GHS Elements Found on Labels and Safety Data Sheets

Chemical Hygiene Plan

Since 2015, all chemical labels and safety data sheets (SDSs) are required to comply with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). GHS defines hazard classifications and uses standardized elements, including pictograms, signal words, hazard statements, and precautionary statements to communicate the hazards associated with the chemical and the measures to protect from the hazards.

Hazard Classes

There are 28 hazard classes, 16 physical, 10 health, and 2 environmental. Each hazard class is further divided into hazard categories based on the severity of the hazard. For example, the hazard class "Flammable Liquids" is divided into 4 categories based on the flash point and boiling point of the liquid.

Signal Words

Two signal words, danger and warning, are used to indicate the severity of the hazard.

Hazard Statements

GHS hazard statements are standardized phrases that describe the nature and severity of the hazard. Each hazard statement is assigned a unique code consisting of a letter "H" followed by three numbers. Examples of hazard statements include:

H225 Highly flammable liquid and vapor and
H331 Toxic if inhaled

Precautionary Statements

GHS precautionary statements are phrases that describe measures to minimize or prevent adverse effects from a chemical, including preventing exposure, proper storage, emergency response, and proper disposal. Each precautionary statement is assigned a unique code consisting of a letter "P" followed by three numbers. Examples of precautionary statements include:

P210 Keep away from heat, hot surface, sparks, open flames, and other ignition sources
P341 If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
P403 Store in a well-ventilated place.

Pictograms

Pictograms are symbols that are used to quickly identify the primary hazards associated with the chemical. There are 9 pictograms that are matched to GHS hazard classes and categories. A single pictogram may be matched to more than one hazard class and category. Therefore, it is important to read the hazard statements to understand the specific hazard indicated by the pictogram. For example, the exclamation mark pictogram may be used for acutely toxic chemicals that are harmful if swallowed, inhaled, or in contact with skin, chemicals that cause skin or eye irritation, chemicals that cause sensitization of the skin, or chemicals that cause narcotic effects (drowsiness or dizziness). The hazard statement(s) will specify which of these hazards are indicated by the exclamation mark.

Physical Hazards

Pictogram	Pictogram Name	Hazard Class(es)
	Exploding Bomb	Explosives Some self-reactive chemicals Some organic peroxides
	Flame	Flammable gases, liquids, and solids Pyrophoric liquids and solids Some self-reactive chemicals Some organic peroxides
	Flame Over Circle	Oxidizers
	Gas Cylinder	Gases under pressure, including • Compressed gases • Liquified gases • Refrigerated liquified gases
	Corrosion	Corrosive to metals

Health Hazards

Pictogram	Pictogram Name	Hazard Class(es)
	Skull and Crossbones	Some acute toxins
	Corrosion	Corrosive to skin and eyes

	Exclamation Mark	Some acute toxins Skin and eye irritant Skin sensitizer Some specific organ toxicity
	Health Hazard	Respiratory sensitizers Mutagens Carcinogens Reproductive hazards Some specific organ toxicity Aspiration hazards

Environmental

Pictogram	Pictogram Name	Hazard Class(es)
	Environment	Hazardous to aquatic environment

Chemical Labels

The following elements will appear on a GHS compliant chemical label:

1. Product Identifier
2. Signal Word
3. Hazard Statements (the alphanumeric code may or may not be identified)
4. Precautionary Statements (the alphanumeric code may or may not be identified)
5. Manufacturer or Importer Information

6. Pictograms

Safety Data Sheets (SDSs)

A safety data sheet (SDS), formerly called a material safety data sheet (MSDS), provides detailed information about the chemical, including the properties of the chemical, the hazards associated with the chemical, safe handling practices, and emergency information. Prior to GHS, there was no required format for SDSs. GHS standardized SDSs into 16 sections:

Section 1: Identification

Identifies the product, synonyms (if any), recommended use(s), restrictions on use, manufacturer or distributor information, and an emergency telephone number.

Section 2: Hazard Identification

Identifies hazard class and category, pictogram, signal word, hazard and precautionary statements.

Section 3 Composition/Information on Ingredients

Identifies the chemical name, synonyms, component(s), CAS number and other identifiers, and the concentration of the component(s).

Section 4: First-Aid Measures

Identifies first-aid measures by route of exposure (inhalation, skin contact, eye contact, ingestion), most important symptoms and effects (both acute or delayed), and indication of medical attention and special treatment needed.

Section 5: Fire-Fighting Measures

Identifies suitable and unsuitable extinguishing media, special hazards arising from the chemical (hazardous combustion products), and advice for firefighters.

Section 6: Accidental Release Measures

Identifies personal precautions, protective equipment, emergency procedures, and methods and materials for containing and cleaning up a spill.

Section 7: Handling and Storage

Identifies precautions for safe handling, proper storage, and incompatible materials.

Section 8: Exposure Controls/Personal Protection

Identifies occupational exposure limits (when available) for component(s) and exposure controls, including person protective equipment.

Section 9: Physical and Chemical Properties

Identifies physical and chemical properties, including appearance, odor, pH, boiling point, flash point, evaporation rate, flammability, lower and upper explosive limits, vapor pressure, vapor density, solubility, etc.

Section 10: Stability and Reactivity

Identifies reactivity and stability data, possible hazardous reactions, conditions to avoid, incompatible materials, and hazardous decomposition products.

Section 11: Toxicological Information

Identifies toxic health effects (immediate and delayed), symptoms related to the toxic effects, and data used to identify those effects.

Section 12: Ecological information

Identifies ecotoxicity, persistence and degradability, bioaccumulative potential, and mobility in soil.

Section 13: Disposal consideration

Identifies disposal methods.

Section 14: Transport information

Identifies DOT, IMDG, and IATA shipping information.

Section 15: Regulatory information

Identifies safety, health, and environmental regulations specific to the product.

Section 16: Other information

Identifies any other pertinent information, including revision date of SDS.