



Safety Data Sheets

Module 3



Health & Safety
Essentials

Registered charity number 207890

Safety Data Sheet Structure

The European standard for Safety Data Sheets has 16 sections to provide structure and clarity. The required content for each section is described below along with practical information on its use to the lab chemist.

The Safety Data Sheet and its 16 Section Structure

SECTION 1: Identification of the substance or mixture and of the company or undertaking

This 'headline' section describes how the substance or mixture is identified by name(s), CAS number etc, the name of the supplier and their contact details with email address and including an emergency contact.

This section also describes 'identified relevant uses' and 'uses advised against'.

SECTION 2: Hazard Identification

This section of the safety data sheet describes the hazard classification and category of the substance or mixture.

The labelling elements according to the CLP Regulation include; Hazard pictogram(s), signal word (either 'danger' or 'warning') and Hazard & Precautionary statement(s). These statements have replaced the old 'r & s' phrases (risk & safety).

SECTION 3: Composition/Information on Ingredients

This section of the safety data sheet describes the chemical identity of the ingredient(s) of the substance or mixture. Of particular interest to the experimental chemist is the presence of substances other than the main one that may interfere with the intended experiment or lead to undesirable side-reactions.

SECTION 4: First-Aid Measures

This section of the safety data sheet describes the initial care in such a way that it can be understood and given by an untrained responder without the use of sophisticated equipment and without the availability of a wide selection of medications. Consequently, it is quite generic.

If medical attention is required, the instructions should state this along with its urgency. There may be immediate or delayed effects. First aid instructions are provided by 'routes of exposure' such as inhalation, skin, eye etc. Instructions such as moving the casualty to fresh air, the removal of clothing or PPE requirements for First aid responders are included in this section.

Also see *Health and Safety Essentials - "Accidents & Emergencies"*.

SECTION 5: Fire Fighting Measures

This section of the safety data sheet describes the requirements for fighting a fire caused by the substance or mixture, or where it has become involved in a fire.

Suitable extinguishing media (water, powder etc.) is described and also unsuitable extinguishing media where this is relevant. Note: in general, water as extinguishing medium is not employed in chemical laboratories. For example, if a water extinguisher was employed in solvent fire it could have disastrous consequences.

The advice can be quite generic as they have no knowledge of the scale and location of your work so once again you need to extract the useful information and formulate your own plans based on local conditions.



SECTION 6: Accidental Release Measures

This section of the safety data sheet recommends the appropriate response to spills, leaks, or releases to prevent or minimise the adverse effects on persons, property and the environment.

It sometimes distinguishes between responses to large and small spills, in cases where the spill volume has a significant impact on the hazard but it can be rather generic as their advice has to suit all users.

Once again judgement is required based upon scale, location etc

SECTION 7: Handling & Storage

This section of the safety data sheet provides advice on safe handling practices.

Whilst it emphasises precautions that are appropriate to the identified relevant uses and to the *unique* properties of the substance or mixture, it also provides general advice on workplace hygiene such as not eating or drinking when handling chemicals, removing contaminated clothes, washing hands etc.

If there are specific storage needs such as segregation or isolation this section should list that information.

SECTION 8: Exposure Controls / Personal Protection

This section of the safety data sheet describes the applicable occupational exposure limits which for the UK are Workplace Exposure Limits (WELs). It also shows the necessary risk management measures to control exposure which it achieves by listing identified relevant uses and the exposure scenarios.

SECTION 9: Physical and Chemical Properties

This section of the safety data sheet describes *relevant* physical data relating to the substance or mixture. For example, the flash point would be provided for flammables but not for a high melting point solid.

It is likely to contain appearance, odour and many basic properties that will be useful in safely handling the substance

Care must be taken when interpreting the data in this section as it may have come from a general source and therefore may not be specific to the grade or purity that you are using.

SECTION 10: Stability and Reactivity

This section of the safety data sheet describes the stability of the substance or mixture and the possibility of hazardous reactions occurring under certain conditions of use. It may also describe any hazardous decomposition products and the consequences if it is released into the environment.

The main thing to look out for in this section is the possibility of hazardous reactions, incompatible materials and especially the description of the 'conditions to avoid'.

SECTION 11: Toxicological Information

Whilst this section of the safety data sheet is meant for use primarily by medical professionals, occupational health & safety professionals and toxicologists, many others refer to it.

This section will give information on the following potential effects: acute toxicity, skin corrosion/irritation, serious eye damage/irritation, respiratory or skin sensitization. Routes of exposure are usually provided along with symptoms and effects both delayed and immediate as well as chronic effects from exposure and this can be very useful in the COSHH assessment process.

SECTION 12: Ecological Information

This section of the safety data sheet provides information that will be useful in assessing the environmental impact of the substance or mixture if it is released to the environment. This can be useful in planning to handle spills or maybe evaluating waste treatment practices, control of release, accidental release measures and transport.



SECTION 13: Disposal Considerations

This section provides information on proper waste management of the substance or mixture and/or its (contaminated) container. In general, specific methods or preparations for the disposal of laboratory reagents are absent from safety data sheets and the assessor/researcher should seek information elsewhere to complete the COSHH assessment.

However, the legal duties to correctly dispose of hazardous waste remain with the producer so you should check what your laboratory/organisation already has in place for management of waste. See also *Health & Safety Essentials – Laboratory Waste*.

SECTION 14: Transport Information

This section of the safety data sheet provides basic classification information for transporting/shipment of substances or mixtures by road, rail, sea, inland waterways or air. The UN number and other classification identifiers are provided here and this can be useful to your transport company if you are shipping material to another location.

SECTION 15: Regulatory Information

This section of the safety data sheet describes the other regulatory information on the substance or mixture that is not already provided in the safety data sheet.

Examples would include if the substance was recognised as depleting the ozone layer, a persistent organic pollutant or a substance listed in the Seveso Directive(s).

SECTION 16: Other Information

This section of the safety data sheet describes the information relevant to the actual compilation of the safety data sheet, such as further hazard statements, safety phrases and or precautionary statements, which are not written in fully under sections 2 or 15. It may also contain advice on the training of workers.

