Standard Operating Procedure

Potassium Hydride

*This is an SOP template and is not complete until: 1) lab specific information is entered into the box below 2) lab specific protocol/procedure is added to the protocol/procedure section and
3) SOP has been signed and dated by the PI and relevant lab personnel.*

 Print a copy and insert into your
*Laboratory Safety Manual* and *Chemical Hygiene Plan*.
Refer to instructions for assistance.

|  |  |
| --- | --- |
| **Department:** | Click here to enter text. |
| **Date SOP was written:** | Click here to enter a date. |
| **Date SOP was approved by PI/lab supervisor:** | Click here to enter a date. |
| **Principal Investigator:** | Click here to enter text. |
| **Internal Lab Safety Coordinator/Lab Manager:** | Click here to enter text. |
| **Lab Phone:** | Click here to enter text. |
| **Office Phone:** | Click here to enter text. |
| **Emergency Contact:** | Click here to enter text. |
| *(Name and Phone Number)* |
| **Location(s) covered by this SOP:** | Click here to enter text. |
| *(Building/Room Number)* |

**Type of SOP:** [ ]  Process [x] Hazardous Chemical [x]  Hazardous Class

**Purpose**

Potassium Hydride is a strong water reactive and air reactive/pyrophoric chemical. In contact with it water releases flammable gas (Hydrogen). The reaction is so vigorous that the hydrogen gas produced will, due to the heat of the reaction, ignite with the oxygen in the air, producing a flame from the presence of potassium ions in the hydrogen fire. Potassium hydride also reacts violently with acids and ignites with oxygen, chlorine or fluorine. It requires careful handling. It is sold commercially as a slurry (~35%) in mineral oil. In one study the compound was dispersed in paraffin to allow for better dispensing.

Potassium hydride is a super-base (more reactive than sodium hydride), which can be used to deprotonate organic molecules. It is used in preparation of other super-bases, RNHK and ROK, where R is an alkyl group. Potassium hydride is soluble in fused hydroxides and salt mixtures, but not in organic solvents.

**Physical & Chemical Properties/Definition of Chemical Group**

CAS#: 7693-26-7

Class: Strong water reactive & air reactive/pyrophoric

Molecular Formula: HK

Form (physical state): Solid

Color: Not available

Flash point: > 113 °C (> 235 °F) - closed cup

**Potential Hazards/Toxicity**

**OSHA Hazards**

Water Reactive

Pictogram

 

Signal word: **Danger!**

**Potential Health Effects**

**Inhalation** May be harmful if inhaled. May cause respiratory tract irritation.

**Skin** May be harmful if absorbed through skin. May cause skin irritation.

**Eyes** May cause eye irritation.

**Ingestion** May be harmful if swallowed.

**Personal Protective Equipment (PPE)**

**Respiratory Protection**

Lab personnel intending to use/wear a respirator mask must be trained and fit-tested by ORS and should contact occhealt@uga.edu. This is a UGA requirement described in more detail in the [UGA Respiratory Protection Plan](https://esd.uga.edu/sites/default/files/respiratoryprotection.pdf) and supported by the [Office of Research Occupational Health and Safety Program](https://research.uga.edu/ohsp/).

Since it is handled/used inside a glove box (under inert atmosphere), respirator is not required. During emergency response, wear Self-Contained Breathing Apparatus (SCBA) for fire- fighting.

**Hand Protection**

Handle Potassium hydride with nitrile or neoprene gloves.

NOTE: Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with Potassium hydride.

Refer to glove selection chart from the links below:

<http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf>

OR

<http://www.allsafetyproducts.biz/page/74172>

OR

<http://www.showabestglove.com/site/default.aspx>

OR

<http://www.mapaglove.com/>

**Eye Protection**

Safety goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US).

**Skin and Body Protection**

Fire/flame resistant lab coat (100% cotton based)

Cotton based clothing/attire.

Full length pants or equivalent

Close toed shoes

**Hygiene Measures**

Avoid contact with skin, eyes and clothing.

Wash hands before breaks and immediately after handling Potassium hydride.

**Engineering Controls**

**Glove Box** must be used to handle Potassium hydride.

Must be stored and used under inert atmosphere/conditions.

**First Aid Procedures**

**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**Special Handling and Storage Requirements**

**Precautions for safe handling:** Always handle inside a glove box.Keep away from water/air and sources of ignition – Open flames/Bunsen Burner. **Conditions for safe storage:** Keep container tightly closed in a dry and well-ventilated place. Hazard communication label on the container must read ‘*Water Reactive’*. Never allow product to get in contact with water or water based compounds during storage. **Note:** Do not leave the container open or on the bench top even momentarily. Do not leave the container near the lab sink, emergency eyewash and safety shower. Do not store in humid air/moisture. Handle and store under inert gas (Noble gases such as Nitrogen, Argon etc.) Keep in a dry place (such as a desiccator or a dry box or glove box). **Chemical stability:** Stable under recommended storage/handling conditions. **Conditions to avoid:** Heat, flames and sparks. Exposure to air, moisture, water & water based compounds. **Materials to avoid:** Reacts violently with air, water, acids, alcohols, oxidizing agents & chlorinated solvents.

**Salient Points to Remember**

**Fire-fighting & Extinguishing media**

**Suitable extinguishing media**

Carbon dioxide (CO2) Dry powder and Class D fire extinguisher

**DO NOT use water**

**Special protective equipment for fire-fighters**

Wear Self-Contained Breathing Apparatus (SCBA) for fire-fighting if necessary.

**Personal precautions**

* Avoid dust formation.
* Ensure adequate ventilation.
* Remove all sources of ignition.
* Evacuate personnel to safe areas.

**Environmental precautions**

Do not let product enter drains.

**Methods and materials for containment and cleaning up**

* Pick-up and dispose of as hazardous waste without creating dust.
* Do not flush with water or bring in contact with moisture.
* Keep in suitable, tightly closed containers for disposal.

**Spill and Accident Procedure**

**Chemical Spill Dial 911**

**24-7 On-Call Response to Research, Environment, Health or Safety Concerns Dial 2-5561 from a campus phone or 706-542-5561 from a non-campus line.**

**Spill** – Follow the procedures set out in the [UGA Chemical and Laboratory Safety Manual.](http://research.uga.edu/docs/units/safety/manuals/Chemical-Laboratory-Safety-Manual.pdf)

[If there are any chemical-specific protocols for responding to a spill, insert them here or mark “none”:]

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# **Medical Emergency Dial 911**

**Life Threatening Emergency, After Hours, Weekends And Holidays** – Dial **911** or the emergency phone numbers listed at the beginning of the UGA Chemical and Laboratory Safety Manual

*Note: All incidents that result in an injury or property damage must be reported to ORS / ESD using a University Incident/Accident Report.*

**Non-Life Threatening Emergency** – Follow the instructions in the UGA Chemical and Laboratory Safety Manual.

*Note: All incidents that result in an injury or property damage must be reported to ORS / ESD using a University Incident/Accident Report.*

**Decontamination/Waste Disposal Procedure**

**For general hazardous waste disposal procedures, see Appendix H of the UGA Chemical and Laboratory Safety Manual.**

**Chemical Specific Procedures: [to be inserted or marked as “none”]**

Wearing proper PPE, decontaminate equipment and bench tops using soap and water. Dispose of the used Potassium Hydride and disposables contaminated with Potassium Hydride as hazardous waste.

**Safety Data Sheet (SDS) Location**

UGA personnel can access Online SDS through a link in the upper left corner of the ESD home page (<https://esd.uga.edu>) and logging in by using their UGA email user name and password.

**Protocol/Procedure (Add lab specific Protocol/Procedure here)**

Click here to enter text.

**NOTE**

Any deviation from this SOP requires approval from PI.

**Documentation of Training** (signature of all users is required)

* Prior to conducting any work with Potassium Hydride., designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.
* The Principal Investigator must provide his/her laboratory personnel with a copy of this SOP and access to the SDS provided by the manufacturer.
* The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last 12 months.

I have read and understand the content of this SOP:

|  |  |  |
| --- | --- | --- |
| **Name** | **Signature** | **Date** |
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