



GHS

The

Globally Harmonized System
of Classification and Labeling of Chemicals

Hazard Communication Standard

- In order to ensure chemical safety in the workplace, information about the identities and hazards of the chemicals must be available and understandable to workers. OSHA's Hazard Communication Standard (HCS) requires the development and dissemination of such information:
- Chemical manufacturers and importers are required to evaluate the hazards of the chemicals they produce or import, and prepare labels and safety data sheets to convey the hazard information to their downstream customers;
- All employers with hazardous chemicals in their workplaces must have labels and safety data sheets for their exposed workers, and train them to handle the chemicals appropriately.

Major changes to the Hazard Communication Standard

- **Hazard classification:** Provides specific criteria for classification of health and physical hazards, as well as classification of mixtures.
- **Labels:** Chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category. Precautionary statements must also be provided.
- **Safety Data Sheets:** Will now have a specified 16-section format.
- **Information and training:** Employers are required to train workers by December 2013 on the new labels elements and safety data sheets format to facilitate recognition and understanding.

Terminology

Signal Word

- “Signal word” means a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label
- The signal words used in this section are “danger” and “warning.” “Danger” is used for the more severe hazards, while “warning” is used for the less severe

Pictogram

- “Pictogram” means a composition that may include a symbol plus other graphic elements, such as a border, background pattern, or color, that is intended to convey specific information about the hazards of a chemical
- Eight pictograms are designated under this standard for application to a hazard category

Hazard Statement

- “Hazard statement” means a statement assigned to a hazard class and category that describes the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard
 - Example: Fatal if swallowed (Acute Oral Toxicity)

Precautionary Statement

- “Precautionary statement” means a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling
 - Example: Do not eat, drink, or smoke when using this product
 - Example: Keep container tightly closed

Precautionary Statements, cont.

- The statements assigned to a chemical address the following four areas
 - Prevention
 - Response
 - Storage
 - Disposal

Effective Dates

The table below summarizes the phase-in dates required under the revised Hazard Communication Standard (HCS):

Effective Completion Date	Requirement(s)	Who
December 2013	Train employees on the new label elements and safety data sheet (SDS) format.	Employers
June 1, 2015 December 1, 2015	Compliance with all modified provisions of this final rule, except: The Distributor shall not ship containers labeled by the chemical manufacturer or importer unless it is a GHS label	Chemical manufacturers, importers, distributors and employers
June 1, 2016	Update alternative workplace labeling and hazard communication program as necessary, and provide additional employee training for newly identified physical or health hazards.	Employers
Transition Period to the effective completion dates noted above	May comply with either 29 CFR 1910.1200 (the final standard), or the current standard, or both	Chemical manufacturers, importers, distributors, and employers

Pictograms

HCS Pictograms and Hazards



Flame Over Circle

- Oxidizers



Flame

- Flammables
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self-Reflective
- Organic Peroxides



Exploding Bomb

- Explosives
- Self-Reactives
- Organic Peroxides

HCS Pictograms and Hazards



Skull & Crossbones

- Acute Toxicity (fatal or toxic)



Corrosion

- Skin Corrosion/Burns
- Eye Damage
- Corrosive to Metals



Gas Cylinder

- Gases Under Pressure

HCS Pictograms and Hazards



Health Hazard

- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Oxygen Toxicity



Environment

- Aquatic Toxicity



Exclamation Mark

- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity (harmful)
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (Non-Mandatory)

Labels

Label Requirements

- Labels on shipped containers must include:
 - Product Identifier
 - Signal Word
 - Pictogram
 - Hazard Statement(s)
 - Precautionary Statement(s)
 - Supplier Identification (Name, Address, Phone Number)



Label Example

Xyz... Chemical



WARNING
Flammable Liquid and vapor
Harmful if swallowed
May cause damage to organs (liver)
May cause damage to organs through prolonged or repeated exposure (heart)
Suspected of damaging fertility

Keep away from heat, sparks, open flames and hot surfaces - No smoking. Do not breathe vapors. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use protective equipment as required. Wear protective gloves and eye protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Keep container tightly closed. Ground container and receiving equipment. Use explosion-proof electrical, ventilating, lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Store locked up in a well ventilated place. Keep cool. Dispose of contents and container in accordance with local, state and federal regulations.

First Aid:
If swallowed: Call a doctor if you feel unwell. Rinse mouth.
If on skin or hair: Remove immediately all contaminated clothing. Rinse skin with water.
If exposed or if you feel unwell: call a doctor.

Fire:
In case of fire: Use water spray foam, dry chemical or carbon dioxide (CO₂) for extinction

GHS Company, 123 Global Drive, Cincinnati, OHtelephone (800) 555-8888

SAMPLE LABEL

PRODUCT IDENTIFIER

CODE _____

Product Name _____

SUPPLIER IDENTIFICATION

Company Name _____

Street Address _____

City _____ State _____

Postal Code _____ Country _____

Emergency Phone Number _____

PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.

Keep away from heat/sparks/open flame. No smoking.

Only use non-sparking tools.

Use explosion-proof electrical equipment.

Take precautionary measure against static discharge.

Ground and bond container and receiving equipment.

Do not breathe vapors.

Wear Protective gloves.

Do not eat, drink or smoke when using this product.

Wash hands thoroughly after handling.

Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO₂) fire extinguisher to extinguish.

First Aid

If exposed call Poison Center.

If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS



SIGNAL WORD

Danger

HAZARD STATEMENT

**Highly flammable liquid and vapor.
May cause liver and kidney damage.**

SUPPLEMENTAL INFORMATION

Directions for use

Fill weight: _____ Lot Number _____

Gross weight: _____ Fill Date: _____

Expiration Date: _____

Safety Data Sheets

Hazard Communication Safety Data Sheets

The HCS requires chemical manufacturers, distributors, or importers to provide SDSs (formerly MSDSs) to communicate the hazards of hazardous chemical products.

As of June 1, 2015, the HCS will require new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the required headings.

Role of the Safety Data Sheet

- The Safety Data Sheet is the detailed source of information about the chemical
 - The SDS has many audiences
 - The SDS is thus a reference to help ensure a chemical is handled safely

Safety Data Sheet Format

- New safety data sheets will be organized using a specified order of information
- The required information will appear in the same sections of an SDS regardless of the supplier
- The most important information will be listed in the first sections of the SDS

SDS Headings

Section 1: Identification

- includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use

Section 2: Hazard(s) identification

- includes all hazards regarding the chemical; required label elements

Section 3: Composition/information on ingredients

- includes information on chemical ingredients; trade secret claims

Section 4: First-aid measures

- includes important symptoms/ effects, acute, delayed; required treatment

SDS Headings

Section 5: Fire-fighting measures

- lists suitable extinguishing techniques, equipment; chemical hazards from fire

Section 6: Accidental release measures

- lists emergency procedures; protective equipment; proper methods of containment and cleanup

Section 7: Handling and storage

- lists precautions for safe handling and storage, including incompatibilities

Section 8: Exposure controls/personal protection

- lists OSHA's Permissible Exposure Limits (PELs); Threshold Limit Values (TLVs); appropriate engineering controls; personal protective equipment (PPE)

SDS Headings

Section 9: Physical and chemical properties²

- lists the chemical's characteristics

Section 10: Stability and reactivity

- lists chemical stability and possibility of hazardous reactions

Section 11: Toxicological information

- includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity

Sections 12-15 are regulated by other agencies

Section 16: Other information

- includes the date of preparation or last revision

NFPA: Flammability



Example of New Format SDS

NFPA 704 Placard & Ratings Voluntarily Provided

GHS System and Labels Down in Section 2

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Product XYZ
Synonyms :
SDS Number : 8881000088809 Version : 1.1
Product Use Description : Fuel
Company :
Chemtrec (Emergency Contact) : (800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classifications : Flammable Liquid – Category 1 or 2 depending on formulation.
Aspiration Hazard – Category 1
Carcinogenicity – Category 2
Specific Target Organ Toxicity (Repeated Exposure) – Category 2
Specific Target Organ Toxicity (Single Exposure) – Category 3
Skin Irritation – Category 2
Eye Irritation – Category 2B
Chronic Aquatic Toxicity – Category 2

Pictograms : A horizontal row of four GHS pictograms, each inside a red diamond border. From left to right: a flame (Flammable), a skull and crossbones (Toxic), an exclamation mark (Irritant/Health Hazard), and a dead tree and fish (Environment).

Signal Word : **Danger**

SDS Requirements

- SDSs must be readily accessible to workers when they are in their work areas, during each work shift
- Hazard communication works when employers also use SDS information to make sure that proper protective measures are being implemented

Safety Data Sheets

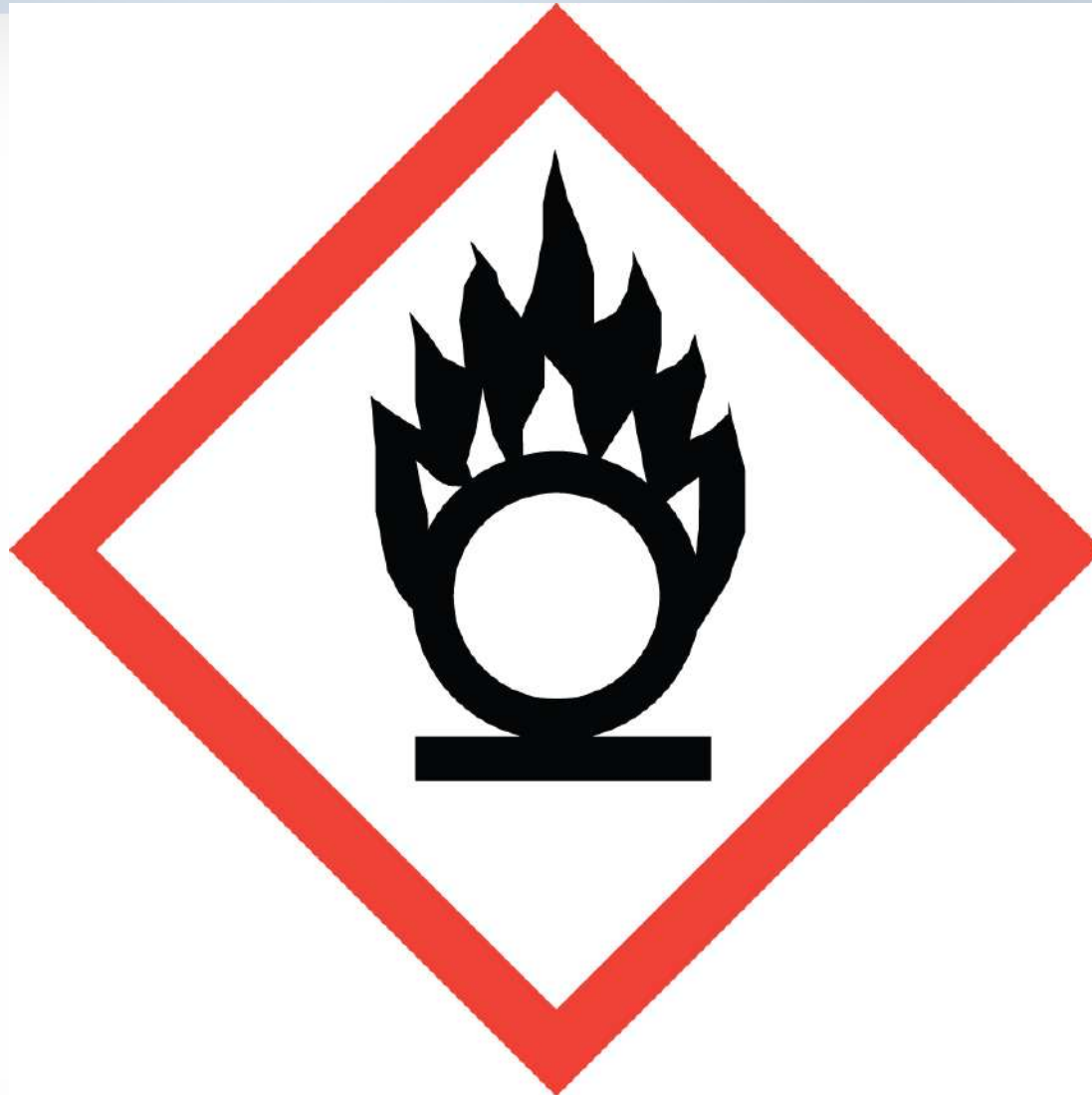
- Distribution
 - An updated SDS must be provided with products shipped by June 1, 2015
 - Companies are not required to send new SDSs to previous customers who may still have the product in inventory
 - New SDSs do not have to be provided for chemicals no longer produced

Trade Secrets

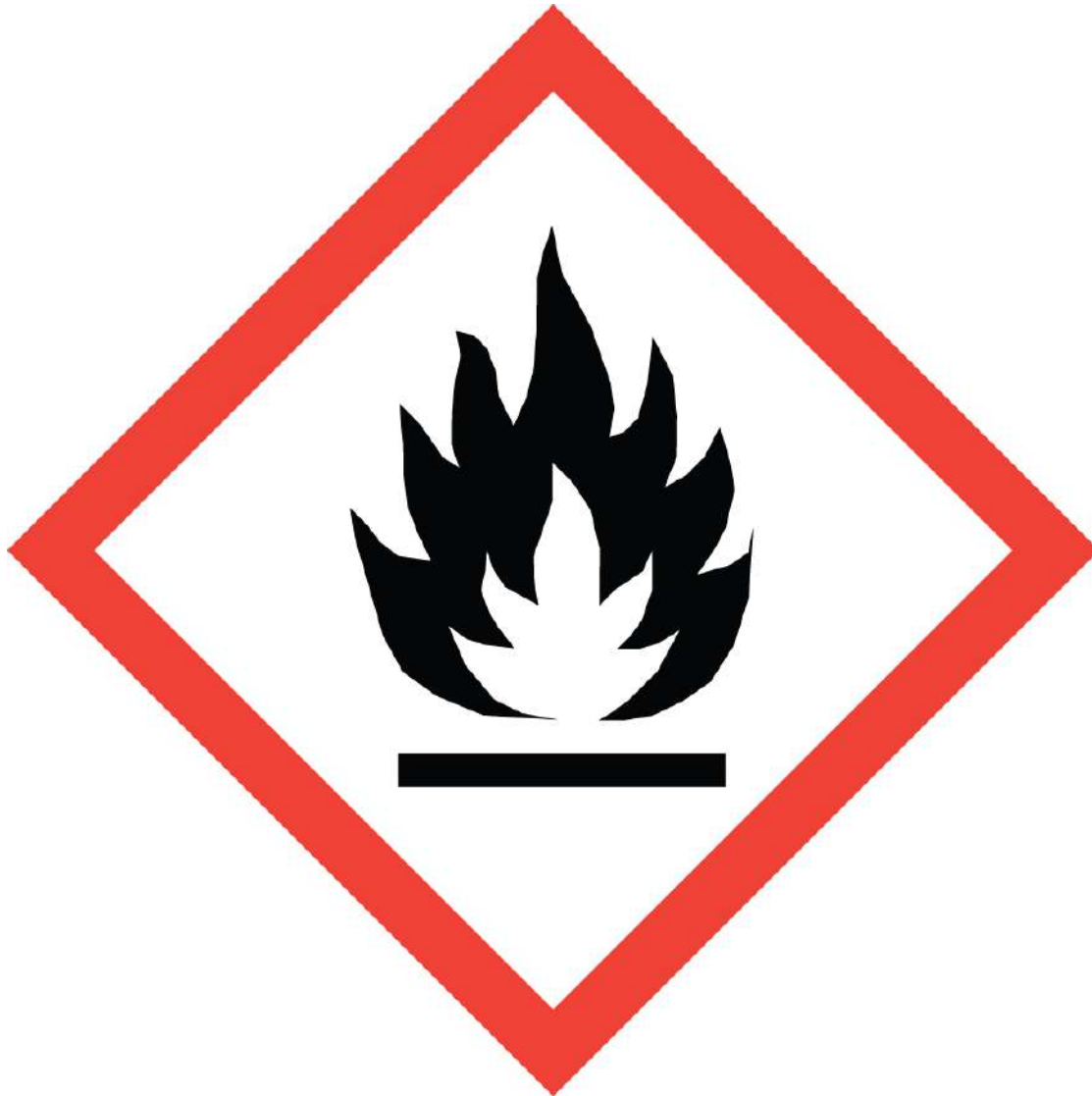
- For mixtures, the trade secret provisions apply to the individual chemicals and their associated CAS numbers
- When a company is claiming a percentage as a trade secret, a statement saying that information is withheld as a trade secret is required in SDS Section 3

Pictogram Review

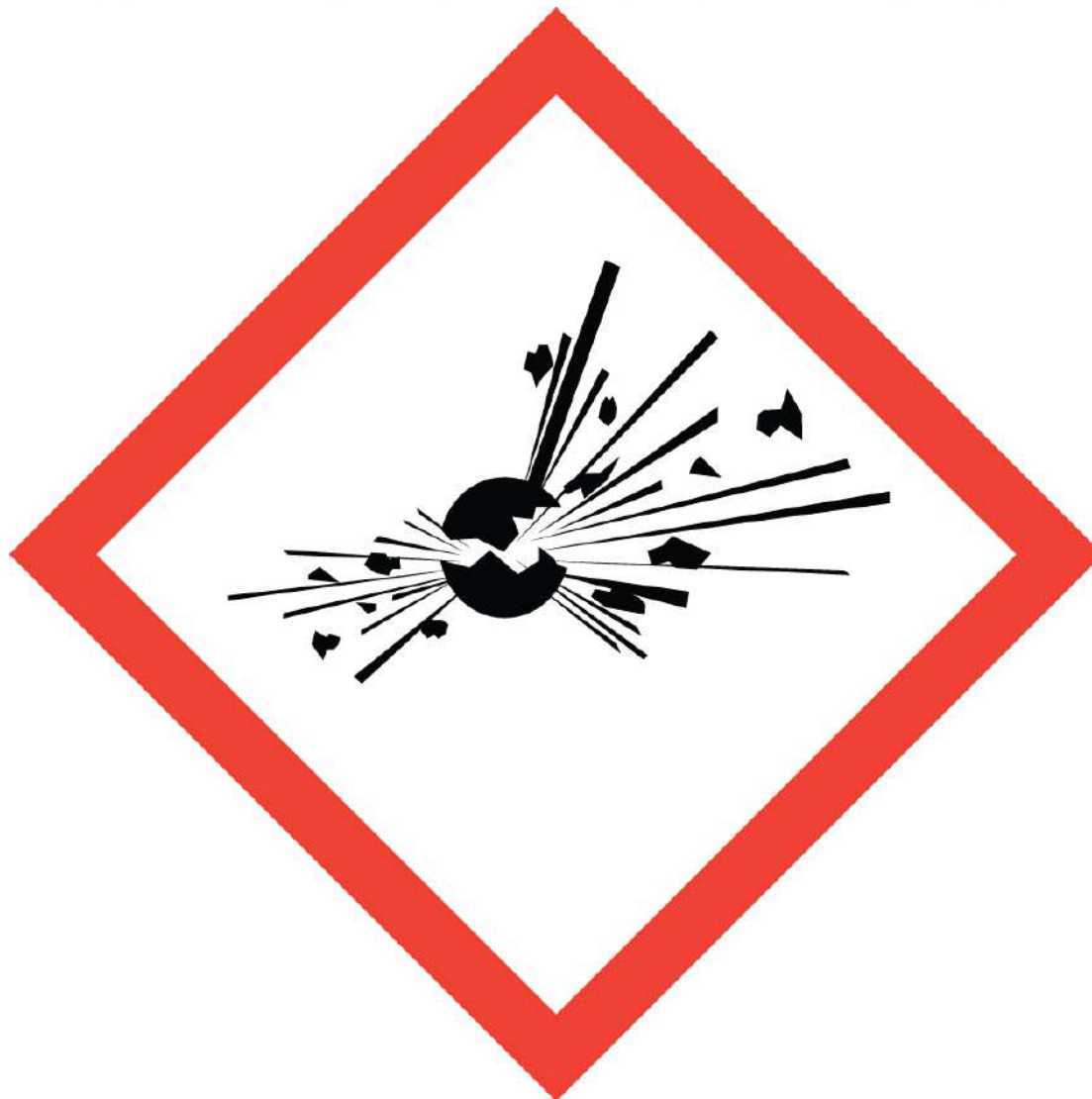
FLAME OVER CIRCLE



FLAME



EXPLODING BOMB



SKULL AND CROSSBONES



CORROSION



GAS CYLINDER



HEALTH HAZARD



ENVIRONMENT



EXCLAMATION MARK



Chemical Life Cycle

