Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 06/16/2009 Reviewed on 06/16/2009

1 Identification of substance:

Product details:

Product name: Zinc chloride

Stock number:
A16281
L13681

Manufacturer/Supplier:
Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Emergency Phone: (978) 521-6300
CHEMTREC: (800) 424-9300
Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department
Emergency information:
During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:

Chemical characterization:
Description: (CAS#)
Zinc chloride, anhydrous (CAS# 7646-85-7): 100%
Identification number(s):
EINECS Number: 231-592-0
Index number: 030-003-00-2

3 Hazards identification

Hazard description:

C Corrosive
N Dangerous for the environment

Information pertaining to particular dangers for man and environment
R 22 Harmful if swallowed.
R 34 Causes burns.
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

HEALTH	2
FIRE	0
REACTIVITY	1

Health (acute effects) = 2
Flammability = 0
Reactivity = 1

GHS label elements

Danger

3.1/3 - Toxic if swallowed.

Danger

3.2/1B - Causes severe skin burns and eye damage.

Warning

4.1/1 - Very toxic to aquatic life with long lasting effects.
Prevention:
Do not breathe dust/fume/gas/mist/vapours/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.

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Response:
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
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.
Specific treatment (see label).
Rinse mouth.
Wash contaminated clothing before reuse.
Collect spillage.
Storage:
Store locked up.
Disposal:
Dispose of contents/container in accordance with local/regional/national/international regulations.

4 First aid measures

General information Immediately remove any clothing soiled by the product.
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
After skin contact
Immediately wash with water and soap and rinse thoroughly.
Wash with water and acidic soap.
Seek immediate medical advice.
After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing Seek immediate medical advice.

5 Fire fighting measures

Suitable extinguishing agents
Product is not flammable. Use fire fighting measures that suit the surrounding fire.
Special hazards caused by the material, its products of combustion or resulting gases:
In case of fire, the following can be released:
Hydrogen chloride (HCl)
Metal oxide
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Person-related safety precautions:
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Measures for environmental protection:
Do not allow material to be released to the environment without proper governmental permits.
Measures for cleaning/collecting:
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Additional information:
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling
Information for safe handling:
Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Information about protection against explosions and fires: The product is not flammable

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Storage
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility:
Store away from oxidizing agents.
Store away from water/moisture.
Further information about storage conditions:
Store under dry inert gas.
Protect from humidity and water.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.

8 Exposure controls and personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

Zinc chloride fume

	mg/m3
ACGIH TLV	1; 2-STEL
Belgium TWA	1; 2-STEL
France TWA	1
Netherlands TWA	1
Switzerland TWA	1
United Kingdom TWA	1; 2-STEL
Denmark	0.5
Finland	1
Sweden	1
USA PEL	1

Additional information: No data

Personal protective equipment
General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Breathing equipment: Use suitable respirator when high concentrations are present.
Protection of hands: Impervious gloves
Eye protection:
Safety glasses
Tightly sealed goggles
Full face protection
Body protection: Protective work clothing.

9 Physical and chemical properties:

General Information	
Form:	Lump
Color:	Off-white
Odor:	Odorless
Change in condition	
Melting point/Melting range:	283°C (541°F)
Boiling point/Boiling range:	732°C (1350°F)
Sublimation temperature / start:	Not determined
Flash point:	Not applicable
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined
Upper:	Not determined
Vapor pressure at 428°C (802°F):	1.33 hPa (1 mm Hg)

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Density at 20°C (68°F):	2.91 g/cm³
Solubility in / Miscibility with Water at 25°C (77°F):	4230 g/l

10 Stability and reactivity

Thermal decomposition / conditions to be avoided:
Decomposition will not occur if used and stored according to specifications.
Materials to be avoided:
Water/moisture
Oxidizing agents
Alkali metals
Sulfides
Cyanides
Dangerous reactions No dangerous reactions known
Dangerous products of decomposition:
Hydrogen chloride (HCl)
Metal oxide fume

11 Toxicological information

Acute toxicity:

LD/LC50 values that are relevant for classification:		
Oral	LD50	200 mg/kg (guinea pig)
		329 mg/kg (mouse)
		350 mg/kg (rat)
Inhalative	LCLo/10M	1960 mg/m3 (rat)

Primary irritant effect:
on the skin:
Corrosive effect on skin and mucous membranes.
Irritant to skin and mucous membranes.
on the eye:
Strong corrosive effect.
Irritating effect.
Sensitization: No sensitizing effects known.
Other information (about experimental toxicology):
Tumorigenic effects have been observed on tests with laboratory animals.
Reproductive effects have been observed on tests with laboratory animals.
Mutagenic effects have been observed on tests with bacteria.
Mutagenic effects have been observed on tests with insects.
Mutagenic effects have been observed on tests with human lymphocytes.
Mutagenic effects have been observed with human fibroblast.
Mutagenic effects have been observed on tests with laboratory animals.
Subacute to chronic toxicity:
Zinc chloride and solutions are corrosive to the eyes and skin and corrosive to the mouth, throat and digestive tract by ingestion. Causes teratogenic, mutagenic and reproductive effects.
Zinc containing fumes may cause metal fume fever. Effects include dry throat, metallic taste, chest pain, dyspnea, rales and dry cough. Several hours later, chills may occur with lassitude, malaise, fatigue, headache, back pain, muscle cramps, blurred vision, nausea, fever, perspiration, vomiting and leukocytosis.
Subacute to chronic toxicity:
The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:
Behavioral - excitement.
Behavioral - fluid intake.
Behavioral - euphoria.
Behavioral - changes in psychophysiological tests.
Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - dehydrogenases.
Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - other enzymes.
Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - multiple enzyme effects.
Biochemical - Metabolism (Intermediary) - other proteins.
Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol).
Blood - other changes.
Blood - changes in erythrocyte (RBC) count.
Blood - normocytic anemia.

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Brain and Coverings - changes in brain weight.
Cardiac - EKG changes not diagnostic of specified effects.
Cardiac - other changes.
Endocrine - hyperglycemia.
Endocrine - changes in luteinizing hormone.
Endocrine - changes in gonadotropins.
Gastrointestinal - colon tumors.
Liver - changes in liver weight.
Lungs, Thorax, or Respiration - dyspnea.
Lungs, Thorax, or Respiration - other changes.
Lungs, Thorax, or Respiration - acute pulmonary edema.
Nutritional and Gross Metabolic - weight loss or decreased weight gain.
Nutritional and Gross Metabolic - changes in metals, not otherwise specified.
Related to Chronic Data - changes in testicular weight.
Related to Chronic Data - death.
Reproductive - Paternal Effects - testes, epididymis, sperm duct.
Reproductive - Maternal Effects - breasts, lactation (prior to or during pregnancy)
Reproductive - Effects on Newborn - behavioral.
Reproductive - Effects on Newborn - growth statistics (e.g.%, reduced weight gain).
Reproductive - Fertility - post-implantation mortality (e.g. dead/or resorbed implants per total number of implants).
Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).
Reproductive - Effects on Embryo or Fetus - fetal death.
Reproductive - Effects on Newborn - viability index (e.g., # alive at day 4 per # born live).
Reproductive - Specific Developmental Abnormalities - eye/ear.
Reproductive - Specific Developmental Abnormalities - craniofacial (including nose and tongue).
Reproductive - Specific Developmental Abnormalities - blood and lymphatic systems (including spleen and marrow).
Reproductive - Specific Developmental Abnormalities - urogenital system.
Reproductive - Fertility - pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea)
Reproductive - Specific Developmental Abnormalities - musculoskeletal system.
Reproductive - Fertility - female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated)
Reproductive - Tumorigenic effects - testicular tumors.
Reproductive - Paternal Effects - other effects on male.
Sense Organs and Special Senses (Eye) - effect, not otherwise specified.
Sense Organs and Special Senses (Eye) - miosis (pupillary construction).
Skin and Appendages - dermatitis, other (after systemic exposure).
Tumorigenic - equivocal tumorigenic agent by RTECS criteria.
Vascular - BP elevation not characterized in autonomic section.

Additional toxicological information:
Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12 Ecological information:

Ecotoxical effects:
Remark: Very toxic for fish
General notes:
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Do not allow material to be released to the environment without proper governmental permits.
Very toxic for aquatic organisms

13 Disposal considerations

Product:
Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

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14 Transport information

DOT regulations:

Hazard class: 8
Identification number: UN2331
Packing group: III
Proper shipping name (technical name): ZINC CHLORIDE, ANHYDROUS
Label corrosive

Land transport ADR/RID (cross-border)

ADR/RID class: 8 (C2) Corrosive substances
Danger code (Kemler): 80
UN-Number: 2331
Packaging group: III
Description of goods: 2331 ZINC CHLORIDE, ANHYDROUS

Maritime transport IMDG:

IMDG Class: 8
UN Number: 2331
Label 8
Packaging group: III
Proper shipping name: ZINC CHLORIDE, ANHYDROUS

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: 8
UN/ID Number: 2331
Label 8
Packaging group: III
Proper shipping name: ZINC CHLORIDE, ANHYDROUS

UN "Model Regulation": UN2331, ZINC CHLORIDE, ANHYDROUS, 8, III
Environmental hazards: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID

15 Regulations

Product related hazard informations:

Hazard symbols:
C Corrosive
N Dangerous for the environment

Risk phrases:
22 Harmful if swallowed.
34 Causes burns.
50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Safety phrases:
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
45 In case of accident or if you feel unwell, seek medical advice immediately.
60 This material and its container must be disposed of as hazardous waste.
61 Avoid release to the environment. Refer to special instructions/Safety data sheets

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National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).

Information about limitation of use:
For use only by technically qualified individuals.
This product contains zinc and is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

16 Other information:
Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.
Contact: Zachariah Holt
Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent