

# Great Western Painting

## Hazard Communication

29 CFR 1910.1200, Hazard Communication

29 CFR 1910.1200 Appendix A, Health Hazard Criteria (Mandatory)

29 CFR 1910.1200 Appendix B, Hazard Determination (Mandatory)

29 CFR 1910.1200 Appendix C, Allocation of Label Elements (Mandatory)

29 CFR 1910.1200 Appendix D, Safety Data Sheets (Mandatory)

29 CFR 1910.1200 Appendix E, Definition of "Trade Secret" (Mandatory)

## HAZARD COMMUNICATION

### OVERVIEW

Petroleum products, adhesives, sealants -- even saw dust from treated wood! What do these typical job site products have in common? They are all chemicals and their properties may cause harm to an employee if inhaled, ingested, or absorbed into the skin. A common error is thinking that a hazard communication plan is not needed because there are no "hazardous" chemicals such as nitroglycerin or sulfuric acid on the job site.

This plan will be maintained at each workplace and its provisions implemented. This plan describes how labels & other forms of warning, material safety data sheets, and employee chemical hazard information will be used to protect our employees.

There may be a tendency to think of common everyday products such as hand cleaners as just that -- hand cleaners. However, even these items are job site chemicals and, if misused, have a health hazard. What possible hazard could be associated with hand cleaner? Quick! Some gritty hand cleaner gets in your eye! What do you do?

This hazard communication plan is designed to make all employees aware that most, if not all, job site chemicals have a downside if improperly used, spilled, transferred or stored. The hazard may be a physical hazard such as an explosion or a health hazard such as cancer.

### DEFINITIONS

**Article:** a manufactured item which is formed to a specific shape or design during manufacture; has end use function(s) dependent in whole or in part upon its shape or design during end use; and does not release, or otherwise result in exposure to a hazardous chemical under normal conditions of use.

[Note: Articles are exempt from the Hazard Communication standard]

**Hazardous Chemical:** any chemical which is a physical or a health hazard.

**Physical Hazard:** a chemical for which there is scientifically valid

evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric (will ignite spontaneously in air at a temperature of 130°F or below), unstable (reactive) or water-reactive.

Health Hazard: a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principals that acute or chronic health effects may occur in exposed employees.

To clarify the difference between acute and chronic, acute effects occur rapidly as a result of short term exposure and are of short duration. Chronic effects occur as a result of long term exposure and are of a long duration. These terms can overlap. For example, a mild heart attack, with no pain severity, would be termed acute within the first two hours, yet if there were long term effects, it would be termed chronic.

Exempt from hazard communication are “articles”. Note that a manufactured item that has a downstream use is not an article. The below example from 29 CFR 1926.59(f)(2) illustrates this point:

*For a solid metal (such as a steel beam or a metal casting) that is not exempted as an article due to its downstream use, the required label may be transmitted to the customer at the time of the initial shipment, and not be included with subsequent shipments to the same employer unless the information on the label changes. The label may be transmitted with the initial shipment itself, or with the material safety data sheet that is to be provided prior to or at the time of first shipment. This exception to requiring labels on every container of hazardous chemicals is only for the solid metal itself and does not apply to hazardous chemicals used in conjunction with, or known to be present with the metal and to which employees handling the metal may be exposed (for example, cutting fluids or lubricants).*

Almost all chemicals are considered hazardous -- a steel beam or metal casting does not immediately come to mind as a hazardous chemical. Without a material safety data sheet (MSDS), or safety data sheet (SDS), and/or a label, one cannot assume a chemical is safe.

Even filters for your equipment will have an MSDS, or SDS. This is because, until it is placed in your equipment, it still has a down stream use and therefore until it is used it is not an article by definition.

Also exempt from the hazard communication standard are chemicals which are regulated by other government agencies such as hazardous waste, food, tobacco products, and normal consumer products that are used in the workplace in the same manner, frequency and duration as normal consumer use and produces the same or less exposure as normal consumer use.

## **CHEMICAL TYPES AS THEY RELATE TO HEALTH**

Below is a list of categories of hazardous chemical types as they relate to health:

- a. Carcinogen or potential carcinogen as determined by the International Agency for Research on Cancer (IARC) or a carcinogen or potential carcinogen as listed in the Annual Report on Carcinogens published by the National Toxicology Program (NTP), latest edition, or as regulated by OSHA as a carcinogen.
- b. Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. This is not to be confused with, and does not refer to, action on inanimate surfaces.
- c. Highly Toxic: A chemical which is lethal to test animals under specific doses and time limits. Some tests require ingestion, some inhalation, some skin exposure, and some implantation.
- d. Irritant: A chemical which is not a corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.
- e. Sensitizer: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure.
- f. Toxic: A chemical which is lethal to test animals under specific doses and time limits. A toxic chemical has a greater dose per weight than a Highly Toxic chemical.
- g. Target Organ Effects:

Hepatotoxins: Chemicals which produce liver damage

Signs & Symptoms: Jaundice; liver enlargement

Chemicals: Carbon tetrachloride; nitrosamines

Nephrotoxins: Chemicals which produce kidney damage

Signs & Symptoms: Edema; proteinuria

Chemicals: Halogenated hydrocarbons; uranium

Neurotoxins: Chemicals which produce their primary toxic effects on the nervous system

Signs & Symptoms: Narcosis; behavioral changes; decreased motor function

Chemicals: Mercury; carbon disulfide  
Agents which act on the blood or hemotopoietic system: decrease hemoglobin function; deprive the body tissue of oxygen

Signs & Symptoms: Cyanosis; loss of consciousness

Chemicals: Carbon monoxide; cyanides

Agents which damage the lungs: chemicals which irritate or damage the pulmonary tissue

Signs & Symptoms: Cough; tightness in the chest; shortness of breath

Chemicals: Silica; asbestos

Reproductive toxins: Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)

Signs & Symptoms: Birth defects; sterility

Chemicals: Lead; DBCP

Cutaneous hazards: Chemicals which affect the dermal (skin) layer of the body

Signs & symptoms: Defatting of the skin; rashes; irritation

Chemicals: Ketones; chlorinated compounds

Eye hazards: Chemicals which affect the eye or visual capacity

Signs & Symptoms: Conjunctivitis; corneal damage

Chemicals: Organic solvents; acids

The above is to illustrate the broad scope of health hazards.

## **HAZARD DETERMINATION**

The determination of chemical hazards is primarily the responsibility of the manufacturer and/or importer. It is performance-oriented and, surprisingly, there is no specific method required to determine if a chemical or chemical mixture is hazardous. Personal judgment of the evaluator is relied upon and it takes but one scientifically acceptable study to force a chemical onto the hazardous chemical list.

According to OSHA regulations, thousands of studies could indicate complete safety and one study indicate a hazard and the chemical will be deemed a hazard. We will rely on the evaluations of the chemical product's manufacturers or importers. Should hazard information be received from a source other than the manufacturer, it shall be placed in this Hazard Communication Plan.

## LABELS

A label is any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

All chemicals used in or on the job site will be properly labeled using the manufacturer's labeling system. Labels will not be removed or defaced. If a chemical is not labeled, it will not be used with the following exception which is quite common with contractors:

*portable containers into which hazardous chemicals are transferred from labeled containers need not be labeled if they are for immediate use of the employee who makes the transfer.*

To simplify the above, one may take a hazardous chemical (*example*: paint) out of a labeled container and put it into a smaller, unlabeled container (*example*: paint tray), for immediate use. OSHA defines "immediate use" as being under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

The label must clearly state:

- a. the identity of the hazardous chemical(s).
- b. the appropriate hazard warning.
- c. the name and address of the manufacturer, importer, or other responsible party.

Appropriate hazard warnings would contain words, pictures or symbols indicating:

- a. instruction for proper and safe use. This would include obvious information such as, "do not ingest" or "do not spray in eyes" as well as less obvious information such as, "caustic, wear rubber gloves"
- b. first aid instructions
- c. fire containment instructions
- d. storage
- e. disposal instructions

Treat empty containers of hazardous materials as if they were full. Proper disposal is a must!

## **MATERIAL SAFETY DATA SHEETS (MSDS)/ SAFETY DATA SHEETS (SDS)**

It is required that material safety data sheets (MSDS), or safety data sheets (SDS), be maintained for all hazardous chemicals in our inventory. The Safety Program Administrator will ensure that MSDS, or SDS, for our company are obtained from the manufacturer, supplier, or vendor. **MSDS, or SDS, will be maintained in a readily accessible location to employees in each work area.** The information contained on MSDS, or SDS, must be readily accessible to the individual(s) using the products and we will share that information with whom we may work.

MSDS, or SDS, must be made available upon request to employees, their designated representatives, the Assistant Secretary and the Director.

Chemicals come in all forms of matter: liquid, solid, and gas; they can be found as sludge, vapor, mist, dust, etc.

How would one know what a chemical smelled or looked like? How would one be able to administer first aid quickly? Where would you find the proper procedure for cleaning up a spill? Where would you find a listing of symptoms caused by inadvertent exposure to a chemical or chemical mixture? Where would you find fire fighting procedures? These questions and many others are answered on MSDS, or SDS.

The Safety Director will be notified immediately if a chemical is in inventory without an MSDS, or SDS. Should that event occur, the Safety Director will contact the manufacturer, vendor, or distributor requesting an MSDS, or SDS.

Personnel utilizing a new chemical product will review the MSDS, or SDS, before initial use. New chemical products will be added to our List of Hazardous Chemicals.

While there is no specific format, the following information will be found on an MSDS, or SDS:

- a. identity (chemical or common name) which will be the same as on the label and on the required list of hazardous chemicals.
- b. hazardous chemical ingredients -- both the chemical and common name(s).
- c. physical and chemical characteristics such as boiling point, flash point, solubility in water, etc.. Two of the most important items to be found in this category are appearance and odor. It is important to be able to identify chemicals rapidly and appearance and odor are of great value in initial determination.
- d. physical hazards which would include the potential for explosion, fire, and reactivity. Also included in this section are the flash point and auto ignition temperature. Special fire fighting procedures are also noted and should be carefully studied by potential users.

- e. health hazards which include first aid procedures, signs and symptoms of exposure, medical dangers, exposure limits, routes of entry, precautions for safe handling, potential carcinogen information, and whether professional medical response is required after a mishap.
- f. chemical reactivity which includes stability, incompatibility with other chemicals, hazardous decomposition products and hazardous polymerization. Special conditions to avoid may also be included.
- g. spill and/or leak procedures which include approved waste disposal methods.
- h. special handling information which includes appropriate hygienic practices, protective equipment requirements, and needed ventilation.
- i. special precautions which would include applicable control measures known to the manufacturer and/or importer. Should it be determined there are special advisories that pertain to our company, the advisories will be placed in this section of the MSDS, or SDS.
- j. the name, address and telephone number as well as the date of preparation or revision must be included.

Of course, you are not required to memorize nor are you expected to know all the information contained therein; however, you are expected to know where to find information when it is needed and you are expected to ask any questions to clear up any uncertainties that you may have concerning chemicals in the workplace.

Particular attention should be paid to:

- a. Identification/detection of a hazardous chemical. This would include odor and color as well as container labeling.
- b. Physical hazards of the hazardous chemical. This information would include the potential for fire, explosion, and reactivity. Reactivity, in chemistry, is defined as "the reciprocal action of chemical agents upon each other; chemical change." The MSDS, or SDS, will indicate proper procedures for fire extinguishing, including special precautions, if needed.
- c. The health hazards of the chemical. Routes of entry are noted. A chemical may enter the body through ingestion, inhalation, absorption, or injection. Signs and symptoms are indicated such as irritation of the skin, redness of the eyes, nausea, etc. Health hazards are defined as acute, chronic or both. Carcinogenicity is indicated. First Aid procedures are explained as well as notes to a treating physician, if appropriate.

Methods to lessen or prevent exposure are explained. The need for protective equipment such as rubber gloves, disposable suits, respirators, goggles, etc. is explained. Hygienic work practices are re-enforced such as keeping the product away from food and washing hands after use.

The MSDS, or SDS, has a wealth of information which is to be made available to all employees and to anyone who wants to review them. There is nothing secret about an MSDS, or SDS; its whole purpose is the dissemination of information. It provides awareness.

Should an employee not be able to read English, the information contained on MSDS, or SDS, and labels (and any other warning sign) will be given orally or written in that employee's language. The actual labels, MSDS, or SDS, and all warning signs must be written in English.

### **LIST OF HAZARDOUS CHEMICAL PRODUCTS**

A list will be maintained of all hazardous chemical products in our inventory with their MSDS, or SDS. A list will also be prepared for each job site listing the chemical products used on the job. With the list of hazardous chemical products on the job site will be the actual MSDS, or SDS. These lists will be arranged alphabetically using an identity that is referenced on the appropriate Material Safety Data Sheet, or Safety Data Sheets.

### **TRAINING AND DOCUMENTATION**

The Safety Director is responsible for employee training and will ensure that all new employees receive training on our Hazard Communication Plan **prior to initial work assignment**. Training will include:

- a. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area. The primary method to detect the presence of a release is sight and smell. As mentioned above, the appearance and odor of a hazardous chemical can be found on the MSDS, or SDS, for that chemical.
- b. Physical and health hazards of the chemicals in the workplace. Again, this information is found on the appropriate MSDS, or SDS.
- c. Measures to take to protect the employee from chemical hazards. This Hazard Communication Program, the specific MSDS, or SDS, as well as oral and hands on training and instruction provide the basis for measures to protect one's self. Where required protective equipment will be provided. Never minimize the value of protective safety equipment. For example, the use of relatively inexpensive eye protection could easily save your eyesight.

Each employee will sign a form indicating that they have attended training and understand the above.

Annually, all employees will receive refresher training to ensure that awareness is maintained. Furthermore, with the introduction of each new hazard, not necessarily each new chemical, training will be given with specific emphasis on emergency procedures as noted on the MSDS, or SDS. This training will include procedures for handling leaks and spills, personal protection equipment if required, decontamination procedures, etc.

### **NON-ROUTINE TASKS**

Prior to performing a non-routine task, an employee will be given information by a competent person or supervisor concerning the hazardous chemicals to which he may be exposed. This information will include:

- a. Specific chemical hazards
- b. Protective/safety measures the employee may take.
- c. Measures taken to lessen the hazards including ventilation, respirators, presence of another employee and emergency procedures.

### **CHEMICALS IN UNLABELED PIPES**

Should work activities be performed in areas where chemicals are transferred through unlabeled pipes, the employee shall be informed by the competent person or supervisor of:

- a. The chemical in the pipes.
- b. Potential Hazards.
- c. Safety precautions to be taken.

### **SHARING OF INFORMATION**

On multi-employer job sites, the competent person on the job site will inform those with whom we work of any hazardous chemical products we are using and will provide them with the appropriate MSDS, or SDS, for their review. MSDS, or SDS, for all chemical products used on the job site will always be readily available.

Should we introduce a new chemical product to the job site that contains a physical or health safety hazard, the product's MSDS, or SDS, will accompany that product and, before use, employees will be given instruction on the products hazards. This information will be shared with other contractors with whom we may be working. Employees are to be kept informed of the chemical products being used by other contractors if they pose a safety hazard.

## GLOBALLY HARMONIZED SYSTEM (GHS)

OSHA revised its Hazard Communication Standard (HCS) to align with the United Nations' Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Two significant changes contained in the revised standard require the use of new labeling elements and a standardized format for Safety Data Sheets (SDSs), formerly known as, Material Safety Data Sheets (MSDSs). The new label elements and SDS requirements will improve worker understanding of the hazards associated with the chemicals in their workplace. To help companies comply with the revised standard, OSHA is phasing in the specific requirements over several years **(December 1, 2013 to June 1, 2016)**.

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

Effective Completion Date	Requirement(s)	Who
December 1, 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

### **Employer Responsibilities:**

We are required to develop, implement, and maintain a written hazard communication program at each workplace. Our Program Administrator has full authority for our Hazard Communication Program implementation and execution: That person is: Robert Evans

We are mandated to maintain a list of hazardous chemicals on the job site. Training Requirements under the revised Hazard Communication Standard (HCS):

Prior to December 1, 2013, all our employees will have been trained on the new label elements and the SDS format.

## **Specific employee information and training:**

Each employee will be provided effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employee has not previously been trained about is introduced into his/her work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets.

Additionally, employees shall be informed of the requirements of the Hazard Communication Standard; any operations in their work area where hazardous chemicals are present; and, the location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and safety data sheets.

**Note: Per 1910.1200(g)(8), “The employer shall maintain in the workplace copies of the required safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access and other alternatives to maintaining paper copies of the safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)”**

**Note: Per 1910.1200(g)(9), “Where employees must travel between workplaces during a workshift, *i.e.*, their work is carried out at more than one geographical location, the material safety data sheets may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.”**

**Note: Per 1910.1200(g)(10), “Safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).”**

Employee training shall include at least:

1. Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);
2. The physical, health, simple asphyxiation, combustible dust, and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work area;

3. The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,
4. The details of the hazard communication program developed by the employer, including an explanation of the labels received on shipped containers and the workplace labeling system used by their employer; the safety data sheet, including the order of information and how employees can obtain and use the appropriate hazard information.

The above chemical training reinforces the information provided to employees through written mediums of labels and safety data sheets (SDS) and how to apply this information in the employee's workplace.

Interactive training will be provided by a competent person so that a determination can be made that the new material is actually understood.

The trainer will use an OSHA Brief that provides a general overview of the label requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(f) and Appendix C of 29 CFR 1910.1200) as well an OSHA Brief that provides a general overview of the safety data sheet requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(g) and Appendix D of 29 CFR 1910.1200).

Additional training items provided by OSHA and other sources may be used.

On the following pages are the referenced OSHA Briefs.

Training and retraining will be documented in Appendix A of our Training Program.

# OSHA<sup>®</sup> BRIEF

## Hazard Communication Standard: Safety Data Sheets

The Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide Safety Data Sheets (SDSs) (formerly MSDSs or Material Safety Data Sheets) for each hazardous chemical to downstream users to communicate information on these hazards. The information contained in the SDS is largely the same as the MSDS, except now the SDSs are required to be presented in a consistent user-friendly, 16-section format. This brief provides guidance to help workers who handle hazardous chemicals to become familiar with the format and understand the contents of the SDSs.

The SDS includes information such as the properties of each chemical; the physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well). In addition, OSHA requires that SDS preparers provide specific minimum information as detailed in Appendix D of 29 CFR 1910.1200. The SDS preparers may also include additional information in various section(s).

Sections 1 through 8 contain general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., fire fighting). This information should be helpful to those that need to get the information quickly. Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.

The SDS must also contain Sections 12 through 15, to be consistent with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS), but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

A description of all 16 sections of the SDS, along with their contents, is presented below:

### Section 1: Identification

This section identifies the chemical on the SDS as well as the recommended uses. It also provides the essential contact information of the supplier. The required information consists of:

- Product identifier used on the label and any other common names or synonyms by which the substance is known.
- Name, address, phone number of the manufacturer, importer, or other responsible party, and emergency phone number.
- Recommended use of the chemical (e.g., a brief description of what it actually does, such as flame retardant) and any restrictions on use (including recommendations given by the supplier).

## Section 2: Hazard(s) Identification

This section identifies the hazards of the chemical presented on the SDS and the appropriate warning information associated with those hazards. The required information consists of:

- The hazard classification of the chemical (e.g., flammable liquid, category<sup>1</sup>).
- Signal word.
- Hazard statement(s).
- Pictograms (the pictograms or hazard symbols may be presented as graphical reproductions of the symbols in black and white or be a description of the name of the symbol (e.g., skull and crossbones, flame).
- Precautionary statement(s).
- Description of any hazards not otherwise classified.
- For a mixture that contains an ingredient(s) with unknown toxicity, a statement describing how much (percentage) of the mixture consists of ingredient(s) with unknown acute toxicity. Please note that this is a total percentage of the mixture and not tied to the individual ingredient(s).

## Section 3: Composition/Information on Ingredients

This section identifies the ingredient(s) contained in the product indicated on the SDS, including impurities and stabilizing additives. This section includes information on substances, mixtures, and all chemicals where a trade secret is claimed. The required information consists of:

### Substances

- Chemical name.
- Common name and synonyms.
- Chemical Abstracts Service (CAS) number and other unique identifiers.
- Impurities and stabilizing additives, which are themselves classified and which contribute to the classification of the chemical.

### Mixtures

- Same information required for substances.
- The chemical name and concentration (i.e., exact percentage) of all ingredients which are classified as health hazards and are:
  - Present above their cut-off/concentration limits or
  - Present a health risk below the cut-off/concentration limits.
- The concentration (exact percentages) of each ingredient must be specified except concentration ranges may be used in the following situations:
  - A trade secret claim is made,
  - There is batch-to-batch variation, or
  - The SDS is used for a group of substantially similar mixtures.

### Chemicals where a trade secret is claimed

- A statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

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<sup>1</sup>Chemical, as defined in the HCS, is any substance, or mixture of substances.

#### **Section 4: First-Aid Measures**

This section describes the initial care that should be given by untrained responders to an individual who has been exposed to the chemical. The required information consists of:

- Necessary first-aid instructions by relevant routes of exposure (inhalation, skin and eye contact, and ingestion).
- Description of the most important symptoms or effects, and any symptoms that are acute or delayed.
- Recommendations for immediate medical care and special treatment needed, when necessary.

#### **Section 5: Fire-Fighting Measures**

This section provides recommendations for fighting a fire caused by the chemical. The required information consists of:

- Recommendations of suitable extinguishing equipment, and information about extinguishing equipment that is not appropriate for a particular situation.
- Advice on specific hazards that develop from the chemical during the fire, such as any hazardous combustion products created when the chemical burns.
- Recommendations on special protective equipment or precautions for firefighters.

#### **Section 6: Accidental Release Measures**

This section provides recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices to prevent or minimize exposure to people, properties, or the environment. It may also include recommendations distinguishing between responses for large and small spills where the spill volume has a significant impact on the hazard. The required information may consist of recommendations for:

- Use of personal precautions (such as removal of ignition sources or providing sufficient ventilation) and protective equipment to prevent the contamination of skin, eyes, and clothing.
- Emergency procedures, including instructions for evacuations, consulting experts when needed, and appropriate protective clothing.
- Methods and materials used for containment (e.g., covering the drains and capping procedures).
- Cleanup procedures (e.g., appropriate techniques for neutralization, decontamination, cleaning or vacuuming; adsorbent materials; and/or equipment required for containment/clean up).

#### **Section 7: Handling and Storage**

This section provides guidance on the safe handling practices and conditions for safe storage of chemicals. The required information consists of:

- Precautions for safe handling, including recommendations for handling incompatible chemicals, minimizing the release of the chemical into the environment, and providing advice on general hygiene practices (e.g., eating, drinking, and smoking in work areas is prohibited).
- Recommendations on the conditions for safe storage, including any incompatibilities. Provide advice on specific storage requirements (e.g., ventilation requirements).

### Section 8: Exposure Controls/Personal Protection

This section indicates the exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure. The required information consists of:

- OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- Appropriate engineering controls (e.g., use local exhaust ventilation, or use only in an enclosed system).
- Recommendations for personal protective measures to prevent illness or injury from exposure to chemicals, such as personal protective equipment (PPE) (e.g., appropriate types of eye, face, skin or respiratory protection needed based on hazards and potential exposure).
- Any special requirements for PPE, protective clothing or respirators (e.g., type of glove material, such as PVC or nitrile rubber gloves; and breakthrough time of the glove material).

### Section 9: Physical and Chemical Properties

This section identifies physical and chemical properties associated with the substance or mixture. The minimum required information consists of:

- Appearance (physical state, color, etc.);
- Odor;
- Odor threshold;
- pH;
- Melting point/freezing point;
- Initial boiling point and boiling range;
- Flash point;
- Evaporation rate;
- Flammability (solid, gas);
- Upper/lower flammability or explosive limits;
- Vapor pressure;
- Vapor density;
- Relative density;
- Solubility(ies);
- Partition coefficient: n-octanol/water;
- Auto-ignition temperature;
- Decomposition temperature; and
- Viscosity.

The SDS may not contain every item on the above list because information may not be relevant or is not available. When this occurs, a notation to that effect must be made for that chemical property. Manufacturers may also add other relevant properties, such as the dust deflagration index (Kst) for combustible dust, used to evaluate a dust's explosive potential.

## Section 10: Stability and Reactivity

This section describes the reactivity hazards of the chemical and the chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other. The required information consists of:

### Reactivity

- Description of the specific test data for the chemical(s). This data can be for a class or family of the chemical if such data adequately represent the anticipated hazard of the chemical(s), where available.

### Chemical stability

- Indication of whether the chemical is stable or unstable under normal ambient temperature and conditions while in storage and being handled.
- Description of any stabilizers that may be needed to maintain chemical stability.
- Indication of any safety issues that may arise should the product change in physical appearance.

### Other

- Indication of the possibility of hazardous reactions, including a statement whether the chemical will react or polymerize, which could release excess pressure or heat, or create other hazardous conditions. Also, a description of the conditions under which hazardous reactions may occur.
- List of all conditions that should be avoided (e.g., static discharge, shock, vibrations, or environmental conditions that may lead to hazardous conditions).
- List of all classes of incompatible materials (e.g., classes of chemicals or specific substances) with which the chemical could react to produce a hazardous situation.
- List of any known or anticipated hazardous decomposition products that could be produced because of use, storage, or heating. (Hazardous combustion products should also be included in Section 5 (Fire-Fighting Measures) of the SDS.)

## Section 11: Toxicological Information

This section identifies toxicological and health effects information or indicates that such data are not available. The required information consists of:

- Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact). The SDS should indicate if the information is unknown.
- Description of the delayed, immediate, or chronic effects from short- and long-term exposure.
- The numerical measures of toxicity (e.g., acute toxicity estimates such as the LD50 (median lethal dose)) - the estimated amount [of a substance] expected to kill 50% of test animals in a single dose.
- Description of the symptoms. This description includes the symptoms associated with exposure to the chemical including symptoms from the lowest to the most severe exposure.
- Indication of whether the chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA.

### Section 12: Ecological Information (non-mandatory)

This section provides information to evaluate the environmental impact of the chemical(s) if it were released to the environment. The information may include:

- Data from toxicity tests performed on aquatic and/or terrestrial organisms, where available (e.g., acute or chronic aquatic toxicity data for fish, algae, crustaceans, and other plants; toxicity data on birds, bees, plants).
- Whether there is a potential for the chemical to persist and degrade in the environment either through biodegradation or other processes, such as oxidation or hydrolysis.
- Results of tests of bioaccumulation potential, making reference to the octanol-water partition coefficient ( $K_{ow}$ ) and the bioconcentration factor (BCF), where available.
- The potential for a substance to move from the soil to the groundwater (indicate results from adsorption studies or leaching studies).
- Other adverse effects (e.g., environmental fate, ozone layer depletion potential, photochemical ozone creation potential, endocrine disrupting potential, and/or global warming potential).

### Section 13: Disposal Considerations (non-mandatory)

This section provides guidance on proper disposal practices, recycling or reclamation of the chemical(s) or its container, and safe handling practices. To minimize exposure, this section should also refer the reader to Section 8 (Exposure Controls/Personal Protection) of the SDS. The information may include:

- Description of appropriate disposal containers to use.
- Recommendations of appropriate disposal methods to employ.
- Description of the physical and chemical properties that may affect disposal activities.
- Language discouraging sewage disposal.
- Any special precautions for landfills or incineration activities.

### Section 14: Transport Information (non-mandatory)

This section provides guidance on classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea. The information may include:

- UN number (i.e., four-figure identification number of the substance)<sup>2</sup>.
- UN proper shipping name<sup>2</sup>.
- Transport hazard class(es)<sup>2</sup>.
- Packing group number, if applicable, based on the degree of hazard<sup>2</sup>.
- Environmental hazards (e.g., identify if it is a marine pollutant according to the International Maritime Dangerous Goods Code (IMDG Code)).
- Guidance on transport in bulk (according to Annex II of MARPOL 73/78<sup>3</sup> and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code (IBC Code))).
- Any special precautions which an employee should be aware of or needs to comply with, in connection with transport or conveyance either within or outside their premises (indicate when information is not available).

<sup>2</sup> Found in the most recent edition of the United Nations Recommendations on the Transport of Dangerous Goods.

<sup>3</sup> MARPOL 73/78 means the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, as amended.

## Section 15: Regulatory Information (non-mandatory)

This section identifies the safety, health, and environmental regulations specific for the product that is not indicated anywhere else on the SDS. The information may include:

- Any national and/or regional regulatory information of the chemical or mixtures (including any OSHA, Department of Transportation, Environmental Protection Agency, or Consumer Product Safety Commission regulations).

## Section 16: Other Information

This section indicates when the SDS was prepared or when the last known revision was made. The SDS may also state where the changes have been made to the previous version. You may wish to contact the supplier for an explanation of the changes. Other useful information also may be included here.

### Employer Responsibilities

Employers must ensure that the SDSs are readily accessible to employees for all hazardous chemicals in their workplace. This may be done in many ways. For example, employers may keep the SDSs in a binder or on computers as long as the employees have immediate access to the information without leaving their work area when needed and a back-up is available for rapid access to the SDS in the case of a power outage or other emergency. Furthermore, employers may want to designate a person(s) responsible for obtaining and maintaining the SDSs. If the employer does not have an SDS, the employer or designated person(s) should contact the manufacturer to obtain one.

### References

OSHA, 29 CFR 1910.1200(g) and Appendix D.

United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), third revised edition, United Nations, 2009.

These references and other information related to the revised Hazard Communication

Standard can be found on OSHA's Hazard Communication Safety and Health Topics page, located at:  
<http://www.osha.gov/dsg/hazcom/index.html>.

Disclaimer: This brief provides a general overview of the safety data sheet requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(g) and Appendix D of 29 CFR 1910.1200). It does not alter or determine compliance responsibilities in the standard or the Occupational Safety and Health Act of 1970. Since interpretations and enforcement policy may change over time, the reader should consult current OSHA interpretations and decisions by the Occupational Safety and Health Review Commission and the courts for additional guidance on OSHA compliance requirements. Please note that states with OSHA-approved state plans may have additional requirements for chemical safety data sheets, outside of those outlined above. For more information on those standards, please visit:  
<http://www.osha.gov/dcsp/osp/statestandards.html>.

**This is one in a series of informational briefs highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.**

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# OSHA<sup>®</sup> BRIEF

## Hazard Communication Standard: Labels and Pictograms

OSHA has adopted new hazardous chemical labeling requirements as a part of its recent revision of the Hazard Communication Standard, 29 CFR 1910.1200 (HCS), bringing it into alignment with the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS). These changes will help ensure improved quality and consistency in the classification and labeling of all chemicals, and will also enhance worker comprehension. As a result, workers will have better information available on the safe handling and use of hazardous chemicals, thereby allowing them to avoid injuries and illnesses related to exposures to hazardous chemicals.

The revised HCS changes the existing Hazard Communication Standard (HCS/HazCom 1994<sup>1</sup>) from a performance-based standard to one that has more structured requirements for the labeling of chemicals. The revised standard requires that information about chemical hazards be conveyed on labels using quick visual notations to alert the user, providing immediate recognition of the hazards. Labels must also provide instructions on how to handle the chemical so that chemical users are informed about how to protect themselves.

The label provides information to the workers on the specific hazardous chemical. While labels provide important information for anyone who handles, uses, stores, and transports hazardous chemicals, they are limited by design in the amount of information they can provide. Safety Data Sheets (SDSs), which must accompany hazardous chemicals, are the more complete resource for details regarding hazardous chemicals. The revised

standard also requires the use of a 16-section safety data sheet format, which provides detailed information regarding the chemical. There is a separate [OSHA Brief on SDSs](#) that provides information on the new SDS requirements.

All hazardous chemicals shipped after June 1, 2015, must be labeled with specified elements including pictograms, signal words and hazard and precautionary statements. However, manufacturers, importers, and distributors may start using the new labeling system in the revised HCS before the June 1, 2015 effective date if they so choose. Until the June 1, 2015 effective date, manufacturers, importers and distributors may maintain compliance with the requirements of HazCom 1994 or the revised standard. Distributors may continue to ship containers labeled by manufacturers or importers (but not by the distributor themselves) in compliance with the HazCom 1994 until December 1, 2015.

This document is designed to inform chemical receivers, chemical purchasers, and trainers about the label requirements. It explains the new labeling elements, identifies what goes on a label, and describes what pictograms are and how to use them.

### Label Requirements

Labels, as defined in the HCS, are an appropriate group of written, printed or graphic informational elements concerning a hazardous chemical that are affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

The HCS requires chemical manufacturers, importers, or distributors to ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information: product identifier; signal word; hazard statement(s); precautionary

<sup>1</sup> Prior to the 2012 update, the Hazard Communication Standard had last been amended in 1994. 'HazCom 1994' refers to the version of the Hazard Communication Standard in effect directly prior to the 2012 revision, printed in the 1995 through 2011 versions of the Code of Federal Regulations. It is also available on OSHA's webpage.

statement(s); and pictogram(s); and name, address and telephone number of the chemical manufacturer, importer, or other responsible party.

#### Labels for a hazardous chemical must contain:

- Name, Address and Telephone Number
- Product Identifier
- Signal Word
- Hazard Statement(s)
- Precautionary Statement(s)
- Pictogram(s)

To develop labels under the revised HCS, manufacturers, importers and distributors must first identify and classify the chemical hazard(s). Appendices A, B, and C are all mandatory. The classification criteria for health hazards are in Appendix A and the criteria for physical hazards are presented in Appendix B of the revised Hazard Communication Standard. After classifying the hazardous chemicals, the manufacturer, importer or distributor then consults Appendix C to determine the appropriate pictograms, signal words, and hazard and precautionary statement(s), for the chemical label. Once this information has been identified and gathered, then a label may be created.

#### Label Elements

The HCS now requires the following elements on labels of hazardous chemicals:

- **Name, Address and Telephone Number** of the chemical manufacturer, importer or other responsible party.
- **Product Identifier** is how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier. The same product identifier must be both on the label and in section 1 of the SDS.
- **Signal Words** are used to indicate the relative level of severity of the hazard and

alert the reader to a potential hazard on the label. There are only two words used as signal words, "Danger" and "Warning." Within a specific hazard class, "Danger" is used for the more severe hazards and "Warning" is used for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a "Danger" signal word and another warrants the signal word "Warning," then only "Danger" should appear on the label.

- **Hazard Statements** describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: "Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin." All of the applicable hazard statements must appear on the label. Hazard statements may be combined where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard classification categories, and chemical users should always see the same statement for the same hazards no matter what the chemical is or who produces it.
- **Precautionary Statements** describe recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to the hazardous chemical or improper storage or handling. There are four types of precautionary statements: prevention (to minimize exposure); response (in case of accidental spillage or exposure emergency response, and first-aid); storage; and disposal. For example, a chemical presenting a specific target organ toxicity (repeated exposure) hazard would include the following on the label: "Do not breathe dust/fume/gas/mist/vapors/spray. Get medical advice/attention if you feel unwell. Dispose of contents/container in accordance with local/regional/national and international regulations."

A forward slash (/) designates that the classifier can choose one of the precautionary statements. In the example

above, the label could state, "Do not breathe vapors or spray. Get medical attention if you feel unwell. Dispose of contents in accordance with local/regional/national/international regulations." See Examples 1 and 2A of this document as an example.

In most cases, the precautionary statements are independent. However, OSHA does allow flexibility for applying precautionary statements to the label, such as combining statements, using an order of precedence or eliminating an inappropriate statement.

Precautionary statements may be combined on the label to save on space and improve readability. For example, "Keep away from heat, spark and open flames," "Store in a well-ventilated place," and "Keep cool" may be combined to read: "Keep away from heat, sparks and open flames and store in a cool, well-ventilated place." Where a chemical is classified for a number of hazards and the precautionary statements are similar, the most stringent statements must be included on the label. In this case, the chemical manufacturer, importer, or distributor may impose an order of precedence where phrases concerning response require rapid action to ensure the health and safety of the exposed person. In the self-reactive hazard category Types C, D, E or F, three of the four precautionary statements for prevention are:

- "Keep away from heat/sparks/open flame/hot surfaces. - No Smoking.";
- "Keep/Store away from clothing/.../combustible materials";
- "Keep only in original container."

These three precautionary statements could be combined to read: "Keep in original container and away from heat, open flames, combustible materials and hot surfaces. - No Smoking."

Finally, a manufacturer or importer may eliminate a precautionary statement if

it can demonstrate that the statement is inappropriate.

- **Supplementary Information.** The label producer may provide additional instructions or information that it deems helpful. It may also list any hazards not otherwise classified under this portion of the label. This section must also identify the percentage of ingredient(s) of unknown acute toxicity when it is present in a concentration of  $\geq 1\%$  (and the classification is not based on testing the mixture as a whole). If an employer decides to include additional information regarding the chemical that is above and beyond what the standard requires, it may list this information under what is considered "supplementary information." There is also no required format for how a workplace label must look and no particular format an employer has to use; however, it cannot contradict or detract from the required information.

An example of an item that may be considered supplementary is the personal protective equipment (PPE) pictogram indicating what workers handling the chemical may need to wear to protect themselves. For example, the Hazardous Materials Identification System (HMIS) pictogram of a person wearing goggles may be listed. Other supplementary information may include directions of use, expiration date, or fill date, all of which may provide additional information specific to the process in which the chemical is used.

- Pictograms are graphic symbols used to communicate specific information about the hazards of a chemical. On hazardous chemicals being shipped or transported from a manufacturer, importer or distributor, the required pictograms consist of a red square frame set at a point with a black hazard symbol on a white background, sufficiently wide to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label.

The pictograms OSHA has adopted improve worker safety and health, conform with the GHS, and are used worldwide.

While the GHS uses a total of nine pictograms, OSHA will only enforce the use of eight. The environmental pictogram is not mandatory but may be used to provide additional information. Workers may see the ninth symbol on a label because label preparers may choose to add the environment pictogram as supplementary information. Figure 1 shows the symbol for each pictogram, the written name for each pictogram, and the hazards associated with each of the pictograms. Most of the symbols are already used for transportation and many chemical users may be familiar with them.

**Figure 1: Pictograms and Hazards**

<p><b>Health Hazard</b></p>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<p><b>Flame</b></p>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<p><b>Exclamation Mark</b></p>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non-Mandatory)</li> </ul>
<p><b>Gas Cylinder</b></p>  <ul style="list-style-type: none"> <li>• Gases Under Pressure</li> </ul>	<p><b>Corrosion</b></p>  <ul style="list-style-type: none"> <li>• Skin Corrosion/ Burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<p><b>Exploding Bomb</b></p>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<p><b>Flame Over Circle</b></p>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<p><b>Environment (Non-Mandatory)</b></p>  <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<p><b>Skull and Crossbones</b></p>  <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>

It is important to note that the OSHA pictograms do not replace the diamond-shaped labels that the U.S. Department of Transportation (DOT) requires for the transport of chemicals, including chemical drums, chemical totes, tanks or other containers. Those labels must be on the external part of a shipped container and must meet the

DOT requirements set forth in 49 CFR 172, Subpart E. If a label has a DOT transport pictogram, Appendix C.2.3.3 states that the corresponding HCS pictogram shall not appear. However, DOT does not view the HCS pictogram as a conflict and for some international trade both pictograms may need to be present on the label. Therefore, OSHA intends to revise C.2.3.3. In the meantime, the agency will allow both DOT and HCS pictograms for the same hazard on a label. While the DOT diamond label is required for all hazardous chemicals on the outside shipping containers, chemicals in smaller containers inside the larger shipped container do not require the DOT diamond but do require the OSHA pictograms. (See Example 2.)

Labels must be legible, in English, and prominently displayed. Other languages may be displayed in addition to English. Chemical manufacturers, importers, and distributors who become newly aware of any significant information regarding the hazards of a chemical must revise the label within six months.

### Employer Responsibilities

Employers are responsible for maintaining the labels on the containers, including, but not limited to, tanks, totes, and drums. This means that labels must be maintained on chemicals in a manner which continues to be legible and the pertinent information (such as the hazards and directions for use) does not get defaced (i.e., fade, get washed off) or removed in any way.

The employer is not responsible for updating labels on shipped containers, even if the shipped containers are labeled under HazCom 1994. The employer must relabel items if the labels are removed or defaced. However, if the employer is aware of newly-identified hazards that are not disclosed on the label, the employer must ensure that the workers are aware of the hazards as discussed below under workplace labels.

### Workplace Labels

OSHA has not changed the general requirements for workplace labeling. Employers have the option to create their own workplace labels. They can either provide all of the required information that is on the

label from the chemical manufacturer or, the product identifier and words, pictures, symbols or a combination thereof, which in combination with other information immediately available to employees, provide specific information regarding the hazards of the chemicals.

If an employer has an in-plant or workplace system of labeling that meets the requirements of HazCom 1994, the employer may continue to use this system in the workplace as long as this system, in conjunction with other information immediately available to the employees, provides the employees with the information on all of the health and physical hazards of the hazardous chemical. This workplace labeling system may include signs, placards, process sheets, batch tickets, operating procedures, or other such written materials to identify hazardous chemicals. Any of these labeling methods or a combination thereof may be used instead of a label from the manufacturer, importer or distributor as long as the employees have immediate access to all of the information about the hazards of the chemical. Workplace labels must be in English. Other languages may be added to the label if applicable.

If the employer chooses to use the pictograms that appear in Appendix C on the workplace (or in-plant) labels, these pictograms may have a black border, rather than a red border.

Employers may use additional instructional symbols that are not included in OSHA's HCS pictograms on the workplace labels. An example of an instructional pictogram is a person with goggles, denoting that goggles must be worn while handling the given chemical. Including both types of pictograms on workplace labels is acceptable. The same is true if the employer wants to list environmental pictograms or PPE pictograms from the HMIS to identify protective measures for those handling the chemical.

Employers may continue to use rating systems such as National Fire Protection Association (NFPA) diamonds or HMIS requirements for workplace labels as long as they are consistent with the requirements of the Hazard Communication Standard and the employees have immediate access to the specific hazard

information as discussed above. An employer using NFPA or HMIS labeling must, through training, ensure that its employees are fully aware of the hazards of the chemicals used.

If an employer transfers hazardous chemicals from a labeled container to a portable container that is only intended for immediate use by the employee who performs the transfer, no labels are required for the portable container.

### **Sample Labels**

The following examples demonstrate how a manufacturer or importer may display the appropriate information on the label. As mentioned above, once the manufacturer determines the classification of the chemical (class and category of each hazard) using Appendices A and B, it would determine the required pictograms, signal words, hazard statements, and precautionary statements using Appendix C. The final step is to put the information on the label.

The examples below show what a sample label might look like under the revised HCS requirements. The examples break the labeling out into "steps" to show the order of information gathering and how label creation occurs. Step 1 is performing classification; step 2 is gathering full label information; and step 3 is creating the label.

These examples are for informational purposes only and are not meant to represent the only labels manufacturers, importers and distributors may create for these hazards.

**Example 1: This example demonstrates a simple label.**

**The Substance:**

HS85

Batch Number: 85L6543

**Step 1: Perform Classification**

Class: Acute Oral Toxicity; Category 4

**Step 2: Gather Labeling Information**

Pictograms:



**Signal Word:**

WARNING

**Hazard Statements:**

Harmful if Swallowed

**Precautionary Statements:**

Prevention:

- Wash hands and face thoroughly after handling.
- Do not eat, drink or smoke when using this product.

Response:

- If swallowed: Call a doctor if you feel unwell.<sup>2</sup>
- Rinse mouth

Storage:

None specified

Disposal:

- Dispose of contents/container in accordance with local/regional/national/international regulations.<sup>3</sup>

**Step 3: Create the Label**

Putting together the above information on HS85, a label might list the following information:

**Example 1: HS85 Label**

**HS85**  
Batch number: 85L6543



**Warning**  
Harmful if swallowed

Wash hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Dispose of contents/container in accordance with local, state and federal regulations.

**First aid:**  
If swallowed: Call a doctor if you feel unwell. Rinse mouth.

GHS Example Company, 123 Global Circle, Anyville, NY 130XX Telephone (888) 888-8888

<sup>2</sup> The manufacturer of this chemical determined that calling a doctor was the most appropriate emergency medical advice; therefore, it is listed as part of the first-aid procedures.

<sup>3</sup> The downstream users must familiarize themselves with the proper disposal methods in accordance with local, regional, state and federal regulations. It is impractical to expect the label preparer to list all potential regulations that exist.

## Example 2: This example demonstrates a more complex label.

Example 2 is for a substance that is a severe physical and health hazard. For shipping packages of chemicals that will be transported in the United States (i.e., drums, totes, tanks, etc.), the U.S. DOT requires a DOT label(s) on the outside container(s) for hazardous chemicals. Two versions of this label are presented below to demonstrate the difference between an OSHA label with pictograms from the HCS and a DOT label required for transport of a shipping container.

### The Substance:

OXI252 (disodiumflammy)

CAS number: 111-11-11xx

### Step 1: Perform Classification

Class: Oxidizing Solid, Category 1

Class: Skin Corrosive, Category 1A

### Step 2: Gather Labeling Information

#### Pictograms:



#### Signal Word:

DANGER

#### Hazard Statements:

- May cause fire or explosion; strong oxidizer
- Causes severe skin burns and eye damage

#### Precautionary Statements:

Prevention:

- Keep away from heat.
- Keep away from clothing and other combustible materials.
- Take any precaution to avoid mixing with combustibles.
- Wear protective neoprene gloves, safety goggles and face shield with chin guard.
- Wear fire/flame resistant clothing.
- Do not breathe dust or mists.
- Wash arms, hands and face thoroughly after handling.

Response:

- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- Immediately call poison center.<sup>4</sup>

Specific Treatment:

Treat with doctor-prescribed burn cream.<sup>5</sup>

In case of fire:

Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Storage:

Store locked up.

Disposal:

- Dispose of contents/container in accordance with local/regional/national/international regulations.<sup>3</sup>

### Step 3: Create the Label

Putting together the above information on OXI252, a label might list the following information:

<sup>4</sup> In this example, the manufacturer determined that calling a poison control center is the most appropriate emergency medical advice.

<sup>5</sup> Not all SDSs will have direction for "specific treatment" on the label. This is only if the manufacturer specifically notes a certain treatment that needs to be used to treat a worker who has been exposed to this chemical.

## Example 2A: OXI252 Label inner package label with OSHA pictograms

**OXI252**  
(disodiumflammy)  
CAS #: 111-11-11xx



**Danger**  
May cause fire or explosion; strong oxidizer  
Causes severe skin burns and eye damage

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wear protective neoprene gloves, safety goggles and face shield with chin guard. Wear fire/flame resistant clothing. Do not breathe dust or mists. Wash arms, hands and face thoroughly after handling. Store locked up. Dispose of contents and container in accordance with local, state and federal regulations.

**First aid:**  
IF ON SKIN (or hair) or clothing<sup>6</sup>: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
Immediately call poison center.  
Specific Treatment: Treat with doctor-prescribed burn cream.

**Fire:**  
In case of fire: Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Great Chemical Company, 55 Main Street, Anywhere, CT 064XX Telephone (888) 777-8888

## Example 2B: OXI252 Label meeting DOT requirements for shipping<sup>7</sup>

**OXI252**  
(disodiumflammy)  
CAS #: 111-11-11xx



**Danger**  
May cause fire or explosion; strong oxidizer  
Causes severe skin burns and eye damage

Keep away from heat. Keep away from clothing and other combustible materials. Take any precaution to avoid mixing with combustibles. Wear protective neoprene gloves, safety goggles and face shield with chin guard. Wear fire/flame resistant clothing. Do not breathe dust or mists. Wash arms, hands and face thoroughly after handling. Store locked up. Dispose of contents and container in accordance with local, state and federal regulations.

**First aid:**  
IF ON SKIN (or hair) or clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a doctor.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
Immediately call poison center.  
Specific Treatment: Treat with doctor-prescribed burn cream.

**Fire:**  
In case of fire: Use water spray. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

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<sup>6</sup> There are occasions where label preparers may combine statements on the label. In this case the similar statements were combined and the most stringent were listed. For example, the first-aid pre-

cautionary statements were combined for exposure to skin, hair and clothing.

<sup>7</sup> DOT Labels must comply with the size requirements presented in 49 CFR 172.

For more detailed information about labels and Safety Data Sheets (SDSs) under the revised Hazard Communication Standard, please refer to 29 CFR 1910.1200 - paragraphs (f) and (g), and Appendix C.

The revised Hazard Communication Standard and additional guidance materials are available on OSHA's Hazard Communication page, located at: [www.osha.gov/dsg/hazcom/index.html](http://www.osha.gov/dsg/hazcom/index.html).

Disclaimer: This OSHA Brief provides a general overview of the label requirements in the Hazard Communication Standard (see 29 CFR 1910.1200(f) and Appendix C of 29 CFR 1910.1200). It does not alter or determine compliance responsibilities in the standard or the Occupational Safety and Health Act of 1970. Since interpretations and enforcement policy may change over time, the reader should consult current OSHA interpretations and decisions by the Occupational Safety and Health Review Commission and the courts for additional guidance on OSHA compliance requirements.

**This is one in a series of informational briefs highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.**

**For assistance, contact us. We can help. It's confidential.**



U.S. Department of Labor  
[www.osha.gov](http://www.osha.gov) (800) 321-OSHA (6742)

**Great Western Painting**  
**LIST OF HAZARDOUS CHEMICALS**

The Material Safety Data Sheets or Safety Data Sheets for the below listed Hazardous Chemicals following this list. The MSDS and/or SDS are arranged in the order listed below:

**MSDS (Listed by Common Name) or SDS (Listed by Product Identifier)**

**Ammonia-Free Glass Cleaner Concentrate**  
**EVO-STIK 528 CONTACT ADHESIVE**



## SAFETY DATA SHEET

### EVO-STIK 528 CONTACT ADHESIVE

According to Regulation (EC) No 1907/2006

#### 1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

PRODUCT NAME	EVO-STIK 528 CONTACT ADHESIVE
PRODUCT NO.	805200, 805507, 805705, 805729x, 805910, S805705, P038530
APPLICATION	Adhesive.
SUPPLIER	BOSTIK LIMITED COMMON ROAD STAFFORD STAFFORDSHIRE ST16 3EH +44 1785 272625 sds.uk@bostik.com
EMERGENCY TELEPHONE	+44 1785 272650 (24 Hours)

#### 2 HAZARDS IDENTIFICATION

Highly flammable Irritating to eyes and skin. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Vapours may cause drowsiness and dizziness.

CLASSIFICATION (1999/45) Xi;R36/38. F;R11. R52/53, R67.

#### 3 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content %	Classification (67/548/EEC)
ACETONE	200-662-2	67-64-1	10-30%	F;R11 Xi;R36 R66 R67
BUTANONE	201-159-0	78-93-3	10-30%	F;R11 Xi;R36 R66 R67
CYCLOHEXANE	203-806-2	110-82-7	< 1%	F;R11 Xn;R65 Xi;R38 R67 N;R50/53
ETHYL ACETATE	205-500-4	141-78-6	10-30%	F;R11 Xi;R36 R66 R67
NAPHTHA (PETROLEUM), HYDRODESULFURIZED LIGHT, DEAROMATIZED; <0.1% BENZENE	295-434-2	92045-53-9	10-30%	Xn;R65. Xi;R38. F;R11. N;R51/53. R67.
NAPHTHA (PETROLEUM), HYDROTREATED LIGHT, <0.1% BENZENE,		64742-49-0	5-10%	Xn;R65. Xi;R38. F;R11. N;R51/53. R67.
N-HEXANE	203-777-6	110-54-3	< 1%	F;R11 Repr. Cat. 3;R62 Xn;R65,R48/20 Xi;R38 R67 N;R51/53
ROSIN	232-475-7	8050-09-7	< 1%	R43
XYLENE	215-535-7	1330-20-7	5-10%	R10 Xn;R20/21 Xi;R38

The Full Text for all R-Phrases is Displayed in Section 16

#### 4 FIRST-AID MEASURES

##### INHALATION

Remove victim immediately from source of exposure. Move the exposed person to fresh air at once. Get medical attention.

##### INGESTION

DO NOT induce vomiting. Get medical attention immediately.

##### SKIN CONTACT

Promptly wash contaminated skin with soap or mild detergent and water. Promptly remove clothing if soaked through and wash as above. Get medical attention if irritation persists after washing.

##### EYE CONTACT

Rinse the eye with water immediately. Continue to rinse for at least 15 minutes and get medical attention.

# EVO-STIK 528 CONTACT ADHESIVE

## 5 FIRE-FIGHTING MEASURES

### EXTINGUISHING MEDIA

Fire can be extinguished using: Foam, carbon dioxide or dry powder.

### SPECIFIC HAZARDS

Toxic gases/vapours/fumes of: Carbon dioxide (CO<sub>2</sub>). Carbon monoxide (CO).

## 6 ACCIDENTAL RELEASE MEASURES

### PERSONAL PRECAUTIONS

Follow precautions for safe handling described in this safety data sheet. Take precautionary measures against static discharges.

### SPILL CLEAN UP METHODS

Stop leak if possible without risk. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate.

## 7 HANDLING AND STORAGE

### USAGE PRECAUTIONS

Keep away from heat, sparks and open flame. Avoid spilling, skin and eye contact. Ventilate well, avoid breathing vapours. Use approved respirator if air contamination is above accepted level.

### STORAGE PRECAUTIONS

Flammable/combustible - Keep away from oxidisers, heat and flames. Ground container and transfer equipment to eliminate static electric sparks. Store at moderate temperatures in dry, well ventilated area.

### STORAGE CLASS

Flammable liquid storage.

## 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	STD	TWA - 8 Hrs		STEL - 15 Min		Notes
ACETONE	WEL	500 ppm	1210 mg/m <sup>3</sup>	1500 ppm	3620 mg/m <sup>3</sup>	
BUTANONE	WEL	200 ppm(Sk)	600 mg/m <sup>3</sup> (Sk)	300 ppm(Sk)	899 mg/m <sup>3</sup> (Sk)	
CYCLOHEXANE	WEL	100 ppm	350 mg/m <sup>3</sup>	300 ppm	1050 mg/m <sup>3</sup>	
ETHYL ACETATE	WEL	200 ppm		400 ppm		
N-HEXANE	WEL	20 ppm	72 mg/m <sup>3</sup>			
XYLENE	WEL	50 ppm(Sk)	220 mg/m <sup>3</sup> (Sk)	100 ppm(Sk)	441 mg/m <sup>3</sup> (Sk)	

WEL = Workplace Exposure Limit.

### INGREDIENT COMMENTS

WEL = Workplace Exposure Limits

### PROTECTIVE EQUIPMENT



### ENGINEERING MEASURES

Explosion-proof general and local exhaust ventilation.

### RESPIRATORY EQUIPMENT

Respiratory protection must be used if air contamination exceeds acceptable level. Wear mask supplied with: Gas cartridge suitable for organic substances.

### HAND PROTECTION

Protective gloves must be used if there is a risk of direct contact or splash. Use protective gloves made of: Nitrile.

### EYE PROTECTION

Wear splash-proof eye goggles to prevent any possibility of eye contact.

### OTHER PROTECTION

Wear appropriate clothing to prevent repeated or prolonged skin contact.

# EVO-STIK 528 CONTACT ADHESIVE

## HYGIENE MEASURES

Wash promptly if skin becomes contaminated. Wash hands at the end of each work shift and before eating, smoking and using the toilet.

## 9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Liquid
COLOUR	Yellowish
ODOUR	of solvents
SOLUBILITY	Insoluble in water
RELATIVE DENSITY	0.84
FLASH POINT (°C)	- 20

## 10 STABILITY AND REACTIVITY

### STABILITY

Avoid Heat, sparks, flames.

### CONDITIONS TO AVOID

Not known.

### MATERIALS TO AVOID

No incompatible groups noted.

### HAZARDOUS DECOMPOSITION PRODUCTS

Not known.

## 11 TOXICOLOGICAL INFORMATION

### INHALATION

Drowsiness, dizziness, disorientation, vertigo.

### SKIN CONTACT

Irritating to skin.

### EYE CONTACT

Irritating to eyes.

## 12 ECOLOGICAL INFORMATION

### ECOTOXICITY

The product contains a substance which may have adverse effects on waste water treatment processes.

### MOBILITY

Semi-mobile.

### BIOACCUMULATION

No data available on bioaccumulation.

### DEGRADABILITY

No data available.

## 13 DISPOSAL CONSIDERATIONS

### DISPOSAL METHODS

Dispose of waste and residues in accordance with local authority requirements.

## 14 TRANSPORT INFORMATION



PROPER SHIPPING NAME

ADHESIVES

**EVO-STIK 528 CONTACT ADHESIVE**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE/MARINE POLLUTANT	No.
UN NO. ROAD	1133
ADR CLASS NO.	3
ADR CLASS	Class 3: Flammable liquids.
ADR PACK GROUP	III
TUNNEL RESTRICTION CODE	(D/E)
HAZARD No. (ADR)	30
ADR LABEL NO.	3
HAZCHEM CODE	3YE
UN NO. SEA	1133
IMDG CLASS	3
IMDG PACK GR.	III
EMS	F-E, S-D
UN NO. AIR	1133
AIR CLASS	3
AIR PACK GR.	III

**15 REGULATORY INFORMATION**

## LABELLING



Irritant



Highly flammable

## RISK PHRASES

R11	Highly flammable
R36/38	Irritating to eyes and skin.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R67	Vapours may cause drowsiness and dizziness.

## SAFETY PHRASES

S2	Keep out of the reach of children.
S9	Keep container in a well-ventilated place.
S16	Keep away from sources of ignition - No smoking.
S24/25	Avoid contact with skin and eyes.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S46	If swallowed, seek medical advice immediately and show this container or label.
S51	Use only in well-ventilated areas.
S56	Dispose of this material and its container to hazardous or special waste collection point.
P14	Contains ROSIN. May produce an allergic reaction.

## EU DIRECTIVES

Dangerous Substance Directive 67/548/EEC. Dangerous Preparations Directive 1999/45/EC.

## STATUTORY INSTRUMENTS

The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (S.I 2009 No. 716). Control of Substances Hazardous to Health.

## APPROVED CODE OF PRACTICE

Safety Data Sheets for Substances and Preparations. Classification and Labelling of Substances and Preparations Dangerous for Supply.

## GUIDANCE NOTES

Workplace Exposure Limits EH40. Introduction to Local Exhaust Ventilation HS(G)37. CHIP for everyone HSG(108).

**16 OTHER INFORMATION**

## EVO-STIK 528 CONTACT ADHESIVE

### GENERAL INFORMATION

This product should be used as directed by Bostik Ltd. For further information consult the product data sheet or contact Technical Services.

### INFORMATION SOURCES

This safety data sheet was compiled using current safety information supplied by distributor of raw materials.

### REVISION COMMENTS

NOTE: Lines within the margin indicate significant changes from the previous revision. This safety data sheet supersedes all previous issues and users are cautioned to ensure that it is current. Destroy all previous data sheets and if in doubt contact Bostik Limited.

### ISSUED BY

Approved LJ

REVISION DATE May 2013

REV. NO./REPL. SDS GENERATED 2

DATE June 2009

### RISK PHRASES IN FULL

R10	Flammable.
R20/21	Harmful by inhalation and in contact with skin.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R65	Harmful: may cause lung damage if swallowed.
R11	Highly flammable
R36/38	Irritating to eyes and skin.
R36	Irritating to eyes.
R38	Irritating to skin.
R43	May cause sensitisation by skin contact.
R62	Possible risk of impaired fertility.
R66	Repeated exposure may cause skin dryness or cracking.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R67	Vapours may cause drowsiness and dizziness.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.



Zep Commercial Sales & Service  
 1310 Seaboard Industrial Blvd.  
 Atlanta, GA 30318  
 1-888-805-HELP (4357)  
 www.zepcommercial.com

# Safety Data Sheet

## Section 1. Chemical Product and Company Identification

**Product name** Ammonia-Free Glass Cleaner Concentrate  
**Product code** CA1052  
**Date of issue** 03/08/13 **Supersedes** 04/27/12

### Emergency Telephone Numbers

**For MSDS Information:**

Compliance Services 404-352-1680

**For Medical Emergency**

(877) 541-2016 Toll Free - All Calls Recorded

**For Transportation Emergency**

CHEMTREC: (800) 424-9300 - All Calls Recorded

In the District of Columbia (202) 483-7616

**Prepared By**

Compliance Services  
 1420 Seaboard Industrial Blvd.  
 Atlanta, GA 30318

## Section 2. Hazards Identification

### Emergency overview

\*Hazard Determination System (HDS): Health, Flammability, Reactivity

WARNING!



FLAMMABLE LIQUID AND VAPOR. CAUSES EYE IRRITATION.

NOTE: MSDS data pertains to the product as delivered in the original shipping container(s). Risk of adverse effects are lessened by following all prescribed safety precautions, including the use of proper personal protective equipment.

### Acute Effects

### Routes of Entry

Dermal contact. Eye contact. Inhalation.

**Eyes** Causes eye irritation. Inflammation of the eye is characterized by redness, watering and itching.

**Skin** Causes skin irritation. Skin inflammation is characterized by itching, scaling, or reddening.

**Inhalation** Over-exposure by inhalation may cause respiratory irritation. Can cause central nervous system (CNS) depression.

**Ingestion** Adverse health effects are considered unlikely when the product is administered according to the label instructions. Exposure can cause stomach pains, vomiting and diarrhea.

**Chronic effects** Contains material which may cause damage to the following organs: blood, kidneys, liver, spleen, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation.

**Carcinogenicity** Ingredients: Not listed as carcinogen by OSHA, NTP or IARC.

### Product/ingredient name

Not available.

Additional Information: See Toxicological Information (Section 11)

## Section 3. Composition/Information on Ingredients

### Name of Hazardous Ingredients

Name of Hazardous Ingredients	CAS number	% by Weight
IPA; Isopropyl Alcohol; propan-2-ol	67-63-0	15.995
ammonium dodecyl sulphate	2235-54-3	2.7824 - 2.9811
tetrasodium ethylene diamine tetraacetate	64-02-8	1.3909 - 1.4661

## Section 4. First Aid Measures

**Eye Contact** Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

**Skin Contact** Rinse with plenty of running water. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if irritation develops.

**Inhalation** If inhaled, remove to fresh air. If irritation persists, get medical attention.

**Ingestion** Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

### Section 5. Fire Fighting Measures

National Fire Protection Association (U.S.A.)



**Flash Point** Closed cup: 27.7°C (82°F).

**Flammable Limits** Not available.

**Flammability** Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.  
Flammable liquid and vapor.

**Fire hazard** Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

**Fire-Fighting Procedures** Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam. Fire-fighters should wear appropriate protective equipment.

### Section 6. Accidental Release Measures

**Spill Clean up** Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

### Section 7. Handling and Storage

**Handling** Avoid contact with eyes, skin and clothing. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Use only with adequate ventilation. Store and use away from heat, sparks, open flame or any other ignition source. Empty containers retain product residue and can be hazardous. Do not reuse container.

**Storage** Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Keep out of the reach of children.

### Section 8. Exposure Controls/Personal Protection

#### Product name

IPA; Isopropyl Alcohol; propan-2-ol

#### Exposure limits

ACGIH TLV (United States, 2/2010).

TWA: 200 ppm 8 hour(s).

STEL: 400 ppm 15 minute(s).

OSHA PEL 1989 (United States, 3/1989).

TWA: 400 ppm 8 hour(s).

TWA: 980 mg/m<sup>3</sup> 8 hour(s).

STEL: 500 ppm 15 minute(s).

STEL: 1225 mg/m<sup>3</sup> 15 minute(s).

NIOSH REL (United States, 6/2009).

TWA: 400 ppm 10 hour(s).

TWA: 980 mg/m<sup>3</sup> 10 hour(s).

STEL: 500 ppm 15 minute(s).

STEL: 1225 mg/m<sup>3</sup> 15 minute(s).

OSHA PEL (United States, 6/2010).

TWA: 400 ppm 8 hour(s).

TWA: 980 mg/m<sup>3</sup> 8 hour(s).

#### Personal Protective Equipment (PPE)

**Eyes** Safety glasses with side-shields

**Body** Rubber gloves.

**Respiratory** Use with adequate ventilation. A respirator is not needed under normal and intended conditions of product use.



**Section 9. Physical and Chemical Properties**

<b>Physical State</b>	Liquid.	<b>Color</b>	Green. [Dark]
<b>pH</b>	9 to 10	<b>Odor</b>	Pleasant.
<b>Boiling Point</b>	100°C (212°F)	<b>Vapor Pressure</b>	Not available.
<b>Specific Gravity</b>	0.97	<b>Vapor Density</b>	Not available.
<b>Solubility</b>	Easily soluble in the following materials: cold water and hot water.	<b>Evaporation Rate</b>	1 (Water = 1)
		<b>VOC (Consumer)</b>	16 % (w/w) 1.3 lbs/gal (155.4 g/l)

**Section 10. Stability and Reactivity**

<b>Stability and Reactivity</b>	The product is stable.
<b>Incompatibility</b>	Avoid contact with strong oxidizers, excessive heat, sparks or open flame.
<b>Hazardous Polymerization</b>	Under normal conditions of storage and use, hazardous polymerization will not occur.
<b>Hazardous Decomposition Products</b>	carbon oxides (CO, CO <sub>2</sub> )

**Section 11. Toxicological Information****Acute Toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
propan-2-ol	LD50 Dermal	Rabbit	12800 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
tetrasodium ethylene diamine tetraacetate	LD50 Oral	Rat	10 g/kg	-

**Section 12. Ecological Information**

**Environmental Effects** Not available.

**Aquatic Ecotoxicity**

propan-2-ol	-	Acute LC50 1400000 ug/L Marine water	Crustaceans - Common shrimp, sand shrimp - Crangon crangon	48 hours
	-	Acute LC50 >1400000 ug/L	Fish - Western mosquitofish - Gambusia affinis - 20 to 30 mm	96 hours
tetrasodium ethylene diamine tetraacetate	-	Acute EC50 610 mg/l	Daphnia	24 hours
	-	Acute LC50 486000 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours

**Section 13. Disposal Considerations****Waste Information**

Waste must be disposed of in accordance with federal, state and local environmental control regulations. Consult your local or regional authorities for additional information.

**Waste Stream** Classification: Non-hazardous waste by Characteristic.  
Origin: RCRA waste.

**Section 14. Transport Information**

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
<b>DOT Classification</b>	Not regulated.	-	-	-	
<b>TDG Classification</b>	UN1993	FLAMMABLE LIQUID, N. O.S. (propan-2-ol)	3	III	
<b>IMDG Class</b>	UN1993	Flammable liquid, n.o.s. (isopropanol)	3	III	

NOTE: DOT classification applies to most package sizes. For specific container size classifications or for size exceptions, refer to the Bill of Lading with your shipment.

PG\* : Packing group

**Section 15. Regulatory Information****U.S. Federal Regulations**

SARA 313 toxic chemical notification and release reporting:

Product name

propan-2-ol

**Clean Water Act (CWA) 311:** No products were found.

**Clean Air Act (CAA) 112 regulated toxic substances:** No products were found.

All Components of this product are listed or exempt from listing on TSCA Inventory.

**State Regulations**

**California Prop 65** No products were found.

**Canada****WHMIS (Canada)**

Class B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).

Class D-2B: Material causing other toxic effects (Toxic).

**Section 16. Other Information**

*To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.*

\*NOTE: Hazard Determination System (HDS) ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although these ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HDS ratings are to be used with a fully implemented program to relay the meanings of this scale.