

Factsheet: Storage of hazardous materials

January, 2020

Background:

Hazardous substances are kept in numerous laboratories and workshops of ETH Zurich. In order to ensure safety and prevent accidents, certain materials must be stored separately. This factsheet contains information on hazardous substances which must be segregated, i.e. stored separately. Depending on the substance, additional measures (such as ventilated cabinets, locks, spill trays,...) may be necessary but are not dealt with in this factsheet.

General guidelines

- Protective storage measures must be geared toward the most dangerous of the substances.
- Substances that could react dangerously with one another may not be stored together.
- Instructions (material safety datasheet, transport classification, storage class, danger symbol) should always be observed.
- Even substances in the same storage category can sometimes react dangerously with one another.
- Consult a specialist if there are any questions or uncertainties.

More information / Sources

- "Lagerung gefährlicher Stoffe – Leitfaden für die Praxis" (2011), (Practical Guidelines) issued by Environmental Agency of the Cantons of Northwest Switzerland (AG, BL, BS, BE, SO) and Canton of Thurgau.
- "TRGS510, Storage of hazardous substances in non-stationary containers" (2010), German Federal Institute for Occupational Safety and Health (BAuA)











Contact:

SSHE BUSS: sgu-gefahrengut@ethz.ch

Hazardous materials officer: Marco Gandini marco-gandini@ethz.ch

Which materials may be stored together?

Green: may be stored together; Yellow: may be stored together under specific conditions; Red: separate or segregated storage required

		LGK	1	2	3	4.1	4.2	4.3	5	6.1	6.2	7	8	10/12	11/13	NH
	Explosive substances	1	Green	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
	Compressed gases	2	Red	Green	Red	Red	Red	Red	Red	Red	Red	Red	Red	Yellow	Yellow	Yellow
	Flammable liquids	3	Red	Red	Green	Red	Red	Red	Red	Red	Red	Red	Red	Yellow	Red	Red
	Flammable solids	4.1	Red	Red	Red	Green	Red	Red	Red	Red	Red	Red	Red	Yellow	Yellow	Red
	Spontaneously combustible substances	4.2	Red	Red	Red	Red	Green	Red	Red	Red	Red	Red	Red	Red	Red	Red
	Substances forming flammable gases on contact with water	4.3	Red	Red	Red	Red	Red	Green	Red	Red	Red	Red	Red	Red	Red	Red
	Oxidizing substances	5	Red	Red	Red	Red	Red	Red	Yellow	Red	Red	Red	Red	Red	Red	Red
	Toxic substances	6.1	Red	Red	Red	Red	Red	Red	Red	Green	Red	Red	Yellow	Yellow	Yellow	Red
	Infectious substances	6.2	Red	Red	Red	Red	Red	Red	Red	Red	Green	Red	Red	Red	Red	Red
	Radioactive substances	7	Red	Red	Red	Red	Red	Red	Red	Red	Red	Green	Red	Red	Red	Red
	Caustic and corrosive substances	8	Red	Red	Red	Red	Red	Red	Red	Red	Yellow	Red	Red	Yellow	Yellow	Red
	Health and environmentally hazardous liquids	10/1 2	Red	Yellow	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red	Yellow	Green	Yellow
	Health and environmentally hazardous solids	11/1 3	Red	Yellow	Red	Yellow	Red	Red	Red	Red	Red	Red	Red	Yellow	Yellow	Green
---	Nonhazardous substances	NH	Red	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red	Yellow	Yellow	Green

LGK = storage class

Examples of substances that may not be stored together:

The following table contains examples of frequently used lab chemicals which can react violently with one another and which therefore must be stored separately. **This list is not exhaustive!**

Substance	Do not store with...
Acetic acid	Chromium (VI)-oxide, nitric acid, alcohols, perchlorates, peroxides, permanganates, ethylene glycol, hypochlorites
Acetylene	Halogens, silver, mercury, copper
Acids	Alkalis, cyanides, hypochlorites, sulfides, alkali metals
Activated carbon	Oxidants, calcium hypochlorite (chlorinated lime)
Alkali metals	Water, haloalkanes, halogens, carbon dioxide, acids
Aluminum alkyls	Water
Ammonia (gas, solution)	Mercury, halogens, calcium hypochlorite, hydrogen fluoride, silver
Ammonium nitrate	Acids, metal powders, chlorates, nitrates, sulfur, flammable liquids, fine-particulate organic or flammable substances, silver
Bromine, chlorine	Ammonia, acetylene, butadiene, alkanes, hydrogen, metal powders, benzene
Chlorates, perchlorates	Ammonium salts, acids, metal powder, sulfur, fine-particulate organic or flammable substances, phosphorus
Chromium (VI)-oxide	Acetic acid, naphthalene, camphor, glycerin, alcohols, flammable liquids, nitric acid
Copper	Acetylene, hydrogen
Cyanide	Acids
Flammable liquids	Ammonium nitrate, chromium (VI)-oxide, halogens, peroxides, nitric acid, all oxidizing substances
Fluorine	Store separated from all other substances
Hydrocarbons	Halogens, chromium (VI)-oxide, peroxides
Hydrochloric acid	Alkalis, cyanides, hypochlorites, sulfides, alkali metals, nitric acid
Hydrogen fluoride	Ammonia (gas or solution), alkalis, hypochlorites
Hydrogen sulfide	conc. nitric acid
Hypochlorites	Acids
Iodine	Acetylene, ammonia (gas or solution)
Mercury	Acetylene, ammonia
Nitric acid (conc.)	Acetic acid, chromium (VI)-oxide, cyanides, hydrogen sulfide, flammable substances, hypochlorites, hydrochloric acid
Oxalic acid	Silver, mercury
Perchloric acid	Acetic anhydride, bismuth and its alloys, alcohols, wood, paper
Permanganates	Glycerin, ethylene glycol, benzaldehyde, sulfuric acid
Peroxides	Metals and metal salts, alcohols, acetone, organic substances, nitromethane, flammable substances
Phosphorus	Sulfur, compounds containing oxygen (e.g. chlorates)
Silver	Acetylene, oxalic acid, tartaric acid, ammonium compounds
Sulfides	Acids
Sulfuric acid	Chlorates, perchlorates, permanganates, alkalis, cyanides