PURDUE UNIVERSITY

HAZARD COMMUNICATION PROGRAM

Department of Physics and Astronomy

Welcome to the Hazard Communication Program training module for the Department of Physics and Astronomy. This training program consists of five sections and will take you approximately 30 minutes to complete.

The Purpose of this training is:

- To provide employees with the knowledge to understand the hazards of the chemicals they work with
- To provide a safer and healthier workplace for all employees
- To ensure regulatory compliance with the State and Federal Right to Know Law 29 CFR 1910.1200

All employees are covered by the Hazard Communication Program

RIGHTS AND RESPONSIBILITIES

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Safety is the responsibility of everyone, but there are specific responsibilities at the employee, department and university level.

RESPONSIBILITIES - EMPLOYEE

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EMPLOYEE

- To use the available information and stay informed about hazards in the work area
- To use the safety techniques and hygiene practices as a routine part of daily activities
- To participate in the appropriate training sessions

RESPONSIBILITIES - DEPARTMENT

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The department provides Designated Trained Individuals (DTIs) whose duties include:

- Ensuring chemical inventories and employee exposure records are maintained
- Ensuring Safety Data Sheets (SDSs) for work areas are up to date
- Conducting employee training and keeping records of training
- Ensuring safe and healthful work conditions are maintained
- Contacting REM with questions

Department DTIs

- Boshra Afra, PHYS 217D, 494-3001, afra@purdue.edu
- Keith Schmitter, PHYS 001, 494-5531, schmittk@purdue.edu
- Aaron Mull, PHYS 032, 494-5533, acmull@purdue.edu
- Ken Mueller, PHYS B172, 494-5382, kam@purdue.edu

RESPONSIBILITIES - PURDUE

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Purdue Radiological and Environmental Management (REM) www.purdue.edu/rem

- Trains Designated Trained Individuals (DTIs)
- Conducts Work Area Audits
- Assists with MSDS (or SDS) acquisition
- Program Oversight

EMPLOYEE RIGHTS

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1. To be informed about the known health and physical hazards in the work area
2. To be trained to use proper safety techniques and hygiene practices
3. To inform the DTI about accidents or hazardous situations in the work area without fear of repercussions from your supervisor or the university
4. To file a formal complaint with IOSHA

   Indiana Department of Labor
   Indiana State Government Center South
   Indianapolis, IN 46204-2287
   (317) 232-2655
   www.in.gov/dol/2733.htm

HAZARD COMMUNICATION MANUAL

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The department is required to maintain a hard copy of its Hazard Communication Program. You can find copies in rooms S153, 144, 162, 217D, and 370.

PURDUE UNIVERSITY

SECTION 1

Building Emergency Plan

PHYSICS BUILDING EMERGENCY PLAN

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The department has employees in 3 buildings on campus:

1. Physics Building (PHYS)
2. Birck Nanotechnology Center (BRK)
3. Wetherill Building (WTHR)

Copies of each Building Emergency Plan can be found at http://www.physics.purdue.edu/resources/safety.html.

This training module will address only the PHYS Building Emergency Plan (BEP).

INTRODUCTION

PURDUE UNIVERSITY

The BEP is designed to provide students, faculty, staff and visitors basic warning notification system, shelter-in-place and building evacuation emergency information for natural and human-caused incidents.

You should also be familiar with the Purdue Emergency Procedures Guide at http://www.purdue.edu/emergency_preparedness/.

If you have any questions about the BEP, contact the PHYS building deputy (Keith Schmitter, schmittk@purdue.edu) or the Campus Emergency Preparedness and Planning Office at (765) 494-0446.

RESPONSE TO ALARMS

PURDUE UNIVERSITY

REMEMBER, WHEN YOU HEAR:

- ALL HAZARDS SIRENS immediately seek shelter (Shelter-In-Place) in a safe location within closest facility
- FIRE ALARMS immediately evacuate the building and move to a safe location

In both cases, you should seek additional clarifying information by all possible means…Purdue Homepage, TV, radio, email, etc.

PRIME LAB ALARMS

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If you work in the PRIME Lab area, you may also hear other alarms.

- PRIME Lab RADIATION ALARMS (S182 and S171): Quickly move out of the immediate area of the sensor that is in alarm condition. Report this condition to the accelerator operator.
- PRIME Lab OXYGEN DEFICIENCY ALARMS (S182): These alarms have an audible warning plus a flashing blue light. In the event of an alarm quickly move out of the S-182 area and evacuate the rest of the sub-basement level. A member of the engineering and operations staff will check the validity of the alarm with a portable oxygen monitor and other means. If the alarm is found to be valid, the remainder of PRIME Lab must be evacuated, and evacuation signs should be placed on both PRIME Lab entrances. All evacuated personnel should meet in the hallway near room 1 in the Physics building.
- PRIME Lab SUMP PUMP ALARM Contact Physical Facilities immediately. No evacuation is required.

EMERGENCY EVACUATION PROCEDURES

PURDUE UNIVERSITY

When a fire alarm sounds, evacuate the building **promptly** using the nearest designated exit routes.

Take keys, coats, ID, or any other critical personal items with you.

Close doors as rooms are vacated.

Assist those who need help, but do not put yourself at risk attempting to rescue trapped or injured individuals. Note their location and inform emergency responders.

Use stairs only. **NO ELEVATORS**.

Go to the Emergency Assembly Area.

Follow instructions of the building deputy or fire and police personnel.

DO NOT re-enter the building until authorized to do so by fire or police personnel.

You may briefly delay evacuating if you need time to shut down electrical and other equipment, especially any that involves flame, explosive vapors, or hazardous materials.

EMERGENCY ASSEMBLY AREA

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Primary location: In order not to interfere with emergency personnel, proceed to the west portion of the Engineering Mall and assemble in the area between Hovde Hall, Schleman Hall and the fountain. **DO NOT assemble between the building and Northwestern Avenue or between the building and Forney Hall, Hampton Hall, Armstrong Hall.**

Secondary location (in case of inclement weather): MSEE Atrium, ground floor.

SHELTER IN PLACE PROCEDURES

PURDUE UNIVERSITY

You may be required to Shelter In Place for events such as:

- Tornado warning or other severe weather events.
- Hazardous materials release.
- Active shooter, building intruder, or civil disturbance.
- As directed by police personnel for any other situation that requires you to find protection within a building.

Purdue ALERT, the University's emergency warning system will be used to announce the "shelter in place" situation.

SHELTER IN PLACE – SEVERE WEATHER

PURDUE UNIVERSITY

- Proceed to the basement or subbasement.
- Position yourself in the safest portion of the area away from glass.
- Be prepared to kneel facing a wall and cover your head.
- Any occupant who encounters a student or visitor should direct them to take appropriate actions.
- Assist physically disabled individuals as possible.
- Try to obtain additional clarifying information by all possible means (Purdue homepage, radio, email, etc.).

SHELTER IN PLACE – HAZARDOUS MATERIALS

PURDUE UNIVERSITY

If you are “sheltering” due to a hazardous materials (HAZMAT) accidental release of toxic chemicals the air quality may be threatened and sheltering in place keeps you inside an area offering more protection. For a HAZMAT situation you should, if possible, take the following actions:

- Close all windows and doors.
- Move to the shelter in place location.
- Do not go outside or attempt to drive unless you are specifically instructed to evacuate.
- Do not use elevators as they may pump air into or out of the building.
- Any occupant who encounters a student or visitor should direct them to take appropriate actions.
- Any occupant that encounters a physically disabled individual should assist them if possible.
- Try and obtain additional clarifying information by all possible means (e.g. Purdue Homepage, TV, radio, email, etc.)
- (PRIME Lab Only) Do NOT operate the PRIME Lab emergency purge system since this will draw additional outside air.

SHELTER IN PLACE – ACTIVE SHOOTER

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If you are sheltering due to an active shooter, building intruder or a civil disturbance on campus, immediately go to a safe location (normally the police department or the All Hazards Outdoors Sirens will be the notification method).

1) RUN	2) HIDE	3) FIGHT
If there is an accessible escape path, attempt to evacuate the premises	If evacuation is not possible, find a place to hide where the active shooter is less likely to find you.	As a last resort, and only when your life is in imminent danger, attempt to disrupt and/or incapacitate the active shooter
• Have an escape route in mind	• Your hiding place should be out of the shooter's view and provide protection if shots are fired in your direction.	• Act as aggressively as possible against him/her
• Evacuate regardless or whether others agree to follow	• Lock and/or blockade the door.	• Throw items and improvise weapons
• Leave belongings behind	• Silence your cell phone and other noise sources (radio, tv, computer).	• Yell
• Help others to escape if possible	• Hide behind large items	• Commit to your actions
• Warn others about entering the area	• Remain quiet	
• Keep hands visible		
• Follow all instructions of any police		
• Do not attempt to moved wounded people		
• Call 911 when safe		

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SECTION 2

Hazardous Characteristics and Effects of Chemicals

CHEMICAL HEALTH AND PHYSICAL HAZARDS

PURDUE UNIVERSITY

Almost all employee at Purdue will encounter chemicals while performing their jobs

A chemical is considered hazardous if it possesses one or more health or physical hazardous characteristics

Chemical health effects can be of two types:

- acute health effect - the body reacts immediately to the exposure (example: ammonia vapor exposure causes immediate irritation to the eyes)
- chronic health effects - the body reacts months or years following the exposure (example: methylene chloride may cause liver disease or cancer after many years of exposure)

Types of Chemical Hazards	
Health Hazards	**Physical Hazards**
Acutely Toxic	Explosives
Corrosive/Irritant	Reactive – self, air, or water
Sensitizer	Flammable
Toxic – specific organs	Oxidizers
Carcinogenic	Cryogenic liquids
Reproductive toxin	Gases under pressure
Asphyxiant	Corrosive to metals
Aspiration hazard	

ROUTES OF ENTRY

PURDUE UNIVERSITY

Chemicals must gain entry into the body to cause harm

There are four potential routes of exposure to a chemical

Most common

1. Inhalation – taken into the body through the lungs
2. Absorption – taken into the body through the skin

Less common

3. Ingestion – taken into the body orally
4. Injection – taken into the body through broken skin

We can protect ourselves from most chemical exposures by handling chemicals in well ventilated areas and wearing personal protective equipment (PPE).

SYMPTOMS OF OVER-EXPOSURE

PURDUE UNIVERSITY

Symptoms of chemical exposure vary by chemical but common signs on chemical over-exposure include:

- Dizziness or light-headedness
- Difficulty breathing
- Coughing or wheezing
- Teary eyes/runny nose
- Nausea
- Skin reddening, irritation or blistering

If you develop symptoms while working with a chemical:

- **Stop work**
- **Place the chemical in storage and leave the area**
- **Inform your supervisor and seek medical assistance if necessary**
- **Follow up with REM**

CHEMICAL EXPOSURE ASSESSMENT

PURDUE UNIVERSITY

Personnel from REM routinely inspect operations handling or storing hazardous chemicals.

Estimates of employee exposures are made from these observations to minimize exposure.

Formal air monitoring has been conducted in many locations where hazardous chemicals are routinely handled.

REM will evaluate exposures of employees who

- Suspect and report that they have been overexposed to a toxic chemical
- Are displaying symptoms of overexposure

Concerns about chemical exposures should be brought to the attention of REM and your supervisor immediately.

MEDICAL CONSULTATION

PURDUE UNIVERSITY

Medical attention and follow-up examinations are provided to individuals who:

- develop signs or symptoms of exposure to a toxic chemical
- were exposed to a toxic chemical during a chemical incident

Individuals with serious or life-threatening injuries should immediately dial 911 for assistance

Emergency treatment is provided at:

- Franciscan St. Elizabeth Health
- IU Health Arnett Hospital Emergency Room

Non-emergency treatment is available through:

- Regional Occupational Care Center (ROCC)
- IU Health Arnett Occupational Services

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SECTION 3

Chemical Container Labeling and Safety Data Sheets

INTRODUCTION

PURDUE UNIVERSITY

Chemical hazard information can be found on the Safety Data Sheet (SDS) and the product label.

Before handling a hazardous chemical you must know the appropriate safeguards to follow including how to:

- Properly store and handle the chemical
- Respond to a spill or release
- Dispose of the chemical

Your supervisor, lab manager, or other responsible individual will review these procedures with you.

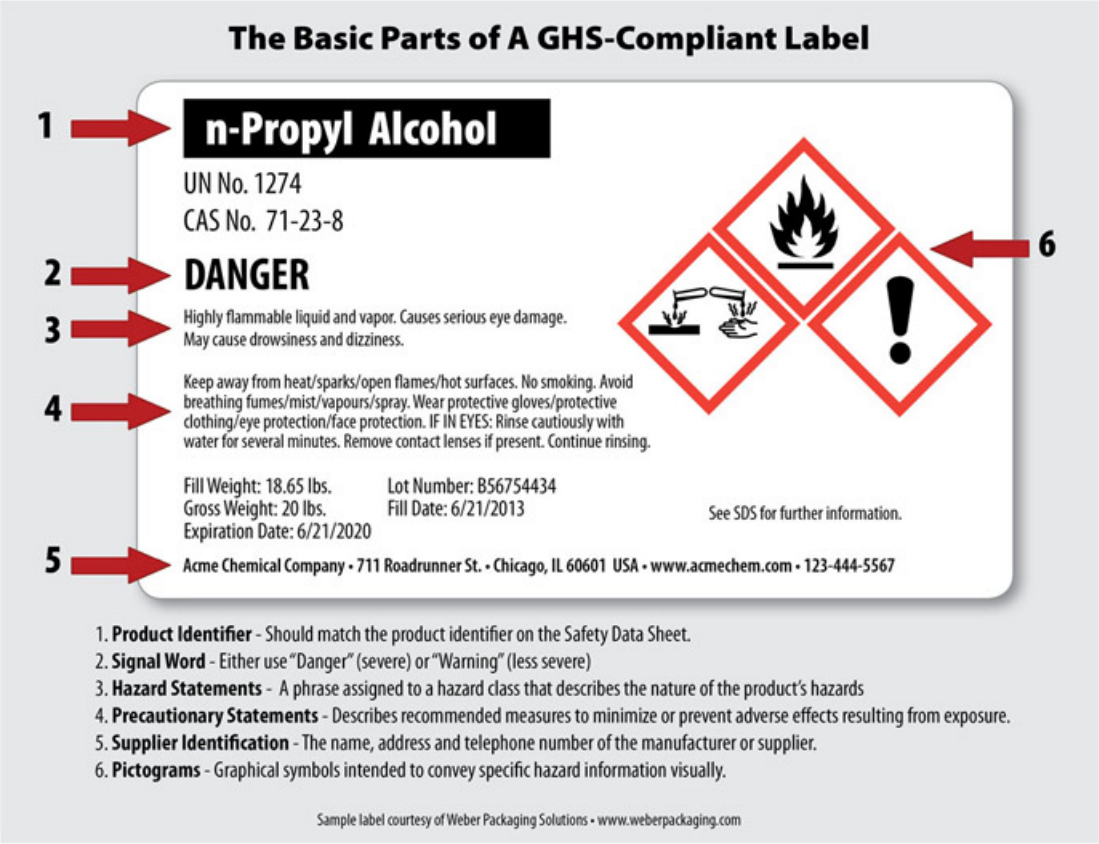
Especially important is knowing the appropriate Personal Protective Equipment (PPE) to wear and any special ventilation requirements necessary while handling the chemical.

CONTAINER LABELS AND SDS'S

PURDUE UNIVERSITY

Beginning in 2015, OSHA regulations required safe handling information to be printed on all hazardous chemical container labels.

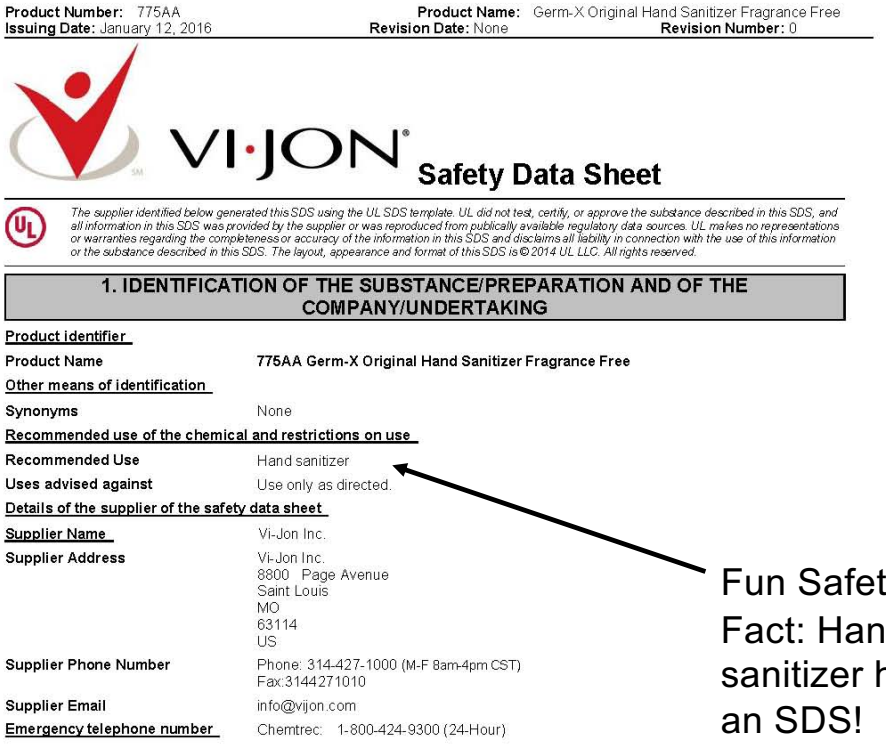
This is required by the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).



CONTAINER LABELS AND SDS'S

PURDUE UNIVERSITY

In addition to the label, the SDS is your best source for information about the chemical's hazardous properties, appropriate handling and storage practices and how to respond to exposure or emergency situations.



Product Number: 775AA **Product Name:** Germ-X Original Hand Sanitizer Fragrance Free
Issuing Date: January 12, 2016 **Revision Date:** None **Revision Number:** 0

VI·JON® **Safety Data Sheet**

The supplier identified below generated this SDS using the UL SDS template. UL did not test, certify, or approve the substance described in this SDS, and all information in this SDS was provided by the supplier or was reproduced from publically available regulatory data sources. UL makes no representations or warranties regarding the completeness or accuracy of the information in this SDS and disclaims all liability in connection with the use of this information or the substance described in this SDS. The layout, appearance and format of this SDS is © 2014 UL LLC. All rights reserved.

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

Product identifier

Product Name	**775AA Germ-X Original Hand Sanitizer Fragrance Free**
Other means of identification	
Synonyms	None
Recommended use of the chemical and restrictions on use	
Recommended Use	Hand sanitizer
Uses advised against	Use only as directed.
Details of the supplier of the safety data sheet	
Supplier Name	Vi-Jon Inc.
Supplier Address	Vi-Jon Inc. 8800 Page Avenue Saint Louis MO 63114 US
Supplier Phone Number	Phone: 314-427-1000 (M-F 8am-4pm CST) Fax:3144271010
Supplier Email	info@vijon.com
Emergency telephone number	Chemtrec: 1-800-424-9300 (24-Hour)

Fun Safety Fact: Hand sanitizer has an SDS!

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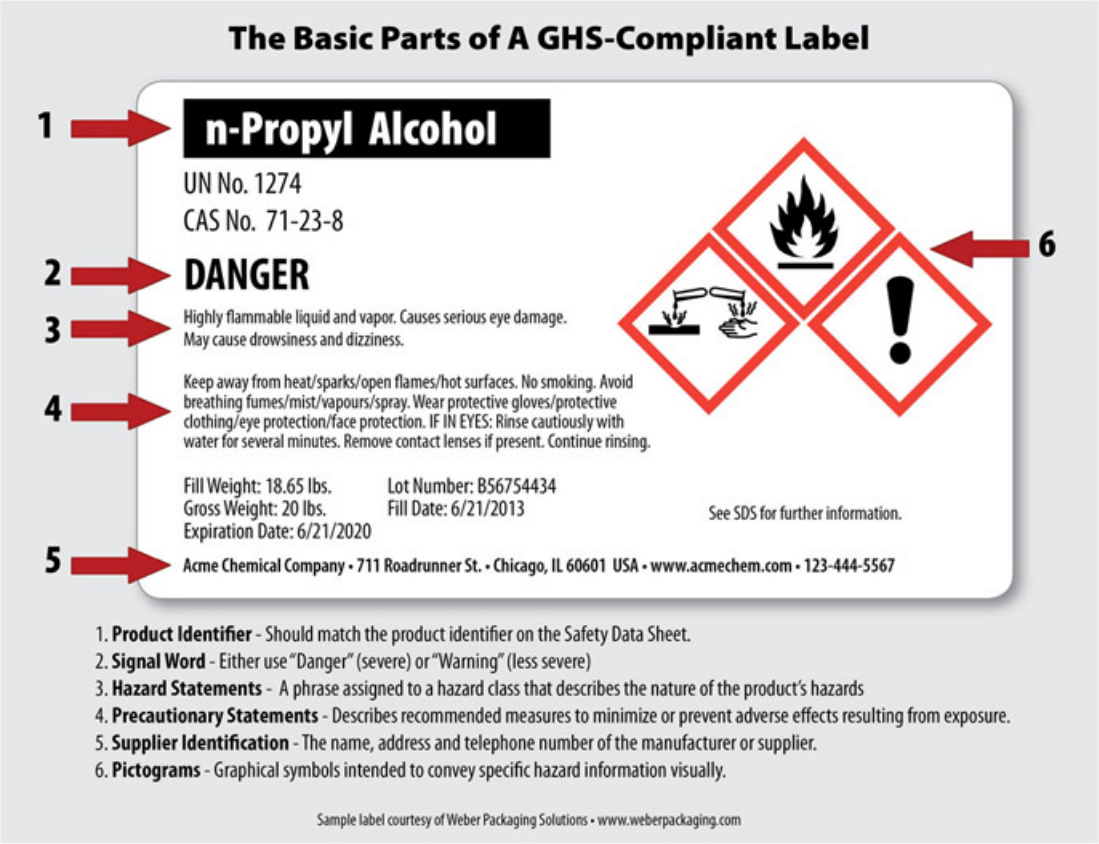
For any given chemical, every manufacturer's or distributor's label will contain exactly the same information

1. Product identifier
2. Signal word
3. Hazard statements
4. Precautionary statements
5. Supplier identification
6. Pictograms



LABEL CONTENT - PICTOGRAMS

PURDUE UNIVERSITY

A pictogram describes a chemical's hazardous characteristic with an image

Image courtesy of ShutterStock

LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Health hazard

This pictogram is reserved for chemical containers that cause the most severe adverse health effects to specific body organs or systems.

It includes the following categories of health hazards:

Carcinogen	May cause cancer
Mutagenicity	May cause mutations in future generations
Reproductive Toxicity	May interfere with sexual function, fertility, and development of offspring
Respiratory Sensitizer	May cause allergy or asthma symptoms or breathing difficulties
Target Organ Toxicity	May cause damage to specific organs but is not lethal
Aspiration Toxicity	May cause chemical pneumonia or pulmonary injury or death

LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Flame

This pictogram is placed on chemical containers that may start or contribute to a fire. It includes the following categories of materials:

Flammables	easily ignited, burns quickly
Pyrophorics	spontaneously igniting in air or water reactive
Self-Heating	spontaneously heats in air but not pyrophoric
Emits Flammable Gas	reacts with water to emit a flammable gas
Self Reactives	liable to undergo strongly exothermic decomposition but not explosive
Organic Peroxides	derivatives of hydrogen peroxide that undergo exothermic decomposition but not explosive

LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Exclamation mark

This pictogram indicates materials that are health hazards that can harm the body in specific ways. Items in this category are much less toxic than items that use the skull and crossbones pictogram. It includes the following categories of materials:

Irritant (skin & eyes)	may cause reversible inflammation or other discomfort to the body
Skin Sensitizer	may induce an allergic response following skin contact
Acute Toxicity	adverse effects occurring following short term exposure to a substance
Narcotic Effects	central nervous system depression (drowsiness, loss of reflexes or coordination)
Respiratory Tract Irritant	cough, pain, choking, and breathing difficulties
Hazardous to Ozone Layer	not mandatory

LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Gas cylinder

This pictogram is placed on containers of gases under at least 29 pounds per square inch of pressure

LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Corrosion

This pictogram indicates materials that are corrosive. It includes the following categories of materials:

Skin Corrosion / Burns	may cause irreversible damage to the skin
Eye Damage	may cause tissue damage in the eye that is not fully reversible
Corrosive to Metals	material which by chemical action will damage or destroy metals

LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Exploding Bomb

This pictogram is placed on chemical containers of explosive chemicals. It includes the following categories of materials:

Explosives	Materials capable of chemical reactions producing gases that damage surroundings
Self-Reactives	unstable substances liable to undergo strongly exothermic reactions
Organic Peroxides	derivatives of hydrogen peroxide that may undergo exothermic decomposition

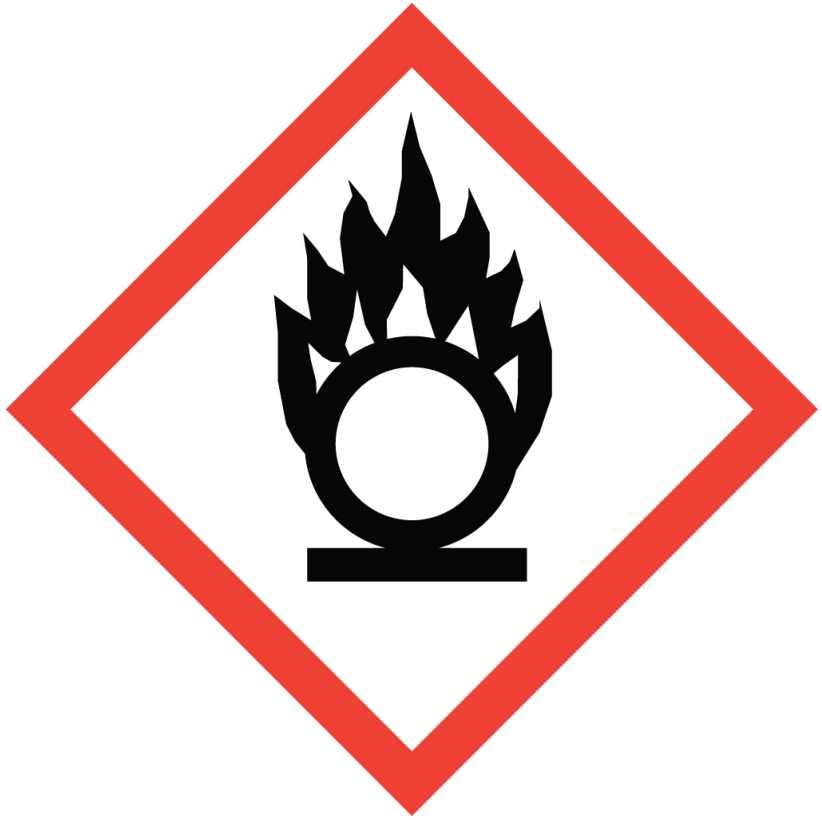
LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Flame over circle

This pictogram is placed on containers of chemicals that are oxidizers (chemicals that when mixed or in contact with combustible materials may cause a fire or explosion, or intensify a fire).

These materials may be solid, liquid, or gas.



LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Skull and crossbones

This pictogram is placed on chemical containers that are extremely toxic (fatal) to moderately acutely toxic.

It includes materials in which adverse effects occur following short term exposure to the substance. These materials are more toxic that the items given the Exclamation Mark pictogram.

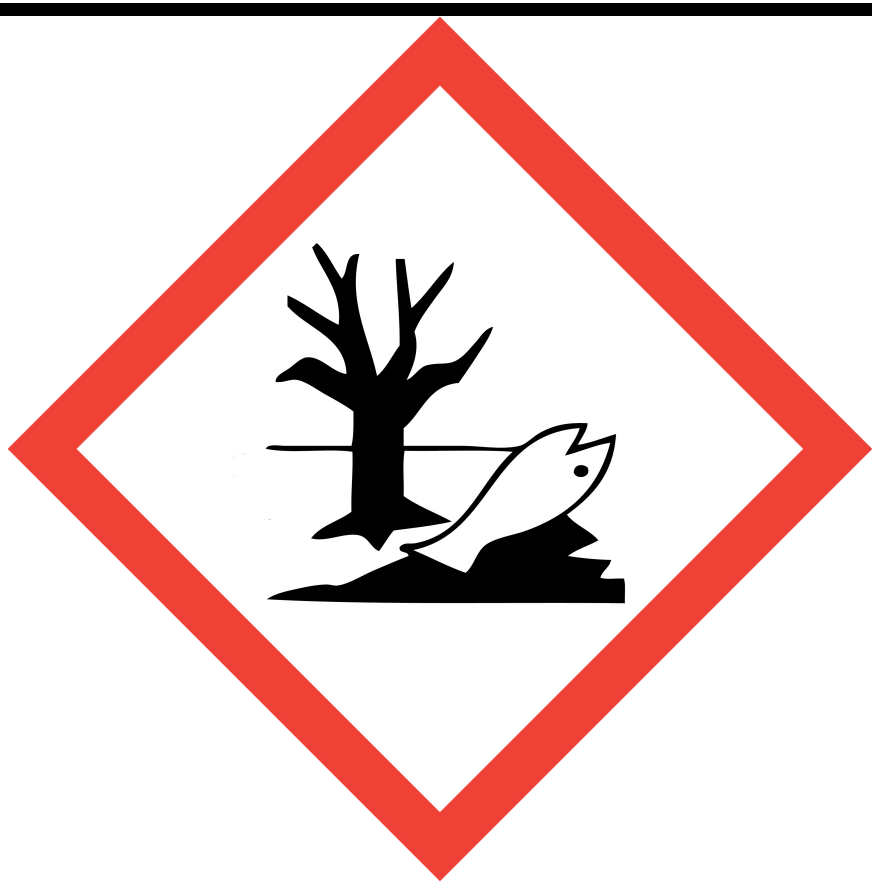
LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Environmental

This pictogram is placed on containers of chemicals that represent a hazard to the aquatic environment and does not convey any workplace related hazard information.

It is a non-mandatory classification since OSHA does not have regulatory authority to address environmental concerns. It is included to support other regulatory agencies like the EPA.



LABEL CONTENTS - PICTOGRAMS

PURDUE UNIVERSITY

Most chemical hazards are represented by pictograms on the new labels, but not all.

These hazards include:

1. chemicals on the lowest end of the hazard spectrum in a hazard class
2. an OSHA defined hazard of which there are two - combustible dusts and an asphyxiant

LABEL CONTENTS – SIGNAL WORDS

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The signal word is a label element that conveys the severity of the hazard when handling the chemical.

There are two signal words used on chemical labels:

Danger - used for the more severe hazards

Warning - used for less severe hazards

LABEL CONTENTS – THE HAZARD STATEMENT

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A Globally Harmonized System (GHS) Label contains one or more hazard statements to convey information about the chemical's hazardous characteristics and degree of risk.

A hazard statement has been assigned to each of OSHA's chemical hazard categories and must appear on the label

Examples of Hazard Statements

Statement associated with the MOST hazardous chemical in a category

Extremely flammable liquid and vapor

Fatal if swallowed

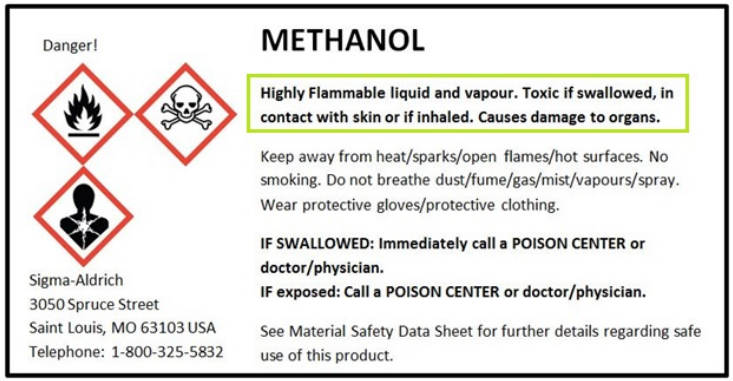
Causes severe skin burns and eye damage

Statement associated with the LEAST hazardous chemical in a category

Combustible liquid

Harmful if swallowed

Cause eye irritation



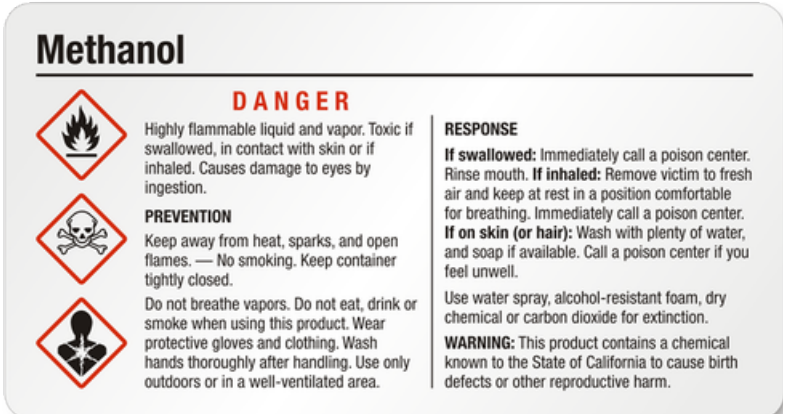
LABEL CONTENTS – PRECAUTIONARY STATEMENTS

PURDUE UNIVERSITY

The second major type of information found on labels is precautionary or safe handling information

Precautionary statements provide four types of information:

- how to avoid the hazard when handling the chemical
- how to properly store the chemical
- what to do if the hazard is not avoided
- how to dispose of the chemical



Each chemical hazard category defined by OSHA has been assigned specific precautionary statements and these will appear on the label

LABEL CONTENTS – PRECAUTIONARY STATEMENTS

PURDUE UNIVERSITY

Some precautionary statement are conditional or depend on some condition in the workplace

An example of a conditional statement is:

"If inadequate ventilation, wear respiratory protection"

If you find conditional statements on labels make sure you understand them before proceeding.

If you are unsure how to respond to a conditional statement, consult the chemical's safety data sheet, or ask your supervisior, REM, or other knowledgeable person.

LABEL CONTENTS – PRECAUTIONARY STATEMENTS

PURDUE UNIVERSITY

Other precautionary statements will refer you to the safety data sheet, SDS, for information.

Examples found on labels of chemicals with cancer causing potential are:

- “Obtain special instructions before use”
- “Do not handle until all safety precautions have been read and understood”

Again, consult the chemical’s safety data sheet or ask your supervisor, REM, or other knowledgeable person before handling this type of chemical.

LABEL CONTENTS – ADDITIONAL ISSUES

PURDUE UNIVERSITY

Most chemicals belong to more than one hazard category and the label will have multiple pictograms, hazard statements and precautionary statements

Labels will have one signal word which will represent the most hazardous characteristic associated with the chemical

If acute toxicity of the chemical is not known for the chemical, this will be stated on the label

LABEL CONTENTS – SECONDARY CONTAINER LABELING

PURDUE UNIVERSITY

If you transfer a hazardous chemical from a stock container to a secondary container, you must transfer some basic information to the new container.

This includes:

- The name of the chemical or chemical product
- The hazardous properties associated with the chemical

The ONLY EXCEPTION to this requirement is if the chemical will be immediately used by the individual making the transfer.

REM will provide blank secondary container labels on request.

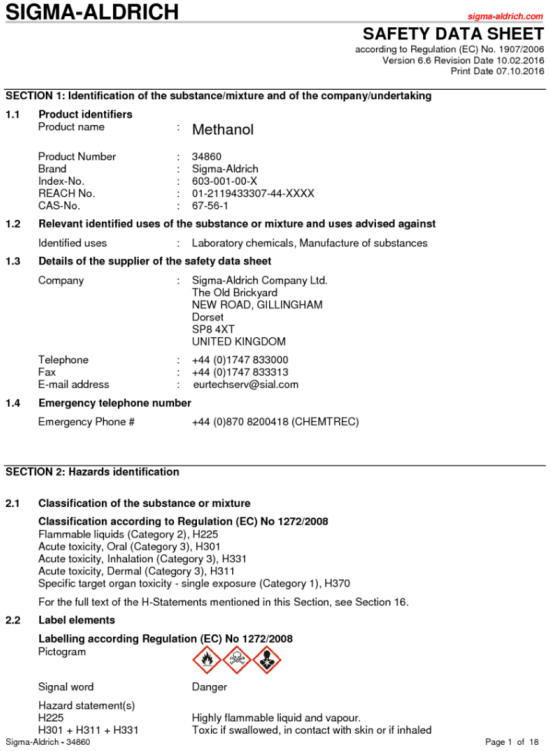
SAFETY DATA SHEET CONTENTS

PURDUE UNIVERSITY

Safety Data Sheets (SDSs) are multi-page documents that contain a lot more health and safety information about a chemical than the label. These replace the old Material Data Safety Sheets (MSDS) that may still be present in several work areas.

You can locate the safety data sheet for a chemical by matching up the name on the label with the name on the safety data sheet.

The health and safety information placed in safety data sheets, as well as the layout of this information, is now specified by federal regulation and as of 2015 will be consistent across all manufacturers and distributors.



SIGMA-ALDRICH sigma-aldrich.com

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006
Version 6.6 Revision Date 10.02.2016
Print Date 07.10.2016

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Methanol

Product Number : 34860
Brand : Sigma-Aldrich
Index-No. : 603-001-00-X
REACH No. : 01-2119433307-44-XXXX
CAS-No. : 67-56-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Company Ltd.
The Old Brickyard
NEW ROAD, GILLINGHAM
Dorset
SP8 4XT
UNITED KINGDOM

Telephone : +44 (0)1747 833000
Fax : +44 (0)1747 833313
E-mail address : eurtechserv@sial.com

1.4 Emergency telephone number

Emergency Phone # +44 (0)870 8200418 (CHEMTREC)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Flammable liquids (Category 2), H225
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 3), H331
Acute toxicity, Dermal (Category 3), H311
Specific target organ toxicity - single exposure (Category 1), H370

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008
Pictogram

Signal word Danger

Hazard statement(s)
H225 Highly flammable liquid and vapour.
H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled

Sigma-Aldrich - 34860 Page 1 of 18

SDS SECTIONS

PURDUE UNIVERSITY

Safety data sheets have sixteen sections with sections 1 through 11 providing health and safety information particularly useful to handlers of chemicals. This training will take you through each section of a SDS for Methanol.

New Safety Data Sheet (SDS) Format

- Section 1, Identification
- Section 2, Hazard(s) Identification
- Section 3, Composition/Information on Ingredients
- Section 4, First Aid Measures
- Section 5, Fire Fighting Measures
- Section 6, Accidental Release Measures
- Section 7, Handling and Storage
- Section 8, Exposure Controls/ Personal Protection
- Section 9, Physical and Chemical Properties
- Section 10. Stability and Reactivity
- Section 11, Toxicological Information
- Section 12, Ecological Information
- Section 13, Disposal Considerations
- Section 14. Transport Information
- Section 15, Regulatory Information
- Section 16, Other Information

SDS SECTION 1 - IDENTIFICATION

PURDUE UNIVERSITY

SAFETY DATA SHEET

Airgas

Methanol (Methyl Alcohol)

Section 1. Identification

GHS product identifier	:	Methanol (Methyl Alcohol)
Chemical name	:	methanol
Other means of identification	:	Methyl alcohol
Product use	:	Synthetic/Analytical chemistry.
Synonym	:	Methyl alcohol
SDS #	:	001065
Supplier's details	:	Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
Emergency telephone number (with hours of operation)	:	1-866-734-3438

Remember, the name of the label will always match the name on the SDS.

SDS SECTION 2 – HAZARDS IDENTIFICATION

PURDUE UNIVERSITY

Section 2. Hazards identification

OSHA/HCS 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
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (respiratory tract) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
May displace oxygen and cause rapid suffocation.
Corrosive to the respiratory tract.

The information in Section 2 is exactly as the same as the information placed on the label.

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, sparks, open flames and hot surfaces. - 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.

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position 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.

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.

SDS SECTION 3 – COMPOSITION

PURDUE UNIVERSITY

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : methanol

Other means of identification : Methyl alcohol

If a substance is not listed because a trade secret is claimed, it will be noted.

CAS number/other identifiers

CAS number : 67-56-1

Product code : 001065

Ingredient name	%	CAS number
methanol	100	67-56-1

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.

SDS SECTION 4 – FIRST AID

PURDUE UNIVERSITY

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 if irritation occurs.

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 adverse health effects persist or are severe. 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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : May cause respiratory irritation.

Skin contact : No known significant effects or critical hazards.

Methanol (Methyl Alcohol)

Section 4. First aid measures

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

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.

This section describes the initial care that should be given by untrained responders.

SDS SECTION 5 – FIRE-FIGHTING MEASURES

PURDUE UNIVERSITY

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	:	Use dry chemical, CO_2, water spray (fog) or foam.
Unsuitable extinguishing media	:	Do not use water jet.
Specific hazards arising from the chemical	:	Highly flammable liquid and vapor. 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. Runoff to sewer may create fire or explosion hazard.
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.

SDS SECTION 6 – ACCIDENTAL RELEASE

PURDUE UNIVERSITY

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 flares, 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 specialised 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.

Recommendations on the appropriate response to spills, leaks, or releases, including containment and cleanup practices that prevent or minimize exposure to people and damage to property or the environment. It may also include recommendations that distinguish between responses for large and small spills where the spill volume has a significant impact on the hazard.

SDS SECTION 7 - HANDLING

PURDUE UNIVERSITY

Section 7. Handling and storage

Precautions for safe handling

Protective measures	:	Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. 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. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
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. Store locked up. Eliminate all ignition sources. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

SDS SECTION 8 – EXPOSURE CONTROL

PURDUE UNIVERSITY

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
methanol	**ACGIH TLV (United States, 3/2012).** **Absorbed through skin.** STEL: 328 mg/m³ 15 minutes. STEL: 250 ppm 15 minutes. TWA: 262 mg/m³ 8 hours. TWA: 200 ppm 8 hours. **NIOSH REL (United States, 1/2013).** **Absorbed through skin.** STEL: 325 mg/m³ 15 minutes. STEL: 250 ppm 15 minutes. TWA: 260 mg/m³ 10 hours. TWA: 200 ppm 10 hours. **OSHA PEL (United States, 6/2010).** TWA: 260 mg/m³ 8 hours. TWA: 200 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** **Absorbed through skin.** STEL: 325 mg/m³ 15 minutes. STEL: 250 ppm 15 minutes. TWA: 260 mg/m³ 8 hours. TWA: 200 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.

Pay attention to the individual protection measures!

Individual protection measures

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: safety glasses with side-shields.

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.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SDS SECTION 9 – PHYSICAL/CHEMICAL PROPERTIES

PURDUE UNIVERSITY

Section 9. Physical and chemical properties

Appearance

Physical state	:	Liquid. [CLEAR, COLORLESS, FLAMMABLE, POISONOUS LIQUID WITH CHARACTERISTIC PUNGENT ODOR]
Color	:	Colorless. Clear.
Molecular weight	:	32.05 g/mole
Molecular formula	:	C-H4-O
Boiling/condensation point	:	64.7°C (148.5°F)
Melting/freezing point	:	-97.8°C (-144°F)
Critical temperature	:	Not available.
Odor	:	Characteristic.
Odor threshold	:	Not available.
pH	:	Not available.
Flash point	:	Closed cup: 9.7°C (49.5°F)
Burning time	:	Not applicable.
Burning rate	:	Not applicable.
Evaporation rate	:	2.1 (butyl acetate = 1)
Flammability (solid, gas)	:	Not available.
Lower and upper explosive (flammable) limits	:	Lower: 6% Upper: 44%
Vapor pressure	:	16.9 kPa (126.963291808 mm Hg) [room temperature]
Vapor density	:	1.1 (Air = 1)
Specific Volume (ft^3/lb)	:	
Gas Density (lb/ft^3)	:	Not available.
Relative density	:	0.79
Solubility	:	Not available.
Solubility in water	:	1000 g/l
Partition coefficient: n-octanol/water	:	-0.77
Auto-ignition temperature	:	455°C (851°F)
Decomposition temperature	:	Not available.
SADT	:	Not available.
Viscosity	:	Dynamic (room temperature): 0.544 to 0.59 mPa·s (0.544 to 0.59 cP)

The physical and chemical properties of a chemical is very helpful in estimating the hazard associated with handling a chemical

SDS SECTION 10 – STABILITY AND REACTIVITY

PURDUE UNIVERSITY

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.
Incompatibility with various substances	:	Extremely reactive or incompatible with the following materials: oxidizing materials.
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.

SDS SECTION 11 - TOXICOLOGY

PURDUE UNIVERSITY

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
methanol	LC50 Inhalation Gas. LC50 Inhalation Gas.	Rat Rat	145000 ppm 64000 ppm	1 hours 4 hours

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
methanol	Eyes - Moderate irritant Eyes - Moderate irritant Skin - Moderate irritant	Rabbit Rabbit Rabbit	- - -	24 hours 100 milligrams 40 milligrams 24 hours 20 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
methanol	Category 3	Not applicable.	Respiratory tract irritation

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 : No known significant effects or critical hazards.
Inhalation : May cause respiratory irritation.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.
Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
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.

Section 11. Toxicological information

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.

Information is provided on the likely routes of exposure, a description of the immediate, and long-term effects of exposure, the symptoms of exposure and numerical measures of acute toxicity. It will also note if the substance has been identified as a known or potential carcinogen or is a reproductive toxin.

SDS SECTION 12 - ECOLOGY

PURDUE UNIVERSITY

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
methanol	-0.77	<10	low

Mobility in soil

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

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

The information found in Sections 12 to 16 is not related to handling the chemical safely

SDS SECTION 13 - DISPOSAL

PURDUE UNIVERSITY

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
Methanol (l); Methyl alcohol (l)	67-56-1	Listed	U154

SDS SECTION 14 - TRANSPORT

PURDUE UNIVERSITY

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1230	UN1230	UN1230	UN1230	UN1230
UN proper shipping name	METHANOL	METHANOL	METHANOL	METHANOL	METHANOL
Transport hazard class(es)	3 	3 	3 	3 (6.1) 	3 (6.1) 
Packing group	II	II	-	II	II
Environment	No.	No.	No.	No.	No.
Additional information	**Reportable quantity** 5000 lbs / 2270 kg [759.08 gal / 2873.4 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. **Packaging instruction** **Passenger aircraft** Quantity limitation: 1 L **Cargo aircraft** Quantity limitation: 60 L **Special provisions** IB2, T7, TP2	**Explosive Limit and Limited Quantity Index** 1 **Passenger Carrying Road or Rail Index** 1 **Special provisions** 43	-	-	**Passenger and Cargo Aircraft**Quantity limitation: 1 L **Cargo Aircraft Only** Quantity limitation: 60 L **Limited Quantities - Passenger Aircraft** Quantity limitation: 1 L

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

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 73/78 and the IBC Code : Not available.

SDS SECTION 15 - REGULATORY

PURDUE UNIVERSITY

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined
United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

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) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
methanol	100	Yes.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	methanol	67-56-1	100
Supplier notification	methanol	67-56-1	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.

New York : This material is listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Section 15. Regulatory information

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
methanol	No.	Yes.	No.	No.

Canada inventory : This material is listed or exempted.

International regulations

International lists : **Australia inventory (AICS)**: This material is listed or exempted.
China inventory (IECSC): This material is listed or exempted.
Japan inventory: This material is listed or exempted.
Korea inventory: This material is listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): This material is listed or exempted.
Philippines inventory (PICCS): This material is listed or exempted.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Canada

WHMIS (Canada) : Class B-2: Flammable liquid
Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

SDS SECTION 16 - OTHER

PURDUE UNIVERSITY

Section 16. Other information

Canada Label requirements : Class B-2: Flammable liquid
Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Hazardous Material Information System (U.S.A.)

Health	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 are not required on SDSs 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 mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

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

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SAFETY DATA SHEET CONTENTS - ADDITIONAL ISSUES

PURDUE UNIVERSITY

Safety data sheets must be completely filled out - none of the required information may be left blank.

When a preparer does not find relevant information for any required element, the safety data sheet must state “no applicable information found.”

CHEMICAL LISTS & SAFETY DATA SHEET ACCESS

PURDUE UNIVERSITY

Safety Data Sheets should be available in your work area, with REM or accessible from a computer.

- A list of the hazardous chemicals you handle as part of your job is maintained in your work area.
- Safety data sheets for these chemicals are available in your work area or from your supervisor.
- The REM office can assist you locate information on the hazards and safe handling practices associated with the specific chemicals.

IF YOU CAN'T FIND AN SDS, ASK.

WORKING WITH HAZARDOUS CHEMICALS

PURDUE UNIVERSITY

Before working with a chemical:

- You must be aware of the chemical hazards associated with it and how to minimize your exposure.
- Perform a hazard assessment to evaluate the potential for exposures and identify appropriate exposure controls. Your supervisor or REM can assist with this assessment.

If you have questions about the proper handling of a hazardous chemical, contact your supervisor or REM.

PURDUE UNIVERSITY

SECTION 4

Controlling Physical and Health Hazards

CONTROLLING PHYSICAL AND HEALTH HAZARDS

PURDUE UNIVERSITY

There are a number of ways that you can safeguard your health and physical safety when using hazardous materials. These measures include:

Method	
Product substitution	Can you use a chemical that does the same job, but is less toxic?
Engineering controls	Know when to work in a fume hood or a glove box.
Personal protective equipment	Masks, eye protection, gloves, aprons, and other protective equipment and clothing are designed to protect you while you work. USE THEM!

CONTROLLING PHYSICAL AND HEALTH HAZARDS

PURDUE UNIVERSITY

There are a number of ways that you can safeguard your health and physical safety when using hazardous materials. These measures include:

Method	
Training and communication	If you don't know how to work with a chemical, ask! Make sure everyone in your work area knows the possible hazards.
Environmental monitoring	REM regularly monitors labs to insure exposure limits are not reached. You should notify REM of any materials used where they are likely to cause high exposure.
Personal monitoring	Be on the lookout for any physical symptoms which would indicate that you or your coworkers have been overexposed to any hazardous chemical. Symptoms, such as skin rashes, dizziness, eye or throat irritations or strong odors, should be reported to your supervisor.

PURDUE UNIVERSITY

SECTION 5

Additional Hazards in the PHYS Building

ADDITIONAL HAZARDS IN PHYS

PURDUE UNIVERSITY

As an employee of the Department of Physics and Astronomy, you may occasionally have reasons to be in areas that have hazards beyond chemical exposure. The most frequent hazards to be aware of are:

- Lasers
- Radiation sources
- Cryogenic liquids
- Machine shops

The following section addresses what you need to know if you are a non-user in an area where these items are found. If you plan to use any of these in your regular duties, you will need to receive training from REM.

SAFETY IN LASER LABS

PURDUE UNIVERSITY

Areas with Class 3B or 4 lasers should have a sign or light on the door warning you that they are present and when they are in use.

- Direct exposure to a Class 3B lasers can result in eye damage.
- Exposure to direct beam or scattered light from a Class 4 laser can result in eye and skin damage.

Use caution when entering these areas and do so only when the laser users are aware of your presence. Laser light is not always visible when in use.

Do not touch any laser equipment unless you have been certified by REM.

SAFETY IN RADIATION AREAS

PURDUE UNIVERSITY

Radiation use areas will be labeled on the door, work area, and storage area.

Use caution when entering these areas and do so only when the users are aware of your presence. As a “non-radiation” worker, your exposure limits are 2% of those of “radiation” workers.

Assume you do not know where radiation sources have been used within the lab.

Do not bring food or drink into radiation areas where a “No eating or drinking” sign is on the outside door. Ingestion of radioactive materials can result in damage at the cellular level.

Do not place personal items on work spaces where radioactive materials are used.

Wash your hands after leaving the area.

CRYOGENIC LIQUIDS

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Many labs in PHYS use cryogenic liquids (having a temperature of −150 °C or lower.) The most commonly encountered cryogens in PHYS are liquid nitrogen, liquid oxygen, liquid argon, and liquid helium.

Cryogens can cause terrible "burns" (death of living tissue caused by the extreme cold) on skin and eyes.

Asphyxiation is a potential hazard in closed areas when nitrogen, argon, and helium are in use. You do not have any warning with these gases. You simply pass out.

Do not handle cryogenics unless you have been trained by the users of the laboratory you are visiting.

SAFETY IN MACHINE SHOPS

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When entering the machine shops in the Physics Building it's important that you follow the following procedures:

Wear safety glasses while in the shop

No loose clothing may be worn in the shop including ties, scarves and loose sleeves. Open-toed shoes, short pants, or skirts are also prohibited.

Do not operate any of the equipment

Do not startle or approach anyone operating equipment. If you must speak with them, wait until they complete their task.

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You have now completed all of the training materials for HAZCOM safety in the department.

Please visit https://purdue.qualtrics.com/jfe/form/SV_1TWTZPO6ZhsMG2h to take the course test. You must pass the test at the 90% level.