




***Globally Harmonized
System of Classification
and Labelling of Chemicals
(GHS)***

Hazard communication



Objective

Develop a harmonized hazard communication system based on GHS classification criteria, including labelling and Safety Data Sheets (SDSs)

Factors considered:

- Potential use of products
- Availability of information other than labels
- Availability of specific training

Communication needs

- Workplace: labels, SDSs, specific training
- Consumers: labels
- Emergency responders: labels, specific training
- Transport: labels, transport documents, specific training

Comprehensibility of hazard communication elements: guiding principles

Information should be conveyed in more than one way

Comprehensibility should take account of existing information (literature, studies and data)

Phrases indicating degree of hazard should be consistent across different hazard types

Words and phrases should retain comprehensibility when translated into other languages

Format and colour of the label elements, and SDS format should be standardized

Labelling according to GHS

Information required on a [GHS](#) label

- Pictograms
- Signal words
- Hazard statements
- Precautionary statements and pictograms
- Product identifier
- Supplier information

Labels and Safety Data Sheets should be updated when new and significant information is available for a chemical

“New and significant information” means any information that changes GHS classification and leads to a change in the information to be provided in the label or in the SDS

Pictograms (sectors other than transport)

Definition:

- Graphical composition that includes a symbol and other graphic elements, such as a border, background pattern or colour that is intended to convey specific information

Characteristics:

- Shape: square set at a point

Colours:

- Symbol: black; Background: white; Border: red*
(* Competent authorities may allow the use of a black border in certain cases)

Pictograms and a code uniquely identifying each one "GHSxx" are listed in section 4 of Annex 3 of the [GHS](#). The pictogram code is intended to be used for references purposes. It is not part of the pictogram and should not appear on labels or in section 2 of the safety data sheet



Pictograms (transport)

For transport, the pictograms (labels) prescribed by the UN Model Regulations should be used (see Part 5 of the [UN Model Regulations](#))



*Example:
Transport pictogram for flammable liquids*

When a transport (UN Model Regulations) pictogram appears on a package, the GHS pictogram for the same hazard should not appear

GHS pictograms for sectors other than transport (i.e the ones with a red border) shall never be used in transport of dangerous goods vehicles

Signal words and hazard statements

Signal word: used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label

- “Danger” (for more severe hazard categories)
- “Warning” (for less severe hazard categories)

Hazard statement: phrase assigned to a hazard class and category that describes the nature of the hazards of a hazardous product, including, where appropriate, the degree of hazard (e.g: “Highly flammable liquid and vapour”; “Toxic in contact with skin”)

Hazard statements and a code uniquely identifying each one “Hxxx” are listed in section 1 of Annex 3 of the [GHS](#). Hazard statement codes are intended to be used for reference purposes only, are not part of the hazard statement text and should not be used to replace it

Precautionary statements

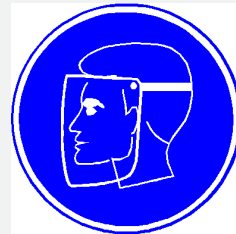
Phrases (and/or pictograms) that describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous product, or improper storage or handling of a hazardous product. There are five types of precautionary statements:

- General (codes "P1xx")
- Prevention (codes "P2xx")
- Response (in case of spillage or exposure) (codes "P3xx")
- Storage (codes "P4xx")
- Disposal (codes "P5xx")

Annex 3 of the [GHS](#) provides guidance on the use of precautionary statements consistent with GHS. Precautionary statements and a code uniquely identifying each one "Pxxx" are listed in section 2 of Annex 3 of the GHS. Precautionary statement codes are intended to be used for reference purposes only, are not part of the precautionary statement text and should not be used to replace it.

Precautionary pictograms

To be used where allowed by the competent authority. Examples (see Annex 3, Section 5 of the [GHS](#)):



Product identifier and supplier identification

Product identifier:

- For pure substances: the chemical identity of the substance
- For mixtures and alloys: the chemical identities of:
 - all ingredients/alloying elements contributing to the hazard of the mixture/alloy (as specified by the competent authority); or,
 - all ingredients/alloying elements contributing to the following hazards when they appear on the label: acute toxicity; skin corrosion/serious eye damage; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity; skin/respiratory sensitization
- For substances/mixtures covered by the [UN Model Regulations](#): Proper shipping name

Supplier identification: Name, address and telephone number of manufacturer/supplier

Example of GHS labelling

CODE
PRODUCT NAME

COMPANY NAME

Street Address
City, State, Postal Code, Country
Phone Number
Emergency Phone Number

DIRECTIONS FOR USE:
XXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX

Fill weight: XXXX Lot Number: XXXX
Gross weight: XXXX Fill Date: XXXX
Expiration Date: XXXX



Danger
Keep out of the reach of children.
Read label before use.



UN Number
Proper shipping name

Highly flammable liquid and vapour.
Harmful if inhaled.
May cause liver and kidney damage through prolonged or repeated exposure.

Keep container tightly closed.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Use only outdoors or in a well-ventilated area.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

Ground and bond container and receiving equipment.

In case of fire: Use [as specified] to extinguish.

FIRST AID
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER/doctor if you feel unwell.

Store in a well-ventilated place. Keep cool

[Universal Product Code (UPC)]

Precedence of hazard information Symbols and signal words

Symbols for physical hazards:

- For transport labelling: as specified by the [UN Model Regulations](#)
- For workplace labelling: as specified by competent authority

Symbols for health hazards:

- Exclamation mark should not appear if:
 - if skull and crossbones applies, or
 - if used for skin sensitization or skin/eye irritation:
 - if corrosive symbol applies
 - if the health hazard symbol appears for respiratory sensitization



Signal words: If “Danger” applies “warning” should not appear on the same label

Precedence of hazard information

Hazard statements

All assigned hazard statements should appear on the label, except where otherwise provided below. The competent authority may specify the order in which they appear.

The following precedence rules may be applied:

- If H410 “Very toxic to aquatic life with long lasting effects” applies: H400 “Very toxic to aquatic life” may be omitted
- If H411 “Toxic to aquatic life with long lasting effects” applies: H401 “Toxic to aquatic life” may be omitted
- If H412 “Harmful to aquatic life with long lasting effects” applies: H402 “Harmful to aquatic life” may be omitted
- If H314 “Causes severe skin burns and eye damage” applies: H318 “Causes serious eye damage” may be omitted

Competent authorities may decide whether to require use of the above precedence rules, or to leave the choice to the manufacturer/supplier

Where a combined hazard statement is indicated, the competent authority may specify whether the combined hazard statement or the corresponding individual statements should appear on the label, or may leave the choice to the manufacturer/supplier

Labelling of small packagings

General principles

All applicable [GHS](#) label elements should appear on the immediate container of a hazardous substance or mixture where possible.

Where it is impossible to put all the applicable label elements on the immediate container itself, other methods of providing the full hazard information should be used in accordance with the definition of “label” in the GHS. Factors influencing this include:

- shape, form or size of the immediate container
- number of label elements to be included
- need for label elements to appear in more than one official language

Labelling of small packagings

General principles (cont'd)

Where the volume of a hazardous substance or mixture is so low and the supplier has data demonstrating, and the competent authority has determined, that there is no likelihood of harm to human health and/or the environment, then the label elements may be omitted from the immediate container

Competent authorities may allow certain label elements to be omitted from the immediate container for certain hazard classes/categories where the volume of the substance or mixture is below a certain amount

Some labelling elements on the immediate container may need to be accessible throughout the life of the product, e.g. for continuous use by workers or consumers

Annex 7 of the [GHS](#) provides examples of labelling of small packagings

Safety Data Sheets

- Provide comprehensive information of a substance/mixture for use in workplace
- Are product related
- Should be provided for:
 - all substances/mixtures meeting [GHS](#) harmonized criteria for physical, health and environmental hazards
 - mixtures containing substances meeting criteria for carcinogenicity, toxicity for reproduction or specific target organ toxicity, in concentrations exceeding cut-off values
 - other substances/mixtures not meeting the criteria for classification as hazardous but containing hazardous substances in certain concentrations, if required by the competent authority

Safety Data Sheets

Information should be presented as follows:

1. Identification
2. Hazard(s) identification
3. Composition/information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls/personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information

For detailed guidance on the preparation of SDS refer to Annex 4 of the [GHS](#)

Safety Data Sheets: Sections 1 and 2

Section 1: Identification of the substance or mixture

- GHS identifier
- Other unique identifiers
- Supplier's details: Name, full address and phone number(s)
- Recommended use of the chemical and restrictions on use; and
- Emergency phone number

Section 2: Hazard identification

- Classification of the substance or mixture
- GHS labels, including precautionary statements
- Other hazards which do not result in classification

Safety Data Sheets: Section 3

Section 3: Composition/information on ingredients

- For substances
 - Chemical identity
 - Common name, synonym of the substance
 - CAS number and other unique identifiers
 - Impurities and stabilizing additives
- For mixtures (for all hazardous ingredients)
 - Chemical identity
 - Identification number
 - Concentration range

Safety Data Sheets: Sections 4 and 5

Section 4: First-aid measures

- Description
- Most important symptoms/effects, acute and delayed
- If needed, indication of:
 - Immediate medical attention
 - Special treatment

Section 5: Fire-fighting measures

- Suitable extinguishing media
- Specific hazards arising from the chemical
- Special protective equipment and precautions for fire-fighters

Safety Data Sheets: Sections 6, 7 and 8

Section 6: Accidental release measures

- Personal precautions, protective equipment and emergency procedures
- Environmental precautions
- Methods and materials for containment and cleaning up

Section 7: Handling and storage

- Precautions for safe handling
- Conditions for safe storage (including incompatibilities)

Section 8: Exposure controls/personal protection

- Control parameters
- Appropriate engineering controls
- Individual protection measures, personal protective equipment (PPE)

Safety Data Sheets: Section 9

Physical and chemical properties

- Physical state
- Colour
- Odour
- Melting point/freezing point
- Boiling point or initial boiling point and boiling range
- Flammability
- Lower and upper explosion limit/flammability limit
- Flash point
- Auto-ignition temperature
- Decomposition temperature
- pH
- Kinematic viscosity
- Solubility
- Partition coefficient: n-octanol/water (log value)
- Vapour pressure
- Density and/or relative density
- Relative vapour density
- Particle characteristics

Safety Data Sheets: Section 10

Section 10: Stability and reactivity

- Reactivity
- Chemical stability
- Possibility of hazardous reactions
- Conditions to avoid
- Incompatible materials
- Hazard decomposition products

Safety Data Sheets: Section 11

Section 11: Toxicological information

- Data for all the health hazards covered by the GHS (*If data for any of those hazards is not available, they should be listed on the SDS with a statement that data is not available*)
- Information on the likely routes of exposure
- Symptoms related to the physical, chemical and toxicological characteristics
- Delayed and immediate effects and chronic effects from short- or long-term exposure
- Numerical measures of toxicity (such as ATE)
- Interactive effects
- Where specific chemical data are not available
- Mixtures
- Mixture versus ingredient information
- Other relevant information

Safety Data Sheets: Sections 12 and 13

Section 12: Ecological information

- Toxicity
- Persistence and degradability
- Bioaccumulative potential
- Mobility in soil
- Other adverse effects

Section 13: Disposal considerations

- Disposal methods

Safety Data Sheets: Section 14

Section 14: Transport information

- UN Number
- UN proper shipping name
- Transport hazard classes
- Packing group, if applicable
- Environmental hazards
- Special precautions for user
- Transport in bulk according to IMO instruments

Safety Data Sheets: Sections 15 and 16

Section 15: Regulatory information

- Regulatory information not provided elsewhere in the SDS
- Safety, health and environmental regulations specific for the chemical in question

Section 16: Other information

- Date of preparation of the latest version of the SDS (with indication of changes made to previous revision)
- Key/legend to abbreviations and acronyms used in the SDS
- Key literature references and sources for data used to compile the SDS



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End of “Hazard communication”