



SAFETY DATA SHEET

OLIN CORPORATION

Product name: Dilute Sulfuric Acid 50-60%

Issue Date: 06/08/2017

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OLIN CORPORATION encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: Dilute Sulfuric Acid 50-60%

Recommended use of the chemical and restrictions on use

Identified uses: Aluminum production. Matting agent Neutralizing agent. Industrial use as intermediate. Intermediate in manufacture of inorganic and organic chemicals including fertilizers

COMPANY IDENTIFICATION

OLIN CORPORATION
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CLAYTON MO 63105
UNITED STATES

Customer Information Number:

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INFO@OLINBC.com

EMERGENCY TELEPHONE NUMBER

Local Emergency Contact: 1 613-996-6666

2. HAZARDS IDENTIFICATION

Hazard classification

This product is hazardous under the criteria of the Hazardous Products Regulation (HPR) as implemented under the Workplace Hazardous Materials Information System (WHMIS 2015).

Corrosive to metals - Category 1
Skin corrosion - Category 1A
Serious eye damage - Category 1
Acute aquatic toxicity - Category 3

Label elements

Hazard pictograms



Signal word: **DANGER!**

Hazards

May be corrosive to metals.
Causes severe skin burns and eye damage.
Harmful to aquatic life.

Precautionary statements**Prevention**

Keep only in original packaging.
Wash skin thoroughly after handling.
Avoid release to the environment.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.

Storage

Store locked up.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Sulfuric acid	7664-93-9	>= 50.0 - <= 60.0 %
Water	7732-18-5	>= 40.0 - <= 50.0 %

4. FIRST AID MEASURES

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin contact: Immediate continued and thorough washing in flowing water for at least 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential. Wash clothing before reuse. Properly dispose of leather items such as shoes, belts, and watchbands. Suitable emergency safety shower facility should be immediately available.

Eye contact: - Wash eyes with plenty of water for 15 minutes at least. Do not forget to remove contact lenses. Suitable emergency eye wash facility should be immediately available.

Ingestion: Do not induce vomiting. Give one cup (8 ounces or 240 ml) of water or milk if available and transport to a medical facility. Do not give anything by mouth unless the person is fully conscious.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. Repeated exposure to acid fumes or mists may be associated with bleeding, ulceration of nose, mouth and gums and erosion of dental enamel. If burn is present, treat as any thermal burn, after decontamination. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

5. FIREFIGHTING MEASURES

Suitable extinguishing media: This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire.

Unsuitable extinguishing media: Do not use water.

Special hazards arising from the substance or mixture

Hazardous combustion products: Fire conditions may cause this product to decompose. Refer to section 10 - Thermal Decomposition.

Unusual Fire and Explosion Hazards: Product reacts with water. Reaction may produce heat and/or gases. This reaction may be violent. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Water is not recommended, but may be applied in large quantities as a fine spray when other extinguishing agents are not available. This material does not burn. Fight fire for other material that is burning. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Evacuate personnel to safe areas. Material is corrosive. If exposed to material as-is or mixed with run-off water during fire-fighting, IMMEDIATELY remove all contaminated clothing and wash exposed skin areas with soap and water. See SECTION 4, First Aid Measures, for further information. Evacuate area. Keep upwind of spill. Spilled material may cause a slipping hazard. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to section 7, Handling, for additional precautionary measures. Evacuate area. Keep upwind of spill. Spilled material may cause a slipping hazard. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to section 7, Handling, for additional precautionary measures.

Environmental precautions: WARNING: KEEP SPILLS AND CLEANING RUNOFFS OUT OF MUNICIPAL SEWERS AND OPEN BODIES OF WATER. Do not allow material to contaminate ground water system. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Evacuate the spill area immediately. Contain spills immediately with inert materials (e.g., sand, earth). Ventilate the area. Transfer liquids and solid diking material to separate suitable containers for recovery or disposal. Avoid all contact. Spread soda ash or lime to neutralize any remaining acidity. Small spills: Dilute with large quantities of water. Large spills: Contain spilled material if possible. Attempt to neutralize by adding materials such as Soda ash. Lime. See Section 13, Disposal Considerations, for additional information. Small spills: Dilute with large quantities of water. Large spills: Contain spilled material if possible. Attempt to neutralize by adding materials such as Soda ash. Lime. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Do not get in eyes, on skin, on clothing. Do not swallow. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

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Conditions for safe storage: Store away from incompatible materials. See STABILITY AND REACTIVITY section.

Store away from incompatible materials. See STABILITY AND REACTIVITY section.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Sulfuric acid	ACGIH	TWA Thoracic fraction	0.2 mg/m ³
	CA AB OEL	TWA	1 mg/m ³
	CA AB OEL	STEL	3 mg/m ³
	CA BC OEL	TWA Thoracic	0.2 mg/m ³
	CA QC OEL	TWAEV	1 mg/m ³
	CA QC OEL	STEV	3 mg/m ³

Consult local authorities for recommended exposure limits.

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Viton. Polyethylene. Styrene/butadiene rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Neoprene. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Avoid gloves made of: Polyvinyl alcohol ("PVA"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

The following should be effective types of air-purifying respirators: Acid gas cartridge with particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	liquid
Color	Colorless to amber
Odor	pungent
Odor Threshold	Not available
pH	< 1
Melting point/range	-28.89 °C
Freezing point	-28.89 °C
Boiling point (760 mmHg)	137.78 °C
Flash point	Not available
Evaporation Rate (Butyl Acetate = 1)	Not available
Flammability (solid, gas)	No data available
Lower explosion limit	Not available
Upper explosion limit	Not applicable
Vapor Pressure	< 1 hPa Not available
Relative Vapor Density (air = 1)	Not available
Relative Density (water = 1)	1.5
Water solubility	not determined
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	Not available
Decomposition temperature	No data available
Kinematic Viscosity	No data available
Explosive properties	No test data available
Oxidizing properties	No data available No data available
Molecular weight	98.08 g/mol

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Avoid temperatures above 140°C (284°F) Exposure to elevated temperatures can cause product to decompose. Avoid moisture.

Incompatible materials: Heat is generated when mixed with water. Spattering and boiling can occur. Avoid contact with strong bases. Avoid contact with: Acids. Alcohols. Bases. Combustible materials. Glycols. Hydrochloric acid. Nitrates. Organic compounds. Oxidizers. Reducing agents. Contact with common metals can generate flammable hydrogen gas. Avoid contact with absorbent materials such as: Moist organic absorbents.

Hazardous decomposition products: Decomposition products can include and are not limited to: Acid fumes. Sulfur oxides. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Low toxicity if swallowed. Swallowing may result in burns of the mouth and throat. May be more toxic to humans than in animals.

LD50, Rat, male and female, 2,140 mg/kg

Acute dermal toxicity

Absorption has not been determined due to corrosivity. The dermal LD50 has not been determined.

Acute inhalation toxicity

Excessive exposure may cause severe irritation to upper respiratory tract (nose and throat) and lungs. Excessive exposure may cause lung injury. For narcotic effects: No relevant data found.

LC50, Rat, male and female, 4 Hour, dust/mist, 0.375 mg/l

Skin corrosion/irritation

Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage.

Classified as corrosive to the skin according to DOT guidelines.

Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Vapor may cause eye irritation experienced as mild discomfort and redness.

Sensitization

For skin sensitization:

No relevant data found.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Material is corrosive. Material is not classified as a respiratory irritant; however, upper respiratory tract irritation or corrosivity may be expected.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Repeated exposure of workers to sulfuric acid mist may cause characteristic dental changes and chronic inflammation of the eye, mouth, skin and upper respiratory tract, and lung effects.

Carcinogenicity

Animal testing did not show any carcinogenic effects.

IARC has classified 'Occupational exposure to strong-inorganic-acid mists containing sulfuric acid' as 'carcinogenic to humans (Group 1)'.

Teratogenicity

Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity

No relevant data found.

Mutagenicity

No data available for assessment due to technical difficulties with testing.

Aspiration Hazard

Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

COMPONENTS INFLUENCING TOXICOLOGY:

Sulfuric acid

Acute dermal toxicity

The dermal LD50 has not been determined.

Carcinogenicity

Component

Sulfuric acid

List

IARC

Classification

Group 1: Carcinogenic to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).
May decrease pH of aquatic systems to < pH 5 which may be toxic to aquatic organisms.

LC50, Lepomis macrochirus (Bluegill sunfish), static test, 48 Hour, 49 mg/l, Method Not Specified.

LC50, Bluegill sunfish (Lepomis macrochirus), 96 Hour, 16 - 28 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates

No data available

EC50, Daphnia magna (Water flea), static test, 48 Hour, > 100 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

EC50, Desmodesmus subspicatus (green algae), Static, 72 Hour, Growth rate inhibition, > 100 mg/l

Toxicity to bacteria

activated sludge, static test, 3 Hour, Respiration rates., > 10 mg/l, OECD Test Guideline 209

Persistence and degradability

Biodegradability: No relevant data found.

Bioaccumulative potential

Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Mobility in soil

Potential for mobility in soil is very high (Koc between 0 and 50).

13. DISPOSAL CONSIDERATIONS

Disposal methods: AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

14. TRANSPORT INFORMATION

TDG

Do Not Ship. Consult DG Specialist. Not included in Olin ERAP.

Classification for SEA transport (IMO-IMDG):

Proper shipping name	SULPHURIC ACID
UN number	UN 1830
Class	8
Packing group	II
Marine pollutant	No
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Sulphuric acid
UN number	UN 1830
Class	8
Packing group	II

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Canadian Domestic Substances List (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

16. OTHER INFORMATION

Hazard Rating System**NFPA**

Health	Fire	Reactivity
2	0	0

Revision

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV)
CA AB OEL	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
CA BC OEL	Canada. British Columbia OEL
CA QC OEL	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
STEL	15-minute occupational exposure limit
STEV	Short-term exposure value
TWA	8-hour time weighted average
TWAEV	Time-weighted average exposure value

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

OLIN CORPORATION urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.