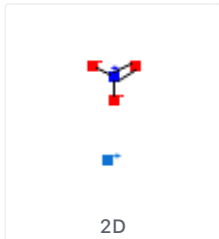


[COMPOUND SUMMARY](#) > [LABORATORY CHEMICAL SAFETY SUMMARY \(LCSS\)](#)

# Sodium nitrate



<b>PubChem CID</b>	24268
<b>Structure</b>	 <p>2D</p> <p><a href="#">Find Similar Structures</a></p>
<b>Synonyms</b>	SODIUM NITRATE 7631-99-4 Nitrate of soda Chile saltpeter Cubic niter <input type="button" value="More..."/>
<b>Molecular Formula</b>	<a href="#">NaNO<sub>3</sub></a> or <a href="#">NNaO<sub>3</sub></a>
<b>Molecular Weight</b>	84.995

[Learn More About LCSS Project](#) >

# 1 GHS Classification



Showing 1 of 4 [View More](#)

<b>Pictogram(s)</b>	  Oxidizer      Irritant
<b>Signal</b>	<u>Warning</u>
<b>GHS Hazard Statements</b>	H272 (58.07%): May intensify fire; oxidizer [ <b>Danger</b> Oxidizing liquids; Oxidizing solids] H302 (17.3%): Harmful if swallowed [ <u>Warning</u> Acute toxicity, oral] H319 (89.43%): Causes serious eye irritation [ <u>Warning</u> Serious eye damage/eye irritation]
<b>Precautionary Statement Codes</b>	P210, P220, P221, P264, P270, P280, P301+P312, P305+P351+P338, P330, P337+P313, P370+P378, and P501 (The corresponding statement to each P-code can be found at the <a href="#">GHS Classification</a> page.)
<b>ECHA C&amp;L Notifications Summary</b>	<p>Aggregated GHS information provided by 1697 companies from 32 notifications to the ECHA C&amp;L Inventory. Each notification may be associated with multiple companies.</p> <p>Reported as not meeting GHS hazard criteria by 61 of 1697 companies. For more detailed information, please visit <a href="#">ECHA C&amp;L website</a>.</p> <p>Of the 31 notification(s) provided by 1636 of 1697 companies with hazard statement code(s). Information may vary between notifications depending on impurities, additives, and other factors. The percentage value in parenthesis indicates the notified classification ratio from companies that provide hazard codes. Only hazard codes with percentage values above 10% are shown.</p>

► [European Chemicals Agency \(ECHA\)](#)

## 2 Identifiers

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### 2.1 CAS

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7631-99-4

▶ [CAMEO Chemicals](#); [ChemIDplus](#); [DrugBank](#); [EPA Chemicals under the TSCA](#); [EPA DSSTox](#); [European Chemicals Agency](#)

### 2.2 InChI

---

InChI=1S/NO<sub>3</sub>.Na/c2-1(3)4;/q-1;+1

*Computed by InChI 1.0.5 (PubChem release 2019.06.18)*

▶ [PubChem](#)

### 2.3 InChI Key

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VWDWKYIASSYTQR-UHFFFAOYSA-N

*Computed by InChI 1.0.5 (PubChem release 2019.06.18)*

▶ [PubChem](#)

## 3 Physical Properties

### 3.1 Physical Description

Showing 2 of 3 [View More](#) 

Sodium nitrate appears as a white crystalline solid. Noncombustible but accelerates the burning of combustible materials. If large quantities are involved in fire or the combustible material is finely divided an explosion may result. May explode under prolonged exposure to heat or fire. Toxic oxides of nitrogen are produced in fires. Used in solid propellants, explosives, fertilizers, and for many other uses.

▶ [CAMEO Chemicals](#)

DryPowder; DryPowder, PelletsLargeCrystals; Liquid; OtherSolid; PelletsLargeCrystals

▶ [EPA Chemicals under the TSCA](#)

### 3.2 Odor

Odorless

*Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 10th ed. Volumes 1-3 New York, NY: John Wiley & Sons Inc., 1999., p. V3: 3264*

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

### 3.3 Boiling Point

Decomposes 716° F (USCG, 1999)

*U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.*

▶ [CAMEO Chemicals](#)

380 °C with decomp

*Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 10th ed. Volumes 1-3 New York, NY: John Wiley & Sons Inc., 1999., p. V3: 3264*

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

### 3.4 Melting Point

584.2 °F (USCG, 1999)

*U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.*

▶ [CAMEO Chemicals](#)

308 °C

*O'Neil, M.J. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. 13th Edition, Whitehouse Station, NJ: Merck and Co., Inc., 2001., p. 1544*

► [Hazardous Substances Data Bank \(HSDB\)](#); [ILO International Chemical Safety Cards \(ICSC\)](#)

## 3.5 Solubility



Showing 2 of 6 [View More](#)

...is soluble in liquid [ammonia](#) and forms Na NO<sub>3</sub>.4NH<sub>3</sub> below -42 °C. The solubility in anhydrous [methanol](#) is 2.8 wt% at 25 °C.

*Gerhartz, W. (exec ed.). Ullmann's Encyclopedia of Industrial Chemistry. 5th ed. Vol A1: Deerfield Beach, FL: VCH Publishers, 1985 to Present., p. VA17: 266 (1991)*

► [Hazardous Substances Data Bank \(HSDB\)](#)

Slightly soluble in [ethanol](#) and [methanol](#)

*Lide, D.R. CRC Handbook of Chemistry and Physics 86TH Edition 2005-2006. CRC Press, Taylor & Francis, Boca Raton, FL 2005, p. 4-87*

► [Hazardous Substances Data Bank \(HSDB\)](#)

## 3.6 Density



Showing 2 of 3 [View More](#)

2.26 at 68 °F (USCG, 1999)

*U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.*

► [CAMEO Chemicals](#)

2.26

*O'Neil, M.J. (ed.). The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals. 13th Edition, Whitehouse Station, NJ: Merck and Co., Inc., 2001., p. 1544*

► [Hazardous Substances Data Bank \(HSDB\)](#)

## 3.7 Decomposition



Showing 2 of 3 [View More](#)

... /Sodium nitrate/ decomposes on heating producing nitrogen oxides and [oxygen](#), which increases fire hazard.

*IPCS, CEC; International Chemical Safety Card on Sodium nitrate. (October 2001). Available from <https://www.inchem.org/documents/icsc/icsc/eics0185.htm> as of October 23.*

► [Hazardous Substances Data Bank \(HSDB\)](#)

When heated to decomposition it emits toxic fumes of /[nitrogen oxide](#) and [sodium oxide](#)/.

*Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 3265*

► [Hazardous Substances Data Bank \(HSDB\)](#)

## 4 Toxicity Data



### 4.1 Non-Human Toxicity Values



#### LD50 Rat oral 1267 mg/kg

Lewis, R.J. Sr. (ed) *Sax's Dangerous Properties of Industrial Materials*. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 3265

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

#### LD50 Mouse iv 175 mg/kg

Lewis, R.J. Sr. (ed) *Sax's Dangerous Properties of Industrial Materials*. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 3265

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

#### LD50 Mouse oral 2480 mg/kg

WHO; WHO Food Additives Series 35 (845): Nitrate. Available from, as of October 30, 2006: <https://www.inchem.org/documents/jecfa/jecmono/v35je14.htm>

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

#### LD50 Rabbit oral 1600 mg/kg

WHO; WHO Food Additives Series 35 (845): Nitrate. Available from, as of October 30, 2006: <https://www.inchem.org/documents/jecfa/jecmono/v35je14.htm>

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

#### LD50 Rabbit oral 2680 mg/kg

Lewis, R.J. Sr. (ed) *Sax's Dangerous Properties of Industrial Materials*. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 3265

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

#### LD50 Rabbit oral 1955 mg/kg

European Chemicals Bureau; IUCLID Dataset, Sodium nitrate, containing in the dry state more than 16.3 per cent by weight of nitrogen (7631-99-4) (2000 CD-ROM edition). Available from, as of October 26, 2006: <https://esis.jrc.ec.europa.eu/>

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

#### LD50 Cow oral 450 mg/kg (est)

WHO; WHO Food Additives Series 35 (845): Nitrate. Available from, as of October 30, 2006: <https://www.inchem.org/documents/jecfa/jecmono/v35je14.htm>

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

#### LD50 Cow oral 970 mg/kg/24 hr

WHO; WHO Food Additives Series 35 (845): Nitrate. Available from, as of October 30, 2006: <https://www.inchem.org/documents/jecfa/jecmono/v35je14.htm>

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

## 5 Exposure Limits



### 5.1 Effects of Short Term Exposure



The substance is irritating to the eyes, skin and respiratory tract. Ingestion could cause effects on the blood. This may result in the formation of methaemoglobin. The effects may be delayed. Medical observation is indicated.

- ▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

### 5.2 Explosive Limits and Potential



... /Sodium nitrate/ is a strong oxidant and reacts with combustible and reducing materials, causing fire and explosion hazard.

*IPCS, CEC; International Chemical Safety Card on Sodium nitrate. (October 2001). Available from <https://www.inchem.org/documents/icsc/icsc/eics0185.htm> as of October 23.*

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)

Explodes when heated to over 1000 °C.

*U.S. Coast Guard, Department of Transportation. CHRIS - Hazardous Chemical Data. Volume II. Washington, D.C.: U.S. Government Printing Office, 1984-5.*

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)

### 5.3 Allowable Tolerances



Sodium nitrate is exempted from the requirement of a tolerance when used as a solid diluent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only.

*40 CFR 180.920; U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of August 30, 2006: <https://www.ecfr.gov>*

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)

## 6 Health and Symptoms



### 6.1 Chemical Dangers



Decomposes on heating. This increases fire hazard. The substance is a strong oxidant. It reacts with combustible and reducing materials. This generates fire and explosion hazard.

- ▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

### 6.2 Evidence for Carcinogenicity



There is inadequate evidence in humans for the carcinogenicity of [nitrate](#) in food. There is inadequate evidence in humans for the carcinogenicity of [nitrate](#) in drinking-water. There is inadequate evidence in experimental animals for the carcinogenicity of [nitrate](#). Overall evaluation: Ingested [nitrate](#) or [nitrite](#) under conditions that result in endogenous nitrosation is probably carcinogenic to humans (Group 2A).

*IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work). Available at: <https://monographs.iarc.fr/ENG/Classification/index.php>, p. V. 94: p. 323 (2010)*

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)

### 6.3 Exposure Routes



The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

- ▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

### 6.4 Fire Hazards



Special Hazards of Combustion Products: Yields toxic gaseous oxides of nitrogen when involved in fire. Behavior in Fire: Explodes when heated to over 1000°C. (USCG, 1999)

*U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.*

- ▶ [CAMEO Chemicals](#)

Not combustible but enhances combustion of other substances. Gives off irritating or toxic fumes (or gases) in a fire. Risk of fire and explosion on contact with reducing agents.

- ▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

### 6.5 Fire Potential



Not combustible but enhances combustion of other substances ... /Sodium nitrate/ is a strong oxidant and reacts with combustible and reducing materials, causing fire and explosion hazard.

*IPCS, CEC; International Chemical Safety Card on Sodium nitrate. (October 2001). Available from <https://www.inchem.org/documents/icsc/icsc/eics0185.htm> as of October 23.*

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)



Flames up when heated to 540 °C. ...

*ITII. Toxic and Hazardous Industrial Chemicals Safety Manual. Tokyo, Japan: The International Technical Information Institute, 1988., p. 484*

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

## 6.6 Skin, Eye, and Respiratory Irritations



The substance is irritating to the eyes, the skin and the respiratory tract.

*IPCS, CEC; International Chemical Safety Card on Sodium nitrate. (October 2001). Available from <https://www.inchem.org/documents/icsc/icsc/eics0185.htm> as of October 23.*

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

## 7 First Aid



See a physician. EYES: Rinse with [water](#). SKIN: Wash with [water](#) for 15 minutes. INGESTION: Drink [water](#), milk, or activated [charcoal](#); then induce vomiting or gastric lavage followed by catharsis. (USCG, 1999)

*U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.*

▶ [CAMEO Chemicals](#)

### 7.1 Inhalation First Aid



Fresh air, rest. Refer for medical attention.

▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

### 7.2 Skin First Aid



First rinse with plenty of [water](#) for at least 15 minutes, then remove contaminated clothes and rinse again.

▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

### 7.3 Eye First Aid



First rinse with plenty of [water](#) for several minutes (remove contact lenses if easily possible), then refer for medical attention.

▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

### 7.4 Ingestion First Aid



Rinse mouth. Refer for medical attention .

▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

## 8 Flammability and Explosivity



### 8.1 Critical Temperature & Pressure



Critical temperature = 1321 deg K

*Daubert, T.E., R.P. Danner. Physical and Thermodynamic Properties of Pure Chemicals Data Compilation. Washington, D.C.: Taylor and Francis, 1989.*

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

## 9 Stability and Reactivity



### 9.1 Reactivity Profile



A mixture of SODIUM NITRATE and [sodium hypophosphite](#) constitute a powerful explosive [Mellor 8, Supp. 1:154 1964]. Sodium nitrate and [aluminum](#) powder mixtures have been reported to be explosive, [Fire, 1935, 28, 30]. The [nitrate](#) appears to be incompatible with [barium thiocyanate](#), [antimony](#), [arsenic trioxide/iron\(II\) sulfate](#), [boron phosphide](#), calcium-sodium alloy, [magnesium](#), metal amidosulfates, metal cyanides, powdered [charcoal](#), [peroxyformic acid](#), [phenol/trifluoroacetic acid](#), [sodium](#), [sodium nitrite/sodium sulfide](#), sodium phosphinate, [sodium thiosulfate](#), [tris\( cyclopentadienyl\)cerium](#), and even wood [Bretherick 5th ed., 1995].

▶ [CAMEO Chemicals](#)

### 9.2 Reactivity Alerts



Explosive

Strong Oxidizing Agent

▶ [CAMEO Chemicals](#)

## 10 Storage and Handling



### 10.1 Safe Storage



Separated from combustible substances and reducing agents. Dry.

- ▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

### 10.2 Storage Conditions



Prevent against physical damage; store in dry and cool place away from inflammable organics or easily oxidizable substances; wooden floor is not acceptable; wear rubber gloves, safety glasses, protecting work clothing.

*ITII. Toxic and Hazardous Industrial Chemicals Safety Manual. Tokyo, Japan: The International Technical Information Institute, 1988., p. 484*

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)

### 10.3 Personal Protective Equipment (PPE)



Rubber gloves, goggles, laboratory coat. (USCG, 1999)

*U.S. Coast Guard. 1999. Chemical Hazard Response Information System (CHRIS) - Hazardous Chemical Data. Commandant Instruction 16465.12C. Washington, D.C.: U.S. Government Printing Office.*

- ▶ [CAMEO Chemicals](#)

Rubber gloves, goggles, laboratory coat.

*U.S. Coast Guard, Department of Transportation. CHRIS - Hazardous Chemical Data. Volume II. Washington, D.C.: U.S. Government Printing Office, 1984-5.*

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)

### 10.4 Nonfire Spill Response



Excerpt from ERG Guide 140 [Oxidizers]: Keep combustibles (wood, paper, oil, etc.) away from spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk. Do not get **water** inside containers. SMALL DRY SPILL: With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area. SMALL LIQUID SPILL: Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal. LARGE SPILL: Dike far ahead of liquid spill for later disposal. Following product recovery, flush area with **water**. (ERG, 2016)

*U.S. Department of Transportation, Transport Canada, and Secretariat of Communications and Transport of Mexico, with collaboration from Argentina's Centro de Información Química para Emergencias. 2016 Emergency Response Guidebook. <https://www.phmsa.dot.gov/hazmat/outreach-training/erg> (accessed April 26, 2016).*

- ▶ [CAMEO Chemicals](#)

## 11 Cleanup and Disposal



### 11.1 Spillage Disposal



Sweep spilled substance into plastic or glass containers. Wash away remainder with plenty of [water](#).

- ▶ [ILO International Chemical Safety Cards \(ICSC\)](#)

### 11.2 Cleanup Methods



Sweep spilled substance into plastic or glass containers. Wash away remainder with plenty of [water](#).

*IPCS, CEC; International Chemical Safety Card on Sodium nitrate. (October 2001). Available from <https://www.inchem.org/documents/icsc/icsc/eics0185.htm> as of October 23.*

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)

SRP: /Laboratory quantities/ For solid: Sweep into a beaker. Dilute with sufficient [water](#). Add soda ash. Mix and neutralize with 6M-HCl. Drain into the sewer with abundant [water](#). For solution: Cover with soda ash. After mixing, transfer into a beaker containing [water](#). Neutralize with 6M-HCl. Drain into the sewer with abundant [water](#).

*ITII. Toxic and Hazardous Industrial Chemicals Safety Manual. Tokyo, Japan: The International Technical Information Institute, 1988., p. 484*

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)

### 11.3 Disposal Methods



SRP: The most favorable course of action is to use an alternative chemical product with less inherent propensity for occupational exposure or environmental contamination. Recycle any unused portion of the material for its approved use or return it to the manufacturer or supplier. Ultimate disposal of the chemical must consider: the material's impact on air quality; potential migration in soil or [water](#); effects on animal, aquatic, and plant life; and conformance with environmental and public health regulations.

- ▶ [Hazardous Substances Data Bank \(HSDB\)](#)

## 12 Additional Considerations



### 12.1 Toxic Combustion Products



Gives off irritating or toxic fumes (or gases) in a fire ... /Sodium nitrate/ decomposes on heating producing nitrogen oxides and **oxygen**, which increases fire hazard.

*IPCS, CEC; International Chemical Safety Card on Sodium nitrate. (October 2001). Available from <https://www.inchem.org/documents/icsc/icsc/eics0185.htm> as of October 23.*

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

### 12.2 Other Hazardous Reactions



Evaporation at 20 °C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

*IPCS, CEC; International Chemical Safety Card on Sodium nitrate. (October 2001). Available from <https://www.inchem.org/documents/icsc/icsc/eics0185.htm> as of October 23.*

▶ [Hazardous Substances Data Bank \(HSDB\)](#)

## 13 Information Sources



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#### SODIUM NITRATE

<https://cameochemicals.noaa.gov/chemical/1509>

### 2. ChemIDplus

#### LICENSE

<https://www.nlm.nih.gov/copyright.html>

#### Sodium nitrate

<https://chem.nlm.nih.gov/chemidplus/sid/0007631994>

### 3. DrugBank

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[https://www.drugbank.ca/legal/terms\\_of\\_use](https://www.drugbank.ca/legal/terms_of_use)

#### Sodium nitrate

<https://www.drugbank.ca/drugs/DB15952>

### 4. EPA Chemicals under the TSCA

#### LICENSE

<https://www.epa.gov/privacy/privacy-act-laws-policies-and-resources>

#### Nitric acid sodium salt (1:1)

<https://www.epa.gov/chemicals-under-tsca>

### 5. EPA DSSTox

#### LICENSE

<https://www.epa.gov/privacy/privacy-act-laws-policies-and-resources>

#### Sodium nitrate

<https://comptox.epa.gov/dashboard/DTXSID6020937>

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<https://echa.europa.eu/web/guest/legal-notice>

#### Sodium nitrate

<https://echa.europa.eu/substance-information/-/substanceinfo/100.028.686>

#### Sodium nitrate

<https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/61079>



Sodium Nitrate

<https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/213018>

## 7. Hazardous Substances Data Bank (HSDB)

SODIUM NITRATE

<https://pubchem.ncbi.nlm.nih.gov/source/hsdb/726>

## 8. ILO International Chemical Safety Cards (ICSC)

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SODIUM NITRATE

[https://www.ilo.org/dyn/icsc/showcard.display?p\\_version=2&p\\_card\\_id=0185](https://www.ilo.org/dyn/icsc/showcard.display?p_version=2&p_card_id=0185)

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Sodium(I) nitrate (1:1)

<https://www.cdc.gov/niosh-rtecs/WC557300.html>

## 10. NITE-CMC

Sodium nitrate - FY2010

<https://www.nite.go.jp/chem/english/ghs/10-mhlw-2022e.html>

Sodium nitrate - FY2006

<https://www.nite.go.jp/chem/english/ghs/06-imcg-1384e.html>

## 11. Wikipedia

sodium nitrate

[https://en.wikipedia.org/wiki/Sodium\\_nitrate](https://en.wikipedia.org/wiki/Sodium_nitrate)

## 12. PubChem

<https://pubchem.ncbi.nlm.nih.gov>