

POTASSIUM NITRATE

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

POTASSIUM NITRATE
Saltpetre; Nitre
CAS: 7757-79-1

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Water-soluble fertiliser (nitrogen-potassium source); food preservative/curing agent (INS 252); oxidiser component in pyrotechnics, fireworks, propellants and matches; heat-transfer salt component; raw material for glass and ceramic frits; tree-stump remover. For industrial user only.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS
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Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281
Email: sales@surajchemicals.com | Website: www.surajchemicals.com
GST No: 33ACEPV8190L1ZZ

1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), based on well-established, publicly documented data for this CAS number.

Ox. Sol. 3	Oxidising solid, Category 3, H272
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2.2 GHS label elements, including precautionary statements:

GHS: Warning

Hazard statements:

Ox. Sol. 3: H272 – May intensify fire; oxidiser.

Precautionary statements:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220: Keep/Store away from clothing and other combustible materials.
P221: Take any precaution to avoid mixing with combustibles.
P280: Wear protective gloves/eye protection.
P370+P378: In case of fire: Use water spray/fog to extinguish; dry chemical, foam or CO2 extinguishers may be less effective as the sole measure against fires involving significant quantities of this oxidiser.
P501: Dispose of contents/container in accordance with local regulations.

2.3 Other hazards which do not result in classification:

No other hazards which do not result in classification are known at this time.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Potassium Nitrate (Saltpetre)
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 7757-79-1	POTASSIUM NITRATE — Potassium Nitrate – Ox. Sol. 3: H272 – Warning	Technical / Fertiliser / Food grade, min. 99% w/w KNO3

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Request medical assistance immediately, showing the SDS of this product, if symptoms persist or if there is any doubt.

By inhalation:

Remove the person affected from the area of exposure to fresh air and keep at rest. If breathing is difficult, administer oxygen. If irritation, coughing or breathing difficulty persists, seek medical attention.

By skin contact:

Remove contaminated clothing and footwear. Wash the affected skin thoroughly with plenty of soap and water. If irritation develops or persists, seek medical attention.

By eye contact:

Rinse eyes immediately with plenty of clean, lukewarm water for at least 15 minutes, holding the eyelids open. Remove contact lenses if present and easy to do. If irritation persists, consult an ophthalmologist.

By ingestion/aspiration:

Rinse mouth with water. Do not induce vomiting. If the person is conscious, give plenty of water to drink. Seek medical attention if large quantities have been swallowed or if discomfort persists.

4.2 Most important symptoms/effects, acute and delayed:

Acute and delayed effects are indicated in sections 2 and 11.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Treat symptomatically. No specific antidote is available.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:

Suitable: Water spray/fog in large quantities (flood with water) to cool and dilute – preferred, since the product can supply its own oxygen and sustain combustion of other materials.
Unsuitable: Dry chemical powder, foam and carbon dioxide are not recommended as the sole extinguishing media for fires involving significant quantities of this oxidiser.

5.2 Specific hazards arising from the chemical:

Strong oxidiser (Ox. Sol. 3, H272). Not itself combustible, but may intensify fire and increase the rate of burning of combustible materials. Mixtures with organic materials, powdered metals, sulfur or other combustibles/reducing agents can ignite readily and burn vigorously or deflagrate (e.g. classic black-powder-type compositions) – such mixing must be avoided.

5.3 Special protective actions for fire-fighters:

Evacuate all non-essential personnel. Intervention only by trained personnel aware of the hazards of the product. Wear self-contained breathing apparatus and full protective clothing in the event of fire.

Additional provisions:

Keep combustible materials away from the fire area. Flood with large quantities of water if safe to do so, to cool containers and dilute the product. Thermal decomposition above ≈400°C releases oxygen and nitrogen oxides (NOx), which can intensify a fire; use self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Avoid generating and inhaling dust. Ventilate the area. Use the personal protective equipment described in section 8. Keep unprotected persons away from the spill area.

For emergency responders:

Wear appropriate protective equipment as described in section 8. Avoid raising dust during clean-up operations.

6.2 Environmental precautions:

Avoid, as far as possible, release of the product into the environment in large quantities. Contain spillage and prevent entry into drains, watercourses or soil. Notify the relevant authority in case of significant exposure to the environment.

6.3 Methods and materials for containment and cleaning up:

Sweep up or vacuum (avoiding dust dispersion) and collect in a suitable, labelled container for reuse or disposal. Wash the contaminated area with water after the bulk of the material has been removed.

6.4 Reference to other sections:

See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

A. General precautions for safe use:

Keep away from heat, sparks, open flames and other ignition sources. Keep away from combustible materials, organic matter, powdered metals, sulfur and other reducing agents. Avoid generating dust.

B. Technical recommendations for the prevention of fires and explosions:

Segregate from all combustible, organic, fuel and reducing materials (see section 10.5), in line with standard oxidiser storage/segregation practice. Store and handle away from sources of ignition. Avoid mechanical shock/friction, particularly with contaminated (combustible) material mixtures.

C. Technical recommendations on general occupational hygiene:

Do not eat, drink or smoke during handling; wash hands and exposed skin thoroughly after handling and before breaks.

D. Technical recommendations to prevent environmental risks:

Avoid release to drains, watercourses or soil. Store containers on an impervious surface. Follow the protective measures given in section 8.

7.2 Conditions for safe storage, including any incompatibilities:

A. Specific storage requirements:

Minimum Temp.	5°C
Maximum Temp.	35°C
Maximum time	24 Months (in original, unopened packaging)

B. General conditions for storage:

Store in a cool, dry, well-ventilated place, away from direct sunlight, heat sources and all combustible, organic or reducing materials. Segregate from fuels, sulfur, powdered metals and other oxidisable substances. For additional information see subsection 10.5.

7.3 Specific end use(s):

Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:

Substances whose occupational exposure limits have to be assessed in the workplace, per the Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987):

Identification	Occupational Exposure Limit Type	Value
Particulates Not Otherwise Classified (PNO) – dust from this product	Time Weighted average concentration (8 hrs, inhalable fraction)	10 mg/m³
	Time Weighted average concentration (8 hrs), respirable fraction	3 mg/m³

8.2 Appropriate engineering controls:

Use local exhaust ventilation or general dilution ventilation to control dust levels below the applicable occupational exposure limit. Provide eyewash stations and washing facilities near the work area.

B. Respiratory protection:

Not normally required under conditions of good industrial hygiene with adequate ventilation. If dust levels are high or ventilation is inadequate, use a dust mask/respirator fitted with a P1/P2 particulate filter.

C. Specific protection for the hands:

Protective gloves (e.g. nitrile or PVC) are recommended for prolonged or repeated handling, as good industrial hygiene practice. Replace at any sign of damage.

D. Eye and face protection:

Safety glasses with side shields are recommended to prevent dust contact with the eyes.

E. Bodily protection:

Standard work clothing; avoid clothing contaminated with combustible residues. Avoid static-generating equipment near accumulated dust.

F. Additional emergency measures:

Emergency shower (ANSI Z358-1, ISO 3864-1:2011, ISO 3864-4:2011) and eyewash stations (DIN 12 899, ISO 3864-1:2011, ISO 3864-4:2011) should be available near the work area.

Environmental exposure controls:

Avoid release of the product to drains, watercourses or soil. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance	
Physical state at 20°C	Solid

Appearance	Crystalline powder, prills or granules
Color	White
Odor	Odorless
Odour threshold	Not relevant *
Volatility	
Boiling point at atmospheric pressure	Not applicable – decomposes before boiling
Vapour pressure at 20°C / 50°C	Not relevant *
Evaporation rate at 20°C	Not relevant *
Product Description	
Density / Relative density at 20°C	2.11 g/cm³
Dynamic / Kinematic viscosity	Non-applicable (solid)
Concentration	Technical / Fertiliser / Food grade, min. 99% w/w KNO3
pH	≈6–9 (neutral, 5% aqueous solution)
Vapour density at 20°C	Not relevant *
Partition coefficient n-octanol/water 20°C	Not applicable – inorganic salt
Solubility in water at 20°C	≈36 g/100 mL at 25°C (highly temperature-dependent; much more soluble when hot)
Decomposition temperature	≈400°C (decomposes, releasing oxygen and nitrogen oxides)
Melting point/freezing point	334°C
Flammability	
Flash Point	Non-applicable (inorganic solid)
Flammability (solid, gas)	Non-flammable, but a strong oxidiser that will intensify the combustion of other materials
Autoignition temperature	Not relevant *
Lower / Upper flammability limit	Not relevant *
Particle Characteristics	
Median equivalent diameter	Typical value — refer to current specification sheet

* Not relevant due to the nature of the product, not providing information on the properties of its hazards.

9.2 Other information:

Explosive properties	Not explosive as supplied; mixtures with combustible or reducing materials (e.g. sulfur, charcoal, organic fuels) can be explosive/deflagrate – such mixing must be avoided
Oxidising properties	Oxidising solid, Category 3 (H272) – may intensify fire
Corrosive to metals	Not corrosive to metals under normal conditions
Heat of combustion	Not relevant *
Surface tension at 20°C	Not relevant *
Refraction index	Not relevant *

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:

Strong oxidiser. May react vigorously, and in some cases explosively, with combustible materials, organic substances, powdered metals, sulfur, cyanides and other reducing agents. Stable under normal, segregated storage conditions.

10.2 Chemical stability:

Chemically stable under the indicated conditions of storage, handling and use.

10.3 Possibility of hazardous reactions:

Mixtures with finely divided combustible materials, sulfur, powdered metals or organic matter can ignite readily and burn vigorously or deflagrate on ignition, friction or shock. Thermal decomposition above ≈400°C releases oxygen and nitrogen oxides, which can intensify a fire.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Avoid friction/shock, particularly with combustible contaminants	Not applicable	Avoid heating above decomposition temperature (≈400°C)	No specific sensitivity	Keep dry – cakes on moisture uptake

10.5 Incompatible materials:

Combustible / Organic Materials	Powdered Metals / Sulfur	Reducing Agents / Cyanides	Strong Acids
Avoid contact – fire/intensification risk	Avoid contact – may form explosive mixtures	Avoid contact – vigorous reaction	Avoid contact

10.6 Hazardous decomposition products:

Oxygen and nitrogen oxides (NOx) on strong heating above ≈400°C; potassium oxide residues.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

A. Ingestion (acute effect):

Low acute oral toxicity at typical exposure levels. The nitrate ion can contribute to methaemoglobinaemia at very high doses, particularly in infants. Large doses may cause gastrointestinal irritation and abdominal pain.

B. Inhalation (acute effect):

May cause irritation of the respiratory tract due to dust; not expected to be acutely toxic by inhalation at typical exposure levels.

C. Contact with skin and eyes (acute effect):

May cause mild irritation to skin and eyes on contact with dust.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):

Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data. IARC: Not listed.

E. Sensitizing effects:

Not expected to be a sensitiser based on available data.

F. Specific target organ toxicity (STOT) – single exposure:

Not classified based on available data.

G. Specific target organ toxicity (STOT) – repeated exposure:

Classification criteria are not met based on available data.

H. Aspiration hazard:

Classification criteria are not met based on available data; not applicable to solids of this nature.

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Potassium Nitrate CAS: 7757-79-1	LD50 oral (rat): ≈3750 mg/kg (literature reference)	Rat

SECTION 12: ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment; nitrogen loading from large releases may contribute to eutrophication.

12.1 Toxicity:

Identification	Acute Toxicity	Species	Genus
Potassium Nitrate CAS: 7757-79-1	LC50 (fish): Typical value — refer to current specification sheet	Not available	Fish

12.2 Persistence and degradability:

Dissociates into potassium and nitrate ions, naturally occurring nutrient species; the concept of biodegradability is not directly applicable.

12.3 Bioaccumulative potential:

Not expected to bioaccumulate.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Not relevant	Not relevant	No	Highly mobile (soluble)

12.5 Results of PBT and vPvB assessment:

Non-applicable – this substance is an inorganic/mineral salt and is not subject to PBT/vPvB assessment criteria.

12.6 Other adverse effects:

Excessive nitrate input to water bodies may contribute to eutrophication/algal blooms.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Dispose of in accordance with local hazardous/oxidiser waste regulations, via a licensed waste disposal contractor; keep segregated from combustible waste during storage and disposal. Do not discharge directly to drains/watercourses in bulk, due to nutrient (nitrate) content.
Refer to national and local regulations on waste management. Do not discharge directly into drains, watercourses or onto the ground.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023):

14.1 UN number	UN1486
14.2 UN proper shipping name	POTASSIUM NITRATE
14.3 Transport hazard class(es)	5.1 (Oxidising substance)
14.4 Packing group	III
14.5 Environmental hazard	No
14.6 Special precautions for user	Keep away from combustible/organic materials during transport and storage. Physico-chemical properties: see section 9.
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22):

14.1 UN number	UN1486
14.2 UN proper shipping name	POTASSIUM NITRATE
14.3 Transport hazard class(es)	5.1 (Oxidising substance)
14.4 Packing group	III
14.5 Marine pollutant	No
14.6 Special precautions for user	Keep away from combustible/organic materials during transport and storage. Physico-chemical properties: see section 9.
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024):

14.1 UN number	UN1486
14.2 UN proper shipping name	POTASSIUM NITRATE
14.3 Transport hazard class(es)	5.1 (Oxidising substance)
14.4 Packing group	III
14.5 Environmental hazard	No
14.6 Special precautions for user	Keep away from combustible/organic materials during transport and storage. Physico-chemical properties: see section 9.
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product. This substance is classified as an oxidising solid (Category 3, H272) under the GHS and is permitted for use as a fertiliser and as a food additive/preservative (INS 252), subject to compliance with applicable regulations.

Other legislation:

Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996
Public Liability Insurance Act, 1991

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

H272: May intensify fire; oxidizer.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

The United Nations Economic Commission for Europe (UNECE); publicly available GHS classification and labelling data for this CAS number.

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | COD: Chemical Oxygen Demand | BOD5: 5-day biochemical oxygen demand | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer | ATE: Acute Toxicity Estimate | PNOC: Particulates Not Otherwise Classified

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET