

NESSLER'S REAGENT (KING'S)

GHS Safety Data Sheet

Version No: 1

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

NESSLER'S REAGENT (KING'S)

OTHER NAMES

"Nessler's Reagent", "sodium hydroxide, mercury iodide, potassium iodide in water"

PROPER SHIPPING NAME

CORROSIVE LIQUID, TOXIC, N.O.S.(contains sodium hydroxide and mercury iodide).

PRODUCT USE

Analytical reagent.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V.Ind.Estate,

248, Worli Road,

Mumbai- 400030, India

www.sdfine.com

Telephone: 91- 22 24959898/99

Fax: 91- 22 2493 7232

Email: technical@sdfine.com

Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity Category 1

Acute Toxicity Category 1

Acute Toxicity Category 2

Chronic Aquatic Hazard Category 2

Metal Corrosion Category 1

Reproductive Toxicity Category 2

Respiratory Sensitizer Category 1

Serious Eye Damage Category 1

Skin Corrosion/Irritation Category 1A

Skin Sensitizer Category 1

STOT - RE Category 2



EMERGENCY OVERVIEW

HAZARD

DANGER

Determined by using GHS criteria

H290	May be corrosive to metals.
H300	Fatal if swallowed.
H310	Fatal in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.

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Section 2 - HAZARDS IDENTIFICATION

H330	Fatal if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

Prevention

Code	Phrase
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P234	Keep only in original container.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P262	Do not get in eyes, on skin, or on clothing.
P264	Wash ... thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well- ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P284	Wear respiratory protection.
P285	In case of inadequate ventilation wear respiratory protection.

Response

Code	Phrase
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P350	IF ON SKIN: Gently wash with plenty of soap and water.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P304+P341	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P310	Immediately call a POISON CENTER or doctor/physician.
P314	Get medical advice/attention if you feel unwell.
P320	Specific treatment is urgent (see MSDS).
P330	Rinse mouth.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P342+P311	If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P361	Remove/Take off immediately all contaminated clothing.
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.
P391	Collect spillage.

Storage

Code	Phrase
P403+P233	Store in a well- ventilated place. Keep container tightly closed.
P405	Store locked up.
P406	Store in corrosive resistant container or with a resistant inner liner.

Disposal

Code	Phrase
P501	Dispose of contents/container to ...

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
sodium hydroxide	1310-73-2	20
mercuric iodide	7774-29-0	8
potassium iodide	7681-11-0	6
water	7732-18-5	>60

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Section 4 - FIRST AID MEASURES

SWALLOWED

- If poisoning occurs, contact a doctor or Poisons Information Centre.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.

EYE

- If this product comes in contact with the eyes:
 - Immediately hold eyelids apart and flush the eye continuously with running water.
 - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
 - Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
 - Transport to hospital or doctor without delay.

SKIN

- If skin or hair contact occurs:
 - Immediately flush body and clothes with large amounts of water, using safety shower if available.
 - Quickly remove all contaminated clothing, including footwear.
 - Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
 - Transport to hospital, or doctor.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.

NOTES TO PHYSICIAN

- For acute or short-term repeated exposures to highly alkaline materials:
 - Respiratory stress is uncommon but present occasionally because of soft tissue edema.
 - Unless endotracheal intubation can be accomplished under direct vision, cricothyroidotomy or tracheotomy may be necessary.
 - Oxygen is given as indicated.
 - The presence of shock suggests perforation and mandates an intravenous line and fluid administration.
 - Moderate adsorption of inorganic mercury compounds through the gastro-intestinal tract (7-15%) is the principal cause of poisoning. These compounds are highly concentrated (as the mercuric (Hg (2+) form) in the kidney; acute ingestion may lead to oliguric renal failure. Severe mucosal necrosis may also result from ingestion.
 - Chronic effects range from proteinuria to nephrotic syndrome. Chronic presentation also involves dermatitis, gingivitis, stomatitis, tremor and neuropsychiatric symptoms of erethism.
 - Absorbed inorganic mercury does not significantly cross the blood-brain barrier.
 - Emesis and lavage should be initiated following acute ingestion.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding area.

FIRE/EXPLOSION HAZARD

- Non combustible liquid.

Not considered to be a significant fire risk.

Heating may cause expansion or decomposition leading to violent rupture of containers.

- Reacts with aluminium / zinc producing flammable, explosive hydrogen gas.
- Decomposes on heating and produces toxic fumes of: caustic compounds and metal oxides.

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Section 5 - FIRE FIGHTING MEASURES

FIRE INCOMPATIBILITY

- Avoid reaction with acids, ammonium salts, strong oxidising agents, organic materials / compounds. Reacts vigorously with water.
- DO NOT use aluminium, galvanised or tin-plated containers.

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.

MAJOR SPILLS

- Clear area of personnel and move upwind.
 - Alert Fire Brigade and tell them location and nature of hazard.
 - Wear full body protective clothing with breathing apparatus.
 - Prevent, by any means available, spillage from entering drains or water course.
- Personal Protective Equipment advice is contained in Section 8 of the MSDS.**

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.

SUITABLE CONTAINER

- Glass container is suitable for laboratory quantities.
- Packaging as recommended by manufacturer.
- Check that containers are clearly labelled.

STORAGE INCOMPATIBILITY

Avoid storage with acids, oxidising agents, ammonium salts and organic compounds.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- DO NOT use aluminium, galvanised or tin-plated containers.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA mg/m ³	Peak mg/m ³	Notes
India Permissible Levels of Certain Chemical Substances in Work Environment	sodium hydroxide (Sodium hydroxide)		2	
India Permissible Levels of Certain Chemical Substances in Work Environment	mercuric iodide (Mercury (as Hg) (ii) All forms except alkyl vapour)	0.05		Skin

The following materials had no OELs on our records

- potassium iodide: CAS:7681- 11- 0
- water: CAS:7732- 18- 5

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MATERIAL DATA

MERCURIC IODIDE:

POTASSIUM IODIDE:

■ It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.

At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience).

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

DREW AMEROID 0488 NESSLER REAGENT:

■ None assigned. Refer to individual constituents.

SODIUM HYDROXIDE:

■ for sodium hydroxide:

The TLV-C is recommended based on concentrations that produce noticeable but not excessive, ocular and upper respiratory tract irritation.

MERCURIC IODIDE:

■ NOTE: Inorganic mercury and its salts has been classified by the ACGIH as A4 NOT classifiable as a Human Carcinogen. The counter ion may, however, be a carcinogen.

Some jurisdictions require that health surveillance be conducted on occupationally exposed workers. Such surveillance should emphasise

- demography, occupational and medical history and advice.

POTASSIUM IODIDE:

■ Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat.

Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations.

WATER:

■ No exposure limits set by NOHSC or ACGIH.

PERSONAL PROTECTION



RESPIRATOR

•Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

EYE

- Chemical goggles.
- Full face shield may be required for supplementary but never for primary protection of eyes
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

HANDS/FEET

■ Wear chemical protective gloves, e.g. PVC.
Wear safety footwear.

OTHER

■ No special equipment needed when handling small quantities.

OTHERWISE:

- Overalls.
- Barrier cream.
- Eyewash unit.

ENGINEERING CONTROLS

■ Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Clear light yellow alkaline solution; mixes with water.

PHYSICAL PROPERTIES

Liquid.
Mixes with water.
Corrosive.
Alkaline.
Toxic or noxious vapours/gas.

State	Liquid	Molecular Weight	Not applicable.
Melting Range (°C)	Not available.	Boiling Range (°C)	Not available.
Solubility in water (g/L)	Miscible	Flash Point (°C)	Not applicable
pH (1% solution)	Not available	Decomposition Temp (°C)	Not available
pH (as supplied)	>12	Autoignition Temp (°C)	Not applicable
Vapour Pressure (kPa)	Not available.	Upper Explosive Limit (%)	Not applicable
Specific Gravity (water=1)	1.20	Lower Explosive Limit (%)	Not applicable
Relative Vapour Density (air=1)	Not available.	Volatile Component (%vol)	Not available.
Evaporation Rate	Not available		

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
 - Product is considered stable.
 - Hazardous polymerisation will not occur.
- For incompatible materials - refer to Section 7 - Handling and Storage.*

Section 11 - TOXICOLOGICAL INFORMATION

Health hazard summary table:

Acute toxicity	Acute Tox. (dermal) 1 Acute Tox. (inhal) 1 Acute Tox. (oral) 2
Skin corrosion/irritation	Skin Corr. 1 A
Serious eye damage/irritation	Eye Dam. 1
Respiratory or skin sensitization	Resp. Sens. 1 Skin Sens. 1
Germ cell mutagenicity	Not applicable
Carcinogenicity	Not applicable
Reproductive toxicity	Repr. 2
STOT- single exposure	Not applicable
STOT- repeated exposure	STOT RE 2
Aspiration hazard	Not applicable

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

- Considered an unlikely route of entry in commercial/industrial environments.

EYE

- The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

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Section 11 - TOXICOLOGICAL INFORMATION

SKIN

- Toxic effects may result from skin absorption.
- Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin.

Absorption by skin may readily exceed vapour inhalation exposure.

- The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

INHALED

- The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function.

CHRONIC HEALTH EFFECTS

- Practical evidence shows that inhalation of the material is capable of inducing a sensitisation reaction in a substantial number of individuals at a greater frequency than would be expected from the response of a normal population. Pulmonary sensitisation, resulting in hyperactive airway dysfunction and pulmonary allergy may be accompanied by fatigue, malaise and aching.

- Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.

Principal route of exposure is usually by skin contact/absorption.

Repeated or prolonged skin contact can cause chronic dermatitis.

Reaction to contact with broken skin is prompt and intense. Reaction to contact with intact skin apart from initial soapy feeling may be delayed, but unless removed quickly will result in pain and burns, which may proceed to deep ulceration with scarring. Contact with the eye may result in rapid destruction of eye tissue/or corneal ulcers with impairment or loss of vision.

Ingestion may result in severe mouth, throat, esophagus and stomach damage.

Death may result from subsequent penetration into vital areas.

TOXICITY AND IRRITATION

- Not available. Refer to individual constituents.

CARCINOGEN

mercuric iodide	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	3	Not classifiable as to its carcinogenicity to humans
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SKIN

sodium hydroxide	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	(3)
sodium hydroxide	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	3C
mercuric iodide	India Permissible Levels of Certain Chemical Substances in Work Environment - Skin	Notes	Skin

Section 12 - ECOLOGICAL INFORMATION

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

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

Avoid release to the environment.

Refer to special instructions/ safety data sheets.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
sodium hydroxide	LOW	No Data Available	LOW	HIGH
mercuric iodide	No Data Available	No Data Available	No Data Available	No Data Available
potassium iodide	HIGH	No Data Available	LOW	HIGH

continued...

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Treat and neutralise with dilute acid at an effluent treatment plant.
- Recycle containers, otherwise dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION



Labels Required: CORROSIVE, TOXIC

HAZCHEM:
2X

Land Transport UNDG:

Class or division:	8	Subsidiary risk:	6.1
UN No.:	2922	UN packing group:	II
Shipping Name: CORROSIVE LIQUID, TOXIC, N.O.S. (contains sodium hydroxide and mercury iodide).			

Air Transport IATA:

ICAO/IATA Class:	8	ICAO/IATA Subrisk:	6.1
UN/ID Number:	2922	Packing Group:	II
Special provisions:	A3A803		

Shipping name: CORROSIVE LIQUID, TOXIC, N.O.S. (contains sodium hydroxide and mercury iodide)

Maritime Transport IMDG:

IMDG Class:	8	IMDG Subrisk:	6.1
UN Number:	2922	Packing Group:	II
EMS Number:	F- A, S- B	Special provisions:	274
Limited Quantities:	1 L	Marine Pollutant:	Yes
Shipping name: CORROSIVE LIQUID, TOXIC, N.O.S. (contains sodium hydroxide and mercury iodide)			

Section 15 - REGULATORY INFORMATION

REGULATIONS

Regulations for ingredients

sodium hydroxide (CAS: 1310-73-2, 12200-64-5) is found on the following regulatory lists;

"Acros Transport Information", "CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP", "FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "India Hazardous Wastes (Management, Handling and Transboundary Movement) Rules - Schedule 2: List of Wastes Constituents with Concentration Limits", "India Manufacture, Storage and Import of Hazardous Chemical Rules - Schedule 1: List of Hazardous and Toxic Chemicals", "India Permissible Levels of Certain Chemical Substances in Work Environment", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Fragrance Association (IFRA) Survey: Transparency List", "International Numbering System for Food Additives", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information", "United Nations Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments"

mercuric iodide (CAS: 7774-29-0) is found on the following regulatory lists;

"FisherTransport Information", "India Chemical Accidents Rules - Schedule 1: List of Hazardous Chemicals", "India Hazardous Wastes (Management, Handling and Transboundary Movement) Rules - Schedule 2: List of Wastes Constituents with Concentration Limits", "India Permissible Levels of Certain Chemical Substances in Work Environment", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Maritime Dangerous Goods Requirements (IMDG Code) - Marine Pollutants", "Sigma-AldrichTransport Information", "United Nations Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments", "United Nations List of Prior Informed Consent Chemicals"

potassium iodide (CAS: 7681-11-0) is found on the following regulatory lists;

"FisherTransport Information", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information"

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Section 15 - REGULATORY INFORMATION

water (CAS: 7732-18-5) is found on the following regulatory lists;

"IMO IBC Code Chapter 18: List of products to which the Code does not apply", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-Aldrich Transport Information"

No data for Drew Ameroid 0488 Nessler Reagent (CW: 41353)

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
sodium hydroxide	1310- 73- 2, 12200- 64- 5

■ Classification of the preparation and its individual components has drawn on official and authoritative sources using available literature references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 21-Jan-2018