

How to Read an MSDS

Material Safety Data Sheets (MSDS) are an important requirement of the OSHA Hazard Communication Standard. MSDS have become important documents to inform employees, students, and the general public about how materials can be safely handled, used, and stored. Since Flinn provides chemicals only to schools, we have written Flinn MSDS specifically for teachers and their students. Using clear and straightforward language, each Flinn MSDS provides all the relevant safety and hazard information in a consistent, useful, and easy-to-read two-page format. Flinn MSDS follow the American National Standards Institute (ANSI) and Chemical Manufacturer Association (CMA) 16-section MSDS format, which exceeds OSHA requirements. The 16 sections are divided into four major areas, each designed to answer a specific question.

What is the material and what do I need to know immediately in an emergency?

Sections 1–3.

- It is important that the chemical name on the label match the name on the MSDS. Many chemicals have similar names, but very different properties.
- The CAS# is the single identifying number for each specific substance. CAS# should match the CAS# on the bottle label.
- The most important section! The first part describes the material's appearance. If it doesn't look like this, STOP. Do not use it. It may be more or less hazardous.
The second part provides an overview of the most significant and immediate concern when using this material. It will include reactivity, adverse health effects, and flammability information.

- Flinn At-A-Glance™ provides a numerical guide in five categories. If 2's and 3's are present, read the MSDS for further information.

What should I do if a hazardous situation occurs?

Sections 4–6.

- Seek medical attention. These first-aid measures are only meant for immediate first aid and should always be followed up with professional medical care.
- This section is written for the firefighter. Flash point (the lowest temperature at which enough vapor is present to form an ignitable mixture with air); upper and lower flammable limits; and the auto ignition temperature (AIT) are common properties included in this section.
- The NFPA code is a numerical code established by the National Fire Protection Association. It rates the substance *under fire conditions* in four categories. **Health**, **Flammability**, **Reactivity**, and **unusual reactivity**: 4 is a severe hazard, 0 is no hazard.

- How to clean up a spill. Always remove unprotected personnel from area and make sure all students are safe. Contain the spill with sand or absorbent materials.

FLINN SCIENTIFIC, INC. Material Safety Data Sheet (MSDS)

MSDS #: 5.00

Revision Date: January 1, 2011

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Acetic Acid; Glacial 1

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261
CHEMTREC Emergency Phone Number: (800) 424-9300

SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

Acetic Acid; Glacial
Synonyms: vinegar acid, ethanoic acid
CAS#: 64-19-7 2

SECTION 3 — HAZARDS IDENTIFICATION

Clear colorless liquid, strong vinegar odor.
Corrosive, causes severe burns to eyes and skin. Moderately toxic by ingestion, inhalation and skin absorption. Fumes can be suffocating.
Class II Combustible Liquid. 3

FLINN AT-A-GLANCE

Health-2
Flammability-2
Reactivity-2
Exposure-3 4
Storage-3

0 is low hazard, 3 is high hazard

SECTION 4 — FIRST AID MEASURES

Call a physician, seek medical attention for further treatment, observation and support after first aid.
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.
Eye: Immediately flush with fresh water for 15 minutes. 5
External: Wash continuously with fresh water and mild liquid soap for 15 minutes.
Internal: Give 1 to 2 cups of water or milk, followed by a gastric antacid, such as milk of magnesia. Do not induce vomiting. Call a physician or poison control at once.

SECTION 5 — FIRE FIGHTING MEASURES

Class II Combustible liquid. When heating to decomposition, emits irritating fumes.
Flash Point: 103 F (OC) Upper: 19.9% Lower: 4.0% AIT: 867 F 6
Fire Fighting Instructions: Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode. 7

NFPA CODE

H-3
F-2
R-0

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material, neutralize with sodium bicarbonate or calcium hydroxide and deposit in sealed bag or container. See Sections 8 and 13 for further information. 8

SECTION 7 — HANDLING AND STORAGE

Flinn suggested chemical storage pattern: Organic #1. Store with acids, anhydrides and peracids. Store away from Nitric Acid. Store in a dedicated acid cabinet and away from any source of water; if an acid cabinet is not available, store in a Flinn Saf-Cube. Use and dispense in a hood. 9

SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire). Exposure guidelines: TWA 10 ppm, STEL 15 ppm (OSHA, NIOSH) 10

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How can I prevent hazardous situations from occurring?

Sections 7–11.

- Use the Flinn Suggested Chemical Storage Pattern to prevent accidents and improve safety. Special storage and usage tips are also included.
- Wear personal protective equipment such as goggles, gloves, and an apron. See page 1132–1133 for an explanation of exposure guidelines.

HOW TO READ AN MSDS continued on next page.

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How to Read an MSDS, continued

Each Flinn MSDS follows the same format and the information is always found in the same location, making it a valuable resource in the event of an emergency. With your first chemical order of the year, every teacher will receive a CD from Flinn Scientific containing all of our MSDS. You may also request another CD at any time. Flinn MSDS are updated on a regular basis, guaranteeing the most up-to-date safety information possible. Flinn sells a complete MSDS Library in two versions, a hard copy version in two binders or a MSDS software program. For a more detailed description of our MSDS Library, please refer to page 1106. For our customers' convenience, Flinn has also placed a complete set of MSDS on our Web site. Simply go to www.flinnsci.com and click on the *Safety* icon—individual MSDS are easy to find and copies may be printed from your computer.

FLINN SCIENTIFIC, INC.		MSDS #: 5.00
Material Safety Data Sheet	Acetic Acid; Glacial	Revision Date: January 1, 2011
SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES		
Clear colorless liquid with strong 'vinegar' odor		Melting Point: 16.2 C
Solubility: Soluble in water.		Boiling Point: 244 F
Freezes at slightly below room temperature (17 C).	11	Vapor Density: 3.52
Formula: CH ₃ CO ₂ H		Vapor Pressure: 11 mm and 20 C
Formula Weight: 60.5		Concentration: 17.4 molar; 36-37%
SECTION 10 — STABILITY AND REACTIVITY		
Avoid contact with strong oxidizers, especially chromic and nitric acids.		
Shelf Life: Indefinite, if stored properly.	12	
SECTION 11 — TOXICOLOGICAL INFORMATION		
Acute effects: Harmful liquid, corrosive		ORL-RAT LD50: 3310 mg/kg
Chronic effects: N.A.		IHL-RAT LC50: 5620 ppm/1H
Target organs: N.A.	13	SKN-RBT LD50: 1060 mg/kg 14
N.A. = Not available, not all health aspects of this substance have been fully investigated.		
SECTION 12 — ECOLOGICAL INFORMATION		
Data not yet available.		
	15	
SECTION 13 — DISPOSAL CONSIDERATIONS		
Please consult with state and local regulations.		
Flinn Suggested Disposal Method #24a is one option.	16	
SECTION 14 — TRANSPORT INFORMATION		
Shipping Name: Acetic Acid, Glacial		
Hazard Class: 8, Corrosive, Flammable liquid		
UN Number: UN2789	17	
N/A = Not applicable		
SECTION 15 — REGULATORY INFORMATION		
TSCA-listed, EINECS-listed (200-580-7). RCRA code D001, D002		
	18	
SECTION 16 — OTHER INFORMATION		
This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific, Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. The data should not be confused with local, state, federal or insurance mandates, regulations, or requirements and CONSTITUTE NO WARRANTY. Any use of this data and information must be determined by the science instructor to be in accordance with applicable local, state or federal laws and regulations. The conditions or methods of handling, storage, use and disposal of the product(s) described are beyond the control of Flinn Scientific, Inc. and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT(S).		
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Consult your copy of the <i>Flinn Scientific Catalog/Reference Manual</i> for additional information about laboratory chemicals.		
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How can I prevent hazardous situations from occurring? (continued)

11 Clear, concise, and useful physical and chemical properties help you learn more about the chemicals you use. Formula and formula weight are also useful for making solutions.

12 Describes the conditions or reactions to be avoided. Also provides some indication about anticipated shelf life.

13 More detail on how the material may injure you. Acute (short exposure) and chronic (long-term) effects are listed along with their target organs.

14 Oral (ORL), inhalation (IHL), and skin absorption (SKN) toxicity data on test animals is included. For more information on LD₅₀, see page 1134.

Other useful information. Section 12–16.

15 Ecological impact if large amounts (e.g., tank car) of the chemical spill near a river or lake.

16 Suggested disposal methods for disposing laboratory quantities of chemicals. See pages 1174–1203 for Flinn Suggested Disposal Methods.

17 Department of Transportation shipping information is included for your school district, emergency responders, and transport/shipping departments.

18 Regulatory information used by regulatory compliance personnel.

19 Flinn Scientific has an ongoing program to update its MSDS. As professional chemists, we try our best to provide science teachers with the most accurate and useful safety information.

20 Call Flinn if you have any questions. We can help!