

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 02/02/2004




Reviewed on 02/02/2004

1 Identification of substance

- **Product details**
- **Trade name:** Ammonia No.2
- **Product Use:** Reagent
- **Part of Orion:** AC2012
- **MSDS p/n:** 233249-001 Revision D
- **Manufacturer/Supplier:**
Thermo Electron Corporation
Environmental Instruments
Water Analysis Group
166 Cummings Center
Beverly, MA 01915-6110
USA
Phone: 978-232-6000
Made in Germany

2 Composition / Data on components

- **Chemical characterization**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

CAS No.	Description		
CAS: 1310-65-2 EINECS: 215-183-4	lithium hydroxide	 C; R 35	35-40%
CAS: 51580-86-0 EINECS: 220-767-7	sodium dichloroisocyanurate, dihydrate	 Xn,  N; R 22-31-36/37-50/53	≤ 2.5%

- **Additional information:**
For the wording of the listed risk phrases refer to section 16.
The remaining 57.5% contains no hazardous ingredients according to OSHA definition.

3 Hazards identification

- **Hazard description:**



C Corrosive

- **Information pertaining to particular dangers for man and environment:**
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Causes severe burns.
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
Only for trade users
- **Classification system:**
The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.
- **NFPA ratings (scale 0 - 4)**
Health = 3
Fire = 0
Reactivity = 0

4 First aid measures

- **General information:** Immediately remove any clothing soiled by the product.

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- **After inhalation:**
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness remove to fresh air, apply artificial respiration, and consult a physician.
- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:**
Do not induce vomiting; immediately call for medical help.
Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- **The following symptoms may occur:**
After inhalation:
Coughing
Mucous membrane irritation
Breathing difficulty
After swallowing:
Cramp
Vomiting
Nausea
- **Danger** Danger of gastric perforation.

* 5 Fire fighting measures

- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards caused by the material, its products of combustion or resulting gases:**
Development of hazardous combustion gases or vapours possible in the event of fire.
In case of fire, the following can be released:
Nitrogen oxides (NO_x)
Hydrogen chloride (HCl)
- **Protective equipment:** Wear self-contained respiratory protective device.
- **Additional information**
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
Collect contaminated fire fighting water separately. It must not enter the sewage system.

* 6 Accidental release measures

- **Person-related safety precautions:** Wear protective equipment. Keep unprotected persons away.
- **Measures for environmental protection:**
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.
- **Measures for cleaning/collecting:**
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

* 7 Handling and storage

- **Handling:**
- **Information for safe handling:** Thorough dusting.
- **Information about protection against explosions and fires:**
Protect from heat.
The product is not flammable.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.

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- **Information about storage in one common storage facility:** Do not store together with acids.
- **Further information about storage conditions:**
 - Keep receptacle tightly sealed.
 - Store in dry conditions.
 - Protect from humidity and water.
- **Storage class:** Not required.

8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Components with limit values that require monitoring at the workplace:**
 - The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists that were valid during the creation were used as basis.
- **Personal protective equipment:**
 - **General protective and hygienic measures:**
 - Keep away from foodstuffs, beverages and feed.
 - Immediately remove all soiled and contaminated clothing.
 - Wash hands before breaks and at the end of work.
 - Avoid contact with the eyes and skin.
 - **Breathing equipment:**
 - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
 - **Protection of hands:**
 - Alkaline resistant gloves
 - Only use chemical-protective gloves with CE-labelling of category III.
 - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
 - Use gloves of stable material (e.g. Nitrile) - if necessary tricoted to improve the wearability.
 - After use of gloves apply skin-cleaning agents and skin cosmetics.
 - **Material of gloves**
 - The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
 - **Penetration time of glove material**
 - The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:** Tightly sealed goggles
- **Body protection:** Alkaline resistant protective clothing

9 Physical and chemical properties

- | | |
|--|-----------------|
| · Odor Threshold: | Not applicable. |
| · Form: | Tablets |
| · Color: | White |
| · Odor: | Characteristic |
| · Melting point/Melting range: | Undetermined. |
| · Boiling point/Boiling range: | 925°C (1697°F) |
| · Freezing Point: | Not applicable. |
| · Flash point: | Not applicable. |
| · Flammability (solid, gaseous): | |
| Upper Flammable Limit: | Not applicable. |
| Lower Flammable Limit: | Not applicable. |
| · Ignition temperature: | Undetermined. |
| · Sensitivity to Mechanical Impact: | None |

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· Sensitivity to Static Discharge:	None
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Vapor Pressure:	Not applicable.
· Vapor Density:	Not applicable.
· Specific Gravity:	Not applicable.
· Density:	Not determined.
· Solubility in / Miscibility with Water:	Soluble.
· Coefficient of Water / Oil Distribution:	Not applicable.
· pH-value (11.2 g/l) at 20°C (68°F):	12.9
· Solvent content:	
Organic solvents:	0.0 %
· Solids content:	100.0 %

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Materials to be avoided:**
 - acids
 - water
- **Dangerous reactions**
 - Corrosive action on metals.
 - Corrodes aluminium.
 - Reacts with metals to form nitrous fumes and hydrogen.
 - Attention! Don't use with other products because dangerous gases can be developed.
- **Dangerous products of decomposition:**
 - Chlorine compounds
 - Hydrogen chloride (HCl)

11 Toxicological information

- **Acute toxicity:**

· LD/LC50 values that are relevant for classification:		
7447-40-7 potassium chloride		
Oral	LD50	2600 mg/kg (rat)
1310-65-2 lithium hydroxide		
Oral	LD50	225 mg/kg (rat)
51580-86-0 sodium dichloroisocyanurate, dihydrate		
Oral	LD50	1400 mg/kg (rat)
Dermal	LD50	> 5000 mg/kg (rabbit)

- **Primary irritant effect:**
 - **on the skin:** Strong caustic effect on skin and mucous membranes.
 - **on the eye:** Strong caustic effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
 - The product shows the following dangers according to internally approved calculation methods for preparations:
 - Corrosive
 - Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

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- **Carcinogenicity:** NTP? IARC Monographs? OSHA Regulated? Not found on these lists. see chapter 8 / 15
- **Teratogenicity:** Not found.
- **Mutagenicity:** Not found.
- **Reproductive Toxicity:** Not found.
- **Synergistic Products:** None

12 Ecological information

- **Ecotoxicological effects:**
- **Remark:** Harmful to fish
- **Additional ecological information:**
The following applies to lithium compounds in general:
MERCK - biological effects:
fish toxic from 100 mg/l up
Daphnia toxic from 16 mg/ up
plants toxic from 0.2 mg/l up (value calculated as Li)
- **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.

13 Disposal considerations

- **Product:**
- **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **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:** UN2680
- **Packing group:** II
- **Proper shipping name (technical name):** LITHIUM HYDROXIDE
- **Label:** 8

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



- **ADR/RID class:** 8 (C6) Corrosive substances

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· **Danger code (Kemler):** 80
 · **UN-Number:** 2680
 · **Packaging group:** II
 · **Description of goods:** 2680 LITHIUMHYDROXID, Gemisch

· **Maritime transport IMDG:**

· **IMDG Class:** 8
 · **UN Number:** 2680
 · **Label:** 8
 · **Packaging group:** II
 · **EMS Number:** F-A,S-B
 · **Marine pollutant:** No
 · **Propper shipping name:** LITHIUM HYDROXIDE

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

· **ICAO/IATA Class:** 8
 · **UN/ID Number:** 2680
 · **Label:** 8
 · **Packaging group:** II
 · **Propper shipping name:** LITHIUM HYDROXIDE, mixture
 · **TDG Class:** 8

15 Regulations

· **Sara**· **Section 355 (Extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**

7447-40-7 | potassium chloride

1310-65-2 | lithium hydroxide

· **Proposition 65**· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity:**

None of the ingredients is listed.

· **Canadian Ingredient Disclosure List**· **Limit 0,1%**

None of the ingredients is listed.

· **Limit 1%**

1310-65-2 | lithium hydroxide

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· Other Regulations

· EPA (Environmental Protection Agency)

None of the ingredients is listed.

· IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

· NTP (National Toxicology Program)

None of the ingredients is listed.

· NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

· Product related hazard informations:

The product has been classified and marked in accordance with directives on hazardous materials.

· Hazard symbols:

C Corrosive

· Hazard-determining components of labelling:

lithium hydroxide

· Risk phrases:

Causes severe burns.

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

· Safety phrases:

Keep locked up and out of the reach of children.

When using do not eat or drink.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point

Wear suitable protective clothing, gloves and eye/face protection.

In case of accident or if you feel unwell, seek medical advice immediately.

· Special labeling of certain preparations:

Only for trade users

· Water hazard class: Water hazard class 2 (Self-assessment): hazardous for water.

· CPR Classification: Class E

· MSDS Discloses Information Elements Required by the CPR .

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Contact: Thermo Electron Corporation, EID, Water Analysis, Quality Assurance

*** Data compared to the previous version altered.**