



Hazard Communication

National Capital Area

Purpose of Hazard Communication

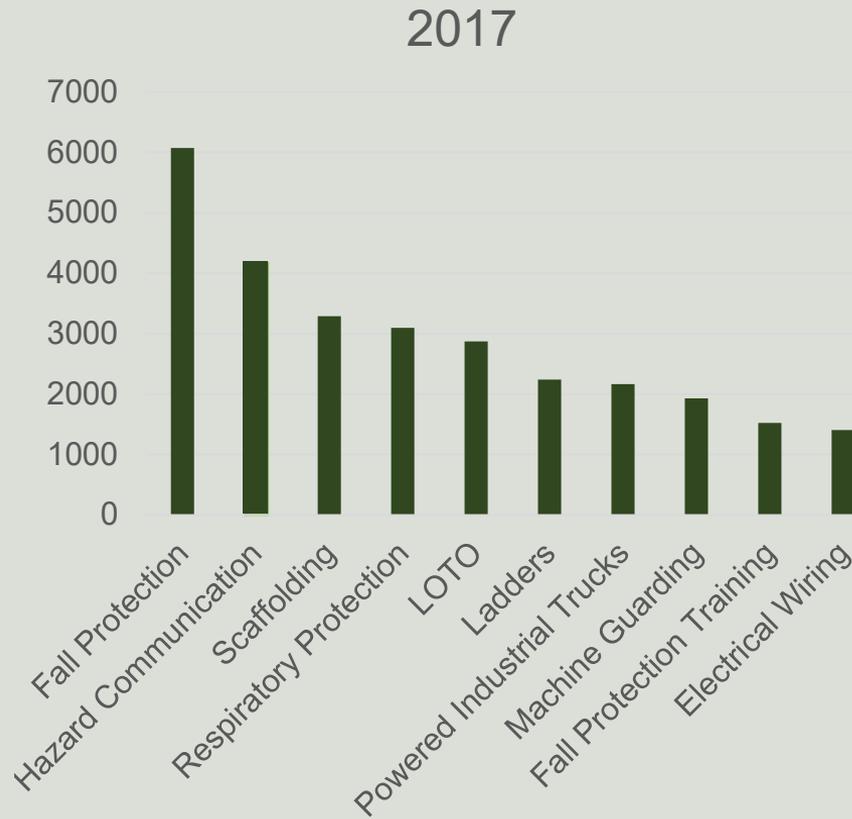
To ensure that the hazards of all chemicals produced or imported are classified, and that the information concerning their hazards is transmitted to employers and employees.



Hazard Communication

▣ 2nd most cited OSHA violation

- ▣ Written program
- ▣ Labeled containers
- ▣ SDS
- ▣ Training
- ▣ Chemical inventory



HazCom Standard

- Also known as “Right to Know”, codified in 29 CFR 1910.1200
- Revised to adopt the Globally Harmonized System (GHS) in 2009.
- The standards for general industry and construction are identical



Who does HazCom apply to?

- The HazCom standard applies to any worker who may be exposed to hazardous chemicals under **normal operating conditions**, or in **foreseeable emergencies**.





So What is a Hazardous Material?

▫ Physical Hazards

- Gas under pressure
- Explosive
- Flammable
- Oxidizer
- Pyrophoric
- Self-reactive or self-heating
- Organic peroxide
- Corrosive to metal
- Emits flammable gas when contact w/H₂O

▫ Health Hazards

- Acute toxicity (all pathways)
- Skin corrosion/irritation
- Serious eye damage/irritation
- Respiratory/skin sensitization
- Mutagen
- Carcinogen
- Reproductive toxin
- Specific organ toxicity
- Aspiration toxicity



Hazardous Materials

- Simple Asphyxiant
- Combustible Dust
- Pyrophoric Gas
- Hazards not otherwise classified



<https://www.youtube.com/watch?v=fl-jlNqpCQ8>



Communication Methods

- Labels
- SDS
- Chemical Inventory
- Written Program
- Training



Communication Methods

- Pictogram
 - Symbol conveying specific information about chemical hazards
- Signal word
 - Indicates relative level of severity
 - Danger
 - Warning
- Hazard statement
 - Describes the nature of the hazard
- Precautionary statement
 - Recommended measures to minimize/prevent adverse effects



Corrosive

"A highly reactive substance that causes obvious damage to living tissue."

Acids <7

- Hydrochloric Acid
- Sulfuric Acid
- Nitric Acid

Basics >7

- Lye
- Sodium Hydroxide
- Ammonium Hydroxide



Eye Irritation vs Eye Corrosion

Eye irritation is the production of changes in the eye following application of a substance to the front outer surface of the eye, which is **fully reversible** within **21 days**.

Eye Corrosion is the production of tissue damage in the eye, or serious physical decay of vision, following the application of a substance to the front outer surface of the eye, which is **not fully reversible** within 21 days.



Communication Methods: Labeling

- Every individual container must be labeled in English
- Manufacturer labels include:
 - A product identifier
 - Pictogram
 - Signal Word
 - Hazard Statement
 - Precautionary statement
 - Contact information for the manufacturer

The Basic Parts of A GHS-Compliant Label

The image shows a sample GHS-compliant label for n-Propyl Alcohol. The label is white with black text and features two red diamond-shaped hazard pictograms. Red arrows with numbers 1 through 6 point to specific parts of the label: 1 points to the product name 'n-Propyl Alcohol', 2 points to the signal word 'DANGER', 3 points to the hazard statement, 4 points to the precautionary statement, 5 points to the supplier identification information, and 6 points to the hazard pictograms.

1 → **n-Propyl Alcohol**

UN No. 1274
CAS No. 71-23-8

2 → **DANGER**

3 → Highly flammable liquid and vapor. Causes serious eye damage. May cause drowsiness and dizziness.

4 → Keep away from heat/sparks/open flames/hot surfaces. No smoking. Avoid breathing fumes/mist/sprays. Wear protective gloves/protective clothing/eye protection/face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present. Continue rinsing.

Fill Weight: 18.65 lbs. Lot Number: 856754434
Gross Weight: 20 lbs. Fill Date: 6/21/2013
Expiration Date: 6/21/2020

See SDS for further information.

5 → Acme Chemical Company • 711 Roadrunner St. • Chicago, IL 60601 USA • www.acmechem.com • 123-444-5567

6 → (Points to the hazard pictograms: a flame and an exclamation mark)

1. **Product Identifier** - Should match the product identifier on the Safety Data Sheet.
2. **Signal Word** - Either use "Danger" (severe) or "Warning" (less severe)
3. **Hazard Statements** - A phrase assigned to a hazard class that describes the nature of the product's hazards
4. **Precautionary Statements** - Describes recommended measures to minimize or prevent adverse effects resulting from exposure.
5. **Supplier Identification** - The name, address and telephone number of the manufacturer or supplier.
6. **Pictograms** - Graphical symbols intended to convey specific hazard information visually.

Sample label courtesy of Weber Packaging Solutions • www.weberpackaging.com



Secondary Container Labeling

- When do I have to apply a label?
 - Anytime chemicals are transferred from manufacturer's container

- Label options:
 - Use original label
 - Label with all GHS elements*
 - Other label with SDS nearby
 - Product identifier
 - Hazard description

*Online resources like [MySafetyLabels.com](https://www.mysafetylabels.com) are helpful



Example Labels

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

Product ID: _____

Signal Word: DANGER WARNING N/A

HEALTH	FIRE		
		<input type="checkbox"/>	<input type="checkbox"/>
			
		<input type="checkbox"/>	<input type="checkbox"/>
SPECIFIC HAZARD	INSTABILITY		
		<input type="checkbox"/>	<input type="checkbox"/>
			
		<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Hazard Statement: _____

Precautionary Statement: _____

Personal Protective Equipment: _____



Communication Methods: Labeling

There are a few exceptions to the HazCom labeling requirements:

▫ Portable Containers

- Must be used in one shift
- Must only be used by the person who filled the container
- Must not be left unattended at any time

▫ Storage Areas

- Forgoes individual labeling if all contents of all containers are the same
- Must be visible at all times
- Must contain the same information as an individual label

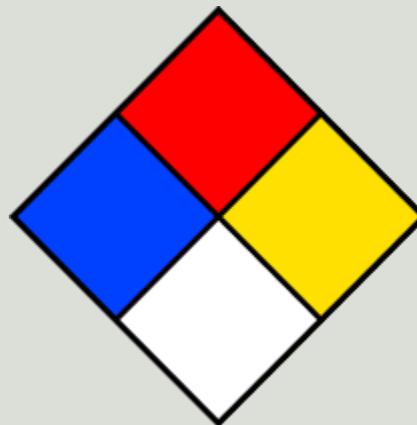
▫ Non-containers

- Pipes, engines, and fuel tanks



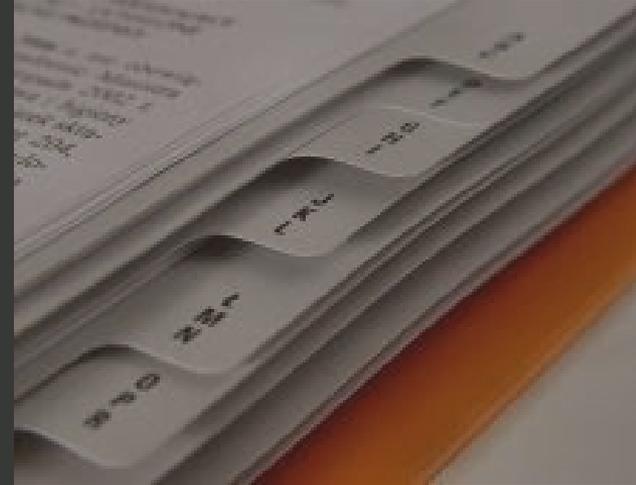
Communication Methods: Labeling

- Other labeling systems
 - NFPA
 - DOT



Communication Methods: SDS

- Standard format of 16 sections
 - Always in the same order
- Must be readily available to all employees on their first day of employment.
- Must be provided to employee within 24 hours of request





Communication Methods: SDS

1. Product Identifier
2. Hazard Identification
3. Composition
4. First Aid Measures
5. Fire-fighting Measures
6. Accidental Release Measures
7. Storage and Handling
8. Exposure Controls (PPE)
9. Physical and Chemical Properties
10. Stability and Reactivity
11. Toxicological Information
12. Ecological Information
13. Disposal
14. Transportation
15. Regulatory Information
16. Other Information



SDS- Acetone

SAFETY DATA SHEET

Airgas
an Air Liquide company

Acetone

Section 1. Identification

GHS product identifier : Acetone
Chemical name : acetone
Other means of identification : propan-2-one, propanone; 2-Propanone; Ketone propane; Dimethyl ketone; dimethyl ketone; 2-propanone; β -ketonepropane; acetonum; dimethylketone; methyl ketone; propanone; pyroacetic acid; pyroacetic ether; methyl ketone; Acetone (I); 2-Propanone (I); Cetona; Pyroacetic ether
Product type : Liquid.
Product use : Synthetic/Analytical chemistry.
Synonym : propan-2-one, propanone; 2-Propanone; Ketone propane; Dimethyl ketone, dimethyl ketone; 2-propanone; β -ketonepropane; acetonum; dimethylketone; methyl ketone; propanone; pyroacetic acid; pyroacetic ether; methyl ketone; Acetone (I); 2-Propanone (I); Cetona; Pyroacetic ether
SDS # : 001088
Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5263
1-610-687-5253
24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

OSHA/HC status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
EYE IRRITATION - Category 2A
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

GHS label elements

Hazard pictograms



Signal word

Hazard statements

: Danger
: May form explosive mixtures with air.
Highly flammable liquid and vapor.
Causes serious eye irritation.
May cause drowsiness or dizziness.

Precautionary statements

General

: Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention

: Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling.

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Acetone

Section 2. Hazards identification

Response : IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
Storage : Store locked up. Store in a well-ventilated place. Keep cool.
Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance
Chemical name : acetone
Other means of identification : propan-2-one; propanone; 2-Propanone; Ketone propane; Dimethyl ketone; dimethyl ketone; 2-propanone; β -ketonepropane; acetonum; dimethylketone; methyl ketone; propanone; pyroacetic acid; pyroacetic ether; methyl ketone; Acetone (I); 2-Propanone (I); Cetona; Pyroacetic ether
Product code : 001088

CAS number/other identifiers

CAS number : 67-64-1

Ingredient name	%	CAS number
acetone	100	67-64-1

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary 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.
Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

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SDS- Acetone

Acetone

Section 4. First aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
Skin contact : No known significant effects or critical hazards.
Frostbite : Try to warm up the frozen tissues and seek medical attention.
Ingestion : Can cause central nervous system (CNS) depression.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following: pain or irritation, watering, redness
Inhalation : Adverse symptoms may include the following: nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness
Skin contact : No specific data.
Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments : No specific treatment.
Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
Unsuitable extinguishing media : Do not use water jet.

- Specific hazards arising from the chemical** : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials: carbon dioxide, carbon monoxide

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

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Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flames, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

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

- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Avoid contact with eyes, skin and clothing. Do not ingest. Empty containers retain product residue and can be hazardous. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Store locked up. Separate from oxidizing materials. 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

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Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
acetone	ACGIH TLV (United States, 3/2017). STEL: 500 ppm 15 minutes. TWA: 250 ppm 8 hours. NIOSH REL (United States, 10/2016). TWA: 590 mg/m ³ 10 hours. TWA: 250 ppm 10 hours. OSHA PEL (United States, 6/2016). TWA: 2400 mg/m ³ 8 hours. TWA: 1000 ppm 8 hours. OSHA PEL 1989 (United States, 3/1989). STEL: 2400 mg/m ³ 15 minutes. STEL: 1000 ppm 15 minutes. TWA: 1800 mg/m ³ 8 hours. TWA: 750 ppm 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

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Section 8. Exposure controls/personal protection

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [COLORLESS LIQUID WITH A FRAGRANT, MINT-LIKE ODOR]

Color : Colorless.

Odor : Characteristic.

Odor threshold : Not available.

pH : Not available.

Melting point : -94.7°C (-138.5°F)

Boiling point : 56.05°C (132.9°F)

Critical temperature : 234.85°C (454.7°F)

Flash point : Closed cup: -20°C (-4°F)

Evaporation rate : 6.06 (butyl acetate = 1)

Flammability (solid, gas) : Not available.

Lower and upper explosives (flammable) limits : Lower: 2.2%
Upper: 13%

Vapor pressure : 24 kPa (180.01 mm Hg) [room temperature]

Vapor density : 2 (Air = 1)

Specific Volume (ft³/lb) : 1.2642

Gas Density (lb/ft³) : 0.791

Relative density : 0.8

Solubility : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : -0.23

Auto-ignition temperature : 465°C (869°F)

Decomposition temperature : Not available.

Viscosity : Not available.

Flow time (ISO 2431) : Not available.

Molecular weight : 58.09 g/mole

Aerosol product : Not available.

Heat of combustion : -28493500 J/kg

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

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Section 10. Stability and reactivity

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
acetone	LC50 Inhalation Vapor	Rat	59526 ppm	1 hours
	LD50 Oral	Rat	5800 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
acetone	Eyes - Mild irritant	Human	-	186300 parts per million	-
	Eyes - Mild irritant	Rabbit	-	10 microliters	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	395 milligrams	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
acetone	Category 3	Not applicable.	Narcotic effects

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

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Section 11. Toxicological information

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact : No known significant effects or critical hazards.

Ingestion : Can cause central nervous system (CNS) depression.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, pain or irritation, watering, redness

Inhalation : Adverse symptoms may include the following:, nausea or vomiting, headache, drowsiness/fatigue, dizziness/vertigo, unconsciousness

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure	
acetone	Acute EC50 20 565 mg/l	Marine water	Algae - Ulva pertusa	
	Acute LC50 6000000 µg/l	Fresh water	Crustaceans - Gammarus pulex	
	Acute LC50 10000 µg/l	Fresh water	Daphnia - Daphnia magna	
	Acute LC50 5800 ppm	Fresh water	Fish - Poecilia reticulata	
	Chronic NOEC 4.95 mg/l	Marine water	Algae - Ulva pertusa	
	Chronic NOEC 0.016 ml/L	Fresh water	Crustaceans - Daphnidae	
	Chronic NOEC 0.1 ml/L	Fresh water	Daphnia - Daphnia magna - Neonate	
	Chronic NOEC 5 µg/l	Marine water	Fish - Gasterosteus aculeatus - Larvae	
				96 hours
				48 hours
			48 hours	
			96 hours	
			96 hours	
			21 days	
			21 days	
			42 days	

Persistence and degradability

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Section 12. Ecological information

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
acetone	-0.23	-	low

Mobility in soil

Soil/water partition coefficient (K_{ow}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Acetone (I); 2-Propanone (I)	67-64-1	Listed	U002

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1090	UN1090	UN1090	UN1090	UN1090
UN proper shipping name	ACETONE	ACETONE	ACETONE	ACETONE (ACETONE SOLUTIONS)	ACETONE
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	II	II	-	II	II
Environmental hazards	No.	No.	No.	No.	No.

Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.

Additional information

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Acetone

Section 14. Transport information

DOT Classification : **Reportable quantity** 5000 lbs / 2270 kg (758.12 gal / 2869.8 L). Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.
Limited quantity Yes.
Quantity limitation Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3).
Explosive Limit and Limited Quantity Index 1
Passenger Carrying Ship Index Forbidden
Passenger Carrying Road or Rail Index 5
Quantity limitation Passenger and Cargo Aircraft: 5 L. Cargo Aircraft Only: 60 L. Limited Quantities - Passenger Aircraft: 1 L.

IATA

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined

Clean Air Act Section 112 : Not listed

(b) Hazardous Air Pollutants (HAPs)

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, F)

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SDS- Acetone

Acetone

Section 15. Regulatory information

Not listed.

[Stockholm Convention on Persistent Organic Pollutants](#)

Not listed.

[Rotterdam Convention on Prior Informed Consent \(PIC\)](#)

Not listed.

[UNECE Aarhus Protocol on POPs and Heavy Metals](#)

Not listed.

Inventory list

Australia	: This material is listed or exempted.
Canada	: This material is listed or exempted.
China	: This material is listed or exempted.
Europe	: This material is listed or exempted.
Japan	: Japan inventory (ENCS) : This material is listed or exempted. Japan inventory (ISHL) : This material is listed or exempted.
Malaysia	: This material is listed or exempted.
New Zealand	: This material is listed or exempted.
Philippines	: This material is listed or exempted.
Republic of Korea	: This material is listed or exempted.
Taiwan	: This material is listed or exempted.
Thailand	: Not determined.
Turkey	: This material is listed or exempted.
United States	: This material is listed or exempted.
Viet Nam	: Not determined.

Section 16. Other information

[Hazardous Material Information System \(U.S.A.\)](#)

Health	7	1
Flammability	3	
Physical hazards	0	

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

[National Fire Protection Association \(U.S.A.\)](#)



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Acetone

Section 16. Other information

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 2	Expert judgment
EYE IRRITATION - Category 2A	Expert judgment
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3	Expert judgment

History

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Key to abbreviations

ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

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.

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Exemptions

- Non-hazardous materials
- Household Consumer Products
 - Based on exposure



Communication Methods: Written Program

- Must include
 - Labeling requirements
 - SDS program
 - Guidelines for employee training

- Also Recommended
 - Roles and responsibilities
 - Contractor/Concessionaire integration
 - Documentation and storage
 - Chemical Inventory



Communication Methods: Written Program

- HazCom plans should be updated:
 - Each time regulations change
 - Each time staff or roles change
 - Each time the training program changes
 - Each time new chemicals are introduced

- The NCA Environmental Program Manager maintains a template that parks can use to create their written program

[Park name]
Park address line 1
Park address line 2
Phone: (888.000.0000)
Fax: (888.000.0000)



[Insert Park Name]

Hazard Communication Program



Plan created: [Insert date]
Plan Revised: [Insert revision date if applicable]
Superintendent signature of approval: _____ Date: _____



Updating the Template

- The template is mostly pre-written, but includes spaces for park staff to include information specific to their park.
 - Park Policy/Program Availability
 - Roles and Responsibilities
 - Secondary Container Labeling
 - Chemicals in pipes
 - Table 3: Employee Training
 - Chemical Inventory



Communication Methods: Chemical Inventory

- Often included as an appendix to the written program, but may also be the Table of Contents in a complete SDS binder

- Lists every chemical at the Park
 - Same product identifier as the SDS
 - Container size and type
 - Quantity
 - Location



Communication Methods: Training

- A HazCom Program is only as good as the training that goes with it
- Documentation is key!



Communication Methods: Training

- General and specific hazards
- Methods to protect employees:
 - Use of PPE
 - Storage/handling practices
 - Emergency procedures
- Details of the Program
 - Location
 - Labeling system
 - SDS



Communication Methods: Training

- Training should be held
 - At initial assignment
 - When roles change
 - When hazards change
 - When the program changes
 - Annually (recommended)



Responsibilities

- Program Coordinator
 - Write and maintain the written program
 - Establish training program and keep documentation
 - Keep chemical inventory updated
 - Maintain old MSDSs/SDSs for 30 years

- Supervisor
 - Informs coordinator and H&S manager of job requirements and hazard exposure of their staff
 - Enforces compliance

- Employee
 - Use proper PPE as necessary
 - Know location of emergency equipment
 - Inform supervisor of potential hazardous situations/events



Almost Done!

- Discuss the components of the HazCom Program at your Park
- Document your training



Thank You!

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