

## Safety Data Sheets

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In a Hazard Communication Program immediate chemical hazard information is provided on container labels but more in depth information relating to the hazards and controls is provided by the Safety Data Sheet (SDS). In its standard format, the SDS outlines the health and physical hazards as well as controls for a particular chemical product. Manufacturers and distributors are required by law to supply an SDS to their customers. A SDS should be on file for all existing or newly ordered chemical products.

Ordering an SDS should be the assigned responsibility of the purchasing department. An SDS should accompany the receipt of any new chemical product into the plant. SDS's should be available to employees in their work area. SDS's can also be kept in electronic form as long as they are still immediately assessable to employees. The safety department should be assigned the responsibility of checking the accuracy and completeness of the SDS provided from the chemical supplier. A copy of all SDS's should remain on file in the safety department. The SDS's should be reviewed by the manufacturing, engineering, and safety departments prior to using a new chemical product. The review should focus on the impact this chemical product will have on existing safety programs in the plant and the need for additional controls.

OSHA's Hazard Communications Standard (29 CFR1910.1200) specifies that all SDS's follow the GHS (Global Harmonization System) of Classification and Labeling of Chemicals. SDS's must contain the following 16 sections:

### 1. Identification

- (a) Product identifier used on the label;
- (b) Other means of identification;
- (c) Recommended use of the chemical and restrictions on use;
- (d) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party;
- (e) Emergency phone number.

### 2. Hazard(s) identification

- (a) Classification of the chemical;
- (b) Signal word, hazard statement(s), symbol(s) and precautionary statement(s). (Hazard symbols may be provided as graphical reproductions in black and white or the name of the symbol, e.g., flame, skull and crossbones);
- (c) Describe any hazards not otherwise classified that have been identified during the classification process;
- (d) Where an ingredient with unknown acute toxicity is used in a mixture at a concentration  $\geq 1\%$  and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of unknown acute toxicity is required.

### 3. Composition/information on ingredients

Except as provided for as trade secrets:

## **For Substances**

- (a) Chemical name;
- (b) Common name and synonyms;
- (c) CAS number and other unique identifiers;
- (d) Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance.

## **For Mixtures**

In addition to the information required for substances:

- (a) The chemical name and concentration (exact percentage) or concentration ranges of all ingredients which are classified as health hazards and
  - (1) Are present above their cut-off/concentration limits; or
  - (2) Present a health risk below the cut-off/concentration limits.
- (b) The concentration (exact percentage) shall be specified unless a trade secret claim is made, when there is batch-to-batch variability in the production of a mixture, or for a group of substantially similar mixtures with similar chemical composition. In these cases, concentration ranges may be used.

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.

## **4. First-aid measures**

- (a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion;
- (b) Most important symptoms/effects, acute and delayed.
- (c) Indication of immediate medical attention and special treatment needed, if necessary.

## **5. Fire-fighting measures**

- (a) Suitable (and unsuitable) extinguishing media.
- (b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).
- (c) Special protective equipment and precautions for fire-fighters.

## **6. Accidental release measures**

- (a) Personal precautions, protective equipment, and emergency procedures.
- (b) Methods and materials for containment and cleaning up.

## **7. Handling and storage**

- (a) Precautions for safe handling.
- (b) Conditions for safe storage, including any incompatibilities.

## **8. Exposure controls/personal protection**

- (a) OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.
- (b) Appropriate engineering controls.
- (c) Individual protection measures, such as personal protective equipment.

## **9. Physical and chemical properties**

- (a) Appearance (physical state, color, etc.);

- (b) Odor;
- (c) Odor threshold;
- (d) pH;
- (e) Melting point/freezing point;
- (f) Initial boiling point and boiling range;
- (g) Flash point;
- (h) Evaporation rate;
- (i) Flammability (solid, gas);
- (j) Upper/lower flammability or explosive limits;
- (k) Vapor pressure;
- (l) Vapor density;
- (m) Relative density;
- (n) Solubility(ies);
- (o) Partition coefficient: n-octanol/water;
- (p) Auto-ignition temperature;
- (q) Decomposition temperature;
- (r) Viscosity.

#### **10. Stability and reactivity**

- (a) Reactivity;
- (b) Chemical stability;
- (c) Possibility of hazardous reactions;
- (d) Conditions to avoid (e.g., static discharge, shock, or vibration);
- (e) Incompatible materials;
- (f) Hazardous decomposition products.

#### **11. Toxicological information**

Description of the various toxicological (health) effects and the available data used to identify those effects, including:

- (a) Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact);
- (b) Symptoms related to the physical, chemical and toxicological characteristics;
- (c) Delayed and immediate effects and also chronic effects from short- and long-term exposure;
- (d) Numerical measures of toxicity (such as acute toxicity estimates).
- (e) Whether the hazardous 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 edition), or by OSHA.

#### **12. Ecological information (Non-mandatory)**

- (a) Ecotoxicity (aquatic and terrestrial, where available);
- (b) Persistence and degradability;
- (c) Bioaccumulative potential;
- (d) Mobility in soil;

(e) Other adverse effects (such as hazardous to the ozone layer).

**13. Disposal considerations (Non-mandatory)**

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging.

**14. Transport information (Non-mandatory)**

- (a) UN number;
- (b) UN proper shipping name;
- (c) Transport hazard class(es);
- (d) Packing group, if applicable;
- (e) Environmental hazards (e.g., Marine pollutant (Yes/No));
- (f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code);
- (g) Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises.

**15. Regulatory information (Non-mandatory)**

Safety, health and environmental regulations specific for the product in question.

**16. Other information, including date of preparation or last revision**

The date of preparation of the SDS or the last change to it.

Sections 12 through 15 are non-mandatory since OSHA does not have regulatory authority in these areas. As a result, OSHA will not enforce these sections of the SDS.

Periodic review of the SDS should be discussed during company safety meetings. The SDS is an invaluable informational and educational tool in helping to ensure a safe work place.