GUIDE TO READING A MATERIAL SAFETY DATA SHEET

These are notes to help you understand the information on a data sheet. Some data sheets may not contain all of the categories of information reflected in this guide.

Product Identification

Synonym
Other terms for the substance.

CAS No.
A unique registry number assigned to the substance by the Chemical Abstracts Service.

Chemical Formula
Formula for the number and types of atoms contained in the substance. Example: water = H2O (two atoms of hydrogen and one atom of oxygen).

Chemical Family
General class of compounds to which the substance or mixture belongs. Examples: ether, acid, ketone.

DOT Proper Shipping Name
Name for the substance assigned by the U.S. Department of Transportation.

DOT Hazard Class/ID No.
Under the U.S. Department of Transportation's Hazardous Materials Table, the descriptive name and identification number which classifies the type of hazard the substance presents. The number is used to determine initial emergency response actions.

DOT Label
The U.S. Department of Transportation's required terminology for labeling of hazardous substance. Example: Flammable.

Hazardous Substance(s)/RQs
The minimum spill or leakage of substance that necessitates reporting the incident to the National Emergency Response Center as required under the Superfund law.

U.S. Surface Freight Classification
Classification given to substance by committees of trucking and railroad industries so that proper freight rate can be applied.

Warning Statements

Includes a signal word (DANGER, WARNING, or CAUTION) plus a description of harmful effects from exposure. Example: May cause eye damage and burns to skin.

Precautionary Measures

Instructions about how to avoid injury from harmful effects. Example: Avoid contact with skin.

Emergency First-Aid Procedures

Emergency treatment for a person exposed to unsafe amounts. Examples: Remove person to fresh air. Flush eyes with water.

Occupational Control Procedures

Eye Protection
Type of eye protective device to be worn when working with substance.

Skin Protection
Type of clothing, gloves, aprons, boots, face protection to be worn when working with substance. Also, instructions on handling contaminated clothing.

Respiratory Protection
Class of breathing device acceptable for use andany special conditions or limitations on use.

Ventilation
The ventilation system needed to capture or contain contaminants at their source to control personal exposure or to prevent a hazardous atmosphere.

Airborne Exposure Limits
Maximum acceptable levels of substance in the workplace air for varying periods of time as assigned by the Occupational Safety and Health Administration (OSHA) and the American Conference of Governmental Industrial Hygienists (ACGIH).

Fire Protection Information

Flash Point: Method
Lowest temperature in degrees Fahrenheit (_F) at which a liquid will give off enough flammable vapor to ignite. Since flash points vary according to how they are obtained, the method used must be listed.

Ignition Temperature
Temperature at which substance will start and continue to burn without any spark or flame.

Flammable Limits (In Air) (% by Volume)
Range of concentrations over which a flammable vapor mixed with air will flash or explode if ignition source is present. Range extends between lower explosive limit (LEL) and upper explosive limit (UEL) and is expressed in percentage of volume of vapor in air.

Extinguishing Media
Fire-fighting material for use on substance that is burning. Fire-fighting material should be indicated by its generic name. Examples: water, fog, foam, alcohol foam.

Special Fire-fighting Procedures
Listing of certain fire-fighting materials, unsuitable or unsafe to use on the burning substance. Also, a listing of special handling procedures and personal protective equipment.

Unusual Fire or Explosion Hazards
Hazards which might occur from overheating or burning of substance, including any chemical reactions or change in chemical form or composition. Also, any special hazards which may need to be considered while extinguishing a fire.

Reactivity Data

Materials to Avoid
A list of common materials or contaminants (if any) with which the specific substance may come in contact and release large amounts of energy, flammable vapor or gas, or produce toxic vapor or gas. Conditions to avoid (if any) should be listed. Examples: extreme temperatures, jarring, inappropriate storage.

Hazardous Decomposition Products
A list of hazardous materials (if any) that may be produced in dangerous amounts if the subject substance is exposed to burning, oxidation, heating or allowed to react with other chemicals.

Hazardous Polymerization
An unintended chemical reaction that may create a great deal of heat and may release a hazardous substance. This listing indicates whether such a reaction is possible and under what conditions. It also indicates how long "inhibitors" in the substance will prevent such a reaction from occurring.

Physiological Effects Summary (also called Health Effects Summary)

Covers immediate and long-term effects of overexposure to substance. Includes information from the human experience and animal tests. This detailed health effects information is intended for employees and toa ssist health professionals in treating employees.

Physical Data

pH
Alkalinity or acidity of substance expressed on a scale from 1 to 14. Numbers less than 7indicate increasing acidity and numbers greater than 7, increasing alkalinity. Thus the pH of pure water is about 7; vinegar is between 3 and4, and blood is between 7 and 8.

Appearance and Odor
Brief description of the substance at normal room temperature and atmospheric conditions such as "viscous, colorless liquid with an aroma tichydrocarbon odor."

Boiling Point
Temperature at which a liquid changes to a vapor at a given pressure, usually stated in degrees Fahrenheit (*F).

Vapor Pressure
The pressure exerted by a vapor above its own liquid in a closed container.

Vapor Density at Bp (Air = 1)
A comparison between the weight of the substance's vapor and that of air. Will the vapor rise or sink?

Solubility in Water
The amount of the substance which can be dissolved in a given volume of water. Expressed usually in terms of milligrams per liter or in general terms such as "negligible."

% Volatile (by volume)
The percentage of a liquid or solid (by volume)that will evaporate at an ambient temperature of70 degrees Fahrenheit (*F).
Freezing Point
Temperature at which substance changes from a liquid to a solid.
Molecular Weight
The relative average weight of a molecule of the substance.

Spill, Leak, and Disposal Information
Immediate steps to be taken to assure safety to people and property in the event of a spill or leak of the substance. Also gives instructions on its disposal. Includes advisory to comply with all applicable federal, state and local laws and regulations.

Additional Comments
Special precautions to be taken to ensure safe handling of substance. May give special emphasis to information or warnings stated in other sections of Material Safety Data Sheets (MSDSs).

Stanford Safety Manual

http://www.stanford.edu/dept/EHS/prod/aboutus/documents/safetyman/safetymanualindex.html