

Material Safety Data Sheets-MSDS

Preparation

1. Read Applicable Background information and related Company Policy Chapter.
2. Make _____ Copies of this Lesson Plan for Personnel
3. Make Transparency, procure transparency pens, etc.
4. Coffee, tea, snacks

Material

1. MSDS Sheets

Objective

By the end of this session, personnel shall be able to:

1. Explain the purpose of a MSDS
2. Explain what information is on a MSDS
3. Read a MSDS and identify the categories of information on a MSDS, to include:
 - a) Chemical Product Name and Company Identification
 - b) Composition and Ingredients & Hazard Identification
 - c) First Aid Measures & Fire Fighting Measures
 - d) Accidental Release Measures & Handling & Storage
 - e) Exposure Controls/Personal Protective Equipment
 - f) Physical and Chemical Properties & Stability and Reactivity
 - g) Toxicological & Ecological Information
 - h) Disposal and Transport Considerations & Regulatory & Other Information
4. Define Words and Terms found on a MSDS
5. Explain where the MSDS's are kept

Background

An important source of information you have access to is a Material Safety Data Sheet (MSDS). The sheet is prepared by the manufacturer of the product and contains very detailed information about the product contents and proper handling. The MSDS will vary by manufacturer, but it will always be in a similar format. The MSDS should always be readily accessible to you, and must also be available to any customer or client that our Company deals with.

Notes

What is a MSDS?

MSDS stands for Material Safety Data Sheets. It is a reference full of information about a certain chemical designed to help workers handle and use the product or chemical safely. By taking a few minutes to read through the MSDS before you start to work with a chemical, you can find out what hazards it poses to your health, what its physical properties are, and how to handle and store it.

A MSDS is a document that contains information on the potential health effects of exposure and how to work safely with the product or chemical product. It is an essential starting point for the development of a complete health and safety program. It contains hazard evaluations on the use, storage, handling and emergency procedures all related to that material.

What Information is on a MSDS?

The MSDS contains much more information about the material than the label and it is prepared by the supplier. It is intended to:

- tell what the hazards of the product are,
- how to use the product safely,
- what to expect if the recommendations are not followed,
- what to do if accidents occur,
- how to recognize symptoms of overexposure, and
- what to do if such incidents occur.

Identity -What is it called on the label and its synonyms. This section also contains the manufacturer's name and address and a phone number to call for information in case of an emergency. Maximum safe exposures are also listed here.

Trade Secret-The only time you won't find the identity of a chemical is when it's a trade secret. But the MSDS will still tell you about its hazards and required safety measures.

Physical and Chemical Characteristics-This section will tell you the boiling and melting point, vapor pressure, vapor density and evaporation rate, solubility in water and specific gravity and normal appearance and odor.

Notes

[illegible]

[illegible]

Heat- acetone is highly flammable.

Section XI & Section XII- Toxicological and Ecological Information- Is acetone toxic?

The acetone MSDS does not have this section filled out, but under Section III, we find that acetone is toxic-poisonous.

Section XIII- Disposal Considerations- Can acetone be flushed down the toilet, sink, or disposed of in the trash?

It is recommended that acetone be incinerated.

Section XIV & Section V- Transport and Regulatory Information- Does acetone cause cancer?

According to the State of California, it can.

Section XVI- Other Information- Does acetone have any other name?

Yes, dimethyl ketone, propanone, and dimethyl ketal are a few.

Common MSDS Terms- Definitions and Analogies

1. **Absorption** is the movement of a chemical into a plant, animal or soil. This is an exposure route into your body. Absorption can be compared to a sponge soaking up spilled water.
2. **Acute** is the short-term effect which occurs when exposed to a chemical for a short time. An example of an acute effect would be a blast of steam on bare skin that causes burns.
3. **Adsorption** means to collect gas or liquid molecules onto the surface of another material. Rain that beads on the hood of a newly waxed car would be an analogy for adsorption.
4. **Chronic** is a long-term effect resulting from long-term exposure. An example of a chronic condition would be sore feet from wearing tight shoes for a long time.
5. **Exposure Routes** are one of four ways that hazards enter the body. The four most common routes of entry are absorption (through the skin), ingestion (swallowing), inhalation (breathing) and injection (punctures). Exposure routes can be compared to highways into your body, a distinct path that something can travel to reach a destination.

[illegible]

MSDS's are located _____

[illegible]

Closure

Why is my MSDS so hard to understand?

Traditionally the intended readers of MSDSs were occupational hygienists and safety professionals. Now the audience also includes employers, workers, supervisors, nurses, doctors, emergency responders and workers. To ensure that MSDS users can quickly find the information that they need, the information should be in an easy-to-read format and written in a clear, precise and understandable manner.

For most people who work with controlled products, there are some sections that are more important than others. You should always read the name of the chemical, know the hazards, understand safe handling and storage instructions, as well as understand what to do in an emergency.

Is all the information I need on the MSDS?

Not necessarily. A lot of health hazard information, for example, is written in general terms. Your health and safety specialist, occupational health nurse or family doctor should be able to help you find more information if needed.

When would I use an MSDS?

Always be familiar with the hazards of a product BEFORE you start using it. You should look at a MSDS, match the name of the chemical on your container to the one on the MSDS, know the hazards, understand safe handling and storage instructions, as well as understand what to do in an emergency.

Why do some MSDS's look different?

MSDSs look different because only the content of the MSDS is specified by law. The format is left up to the supplier who writes the MSDS. Some suppliers put more details in than what is required. However, the information for the nine basic categories must always be in a Canadian MSDS for a controlled product.

Can an MSDS be too old?

Yes. Under WHMIS law, an MSDS for a controlled product must not be more than three years old. If you are still using a product that you bought more than three years ago, you may not have a current MSDS. Contact the supplier again and ask for a newer version of the MSDS.

The three-year time limit does not apply to MSDSs for non-controlled products (i.e. products that do not meet WHMIS criteria).

How often should an MSDS be updated?

If new, significant information becomes available before the three years has elapsed, the supplier is required to update the product label and MSDS.

If there is no new information on the ingredients by the end of the three-year period, the supplier should review the MSDS and the label for accuracy, revise it where necessary, and revise the preparation date on the MSDS.

Does the employer have responsibilities for MSDS's?

Yes. Employers must make sure that all controlled products have an up-to-date (less than three years old) MSDS when it enters the workplace. The MSDSs must be readily available to the workers who are exposed to the controlled product and to the health and safety committee or representative. If a controlled product is made in the workplace, the employer has a duty to make an MSDS for any of these products.

What questions do you have?

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Material Safety Data Sheet

Revision Issued: 8/23/99

Supersedes: 1/22/96

First Issued: 3/04/87

Section I - Chemical Product And Company Identification

Product Name: Acetone

CAS Number: 67-64-1

HBCC MSDS No. CA02000

Hills Brothers Chemical Company

1675 No. Main Street, Orange, California 92867

Telephone No: 714-998-8800 | Outside Calif: 800-821-7234 | Chemtrec: 800-424-9300

Section II - Composition/Information On Ingredients

			Exposure Limits (TWAs) in Air		
Chemical Name	CAS Number	%	ACGIH TLV	OSHA PEL	STEL
Acetone	67-64-1	100	750 ppm	750 ppm	1000 ppm
Benzene	71-43-2	0.0003	10 ppm	1 ppm	5 ppm

Section III - Hazard Identification

Routes of Exposure: Inhalation, skin absorption, ingestion, or eye contact.

Summary of Acute Health Hazards

Ingestion: Acetone has a low order of toxicity but is very irritating to mucous membranes. Ingestion of a toxic dose can cause gastroenteric irritation, narcosis and injury to the kidneys and liver. Aspiration into lungs can produce severe lung damage and is a medical emergency. Other symptoms are expected to parallel inhalation.

Inhalation: The vapor is irritating to mucous membranes. Vapor concentration of 2,500-3,000 ppm causes minor irritation of eyes, nose and throat. Inhalation of higher concentration may cause headache, nausea, confusion, drowsiness, convulsions and coma. Higher concentrations can produce central nervous system depression, narcosis, and unconsciousness.

Skin: Prolonged exposure to the vapor irritates the skin. Repeated and prolonged contact of the liquid with skin can cause dryness and erythema (inflammation).

Eyes: Eye contact with acetone is irritating and may be damaging.

Summary of Chronic Health Hazards: N/A

Effects of Overexposure: Acts as an anesthetic in very high concentrations. Headache, nausea, dizziness, and narcosis can result from excessive exposure to vapors. Causes severe eye irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva. Corneal injury may occur. Prolonged contact of the liquid with the skin can have a defatting action and may result in dermatitis. Absorption through intact skin is not expected to cause systemic injury; however, possible skin absorption should be considered in meeting TLV requirements.

Medical Conditions Generally Aggravated by Exposure: Use of alcoholic beverages enhances toxic effects. Exposure may increase the toxic potential of chlorinated hydrocarbons, such as chloroform, trichloroethane.

Note to Physicians: Aspirated acetone may cause severe lung damage and present a significant hazard. Stomach contents should be evacuated quickly in a manner which avoids aspiration. Otherwise, treatment of overexposure is directed at the control of symptoms and the clinical condition of the patient. No specific antidote is known.

Section IV - First Aid Measures

Ingestion: Do not make an unconscious person vomit. If conscious give 2 glasses of water to dilute. DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION IMMEDIATELY. No specific antidote known. If vomiting occurs, keep head below hips to prevent aspiration into the lungs.

Inhalation: Remove to fresh air. Administer artificial respiration if breathing is irregular or stopped. If breathing is difficult, oxygen may be given by qualified personnel. GET MEDICAL ATTENTION.

Skin: Wash with large quantities of water and soap or a mild detergent. Remove contaminated clothing. Seek medical attention if irritation from contact persists.

Eyes: Flush eyes with water immediately for at least 15 minutes, lifting the upper and lower lids. GET MEDICAL ATTENTION, preferably from an ophthalmologist.

Section V - Fire Fighting Measures

Flash Point: 0°F

Autoignition Temperature: 869°F

Lower Explosive Limit: 2.5

Upper Explosive Limit: 12.8

Unusual Fire and Explosion Hazards: Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point. Vapors from this material may settle in low or confined areas or travel a long distance to an ignition source and flash back explosively. This material may produce a floating fire hazard.

Extinguishing Media: Small fire : Use carbon dioxide or dry chemical. Large fire: Use polar solvent (alcohol) type foam. The normal firefighting foams that are suitable for gasoline or hydrocarbon fires will break down and will not extinguish acetone fires. Water spray will reduce the intensity of flames. Acetone/water solutions have flash points when the acetone concentration is greater than 8% (by weight). The fire point, which is the percent by weight when a solution sustains a flame, is higher than that.

Special Firefighting Procedures: The use of self-contained breathing apparatus is recommended for fire fighters. Use water spray to cool fire-exposed containers and to dilute and reduce fire intensity. Use remote spray monitors or fight fire from behind shields. Use water spray to disperse vapors; re-ignition is possible.

Section VI - Accidental Release Measures

Provide maximum explosion-proof ventilation. Eliminate all sources of ignition. Flush spilled material into suitable retaining areas or containers with large quantities of water. Small amounts of spilled material may be absorbed into an appropriate absorbant.

Section VII - Handling and Storage

Handling and Storing Precautions: Store in a cool, clean, well-ventilated fireproof storage room or cabinet to meet OSHA requirements. Sprinkler fire protection is needed in areas of storage, handling and use. Acetone must be stored and handled away from heat. Electrically interconnect and ground containers for all transfers of acetone to avoid fires from static sparks. Avoid breathing vapor.

Other Precautions: Transfer hazard: Vapors of this product may be ignited by static sparks. Use proper bonding and grounding during liquid transfer as described in National Fire Protection Association document NFPA 77.

Section VIII - Exposure Controls/Personal Protection

Respiratory Protection: Use only NIOSH- or MSHA -approved respirators. For a non-routine or emergency exposure above the TLV, use a full facepiece gas mask with organic vapor canister, or a air-supplied respirator in accordance with conditions. Use self-contained breathing apparatus in high vapor concentrations.

Ventilation: General mechanical ventilation may be sufficient to keep product vapor concentrations within specified time-weighted TLV ranges. Supplemental local exhaust may be required to maintain safe vapor concentrations.

Protective Clothing: Wear appropriate clothing to prevent repeated or prolonged skin contact. The use of impermeable gloves, aprons, boots, and lab coat are advised to prevent skin irritation.

Eye Protection: Safety glasses, chemical goggles, and/or face shields are recommended to safeguard against potential eye contact, irritation, or injury.

Other Protective Clothing or Equipment: Eye washes and safety showers should be readily available in the work areas.

Work/Hygienic Practices: Employees should wash promptly when skin is wet.

Section IX - Physical and Chemical Properties

Physical State: Liquid	pH: N/A
Melting Point/Range: -138°F (-94.7°C)	Boiling Point/Range: 133°F (56.5°C)
Appearance/Color/Odor: Clear, colorless liquid with a sweet, mint-like odor	Vapor Pressure(mmHg): 400 @ 104°F; (39.5°C)
Solubility in Water: Miscible in all proportions in water	Molecular Weight: 58.08
Specific Gravity(Water=1): 0.791 @ 20°C	% Volatiles: 100%
Vapor Density(Air=1): 2.0	Freezing Point: -96.54°C (-141.77°F)
How to detect this compound : N/A	
Evaporation Rate (Butyl Acetate=1): Ca. 7.7	

Section X - Stability and Reactivity

Stability: Stable

Hazardous Polymerization: Will not occur

Conditions to Avoid: Heat - acetone is a highly flammable material.

Materials to Avoid: Acetone is incompatible with strong oxidizing agents and strong acids or bases. Concentrated nitric and sulfuric acid mixtures, oxidizing materials, chloroform, alkalis, chlorine compounds, acids, potassium t-butoxide.

Hazardous Decomposition Products: Thermal decomposition in the presence of air may yield carbon monoxide and/or carbon dioxide.

Section XI - Toxicological Information

N/A

Section XII - Ecological Information

N/A

Section XIII - Disposal Considerations

Incineration is a recommended method to dispose of scrap acetone. Dispose of acetone in accordance with applicable local, county, state and federal regulations

Section XIV - Transport Information

DOT Proper Shipping Name: Acetone
DOT Hazard Class/ I.D. No.: 3, UN1090, II

Section XV - Regulatory Information

CALIFORNIA PROPOSITION 65: WARNING

This product contains trace levels of Benzene, Formaldehyde, and Acetaldehyde which the state of California has found to cause cancer.

Medical Surveillance Suggested: Preplacement examinations should evaluate skin and respiratory conditions. Acetone can be detected in the blood, urine, and expired air and has been used as an index of exposure.

Respirator Selection

5,000 ppm: GMOVc* 20,000 ppm: GMOVfb/SAF/SCBAF* Escape: GMOV/SCBA* *see below

Reportable Quantity: 5000 Lbs (2270 Kilograms) (753.01 Gals)

NFPA Rating: Health - 1; Fire - 3; Reactivity - 0

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Carcinogenicity Lists: NTP: No IARC Monograph: No OSHA Regulated: Yes

Section 313 Supplier Notification: This product contains the following toxic chemical(s) subject to the reporting requirements of SARA TITLE III Section 313 of the Emergency Planning and Community Right-To Know Act of 1986 and of 40 CFR 372:

CAS #
67-64-1

Chemical Name
Acetone

% By Weight
100%

Section XVI - Other Information

Synonyms/Common Names: Dimethyl Ketone, Propanone, 2-propanone, Dimethyl Ketal

Chemical Family/Type: Oxygenated Hydrocarbon, Ketone

IMPORTANT! Read this MSDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This MSDS has been prepared according to the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The MSDS information is based on sources believed to be reliable. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control, **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Also, additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks prior to use, and then to exercise appropriate precautions for protection of employees and others.