

**Material Safety Data Sheet**

According to OSHA and ANSI

Printing date 05/28/2011

Reviewed on 03/08/2010

**1 Identification of the substance/mixture and of the company/undertaking****Product identifier****Product name:** Soldering flux, liquid**Stock number:** 45581**CAS Number:**

7646-85-7

**EINECS Number:**

231-592-0

**Index number:**

030-003-00-2

**Relevant identified uses of the substance or mixture and uses advised against.****Sector of Use** SU24 Scientific research and development**Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company

Johnson Matthey Catalog Company, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

**Information Department:** Health, Safety and Environmental Department**Emergency telephone number:**

During normal hours the Health, Safety and Environmental Department at (800) 343-0660. After normal hours call Carechem 24 at (866) 928-0789.

**2 Hazards identification****Classification of the substance or mixture**

GHS05 Corrosion

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.



GHS09 Environment

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.



GHS07

H302 Harmful if swallowed.

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

C; Corrosive

R34: Causes burns.



Xn; Harmful

R22: Harmful if swallowed.



N; Dangerous for the environment

R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Label elements****Labelling according to EU guidelines:****Code letter and hazard designation of product:**

C Corrosive

N Dangerous for the environment

**Risk phrases:**

22 Harmful if swallowed.

34 Causes burns.

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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

**Hazard description:****WHMIS classification****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

**Other hazards****Results of PBT and vPvB assessment**

PBT: Not applicable.

vPvB: Not applicable.

**3 Composition/information on ingredients****Chemical characterization: Substances****(CAS#) Description:**

Zinc chloride (CAS# 7646-85-7): 20-35%

Water (CAS# 7732-18-5): Balance

**Identification number(s):**

EINECS Number: 231-592-0

Index number: 030-003-00-2

**4 First aid measures****Description of 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.

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 Firefighting measures****Extinguishing media****Suitable extinguishing agents**

Product is not flammable. Use fire fighting measures that suit the surrounding fire.

**Special hazards arising from the substance or mixture**

In case of fire, the following can be released:

Metal oxide fume

Hydrogen chloride (HCl)

**Advice for firefighters****Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

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**6 Accidental release measures****Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Environmental precautions:**

Do not allow material to be released to the environment without proper governmental permits.

**Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**Reference to other sections**

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****Precautions for safe handling**

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**Conditions for safe storage, including any incompatibilities****Storage****Requirements to be met by storerooms and receptacles:** No special requirements.**Information about storage in one common storage facility:**

Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic and inorganic chemicals.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**8 Exposure controls/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.

**Control parameters****Components with limit values that require monitoring at the workplace:**

Zinc chloride fume

|                    |                   |
|--------------------|-------------------|
|                    | mg/m <sup>3</sup> |
| 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**Exposure controls****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

Check protective gloves prior to each use for their proper condition.

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**Material of gloves**

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Eye protection:**

Safety glasses

Tightly sealed goggles

Full face protection

**Body protection:** Protective work clothing.**9 Physical and chemical properties****Information on basic physical and chemical properties****General Information****Appearance:**

|                  |                 |
|------------------|-----------------|
| Form:            | Liquid          |
| Color:           | Red             |
| Odor:            | Not determined  |
| Odour threshold: | Not determined. |

|           |                 |
|-----------|-----------------|
| pH-value: | Not determined. |
|-----------|-----------------|

**Change in condition**

|                                  |                |
|----------------------------------|----------------|
| Melting point/Melting range:     | Not determined |
| Boiling point/Boiling range:     | Not determined |
| Sublimation temperature / start: | Not determined |

|              |                |
|--------------|----------------|
| Flash point: | Not determined |
|--------------|----------------|

|                               |                 |
|-------------------------------|-----------------|
| Flammability (solid, gaseous) | Not applicable. |
|-------------------------------|-----------------|

|                       |                |
|-----------------------|----------------|
| Ignition temperature: | Not determined |
|-----------------------|----------------|

|                            |                |
|----------------------------|----------------|
| Decomposition temperature: | Not determined |
|----------------------------|----------------|

|                |                 |
|----------------|-----------------|
| Auto igniting: | Not determined. |
|----------------|-----------------|

|                      |   |
|----------------------|---|
| Danger of explosion: | Product does not present an explosion hazard. |
|----------------------|---|

**Explosion limits:**

|        |                |
|--------|----------------|
| Lower: | Not determined |
| Upper: | Not determined |

|                 |                |
|-----------------|----------------|
| Vapor pressure: | Not determined |
|-----------------|----------------|

|                          |   |
|--------------------------|---|
| Density at 20°C (68 °F): | 1.26 g/cm <sup>3</sup> (10.515 lbs/gal) |
|--------------------------|---|

|                  |                 |
|------------------|-----------------|
| Relative density | Not determined. |
|------------------|-----------------|

|                |                 |
|----------------|-----------------|
| Vapour density | Not determined. |
|----------------|-----------------|

|                  |                 |
|------------------|-----------------|
| Evaporation rate | Not determined. |
|------------------|-----------------|

**Solubility in / Miscibility with**

|        |                |
|--------|----------------|
| Water: | Fully miscible |
|--------|----------------|

|  |                 |
|--|-----------------|
| Segregation coefficient (n-octanol/water): | Not determined. |
|--|-----------------|

**Viscosity:**

|          |                 |
|----------|-----------------|
| dynamic: | Not determined. |
|----------|-----------------|

|            |                 |
|------------|-----------------|
| kinematic: | Not determined. |
|------------|-----------------|

|                   |  |
|-------------------|--|
| Other information | No further relevant information available. |
|-------------------|--|

**10 Stability and reactivity****Reactivity****Chemical stability****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions**

Reacts with alkali metals.

Reacts with alkaline earth metals.

**Incompatible materials:**

Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic and inorganic chemicals.

**Hazardous decomposition products:**

Metal oxide fume

Hydrogen chloride (HCl)

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**11 Toxicological information****Information on toxicological effects****Acute toxicity:****Primary irritant effect:****on the skin:** Corrosive effect on skin and mucous membranes.**on the eye:** Strong corrosive effect.**Sensitization:** No sensitizing effects known.**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.

**Subacute to chronic toxicity:**

Corrosive materials are acutely destructive to the respiratory tract, eyes, skin and digestive tract. Eye contact may result in permanent damage and complete vision loss. Inhalation may result in respiratory effects such as inflammation, edema, and chemical pneumonitis. May cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Ingestion may cause damage to the mouth, throat and esophagus. May cause skin burns or irritation depending on the severity of the exposure.

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.

**12 Ecological information****Toxicity****Acquatic toxicity:** No further relevant information available.**Persistence and degradability** No further relevant information available.**Behavior in environmental systems:****Bioaccumulative potential** No further relevant information available.**Mobility in soil** No further relevant information available.**Ecotoxicological effects:****Remark:** Very toxic for aquatic organisms**Additional ecological information:****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

**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**Other adverse effects** No further relevant information available.**13 Disposal considerations****Waste treatment methods****Recommendation** Consult state, local or national regulations to ensure proper disposal.**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.**Recommended cleansing agent:** Water, if necessary with cleansing agents.**14 Transport information****DOT regulations:****Hazard class:**

8

**Identification number:**

UN1840

**Packing group:**

III

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**Proper shipping name (technical name):** ZINC CHLORIDE SOLUTION  
**Label:** 8  
**Remarks:** Special marking with the symbol (fish and tree).

**Land transport ADR/RID (cross-border)**

**ADR/RID class:** 8 (C1) Corrosive substances  
**Danger code (Kemler):** 80  
**UN-Number:** 1840  
**Packaging group:** III  
**Special marking:** Symbol (fish and tree)  
**UN proper shipping name:** 1840 ZINC CHLORIDE SOLUTION

**Maritime transport IMDG:**

**IMDG Class:** 8  
**UN Number:** 1840  
**Label:** 8  
**Packaging group:** III  
**EMS Number:** F-A, S-B  
**Marine pollutant:** Yes (P)  
 Symbol (fish and tree)  
**Segregation groups:** Acids, heavy metals and their salts (including their organometallic compounds)  
**Proper shipping name:** ZINC CHLORIDE SOLUTION

**Air transport ICAO-TI and IATA-DGR:**

**ICAO/IATA Class:** 8  
**UN/ID Number:** 1840  
**Label:** 8  
**Packaging group:** III  
**Proper shipping name:** ZINC CHLORIDE SOLUTION

**UN "Model Regulation":** UN1840, ZINC CHLORIDE SOLUTION, 8, III  
**Environmental hazards:** Environmentally hazardous substance, liquid; Marine Pollutant  
**Special precautions for user Warning:** Corrosive substances  
**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

**15 Regulatory information**

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

**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.  
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 60 This material and its container must be disposed of as hazardous waste.

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61 Avoid release to the environment. Refer to special instructions/Safety data sheets

**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.**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**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 C. Holt

Global EHS Manager

**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)

P: Marine Pollutant

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

USA