



Expert Information

HazMat Guide

FLAMMABLES

Edition 2.0

SAMPLE



► ***The Ultimate Flammable
Storage Guide***



»» "Lack of awareness is still the root cause of fire-related accidents at the workplace".

Sascha Kunkel, Vice President, Global Business Development

INTRODUCTION

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This is the second edition of the asecos HazMat Guide series for flammables. We have collected information from many sources and added our own content to make this an aid to help designing the safest possible workplace. This edition puts special focus on flammable storage. Look out for future HazMat Guide releases, specializing in corrosive storage, gas cylinder storage and more.

All HazMat Guides will be regularly reviewed and revised. We would be happy to receive your feedback, ideas or critiques and invite you to help us making this guide a valuable source of information in the industry. Feel free to send an email to academy@asecos.com

You will find that we sometimes refer to the German regulations (whenever we could not find an international source). Before applying this advice make sure to double-check with your local legislation and regulations. When in doubt you can always get in touch with one of our local agents or distributors. If nothing is available the German regulations might serve you as best-practice examples.

At the end of each chapter you will find „**take away pages**“, that conveniently summarize the most important elements.



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IT CAN HAPPEN TO ANYONE

Many different dangers exist when handling hazardous materials.

The use of hazardous and combustible materials is part of the daily routine in most laboratories and industries and is unavoidable. What is often quickly forgotten in daily handling: the improper storage of such materials puts people, the environment and property in danger.

- **Fires and explosions** caused, for example, by the improper storage of combustible liquids
- **Pollution of soil, groundwater and surface water**, for example, by contaminated fire fighting water or leakages
- **Downtimes**, for example, due to laboratories destroyed by fires
- **Endangerment to human life**

Hazardous materials are therefore always very much a current topic for every laboratory and industry.

Apart from the proper handling of these health-endangering substances, strict storage regulations must be observed.

The legal basis concerning the handling of hazardous materials is defined

- in global regulations (e.g. GHS – globally harmonised system)
- in directives and guidelines of state confederations (e.g. the European Union)
- and finally in rules and laws of individual countries

- ▶ ***Do you know the legislation for handling hazardous materials in your country?***
- ▶ ***Do you apply these rules wherever and whenever necessary?***
- ▶ ***Do you already use appropriate storage facilities with the highest protection level?***

Only if you have answered 'Yes' to all these questions can you stay safe!

The experts of asecos will be happy to assist you with all regulatory affairs in the field of hazardous material storage. Just get in touch with us.

1 HAZARDOUS MATERIALS

Terms & Definitions

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1.1 WHAT ARE HAZARDOUS MATERIALS?

Hazardous materials are materials with the following properties:

- ▶ highly toxic
- ▶ toxic
- ▶ hazardous to health
- ▶ corrosive
- ▶ irritant
- ▶ sensitising
- ▶ oxidising
- ▶ explosive
- ▶ extremely flammable
- ▶ highly flammable
- ▶ flammable
- ▶ carcinogenic
- ▶ reprotoxic
- ▶ mutagenic
- ▶ dangerous for the environment
- ▶ releasing hazardous materials when handled
- ▶ chronically harmful in any other way

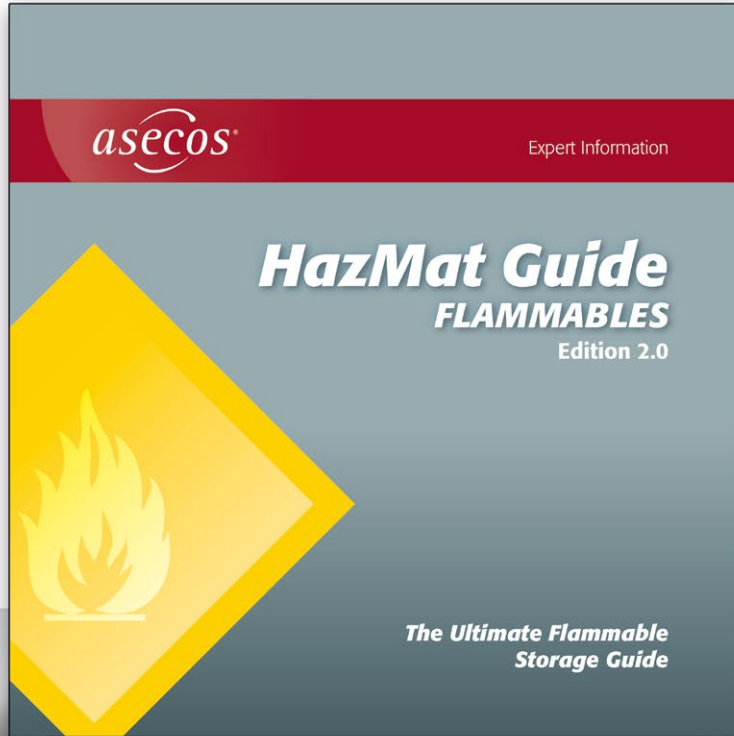
These terms can be explained as follows:

HIGHLY TOXIC	materials which can cause temporary or permanent damage to health or even death, even in very small quantities e.g. hydrogen cyanide, phosgene.
TOXIC	materials which can cause temporary or permanent damage to health or even death in small quantities e.g. methanol, chlorine.
HAZARDOUS TO HEALTH	materials which can cause temporary or permanent damage to health or even death, e.g. glycol, iodine.
CORROSIVE	are materials, which can cause destruction of body tissue upon contact with the skin or mucous membranes, e. g. hydrochloric acid above 25 %, sodium hydroxide above 2 %.
IRRITANT	materials which can cause inflammation upon contact with the skin or mucous membranes, e.g. hydrochloric acid between 10 and 25%, sodium hydroxide between 0.5 and 2%.

SENSITISING	materials which may cause hypersensitive reactions when inhaled or absorbed through the skin, e.g. cobalt, nickel, various diisocyanates.
OXIDISING	materials which can maintain a fire without air supply, e.g. sodium chlorate, sodium peroxide, nitric acid above 70%.
EXPLOSIVE	materials which can be brought to explode e.g. due to heat, friction, impact or initial ignition, e.g. nitroglycerine, dynamite, TNT.
EXTREMELY FLAMMABLE	gases or materials whose vapours form potentially explosive mixtures with the surrounding air and which are extremely flammable in the presence of an ignition source; with a flash point - below 0 °C and boiling point below 35 °C, e.g. acetylene, hydrogen, diethyl ether.
HIGHLY FLAMMABLE	materials whose vapours form potentially explosive mixtures with the surrounding air and which are highly flammable in the presence of an ignition source; with a flash point below 23 °C, e.g. acetone, petrol.
FLAMMABLE	materials whose vapours form potentially explosive mixtures with the surrounding air and which are flammable in the presence of an ignition source; with a flash point between 23 °C and 60 °C, e.g. styrene, turpentine oil.
CARCINOGENIC	a material which can prompt the body's own cells to form carcinomas e.g. asbestos, benzene.
REPROTOXIC	materials which cause non-heritable damage to the progeny or increase their frequency and/or which may cause an impairment of the male or female reproduction functions or capability e.g. benzo[a]pyrene, 2-ethoxyethanol.
MUTAGENIC	materials which may cause heritable genetic damage, e.g. acrylamide, diethyl sulphate, ethylene oxide.
DANGEROUS FOR THE ENVIRONMENT	materials which may damage animals, plants, microorganisms, climate, air, water or soil, e.g. diesel fuel, mercury, dichlorofluoroethane.

During the manufacture or use of materials, hazardous materials may arise or be released, e.g. welding electrodes.

Other chronically harmful materials can cause damage to health when repeated or longer exposure occurs.



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The applicable state legislation has to be observed.

Sources: EN 14470-1, TRGS 510, TRGS 800, TRBS 2152/TRGS720, German Act on Protection Against Hazardous Substances (ChemG), GefStoffV, GGVSEB, GHS/CLP

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