



Chemical Labels & Labeling

Relabeling, Secondary Container Labels, Wastes



Outline

- GHS Labels & Hazard Pictograms
- NFPA Diamond
- NFPA Diamond versus GHS Hazard Levels
- Labeling
 - Manufacturer's Labels
 - Re-labeling of Chemical Containers
 - Secondary Container Labels (created solutions, mixtures)
 - Alternative Labeling Systems
- Waste Labeling
 - Chemical / Hazardous Waste
 - Biohazard Waste Containers
 - Trash, Broken Glass

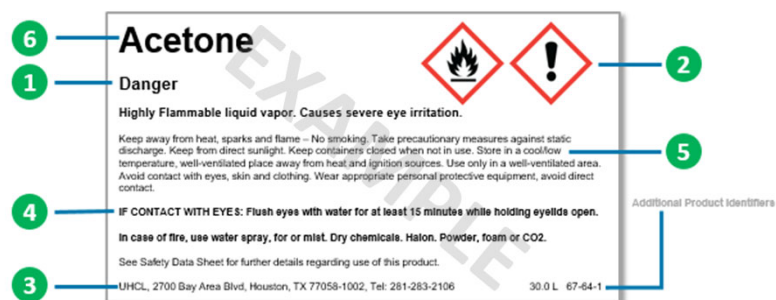
GHS

GHS – is an acronym for the **Globally Harmonized System (GHS)** of Classification and Labeling of Chemicals developed by the United Nations for Hazard Communication purposes.

- It is not a global law or regulation, but it has been adopted by over 65 countries.
- It is a worldwide system for standardizing hazard classification criteria and the communication of chemical hazards.

GHS system includes these 6 label elements:

- 1 **Signal Word**
- 2 **GHS Symbols (Hazard Pictogram)**
- 3 **Manufacturing Information**
- 4 **First Aid**
- 5 **Hazard Statements**
- 6 **Product Name / Identifier**





GHS Label Elements

- 1 **Signal Word** – Indicates the hazard level. “Danger” is used for the most severe, “Warning” is less severe.
- 2 **GHS Hazard Pictograms (Symbols)** – Identifies hazardous products, commonly grouped by chemical/physical risk, health and environmental risk.
- 3 **Manufacturing Information** – Manufacturer’s name, address telephone number.
- 4 **First Aid** – Describes general preventative, response, storage or disposal precautions.
- 5 **Hazard Statements** – Describes the nature of hazardous products and degree of hazard.
- 6 **Product Name/Identifier** – Identifies the product or chemical name.

6 — **Acetone**

1 — **Danger**

2 —  

5 — **Highly Flammable liquid vapor. Causes severe eye irritation.**

4 — **IF CONTACT WITH EYES: Flush eyes with water for at least 15 minutes while holding eyelids open.**

3 — **UHCL, 2700 Bay Area Blvd, Houston, TX 77058-1002, Tel: 281-283-2106** **30.0 L 67-64-1**

Additional Product Identifiers

GHS Hazard Pictograms

Chemical/Physical Risk

Explosive

Explosives, self-reactives, organic peroxides



Flammable

Flammable gases, liquids, & solids; self-reactives; pyrophorics; self-heating



Oxidizing

Oxidizing gases, liquids and solids



Gas Pressure

Compressed gases; liquefied gases; dissolved gases



Corrosive

Corrosives to metals



Health Risk

Corrosive

Skin corrosion; serious eye damage



Severe Toxic

Acute toxicity (severe)



Acute Toxic

Irritant, dermal sensitizer, acute toxicity (harmful)



Health Danger

Carcinogens, respiratory sensitizers, reproductive toxicity, target organ toxicity, germ cell mutagens



Environmental Risk


Environmental

Aquatic toxicity















NFPA to GHS

Prior to the introduction of GHS and its hazard rating system, there was the National Fire Protection Association  diamond on (M)SDS.

The new SDS GHS hazard rating system is the opposite of NFPA's diamond hazard score.

| NFPA | | New GHS | | | |
|----------|-----------------|---|----------|-----------------|---|
| 0 | Minimal Hazard |  | 1 | Severe Hazard |  |
| 1 | Slight Hazard |  | 2 | Serious Hazard |  |
| 2 | Moderate Hazard |  | 3 | Moderate Hazard |  |
| 3 | Serious Hazard |  | 4 | Slight Hazard |  |
| 4 | Severe Hazard |  | 5 | Minimal Hazard |  |

Always be aware of which hazard system you are viewing.



NFPA Diamond

Some MSDS forms abbreviate the diamond.
 Example shown would be: “NFPA 704M Rating: 1-3-0”

Health Hazard

- 4 – Severe
- 3 – Serious
- 2 – Moderate
- 1 – Slight Hazardous
- 0 – Minimal

Fire Hazard

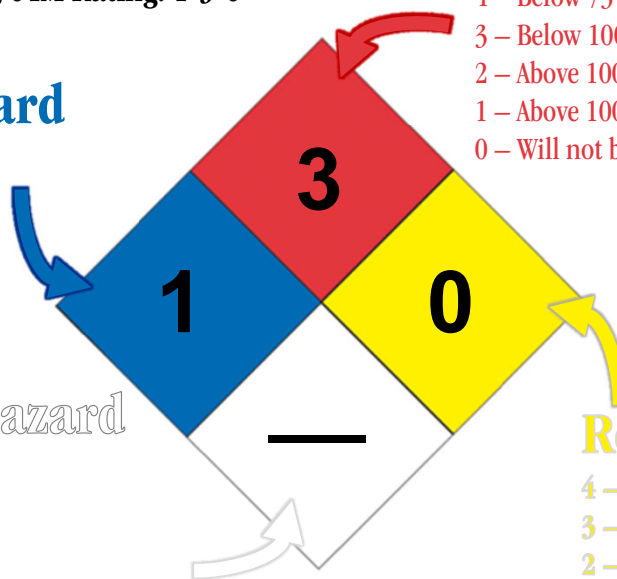
- 4 – Below 73°F
- 3 – Below 100°F
- 2 – Above 100°F not exceeding 200°F
- 1 – Above 200°F
- 0 – Will not burn

Special Hazard

- ACID – Acid
- ALK – Alkali
- COR – Corrosive
- OXY – Oxidizer
- SA – Simple Asphyxiant
- ☢ – Radioactive
- ☞ – Use NO Water, Water Reactive
- ☄ – Explosive
- – N/A (Can also be left blank)

Reactivity/Instability

- 4 – May Detonate
- 3 – Shock & Heat May Detonate
- 2 – Violent Chemical Change
- 1 – Unstable If Heated
- 0 – Stable

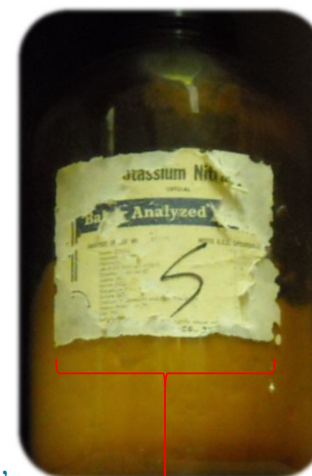


Manufacturer's Chemical Labels

- Chemicals made prior to 1985 may not include hazard warnings on labels, which were not required then.
- Manufacturer's labels after 1985 are required to specify known hazards, and the most important information from their (M)SDS sheet.
- It is **ILLEGAL** to remove or deface the original manufacturer label information when the container still contains the chemical.
 - You may add additional **information** to the primary container.

Re-Labeling – is required by the Hazard Communication Act of primary containers if the original label becomes illegible.

- **The replacement label MUST include:**
 - Identity of the chemical as listed on the MSDS;
 - Appropriate hazard warnings (words, pictures, symbols, combinations) for the chemical's physical and health hazards, including target organs effected.
 - Manufacturer's name and address.



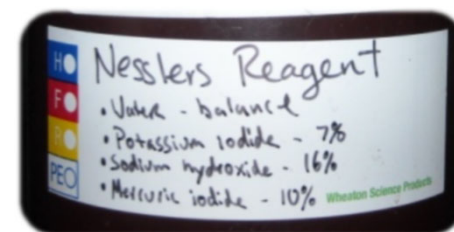
This container still contains chemical and the manufacture label on this container is not legible.
It is required **BY LAW** to be re-labeled.

Secondary Container Labels

- When a chemical is transferred to another (secondary) container, such as prepared solutions and mixtures, **the new (secondary) container MUST be labeled with:**
 - **The chemical name** as listed on the MSDS (chemical formula may be used, but **NO acronyms or abbreviations or structures**) in English.
 - **Hazard warnings** including **words**, pictures/symbols or combinations that provide general information on the **hazards** of the chemical.
- Unless the container is for the immediate use of the individual who made the transfer, the contents **MUST be written on the container before it is left unattended in the lab.**
- All experiment solutions prepared for other people, or for use later, **MUST** also be labeled with all chemical contents and hazards.

| | |
|--------------------------|--|
| Chemical or Product Name | <input type="checkbox"/> Non-hazardous |
| | <input type="checkbox"/> Corrosive |
| Chemical Composition | <input type="checkbox"/> Flammable |
| | <input type="checkbox"/> Reactive |
| | <input type="checkbox"/> Toxic |
| | <input type="checkbox"/> Oxidizer |
| | <input type="checkbox"/> Health Hazard |
| Name of Preparer | <input type="checkbox"/> Other (explain) |
| Date | |

| | |
|--|-------|
| [Insert Chemical Name] | |
| | |
| DANGER or WARNING [Choose proper Signal word & Pictogram from SDS] | |
| [Insert Hazard Statements from the SDS] | |
| Chemical composition | % |
| | |
| | |
| Name of Preparer: | Date: |



Alternative Labeling Systems

There are some allowable alternatives to full labeling requirements of containers to make labeling easier for multiple or small containers:

1. Laboratory Notebook (logbook) -

Multiple or smaller containers may have a unique ID or acronym, and be written in a notebook with their full contents and concentrations. They must be **readily accessible to anyone, in the lab.**

2. Signage -

A sign nearby in the lab which explains what it is, can also be used.

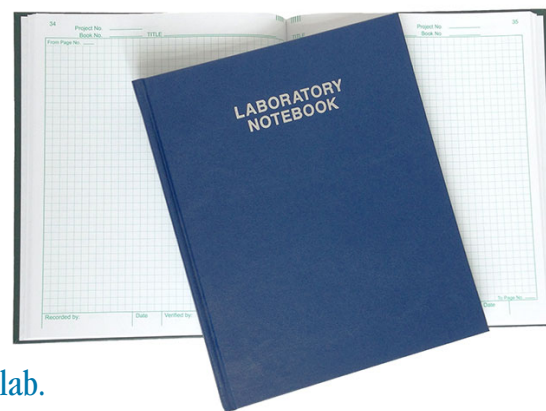
Example: Sign on shelf, or a list of acronyms used on containers, in the lab.

3. Outer Container -

Labeling for multiple smaller containers of an identical material. The outer container can have the full label.

4. Equipment Process Logs -

For containers with constant material changes, such as those inside equipment. Signs, process/log sheets, operating procedures, or other similar written materials may be used in lieu of affixing labels. The alternative method must identify the containers to which it is applicable and convey both the name and hazards required.



Chemical / Hazardous Waste

- **All chemical wastes are collected for disposal by an outside waste vendor.** Because of the hazardous waste lists and other waste requirements, all Chemical Waste is handled as Hazardous until evaluated by EHS.
- Chemical or biological waste shall be collected in their respective properly labeled waste containers.
- **Never** dump chemical/hazardous waste in regular trash or broken glass container or down the sink.
- **Never** dump chemically contaminated glass in broken glass container. Dispose of as hazardous waste.

Hazardous Waste includes chemicals that are one or more of the following:

- **Toxic Components** – 40 listed chemicals (Benzene, Lead, Mercury...)
- **Reactive** – Unstable, reacts violently with water or air, potentially explosive
- **Ignitable** – Liquid flash point <140°F, or non-liquid spontaneously combustible at STP
- **Corrosive** – Liquid with pH <2 or >12.5 (highly acidic or basic)
- Specific lists of chemicals regulated as hazardous that carry these characteristics, common solvents like *Acetone* or *Methanol*

This is our waste label with the information the UHCL Environmental Health & Safety Department needs to properly treat and dispose of waste.

| HAZARDOUS WASTE | |
|--|--|
| Name: _____ | Date Filled: _____ |
| Contents: _____ | |
| _____ | |
| <input type="checkbox"/> Ignitable (Flash Point <140) | <input type="checkbox"/> Corrosive (pH<2 or >12.5) |
| <input type="checkbox"/> Reactive(Explosive, Air/Water reactive, cyanide/sulfide releasing) | |
| <input type="checkbox"/> Halogen <input type="checkbox"/> Oxidizer <input type="checkbox"/> Contains metal(s): _____ | |

Hazardous Waste, Cont'd

- **The moment a container is started for waste accumulation, it MUST contain a Hazardous Waste label, filled out completely.**
- Hazardous Waste Labels must include all contents (even water) and concentrations.
- The name is a contact to ask any questions regarding the waste.
- The Hazards are required by both waste and hazard communication regulations.
- The date filled is the date it is done being used, so this is written on the last day of the experiment or when the container is full.

| HAZARDOUS WASTE | |
|---|---|
| Name: _____ | Date Filled: _____ |
| Contents: _____ | |
| _____ | |
| <input type="checkbox"/> Ignitable (Flash Point <140) | <input type="checkbox"/> Corrosive (pH<2 or >12.5) |
| <input type="checkbox"/> Reactive(Explosive, Air/Water reactive, cyanide/sulfide releasing) | |
| <input type="checkbox"/> Halogen | <input type="checkbox"/> Oxidizer <input type="checkbox"/> Contains metal(s): _____ |

Non-Hazardous Waste

Non-Hazardous Trash/Solid Waste

- Paper products, plastics, and other **uncontaminated**, non-hazardous substances may be placed in the trash containers with these labels.
- **Never** place any glass (broken or not) in these trash containers.
- **Never** place any needles or sharps in these trash containers.
- **Never** place any chemicals or chemical residues in regular trash



Broken Glass

- Broken glass and/or glass waste must be disposed of in a special cardboard box container (as shown).
- Before glass is thrown away, it must be **cleaned of any chemicals** or biological contamination. **Glass with chemical residue must be disposed of with EHS waste vendor as chemical contaminated.*
- **Never** place non-hazardous trash/solid waste as described above in these containers.
- **Never** place any needles or sharps in the glass boxes.



Biohazardous Waste Containers

All Biohazard Waste is Regulated Waste :

- Blood or Other Potentially Infections Material (OPIM) such as human bodily fluids, whether liquid, semi-liquid, or dry
- Must be Rigid, Leak-proof containers
- Sealed and impervious to moisture
- Closed container for aerosols

With Proper Labeling:

- Biohazard Symbol Labels on Containers
- Orange heat withstanding bags for Autoclave
- Moisture in bag when autoclaved
- Absorbent to capture free liquids when shipped offsite
- **Contaminated broken glass or sharps should go in either Biohazardous sharps container, or Chemical waste container.*

