damage to parts of the structure
 - damage caused by impacts or overloading of the beams
 - cracks in welds or base material
 - condition and effectiveness of fuses
 - permissible loading
 - The result of the control is documented.
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Additional requirements

- Smoking is strictly prohibited in the storage facility.
 - The Control Guidance Sheets 100, 110, 120 and pc-170 are additionally observed.
 - In particular, fire and explosion protection measures must be considered.
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- Technical Rules for Workplaces, available as a PDF file under <http://www.baua.de/asr>
 - ASR A1.3 - Special safety and health signs
 - DGUV Information 208-043 (previously BGI 5166/GUV-I) - Safety of shelving, www.dguv.de/publikationen

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