	<i>Environmental Health and Safety</i>	Page 1
Subject: Hazard Communication/ Right-to-Know Program		
Number: 10052021		
Effective Date: October 5, 2021		
Issuing Authority: Jeffrey Hescok, Executive Director of Environmental Health and Safety and Emergency Management		
Amends or rescinds: New Policy		

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1.0 INTRODUCTION/BACKGROUND

- 1.1 The University of Massachusetts is committed to preventing accidents and ensuring the safety and health of our employees. We strive to comply with all applicable federal and state health and safety rules. Under this program employees are informed of the contents of the OSHA Hazard Communications Standard, as well as the MA Right-to-Know requirements, the hazardous properties of chemicals with which they work, safe handling procedures and measures to take to protect themselves from these chemicals, which may create physical and/or health-related hazards. It is the intent of the University that all employees are aware of the chemical hazards associated with the work they do and that they are provided training and appropriate personal protective equipment (PPE) to conduct work safely.
- 1.2 OSHA's Hazard Communication Standard, 1910.1200, provides for the following:
 - 1.2.1 Hazard determination
 - 1.2.2 Development, implementation, and maintenance of a written hazard communication program
 - 1.2.3 Regulation and maintenance of container labeling and other types of warnings
 - 1.2.4 Regulation and maintenance of Safety Data Sheets (SDS's)
 - 1.2.5 Employee information and training
 - 1.2.6 Safe Storage of hazardous materials
- 1.3 The Massachusetts Right-to-Know Law, 454 CMR 21.00 MGL Part I Title XVI Chapter 111F, also requires a Workplace Notice, in addition to the items listed in 1.2:
 - 1.3.1 A notice must be posted in a central location in the workplace informing employees of their rights under the law. The notice must be in the English language. In workplaces where employees' first language is other than English, the notice must be posted in that language.

2.0 PURPOSE

- 2.1 The purpose of the Written Hazard Communication Program is to ensure that:
 - 2.1.1 Hazardous chemicals present in the workplace are properly identified and labeled utilizing the GHS pictograms and labeling system.
 - 2.1.2 Employees have access to information, in an understandable format, on the hazards of these chemicals (Safety Data Sheets (SDS), labeling, etc.).
 - 2.1.3 Employees are provided with information on how to prevent injuries/illnesses due to exposure to the chemicals, including appropriate Personal Protective Equipment (PPE).
 - 2.1.4 Identifies by job title, person responsible for maintaining the program, the SDS, labeling, training, etc.

3.0 SCOPE

- 3.1 The scope of the Written Hazard Communication Program applies to University of Massachusetts departments which work with and use hazardous chemicals. This includes all cleaning supplies, paints, solvents, fuels, lubricating liquids, bulk chemicals, pesticides, fertilizers, and laboratory chemicals. The departments must provide information to their employees about the hazardous chemicals to which they are potentially exposed through the Hazard Communication Program.

All employees have a need and the right to know what chemicals they may contact in the workplace, their potential adverse health effects, methods of protection, and proper responses to emergencies or accidents involving them

Requirements for personal protective equipment in laboratories shall be in accordance with the University's Chemical Hygiene Plan. At a minimum, safety glasses and laboratory coats are required in laboratories that have hazardous chemicals. The UMass Amherst Chemical Hygiene Plan can be found at <http://ehs.umass.edu/laboratory-health-and-safety-manualchemical-hygiene-plan>.

4.0 ROLES & RESPONSIBILITIES

- 4.1 Employees
- 4.1.1 Responsible for following safety instructions on labels, Safety Data Sheets, and complying with safety procedures
 - 4.1.2 Required to complete assigned training
 - 4.1.3 Notify their supervisor if labels are missing or products cannot be identified.
- 4.2 Supervisors/Managers
- 4.2.1 Ensure that their staff are in compliance with this policy
 - 4.2.2 Address concerns, contacting EHS for assistance as needed.
 - 4.2.3 For departments not using CEMS for chemical ordering; maintain chemical inventory for products used by the department and keep SDS binder up-to-date.
- 4.3 Environmental Health & Safety (EHS)
- 4.3.1 Responsible for maintaining chemical inventory and for uploading a current SDS into the UMass CEMS program for tracking for departments who place their orders through this system.
 - 4.3.2 Responsible for providing chemical hazard training and information to employees
 - 4.3.3 Conducts exposure assessments as needed to determine employee exposure and provide guidance as needed.

- 4.3.4 Responds to employee concerns about chemical exposure.

5.0 PROCEDURE - CHEMICALS

- 5.1 Review by EHS prior to ordering a new product.
 - 5.1.1 EHS will review and provide a recommendation for any potentially hazardous products, prior to use. The purpose of this review is to determine handling and PPE requirements, and to verify that the product can be used safely.
 - 5.1.2 Products labeled as safe for the environment or “green” are not necessarily without hazards to humans and should be evaluated by EHS before use.
- 5.2 Ordering
 - 5.2.1 Purchasing departments will obtain current SDS for products ordered and received. Hard copies will be given to EHS for review and filing. Products are not to be distributed until a current SDS is obtained.
- 5.3 Labeling
 - 5.3.1 Labeling System
 - 5.3.1.1 The labeling system used follows the requirements in the 2012 revision of the OSHA Hazard Communication Standard to be consistent with the United Nations Globally Harmonized System (GHS) of Classification of Labeling of Chemicals.

The label on the chemical is intended to convey information about the hazards posed by the chemical through standardized label elements, including symbols, signal words and hazard statements.

SEE APPENDIX 11.1 FOR AN EXAMPLE

- 5.3.2 Secondary containers
 - 5.3.2.1 Bulk storage containers of hazardous material will be stored using adequate secondary containments. This means that the containment structure can contain a spill that 110% of the largest container stored.

5.3.3 Storage areas

5.3.3.1 Only designated storage areas that are compatible and in compliance with NFPA storage requirements will be used for storage.

5.3.3.2 Flammable materials will be stored in an NFPA-approved flammable storage cabinet.

5.3.4 GHS Pictograms



SEE APPENDIX 11.2

5.3.5 NFPA diamond



Blue = Health
Red = Flammability/Combustibility
Yellow = Instability
White = Special Information

Hazard Rating System for Chemicals

0 = None
1 = Slight
2 = Moderate
3 = Severe
4 = Deadly

5.3.5.1 UMA “door-cards”, which include the NFPA diamond

- 5.3.5.1.1 These are typically found on laboratory doors, however can also be found in any room containing chemicals.

SEE APPENDIX 11.3 FOR AN EXAMPLE

They provide information for emergency-response personnel, appropriate staff contacts, support personnel, as well as the general public:

- Campus Emergency Phone Numbers
- Hazards
- PPE required
- (Laboratory) Emergency Information

5.4 Storage

5.4.1 Flammable storage cabinets – must meet NFPA requirements

5.4.2 Secondary containment

5.4.3 Periodic inspections, at least annually, shall be performed in bulk storage and receiving locations. Any unwanted, expired, or waste like chemicals shall be removed. Inspections shall be documented and kept on file.

5.4.3.1 Are all containers capped?

5.4.3.2 Are containers compatible with their contents?

5.4.3.3 Are containers in good condition?

5.4.3.4 Are containers leaking? If yes, contact EHS.

5.5 Safety Data Sheets (SDS)

5.5.1 The manufacturer or importer of a chemical is required by OSHA to develop a Safety Data Sheet (SDS) that contains specific, detailed information about the chemical’s hazard using a specified format. The distributor or supplier of the chemical is required to provide this SDS to the purchaser.

5.5.1.1 The following sections are included in each SDS:

Section 1 Identification

- includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use

Section 2 Hazard(s) identification

- includes all hazards regarding the chemical; required label elements

Section 3 Composition/information on ingredients

- includes information on chemical ingredients; trade secret claims

Section 4 First-aid measures

- includes important symptoms/effects, acute, delayed; required treatment

Section 5 Fire-fighting measures

- lists suitable extinguishing techniques, equipment; chemical hazards from fire

Section 6 Accidental release measures

- lists emergency procedures; protective equipment; proper methods of containment and cleanup

Section 7, Handling and storage lists precautions for safe handling and storage

- including incompatibilities

Section 8 Exposure controls/personal protection

- lists OSHA's Permissible Exposure Limits (PELs); ACGIH Threshold Limit Values (TLVs); and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS where available as well as appropriate engineering controls; personal protective equipment (PPE).

Section 9 Physical and chemical properties

- lists the chemical's characteristics

Section 10 Stability and reactivity

- lists chemical stability and possibility of hazardous reactions

Section 11 Toxicological information

- includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity

Section 12 Ecological information*

Section 13 Disposal considerations*

Section 14 Transport information*

Section 15, Regulatory information*

Section 16, Other information

- includes the date of preparation or last revision.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29 CFR 1910.1200(g)(2)).

SEE APPENDIX 11.4 FOR EXAMPLES

- 5.5.2 The receiving party (storerooms or individual departments) must forward the SDS to EHS, who will update and manage the SDS in CEMS.
- 5.5.3 SDS's are readily available to all employees during their work shifts. Employees can review SDS for all hazardous chemicals used in the workplace
- 5.5.3.1 Electronically via the UMA database CEMS
- 5.5.3.2 Electronically via Manufacturers' websites
- 5.5.3.3 Hard-copies stored in a central departmental location
- 5.5.3.4 If an SDS is not immediately available for a hazardous chemical, employees can obtain the required information by contacting their supervisor or EHS.

- 5.5.4 Items purchased retail usually do not come with SDS's; they must be requested from the manufacturer.
- 5.5.5 If an employee needs medical attention (especially the "emergency" room), the SDS should accompany the employee.
- 5.5.6 SDS's must be kept for a minimum of **30** years from the end-of-use of the chemical
- 5.5.7 It is recommended that the SDS's be dated when use is discontinued and the SDS be kept on file.
- 5.5.8 Contact EHS if there are any questions or concerns regarding a SDS.

- 5.6 Personal Protective Equipment
 - 5.6.1 Always wear safety glasses or goggles when handling chemicals along with appropriate gloves. Refer to SDS for PPE needed.
 - 5.6.2 Refer to the "University of Massachusetts Amherst Personal Protective Equipment Policy".

- 5.7 Spills/Disposal
 - 5.7.1 Small spills – departments can perform clean-up if they are knowledgeable, otherwise contact EHS
 - 5.7.2 Large spills – contact EHS
 - 5.7.3 Disposal – contact EHS for waste pick-up

- 5.8 Routes of Exposure: "How Chemicals Enter the Body"
 - 5.8.1 Ingestion
 - 5.8.2 Inhalation
 - 5.8.3 Absorption (skin)
 - 5.8.4 Injection

- 5.9 Effects of Chemicals on the Body
 - 5.9.1 Localized (one site of contact on the body); for example, acid coming into contact with a small section of skin and creating a burn
 - 5.9.2 Systemic (widespread throughout the body); for example, inhalation of vapors/gases, damaging the lungs
 - 5.9.3 Acute (short-term issue); for example, the effect that alcohol has on the brain and kidneys
 - 5.9.4 Chronic (long-term issue); for example, the effects of alcohol on the liver over time.

- 5.10 Emergency procedures to follow if an employee is exposed to a hazardous chemical
 - 5.10.1 If splashed in the eye, rinse for 15 minutes and seek medical attention.
 - 5.10.2 If splashed on the skin, wash exposed skin with soap and water; seek medical attention if appropriate.
 - 5.10.3 If inhaled, get to fresh air and seek medical attention

6.0 TRAINING

- 6.1 Content includes all sections of the University of Massachusetts Hazard Communication/Right to Know Program
- 6.2 Classroom sessions
- 6.3 EHS OWL – must be completed annually
- 6.4 Frequency
 - 6.4.1 Upon hire
 - 6.4.2 When beginning use of a product with a new or different hazard.
 - 6.4.3 Annual refreshers

7.0 DOCUMENTATION

- 7.1 Safety Data Sheets (SDS)
- 7.2 List/Inventory of Hazardous Chemicals in the workplace (ChEMS)
- 7.3 Training
- 7.4 Inspection checklists of storage areas

8.0 PROGRAM EVALUATION

- 8.1 The program is evaluated periodically to ensure that it is accurate and meeting its objectives
- 8.2 The program is revised as appropriate to address changed conditions (e.g. new chemicals/products, new hazards)

9.0 OTHER

- 9.1 Contractors/Multi-Employer workspaces
 - 9.1.1 Each contractor shall have their own Hazard Communication policy, which will comply with the OSHA standard.

10.0 REFERENCES

- 10.1 OSHA 1910.1200 Subpart Z - Hazard Communication Standard
- 10.2 Massachusetts “Right-to-Know” Law
 - 10.2.1 454 CMR 21.00
 - 10.2.2 MGL Part I Title XVI, Chapter 111F
- 10.3 NFPA 704, “Standard System for Identification of the Hazards of Materials for Emergency Response”, 2012 edition
- 10.4 University of Massachusetts Amherst “Personal Protective Equipment Policy”

11.0 APPENDICES

- 11.1 OSHA example of a GHS Label
- 11.2 OSHA GHS Table of Pictograms
- 11.3 NFPA diamond; example of a UMA “door-card”
- 11.4 SDS examples
 - 11.4.1 Acetone
 - 11.4.2 WD-40

APPENDIX 11.1 – OSHA QuickCard Hazard Communication Standard Labels



Hazard Communication Standard Labels

OSHA has updated the requirements for labeling of hazardous chemicals under its Hazard Communication Standard (HCS). As of June 1, 2015, all labels will be required to have pictograms, a signal word, hazard and precautionary statements, the product identifier, and supplier identification. A sample revised HCS label, identifying the required label elements, is shown on the right. Supplemental information can also be provided on the label as needed.

For more information:



(800) 321-OSHA (6742)
www.osha.gov

SAMPLE LABEL				
CODE _____ Product Name _____	Product Identifier			
Company Name _____ Street Address _____ City _____ State _____ Postal Code _____ Country _____ Emergency Phone Number _____		Supplier Identification		
<p>Keep container tightly closed. Store in a cool, well-ventilated place that is locked. Keep away from heat/sparks/open flame. No smoking. Only use non-sparking tools. Use explosion-proof electrical equipment. Take precautionary measures against static discharge. Ground and bond container and receiving equipment. Do not breathe vapors. Wear protective gloves. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Dispose of in accordance with local, regional, national, international regulations as specified.</p> <p>In Case of Fire: use dry chemical (BC) or Carbon Dioxide (CO₂) fire extinguisher to extinguish.</p> <p>First Aid If exposed call Poison Center. If on skin (or hair): Take off immediately any contaminated clothing. Rinse skin with water.</p>			Hazard Pictograms 	Signal Word Danger
Precautionary Statements		Supplemental Information Directions for Use _____ _____ _____		
Fill weight: _____ Lot Number: _____ Gross weight: _____ Fill Date: _____ Expiration Date: _____				




APPENDIX 11.2 – OSHA QuickCard Hazard Communication Standard Pictogram



Hazard Communication Standard Pictogram

As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

HCS Pictograms and Hazards

Health Hazard  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	Flame  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	Exclamation Mark  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  <ul style="list-style-type: none"> • Gases Under Pressure 	Corrosion  <ul style="list-style-type: none"> • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals 	Exploding Bomb  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle  <ul style="list-style-type: none"> • Oxidizers 	Environment (Non-Mandatory)  <ul style="list-style-type: none"> • Aquatic Toxicity 	Skull and Crossbones  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

APPENDIX 11.3 – Laboratory “Door Card”

LABORATORY SAFETY INFORMATION Campus Emergency Number (Ambulance/Fire/Police) 911				
Environmental Health & Safety 413-545-2682		Physical Plant 413-545-6401		University Health Services 413-577-5000
	 EYE PROTECTION REQUIRED	 NO EATING OR DRINKING		
BIO SAFETY LEVEL 1  BIOHAZARD Non-Infectious Organisms Only		 NO OPEN TOE SHOES		
FOR FIRE OR FIRST AID DIAL 911				
Location: Ag Eng Annex B 140			Last Updated On: 2020-08-11	
Additional Information:				
Special Instructions:				
SDS Location:				
Spill Kit Location:				
Emergency Contact	Department	Title or Status	Office Phone	Alternate Phone
Amy Rubin	VSCI	Principal Investigator	413-687-3031	
Amy Rubin				

APPENDIX 11.4.1 – Safety Data Sheet: Acetone



SAFETY DATA SHEET

Creation Date 28-Apr-2009

Revision Date 19-Jan-2018

Revision Number 6

1. Identification

Product Name Acetone

Cat No. : AC326800000; AC326800010; AC326801000; AC326802500

CAS-No 67-64-1

Synonyms 2-Propanone

Recommended Use Laboratory chemicals.

Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number

For information US call: 001-800-ACROS-01 / Europe call: +32 14 57 52 11

Emergency Number US:001-201-796-7100 / Europe: +32 14 57 52 99

CHEMTREC Tel. No.US:001-800-424-9300 / Europe:001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, spleen, Blood.	

Label Elements

Signal Word

Danger

Hazard Statements

Highly flammable liquid and vapor

Causes serious eye irritation

May cause drowsiness or dizziness

May cause damage to organs through prolonged or repeated exposure

Acetone

Revision Date 19-Jan-2018



Precautionary Statements

Prevention

Wash face, hands and any exposed skin thoroughly after handling
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection
Keep cool

Response

Get medical attention/advice if you feel unwell

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell

Skin

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

Eyes

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 advice/attention

Fire

In case of fire: Use CO₂, dry chemical, or foam for extinction

Storage

Store in a well-ventilated place. Keep container tightly closed
Store locked up

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Repeated exposure may cause skin dryness or cracking

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Acetone	67-64-1	>95

4. First-aid measures

General Advice	If symptoms persist, call a physician.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.
Inhalation	Move to fresh air. If not breathing, give artificial respiration. Get medical attention if

Acetone

Revision Date 10-Jan-2018

	symptoms occur.
Ingestion	Clean mouth with water and drink afterwards plenty of water.
Most important symptoms and effects	None reasonably foreseeable. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. May cause pulmonary edema. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.
Unsuitable Extinguishing Media	Water may be ineffective
Flash Point	-20 °C / -4 °F
Method -	Closed cup
Autoignition Temperature	465 °C / 869 °F
Explosion Limits	
Upper	12.8 vol %
Lower	2.5 vol %
Oxidizing Properties	Not oxidising
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical

Flammable. Risk of ignition. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products

Carbon monoxide (CO) Carbon dioxide (CO₂) Formaldehyde Methanol

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health
2

Flammability
3

Instability
0

Physical hazards
N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
Environmental Precautions	Should not be released into the environment.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling	Do not get in eyes, on skin, or on clothing. Wear personal protective equipment. Ensure adequate ventilation. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.
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Storage Flammables area. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Acetone	TWA: 250 ppm STEL: 500 ppm	(Vacated) TWA: 750 ppm (Vacated) TWA: 1800 mg/m ³ (Vacated) STEL: 2400 mg/m ³ (Vacated) STEL: 1000 ppm TWA: 1000 ppm TWA: 2400 mg/m ³	IDLH: 2500 ppm TWA: 250 ppm TWA: 590 mg/m ³	TWA: 1000 ppm TWA: 2400 mg/m ³ STEL: 1260 ppm STEL: 3000 mg/m ³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

Personal Protective Equipment

Eyeface Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	sweet
Odor Threshold	19.8 ppm
pH	7
Melting Point/Range	-95 °C / -139 °F
Boiling Point/Range	56 °C / 132.8 °F
Flash Point	-20 °C / -4 °F
Method -	Closed cup
Evaporation Rate	5.6 (Butyl Acetate = 1.0)
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	12.8 vol %
Lower	2.5 vol %
Vapor Pressure	247 mbar @ 20 °C
Vapor Density	2.0
Specific Gravity	0.790
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available

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Autoignition Temperature	465 °C / 869 °F
Decomposition Temperature	> 4°C
Viscosity	0.32 mPa.s @ 20 °C
Molecular Formula	C ₃ H ₆ O
Molecular Weight	58.08
Refractive index	1.358 - 1.359

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Heat, flames and sparks. Incompatible products. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Strong oxidizing agents, Strong reducing agents, Strong bases, Peroxides, Halogenated compounds, Alkali metals, Amines
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO ₂), Formaldehyde, Methanol
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Acetone	5800 mg/kg (Rat)	> 15800 mg/kg (rabbit) > 7400 mg/kg (rat)	76 mg/l, 4 h, (rat)

Toxicologically Synergistic Products Carbon tetrachloride; Chloroform; Trichloroethylene; Bromodichloromethane; Dibromochloromethane; N-nitrosodimethylamine; 1,1,2-Trichloroethane; Styrene; Acetonitrile, 2,5-Hexanedione; Ethanol; 1,2-Dichlorobenzene

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation	Irritating to eyes and skin
Sensitization	No information available
Carcinogenicity	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Acetone	67-64-1	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)

STOT - repeated exposure Kidney Liver spleen Blood

Aspiration hazard No information available

Symptoms / effects, both acute and Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting:

Acetone

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delayed May cause pulmonary edema: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Acetone	NOEC = 430 mg/l (algae; 96 h)	Oncorhynchus mykiss: LC50 = 5540 mg/l 96h Alburnus alburnus: LC50 = 11000 mg/l 96h Leuciscus idus: LC50 = 11300 mg/L/48h Salmo gairdneri: LC50 = 6100 mg/L/24h	EC50 = 14500 mg/L/15 min	EC50 = 8800 mg/L/48h EC50 = 12700 mg/L/48h EC50 = 12600 mg/L/48h

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
Acetone	-0.24

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Acetone - 67-64-1	U002	-

14. Transport information

DOT

UN-No UN1090
Proper Shipping Name ACETONE
Hazard Class 3
Packing Group II

TDG

UN-No UN1090
Proper Shipping Name ACETONE
Hazard Class 3
Packing Group II

IATA

UN-No UN1090
Proper Shipping Name ACETONE
Hazard Class 3
Packing Group II

IMDG/IMO

UN-No UN1090
Proper Shipping Name ACETONE
Hazard Class 3
Packing Group II

15. Regulatory information

Acetone

Revision Date 19-Jan-2018

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Acetone	X	X	-	200-662-2	-		X	X	X	X	X

Legend:

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Acetone	5000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Acetone	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product contains the following DHS chemicals:

Component	DHS Chemical Facility Anti-Terrorism Standard
Acetone	2000 lb STQ

Acetone

Revision Date 19-Jan-2018

Other International Regulations

Mexico - Grade Serious risk, Grade 3

16. Other information

Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
Creation Date	28-Apr-2009
Revision Date	19-Jan-2018
Print Date	19-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

APPENDIX 11.4.2 – Safety Data Sheet: WD-40



Safety Data Sheet



1 - Identification

Product Name: WD-40 Multi-Use Product Aerosol NOT FOR SALE IN CALIFORNIA Product Use: Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion Restrictions on Use: None identified SDS Date Of Preparation: 07/20/2014	Manufacturer: WD-40 Company Address: 1061 Cudahy Place (92110) P.O. Box 80607 San Diego, California, USA 92138 -0607 Telephone: Emergency only: 1-888-324-7596 (PROSAR) Information: 1-888-324-7596 Chemical Spills: 1-800-424-9300 (Chemtrec) 1-703-527-3887 (International Calls)
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2 – Hazards Identification

Hazcom 2012/GHS Classification:
 Flammable Aerosol Category 1
 Gas Under Pressure: Compressed Gas
 Aspiration Toxicity Category 1

Note: This product is a consumer product and is labeled in accordance with the US Consumer Product Safety Commission regulations which take precedence over OSHA Hazard Communication labeling. The actual container label will not include the label elements below. The labeling below applies to industrial/professional products.

Label Elements:



DANGER!

Extremely Flammable Aerosol.
 Contains gas under pressure; may explode if heated.
 May be fatal if swallowed and enters airways.

Prevention

Keep away from heat, sparks, open flames, hot surfaces – No smoking.
 Do not spray on an open flame or other ignition source.
 Pressurized container: Do not pierce or burn, even after use.

Response

IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.

Storage

Store locked up.
 Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Store in a well-ventilated place.

Disposal

Dispose of contents and container in accordance with local and national regulations.

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent	US Hazcom 2012/ GHS Classification
Aliphatic Hydrocarbon	64742-47-8	45-50	Flammable Liquid Category 3

Petroleum Base Oil	64742-56-9 64742-65-0 64742-53-6 64742-54-7 64742-71-8	<25	Aspiration Toxicity Category 1 Not Hazardous
LVP Aliphatic Hydrocarbon	64742-47-8	12-18	Aspiration Toxicity Category 1
Carbon Dioxide	124-38-9	2-3	Simple Asphyxiant Gas Under Pressure, Compressed Gas
Non-Hazardous Ingredients	Mixture	<10	Not Hazardous

Note: The exact percentages are a trade secret.

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.

Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.

Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.

Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.

Signs and Symptoms of Exposure: May cause eye and respiratory irritation. Inhalation may cause coughing, headache and dizziness. Skin contact may cause drying of the skin.

Indication of Immediate Medical Attention/Special Treatment Needed: Immediate medical attention is needed for ingestion.

5 – Fire Fighting Measures

Suitable (and unsuitable) Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.

Specific Hazards Arising from the Chemical: Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Combustion will produce oxides of carbon and hydrocarbons.

Special Protective Equipment and Precautions for Fire-Fighters: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

6 – Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area.

Methods and Materials for Containment/Cleanup: Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Precautions for Safe Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.

Conditions for Safe Storage: Store in a cool, well-ventilated area, away from incompatible materials. Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol. Store away from oxidizers.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure Limits
Aliphatic Hydrocarbon	1200 mg/m ³ TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m ³ TWA, 10 mg/m ³ STEL ACGIH TLV 5 mg/m ³ TWA OSHA PEL
LVP Aliphatic Hydrocarbon	1200 mg/m ³ TWA (manufacturer recommended)
Carbon Dioxide	5000 ppm TWA (OSHA/ACGIH), 30,000 ppm STEL (ACGIH)
Non-Hazardous Ingredients	None Established

The Following Controls are Recommended for Normal Consumer Use of this Product

Appropriate Engineering Controls: Use in a well-ventilated area.

Personal Protection:

Eye Protection: Avoid eye contact. Always spray away from your face.

Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.

Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended

Appropriate Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.

Personal Protection:

Eye Protection: Safety goggles recommended where eye contact is possible.

Skin Protection: Wear chemical resistant gloves.

Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.

Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Appearance:	Light amber liquid	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8%
Odor:	Mild petroleum odor	Vapor Pressure:	95-115 PSI @ 70°F
Odor Threshold:	Not established	Vapor Density:	Greater than 1 (air=1)
pH:	Not Applicable	Relative Density:	0.8 – 0.82 @ 60°F
Melting/Freezing Point	Not established	Solubilities:	Insoluble in water
Boiling Point/Range:	361 - 369°F (183 - 187°C)	Partition Coefficient; n-octanol/water:	Not established
Flash Point:	122°F (49°C) Tag Closed Cup (concentrate)	Autoignition Temperature:	Not established
Evaporation Rate:	Not established	Decomposition Temperature:	Not established
Flammability (solid, gas)	Flammable Aerosol	Viscosity:	2.79-2.96 cSt @ 100°F
VOC:	412 grams/liter (49.5%)	Pour Point:	-63°C (-81.4°F) ASTM D-97

10 – Stability and Reactivity

Reactivity: Not reactive under normal conditions

Chemical Stability: Stable

Possibility of Hazardous Reactions: May react with strong oxidizers generating heat.
Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.
Incompatible Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

Symptoms of Overexposure:

Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.

Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.

Eye Contact: Contact may be irritating to eyes. May cause redness and tearing.

Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.

Chronic Effects: None expected.

Carcinogen Status: None of the components are listed as a carcinogen or suspect carcinogen by IARC, NTP, ACGIH or OSHA.

Reproductive Toxicity: None of the components is considered a reproductive hazard.

Numerical Measures of Toxicity:

The oral toxicity of this product is estimated to be greater than 5,000 mg/kg and the dermal toxicity greater than 2,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard.

12 – Ecological Information

Ecotoxicity: No specific aquatic toxicity data is currently available, however components of this product are not expected to be harmful to aquatic organisms

Persistence and Degradability: Component are readily biodegradable.

Bioaccumulative Potential: Bioaccumulation is not expected based on an assessment of the ingredients.

Mobility in Soil: No data available

Other Adverse Effects: None known

13 - Disposal Considerations

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Do not puncture or incinerate containers, even empty. Dispose in accordance with federal, state, and local regulations.

14 – Transportation Information

DOT Surface Shipping Description:

UN1950, Aerosols, 2.1 Ltd. Qty (Note: Shipping Papers are not required for Limited Quantities unless transported by air or vessel – each package must be marked with the Limited Quantity Mark)

IMDG Shipping Description: Un1950, Aerosols, 2.1, LTD QTY

ICAO Shipping Description: UN1950, Aerosols, flammable, 2.1 NOTE: WD-40 does not test aerosol cans to assure that they meet the pressure and other requirements for transport by air. We do not recommend that our aerosol products be transported by air.

15 – Regulatory Information

U.S. Federal Regulations:

CERCLA 103 Reportable Quantity: This product is not subject to CERCLA reporting requirements, however, oil spills are reportable to the National Response Center under the Clean Water Act and many

states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

SARA TITLE III:

Hazard Category For Section 311/312: Acute Health, Fire Hazard, Sudden Release of Pressure

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III

Section 313 Reporting requirements: None

Section 302 Extremely Hazardous Substances (TPQ): None

EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory.

VOC Regulations: This product complies with the consumer product VOC limits of the US EPA and states adopting the OTC VOC rules but does not comply with CARB.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65): This product does not contain chemicals regulated under California Proposition 65.

Canadian Environmental Protection Act: One of the components is listed on the NDSL. All of the other ingredients are listed on the Canadian Domestic Substances List or exempt from notification.

Canadian WHMIS Classification: Class A (Compressed gas), Class B-5 (Flammable Aerosol)

This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

16 – Other Information:

HMIS Hazard Rating:

Health – 1 (slight hazard), Fire Hazard – 4 (severe hazard), Reactivity – 0 (minimal hazard)

Revision Date: July 20, 2014

Supersedes: May 23, 2014

Revision Summary: Convert to Hazcom 2012. Changes in all sections.

Prepared by: Industrial Health & Safety Consultants, Inc. Shelton, CT, USA

APPROVED By: I. Kowalski

Regulatory Affairs Dept.