

SAFETY DATA SHEET

Preparation Date: No data available

Revision Date: 04/08/2015

Revision Number: G1

Product identifier

Product code: A1015
Product Name: ACETIC ANHYDRIDE, REAGENT, ACS

Other means of identification

Synonyms: Acetanhydride; Acetic Acid, anhydride; Acetic oxide; Acetyl ether; Acetyl oxide; Ethanoic anhydrate
CAS #: 108-24-7
RTECS # AK1925000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.
Uses advised against No information available

Supplier: Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: <https://www.spectrumchemical.com>

Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

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

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Gases)	Category 4
Acute toxicity - Inhalation (Vapors)	Category 3
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Flammable liquids	Category 3

Label elements

Danger

Hazard statements

Harmful if swallowed

Toxic if inhaled

Causes severe skin burns and eye damage

May cause respiratory irritation

Flammable liquid and vapor



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

May be harmful in contact with skin

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Use only outdoors or in a well-ventilated area

Do not breathe dust/fume/gas/mist/vapors/spray

Wear protective gloves/protective clothing/eye protection/face protection

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

Keep cool

Precautionary Statements - Response

Specific treatment (see ? on this label)

Immediately call a POISON CENTER or doctor/physician

Specific treatment (see ? on this label)

In case of fire: Use CO₂, dry chemical, or foam to extinguish.

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 or doctor/physician.

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

Wash contaminated clothing before reuse

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. Immediately call a POISON CENTER or doctor/physician.

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IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Do NOT induce vomiting

Precautionary Statements - Storage

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

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %	Trade Secret
Acetic Anhydride 108-24-7	108-24-7	100	*

4. FIRST AID MEASURES

First aid measures

General Advice:

Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Skin Contact:

Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.

Eye Contact:

Flush eye with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

Inhalation:

Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **WARNING!** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion:

Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Immediate medical attention is required.

Most important symptoms and effects, both acute and delayed

Symptoms

Causes skin and eye burns. Harmful if swallowed. May cause irritation of respiratory tract. Toxic by inhalation.

Indication of any immediate medical attention and special treatment needed

Notes to Physician:

Treat symptomatically

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media:

Carbon dioxide (CO₂). Dry chemical. Alcohol-resistant foam.
Water spray.

Unsuitable Extinguishing Media:

Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous Combustion Products:

Carbon oxides

Specific hazards:

Flammable
May be ignited by heat, sparks or flames
Container explosion may occur under fire conditions or when heated
Vapor may travel considerable distance to source of ignition and flash back
Vapors may form explosive mixtures with air
Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks)
When heated to decomposition it emits toxic fumes
Acetic anhydride forms potentially explosive reactions with the following: Acetic acid + water; Barium peroxide; Boric acid; Chromium trioxide; 1,3-Diphenyltriazene; Hydrochloric acid + water; Hypochlorous acid; Nitric acid; Perchloric acid + water; Peroxyacetic acid; Potassium permanganate; Tetrafluoroboric acid; 4-Toluenesulfonic acid + water.
Reactions with acetic anhydride and the following form explosive products:
Ethanol + sodium hydrogen sulfate; Hydrogen peroxide.

Special Protective Actions for Firefighters

Specific Methods:

Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out. Dike fire-control water for later disposal; do not scatter the material.

Special Protective Equipment for Firefighters:

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice:

Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Never add water to this product. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials. Keep away from heat and sources of ignition.

Incompatible Materials:

Acids. Alkalis. Metals. Oxidizing agents. Reducing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	OSHA	NIOSH	ACGIH	AIHA WHEEL
Acetic Anhydride - 108-24-7	5 ppm TWA 20 mg/m ³ TWA	= 5 ppm Ceiling = 20 mg/m ³ Ceiling	= 5 ppm TWA	None

Canada

Components	Alberta	British Columbia	Ontario	Quebec
Acetic Anhydride - 108-24-7	= 21 mg/m ³ Ceiling = 5 ppm Ceiling	= 5 ppm TWA	5 ppm TWA	5 ppm TWAEV 21 mg/m ³ TWAEV

Australia and Mexico

Components	Australia	Mexico
Acetic Anhydride 108-24-7	None	= 20 mg/m ³ TWA = 5 ppm TWA

Appropriate engineering controls

Engineering measures to reduce exposure: Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

- Eye protection:** Goggles. Safety glasses with side-shields.
- Skin and body protection:** Chemical resistant apron. Gloves. Long sleeved clothing.
- Respiratory protection:** Vapor respirator. Be sure to use an approved/certified respirator or equivalent.
- Hygiene measures:** Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

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Physical state: Liquid	Appearance: No information available	Color: Colorless.
Odor: Acetic acid (vinegar) -like. Pungent.	Taste Strong.	Molecular/Formula weight: 102.09
Formula: C4H6O3	Flash point (°C): No data available	Flashpoint (°C/°F): 49°C/120.2°F
Flash Point Tested according to: Closed cup	Lower Explosion Limit (%): 2.7	Upper Explosion Limit (%): 10.3
Autoignition Temperature (°C/°F): 316°C/600.8°F	pH: No information available	Melting point/range(°C/°F): -73.1°C/(-99.6°F)
Boiling point/range(°C/°F): 139°C/282.2°F	Decomposition temperature(°C/°F): No information available	Bulk density: No information available
Specific gravity: 1.08	Density (g/cm3): No information available	Vapor pressure @ 20°C (kPa): 0.5
Evaporation rate: No information available	Vapor density: 3.52	VOC content (g/L): No information available
Odor threshold (ppm): 0.117	Partition coefficient (n-octanol/water): No information available	Viscosity: No information available
Miscibility: No information available	Solubility: Soluble in Alcohol Soluble in Benzene Soluble in Chloroform Soluble in diethyl ether Slightly soluble in water	

10. STABILITY AND REACTIVITY

Reactivity

Reactive with acids

Reactive with alkalis

Reactive with metals

Reactive with oxidizing agents

Reacts with reducing agents

Acetic anhydride forms potentially explosive reactions with the following:

Acetic acid + water; Barium peroxide; Boric acid; Chromium trioxide; 1,3-Diphenyltriazene; Hydrochloric acid + water; Hypochlorous acid; Nitric acid; Perchloric acid + water; Peroxyacetic acid; Potassium permanganate; Tetrafluoroboric acid; 4-Toluenesulfonic acid + water.

Acetic anhydride reacts violently with the following:

N-tert-Butylphthalimic acid + tetrafluoroboric acid; Chromic acid; N Glycerol + phosphoryl chloride; Metal nitrates (eg, copper or sodium nitrates).

Reactions with acetic anhydride and the following form explosive products:

Ethanol + sodium hydrogen sulfate; Hydrogen peroxide.

Acetic anhydride is incompatible with the following:

(CrO3 + acetic acid); Hydrogen Fluoride; H2SO4; Sodium Hydroxide; Na2O2; N2O2; 2-Aminoethanol; Aniline; Chlorosulfonic acid; Ethylenediamine; Ethyleneimine; Glycerol; (Glycerol + phosphoryl chloride); Oleum; Permanganates; nitrates; alcohols; metal powders

Chemical stability

Stability: Stable under recommended storage conditions

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Incompatible materials. Exposure to moisture. Exposure to water.

Incompatible Materials: Acids. Alkalis. Metals. Oxidizing agents. Reducing agents.

Hazardous decomposition products: Carbon oxides.

Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:

Eyes. Ingestion. Inhalation. Skin.

Acute Toxicity

Component Information

Acetic Anhydride - 108-24-7

LD50/oral/rat = 1780 mg/kg Oral LD50 Rat

LD50/oral/mouse = No information available

LD50/dermal/rat = No information available

LD50/dermal/rabbit = 4 mL/kg Dermal LD50Rabbit

LC50/inhalation/rat = 1000 ppm Inhalation LC50 Rat 4 h

LC50/inhalation/mouse = No information available

Other LD50 or LC50 information = No information available

Product Information

LD50/oral/rat =

VALUE- Acute Tox Oral = 1780mg/kg

LD50/oral/mouse =

Value - Acute Tox Oral = No information available

LD50/dermal/rabbit

VALUE-Acute Tox Dermal = 4mL/kg

LD50/dermal/rat

VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat

VALUE-Vapor = 1000ppm (4-hr)

VALUE-Gas = No information available

VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse

VALUE-Vapor = No information available

VALUE - Gas = No information available

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VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Contact causes severe skin irritation and possible burns.

Eye Contact: Corrosive. Causes severe irritation and burns. Contact with liquid or vapor can cause severe damage to the eyes. Symptoms may include immediate burning, followed by increasing severity of reaction with corneal and conjunctival edema. Corneal opacity may develop over a period of several days due to progression of tissue infiltration. In mild cases, this condition is reversible, but permanent opacification with loss of vision also may occur.

Inhalation The immediate effect of exposure to vapor concentrations above 5 ppm is acute irritation of the eyes and upper respiratory tract. Inhalation of high vapor concentrations may produce ulceration of the nasal mucosa and, in some instances, bronchospasm, lung damage with burning sensation, coughing and/or shortness of breath (breathing difficulty). Inhalation of 2000 ppm by rats for 4 hours has caused deaths.

Ingestion Corrosive. Causes burns (corrosion) of the mucous membranes of the mouth, throat, and esophagus with immediate pain and dysphagia. The necrotic areas are at first grayish white, but soon acquire a blackish discoloration and sometimes a shrunken or wrinkled texture. Epigastric pain, which may be associated with nausea, and the vomiting of mucoid and "coffee-ground" material can occur. Gastric hemorrhage may occur and be intense, and the vomitus then contains fresh blood. In severe cases, circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may occur. Circulatory shock is often the immediate causes of death. Asphyxial death due to glottic edema may occur. Other symptoms that may be anticipated include late esophageal, gastric, and pyloric strictures and stenoses, which may require major surgical repair.

Aspiration hazard No information available

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

Chronic Toxicity Skin: Prolonged dermal contact with the liquid can cause irritation and may cause skin to redden and subsequently to turn white and wrinkled, but may not be painful. Skin burns may appear later. Skin sensitization (skin allergy) in humans occasionally occurs.
Inhalation: Repeated or prolonged inhalation may affect the urinary system (kidneys), blood (changes in white blood cell count), and respiration (respiratory tract, lungs).

Sensitization: No information available

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic

Components	ACGIH - Carcinogens	IARC	NTP	OSHA HCS - Carcinogens	Australia - Prohibited Carcinogenic Substances	Australia - Notifiable Carcinogenic Substances
Acetic Anhydride	A4 Not Classifiable as a Human Carcinogen	Not listed	Not listed	Not listed	Not listed	Not listed

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available
STOT - repeated exposure No information available
Target Organs: No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.

Acetic Anhydride - 108-24-7

Freshwater Fish Species Data: 265 mg/L LC50 *Leuciscus idus* 48 h 1

Water Flea Data: 55 mg/L EC50 *Daphnia magna* 24 h

Persistence and degradability: No information available

Bioaccumulative potential: No information available

Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Acetic Anhydride	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN1715
Proper Shipping Name: Acetic anhydride
Hazard Class: 8
Subsidiary Risk: 3
Packing Group: II
ERG No: 137
Marine Pollutant No data available
DOT RQ (lbs): No information available

14. TRANSPORT INFORMATION

Symbol(s): R5

TDG (Canada)
UN-No: UN1715
Proper Shipping Name: Acetic anhydride
Hazard Class: 8
Subsidiary Risk: (3)
Packing Group: II
Description: No information available

ADR
UN-No: UN1715
Proper Shipping Name: Acetic anhydride
Hazard Class: 8
Packing Group: II
Subsidiary Risk: 3
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG
UN-No: UN1715
Proper Shipping Name: Acetic anhydride
Hazard Class: 8
Subsidiary Risk: 3
Packing Group: II
Description: No information available
IMDG Page: No information available
Marine Pollutant: No information available
EMS: F-E
MFAG: No information available
Maximum Quantity: No information available

RID
UN-No: UN1715
Proper Shipping Name: Acetic anhydride
Hazard Class: 8
Subsidiary Risk: 3
Packing Group: II
Classification Code: No information available
Description: No information available

ICAO
UN-No: UN1715
Proper Shipping Name: Acetic anhydride
Hazard Class: 8
Subsidiary Risk: 3
Packing Group: II
Description: No information available

IATA
UN-No: UN1715
Proper Shipping Name: Acetic anhydride
Hazard Class: 8
Subsidiary Risk: 3
Packing Group: II

14. TRANSPORT INFORMATION

ERG Code: 8F
Description: No information available

15. REGULATORY INFORMATION**International Inventories**

Components	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Acetic Anhydride	Present	Present KE-00017	Present	Present (2)-690	Present	Present	Present 203-564-8

U.S. Regulations*Acetic Anhydride*

Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 0005
New Jersey - Discharge Prevention - List of Hazardous Substances: Present
Pennsylvania RTK: Environmental hazard
Pennsylvania RTK - Environmental Hazard List Present
Pennsylvania RTK - Special Hazardous Substances Present
RI RTK - Hazardous Substances List: Present
Minnesota - Hazardous Substance List: Present
New York Release Reporting - List of Hazardous Substances:
= 5000 lb RQ
Louisiana Reportable Quantity List for Pollutants: Listed
California Directors List of Hazardous Substances: Present

FDA - Direct Food Additives 21 CFR 172.892

FDA - 21 CFR - Total Food Additives 172.892

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.**Chemicals Known to the State of California to Cause Cancer:**

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Acetic Anhydride	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting <i>de minimis</i>
Acetic Anhydride	= 2270 kg final RQ	None	None	None	None

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Acetic Anhydride	Not Applicable	Not Applicable

Canada**WHMIS hazard class:**

B3 Combustible liquid

E Corrosive material

Product code: A1015

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Acetic Anhydride
B3 D1A E

Canada Controlled Products Regulation:

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

Components	WHMIS Ingredient Disclosure List -
Acetic Anhydride	1 %

Inventory

Components	Canada (DSL)	Canada (NDSL)
Acetic Anhydride	Present	Not Listed

Components	CEPA Schedule I - Toxic Substances	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Acetic Anhydride	Not listed	Not listed

EU Classification

R-phrase(s)

R10 - Flammable.
R34 - Causes burns.
R20/22 - Harmful by inhalation and if swallowed.

S -phrase(s)

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

Components	Classification	Concentration Limits:	Safety Phrases
Acetic Anhydride	R10 Xn; R20/22 C; R34	25%≤C: C; R20/22-34 5%≤C<25%: Xi; R37/38-41 1%≤C<5%: Xi; R36	S1/2 S26 S36/37/39 S45

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

None.

16. OTHER INFORMATION

16. OTHER INFORMATION

Revision Date: 04/08/2015
Prepared by: Sonia Owen

Disclaimer: All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet