



# Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 02/29/2016

Reviewed on 02/29/2016

## \* 1 Identification

- **Product Identifier**
- **Trade name: 4.24 M KOH**
- **Product Number:** 332059
- **Relevant identified uses of the substance or mixture and uses advised against:**
- **Product Description:** 4.24 M KOH Potassium Hydroxide Solution
- **Application of the substance / the mixture:** Buffers, Filling & Calibration Solutions
- **Details of the Supplier of the Safety Data Sheet:**
- **Manufacturer/Supplier:**  
Analytical Sensors & Instruments, Ltd.  
12800 Park One Drive  
Sugar Land TX, 77478  
www.asi-sensors.com
- **Emergency telephone number:** Bill Boyne 281-565-8818 x 133

## \* 2 Hazard(s) Identification

- **Classification of the substance or mixture:**



GHS05 Corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

- **Label elements:**
- **GHS label elements**  
The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms:**



GHS05 GHS07

- **Signal word:** Danger
- **Hazard-determining components of labeling:**  
Potassium Hydroxide
- **Hazard statements:**  
H302 Harmful if swallowed.  
H314 Causes severe skin burns and eye damage.
- **Precautionary statements:**  
P260 Do not breathe dusts or mists.  
P280 Wear eye protection / face protection.  
P264 Wash thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.

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- P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a POISON CENTER/doctor.
- P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
- P321 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P363 Wash contaminated clothing before reuse.
- P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



- **HMS-ratings (scale 0 - 4)**



- **Hazard(s) not otherwise classified (HNOC):** None known

\* **3 Composition/Information on Ingredients**

- **Non-hazardous components:**

7732-18-5	Water, distilled water, deionized water	70-90%
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- **Chemical characterization: Mixtures**

- **Description:** Mixture of substances listed below with non-hazardous additions.

- **Dangerous Components:**

CAS: 1310-58-3	Potassium Hydroxide	⚠ Skin Corr. 1A, H314; ⚠ Acute Tox. 4, H302	15-35%
RTECS: TT 2102000			

\* **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. Consult doctor if symptoms persist.

- **After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

If skin irritation occurs, consult a doctor.

- **After eye contact:**

Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.

- **After swallowing:**

Do not induce vomiting.

Drink copious amounts of water and provide fresh air. Immediately call a doctor.

- **Information for doctor:**

- **Most important symptoms and effects, both acute and delayed:** No further relevant information available.

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- **Indication of any immediate medical attention and special treatment needed:**  
No further relevant information available.

### \* 5 Fire-Fighting Measures

- **Extinguishing media:**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture:** No further relevant information available.
- **Advice for firefighters:**
- **Protective equipment:**  
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

### \* 6 Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures:**  
Ensure adequate ventilation.  
Avoid contact with skin, eyes and clothing.  
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (i.e. sand, diatomite, acid binders, universal binders, sawdust).  
Use neutralizing agent.  
Dispose contaminated material as waste according to section 13.  
Ensure adequate ventilation.  
Dispose of the collected material according to regulations.
- **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:**  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** No special measures required.
- **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:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s):** No further relevant information available.

### \* 8 Exposure Controls/Personal Protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **Control parameters:**  
All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure Limits in Air below TLV & PEL limits.

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<b>Components with occupational exposure limits:</b>	
<b>1310-58-3 Potassium Hydroxide</b>	
REL	Ceiling limit value: 2 mg/m <sup>3</sup>
TLV	Ceiling limit value: 2 mg/m <sup>3</sup>

· **Additional information:** The lists that were valid during the creation of this SDS were used as basis.

· **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.

Immediately remove all soiled and contaminated clothing and wash before reuse.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

· **Breathing equipment:** Not required.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Select glove material based on penetration times, rates of diffusion and degradation.

· **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 cannot 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 determined and observed by the manufacturer of the protective gloves.

· **Eye protection:**



Tightly sealed goggles

· **Body protection:**



Protective work clothing

## \* 9 Physical and Chemical Properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form:

Liquid

Color:

Clear, colorless

· **Odor:**

Odorless

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- **Odor threshold:** Not determined.
- **pH-value @ 20 °C (68 °F):** > 13.5
- **Change in condition**
  - Melting point/Melting range:** Not determined.
  - Boiling point/Boiling range:** 100 °C (212 °F)
- **Flash point:** None
- **Flammability (solid, gaseous):** Not applicable.
- **Ignition temperature:** Not determined
- **Decomposition temperature:** Not determined.
- **Auto igniting:** Product is not self-igniting.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Explosion limits:**
  - Lower:** Not determined.
  - Upper:** Not determined.
- **Vapor pressure @ 20 °C (68 °F):** 23 hPa (17 mm Hg)
- **Density @ 20 °C (68 °F):** 1.215 g/cm<sup>3</sup> (10.139 lbs/gal)
- **Relative density:** Not determined.
- **Vapor density:** Not determined.
- **Evaporation rate:** Not determined.
- **Solubility in / Miscibility with:**
  - Water:** Fully miscible.
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
  - Dynamic:** Not determined.
  - Kinematic:** Not determined.
- **Solvent content:**
  - Organic solvents:** 0.0 %
  - Water:** 70-90 %
- **Solids content:** 15-35 %
- **Other information:** No further relevant information available.

**\*10 Stability and Reactivity**

- **Reactivity:** No further relevant information available.
- **Chemical stability:** Stable under normal conditions.
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions:** No dangerous reactions known.
- **Conditions to avoid:** No further relevant information available.
- **Incompatible materials:**  
Strong bases, strong oxidizing agents, Nitro compounds, reactive metals (Zinc & Aluminum) and their alloys (Brass, etc.), Tin/Tin Oxides, Lead and organic materials.
- **Hazardous decomposition products:** Potassium Oxides.

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**Trade name: 4.24 M KOH****\* 11 Toxicological Information**

- **Information on toxicological effects:**

- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

**1310-58-3 Potassium Hydroxide**

Oral	LD50	273 mg/kg (rat)
Inhalative	LC50/96 hours	80 mg/l (daphnia)

- **Primary irritant effect:**

- **On the skin:** Strong caustic effect on skin and mucous membranes.

- **On the eye:**

Strong irritant with the danger of severe eye injury.

Corrosive effect.

Causes serious eye irritation.

- **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Harmful

Corrosive

Irritant

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

- **Carcinogenic categories:**

- **IARC (International Agency for Research on Cancer):**

Group 1 - Carcinogenic to humans

Group 2A - Probably carcinogenic to humans

Group 2B - Possibly carcinogenic to humans

Group 3 - Not classifiable as to its carcinogenicity to humans

Group 4 - Probably not carcinogenic to humans

None of the ingredients are listed.

- **NTP (National Toxicology Program):**

None of the ingredients are listed.

- **OSHA-Ca (Occupational Safety & Health Administration):**

None of the ingredients are listed.

**\* 12 Ecological Information**

- **Toxicity:** The hazards for the aquatic environment are unknown.

- **Aquatic 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.

- **Additional ecological information:**

- **General notes:**

Must not reach bodies of water or drainage ditch undiluted or unneutralized.

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.

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- **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:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system. Observe all federal, state and local environmental regulations when disposing of this material.
- **Uncleaned packagings**
- **Recommendation:**  
Dispose of as unused product.  
Disposal must be made according to official regulations.

**\* 14 Transport Information**

- **UN-Number:**
- **DOT, ADR, IMDG, IATA** UN1814
- **UN proper shipping name:**
- **DOT, IATA** Potassium hydroxide, solution
- **ADR** UN1814 Potassium hydroxide, solution
- **IMDG** POTASSIUM HYDROXIDE SOLUTION
- **Transport hazard class(es):**
- **DOT**



- **Class:** 8 Corrosive substances
- **Label:** 8

· **ADR**

- **Class:** 8 (C5) Corrosive substances
- **Label:** 8

· **IMDG, IATA**

- **Class:** 8 Corrosive substances
- **Label:** 8
- **Packing group:**
- **DOT, ADR, IMDG, IATA** II
- **Environmental hazards:** Not applicable.
- **Special precautions for user:** Warning: Corrosive substances

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- **Danger code (Kemler):** 80
  - **EMS Number:** F-A,S-B
  - **Segregation groups:** Alkalis
  - **Stowage Category:** A
  - **Segregation Code:** SG35 Stow "separated from" acids.
  - **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.
  - **Transport/Additional information:**
  - **DOT**
  - **Quantity limitations:** On passenger aircraft/rail: 1 L  
On cargo aircraft only: 30 L
- 
- **ADR**
  - **Excepted quantities (EQ):** Code: E2  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 500 ml
- 
- **IMDG**
  - **Limited quantities (LQ):** 1L
  - **Excepted quantities (EQ):** Code: E2  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 500 ml
  - **UN "Model Regulation":** UN 1814 POTASSIUM HYDROXIDE, SOLUTION, 8, II

#### \* 15 Regulatory Information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture:**
- **SARA (Superfund Amendments and Reauthorization):**

· <b>Section 355 (extremely hazardous substances):</b>	
None of the ingredients are listed.	
· <b>Section 313 (Specific toxic chemical listings):</b>	
None of the ingredients are listed.	
· <b>TSCA (Toxic Substances Control Act):</b>	
All ingredients are listed or exempt from listing.	
· <b>California Proposition 65:</b>	
· <b>Chemicals known to cause cancer:</b>	
None of the ingredients are listed.	
· <b>Chemicals known to cause reproductive toxicity for females:</b>	
None of the ingredients are listed.	
· <b>Chemicals known to cause reproductive toxicity for males:</b>	
None of the ingredients are listed.	
· <b>Chemicals known to cause developmental toxicity:</b>	
None of the ingredients are listed.	
· <b>New Jersey Right-to-Know List:</b>	
1310-58-3	Potassium Hydroxide
· <b>New Jersey Special Hazardous Substance List:</b>	
1310-58-3	Potassium Hydroxide
	CO, R1





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**Trade name: 4.24 M KOH****· Pennsylvania Special Hazardous Substance List:**

1310-58-3 Potassium Hydroxide

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**· Carcinogenic categories:****· EPA (Environmental Protection Agency):**

None of the ingredients are listed.

**· TLV (Threshold Limit Value established by ACGIH):**

None of the ingredients are listed.

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

None of the ingredients are listed.

**· GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

**· Hazard pictograms:**

GHS05 GHS07

**· Signal word: Danger****· Hazard-determining components of labeling:**

Potassium Hydroxide

**· Hazard statements:**

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

**· Precautionary statements:**

P260 Do not breathe dusts or mists.

P280 Wear eye protection / face protection.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor.

P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.

P321 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P363 Wash contaminated clothing before reuse.

P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**· National regulations:**

The product is subject to be classified according with the latest version of the regulations on hazardous substances.

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

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### 16 Other Information

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied, and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

· **Date of preparation / last revision:** 02/29/2016 / -

· **Abbreviations and acronyms:**

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road

ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

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

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Acute Tox. 4: Acute toxicity, Hazard Category 4

Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A

Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1

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

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