

**SAFETY DATA SHEET**

**1. SUBSTANCE AND SOURCE IDENTIFICATION**

**Product Identifier**

**SRM Number:** 3152a  
**SRM Name:** Sodium (Na) Standard Solution  
**Other Means of Identification:** Not applicable.

**Recommended Use of This Material and Restrictions of Use**

This Standard Reference Material (SRM) is intended for use as a primary calibration standard for the quantitative determination of sodium. A unit of SRM 3152a consists of 50 mL of an aqueous solution in a high-density polyethylene bottle sealed in an aluminized bag. The solution was prepared gravimetrically to contain a known mass fraction of sodium in nitric acid.

**Company Information**

National Institute of Standards and Technology  
 Standard Reference Materials Program  
 100 Bureau Drive, Stop 2300  
 Gaithersburg, Maryland 20899-2300

Telephone: 301-975-2200  
 E-mail: SRMMSDS@nist.gov  
 Website: <https://www.nist.gov/srm>

Emergency Telephone ChemTrec:  
 1-800-424-9300 (North America)  
 +1-703-527-3887 (International)

**2. HAZARDS IDENTIFICATION**

**Classification**

**Physical Hazard:** Not classified.  
**Health Hazard:** Skin Corrosion/Irritation Category 1B  
 Serious Eye Damage/Eye Irritation Category 1

**Label Elements**

**Symbol**



**Signal Word**

DANGER

**Hazard Statement(s)**

H314 Causes severe skin burns and eye damage.

**Precautionary Statement(s)**

P260 Do not breathe fumes, mists, vapors, or spray.  
 P264 Wash hands thoroughly after handling.  
 P280 Wear protective gloves, protective clothing, and eye protection.  
 P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.  
 P303+P361+P353 If on skin (or hair): Remove immediately all contaminated clothing. Rinse skin with water.  
 P304+P340 If inhaled: Remove person to fresh air and keep 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.  
 P310 Immediately call a doctor.  
 P363 Wash contaminated clothing before reuse.

P405 Store locked up.  
P501 Dispose of container and contents according to local regulations.

**Hazards Not Otherwise Classified:** Not applicable.

**Ingredients(s) with Unknown Acute Toxicity:** Not applicable.

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### 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

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**Substance:** Sodium chloride in nitric acid solution

**Other Designations:**

Nitric acid (aqua fortis; hydrogen nitrate; azotic acid; engraver's acid)  
Sodium chloride [sodium monochloride; sodium chloride (NaCl); salt; white crystals]

**NOTE:** Sodium chloride in nitric acid solution forms a solvated sodium ion. The health and physical hazard information provided in this SDS are for nitric acid and sodium chloride. No physical or chemical data are listed for this solution. The actual effects of the solution may differ from the individual components.

Components are listed in compliance with OSHA's 29 CFR 1910.1200; for the actual values see the NIST Certificate of Analysis.

<b>Hazardous Component(s)</b>	<b>CAS Number</b>	<b>EC Number (EINECS)</b>	<b>Nominal Mass Concentration (%)</b>
Nitric acid	7697-37-2	231-714-2	<20
Sodium chloride	7647-14-5	231-598-3	1
<b>Non-Hazardous Component(s)</b>			
Water	7732-18-5	231-791-2	80

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### 4. FIRST AID MEASURES

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**Description of First Aid Measures:**

**Inhalation:** If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

**Skin Contact:** Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.

**Eye Contact:** Immediately flush eyes, including under the eyelids with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

**Ingestion:** Contact a poison control center immediately for instructions. Do not induce vomiting. Give water to rinse out mouth. Never give liquids to a person with reduced awareness or becoming unconscious. If vomiting occurs, keep head lower than hips to prevent aspiration. If not breathing, give artificial respiration by qualified personnel. Seek immediate medical attention.

**Most Important Symptoms/Effects, Acute and Delayed:** Acid burns to skin, eyes, and lungs.

**Indication of any immediate medical attention and special treatment needed, if necessary:** If any of the above symptoms are present, seek immediate medical attention.

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### 5. FIRE FIGHTING MEASURES

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**Fire and Explosion Hazards:** Negligible fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

**Extinguishing Media:**

Suitable: Use extinguishing media appropriate to the surrounding fire.  
Unsuitable: None listed.

**Specific Hazards Arising from the Chemical:** Thermal decomposition will form oxides of nitrogen and sodium.

**Special Protective Equipment and Precautions for Fire-Fighters:** Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

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## 6. ACCIDENTAL RELEASE MEASURES

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**Personal Precautions, Protective Equipment and Emergency Procedures:** Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment; see Section 8, “Exposure Controls and Personal Protection”.

**Methods and Materials for Containment and Clean up:** Do not touch spilled material. Notify safety personnel of spills. Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Isolate hazard area and deny entry.

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## 7. HANDLING AND STORAGE

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**Safe Handling Precautions:** See Section 8, “Exposure Controls and Personal Protection”.

**Storage:** Store and handling in accordance with all current regulations and standards. Keep separated from incompatible substances (See Section 10, “Stability and Reactivity”).

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## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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### Exposure Limits

Nitric acid

NIOSH (REL): 5 mg/m<sup>3</sup> (2 ppm) TWA  
10 mg/m<sup>3</sup> (4 ppm) STEL  
65 mg/m<sup>3</sup> (25 ppm) IDLH

ACGIH (TLV): 5 mg/m<sup>3</sup> (2 ppm) TWA  
10 mg/m<sup>3</sup> (4 ppm) STEL

OSHA (PEL): 5 mg/m<sup>3</sup> (2 ppm) TWA

Sodium chloride: No occupational exposure limits available.

**Engineering Controls:** Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**Personal Protection:** In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

**Respiratory Protection:** If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

**Eye/Face Protection:** Wear splash resistant safety goggles with a face shield. An eyewash station should be readily available near areas of use.

**Skin and Body Protection:** Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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Descriptive Properties:	
<b>Appearance (physical state, color, etc.):</b>	colorless to yellow liquid
<b>Molecular Formula</b>	not available
<b>Molar Mass (g/mol)</b>	not available
<b>Odor</b>	not available
<b>Odor threshold</b>	not available
<b>pH</b>	not available
<b>Evaporation rate</b>	not available
<b>Melting point/freezing point</b>	not available
<b>Relative Density (g/mL)</b>	not available

<b>Descriptive Properties:</b>	
<b>Vapor Pressure</b>	not available
<b>Vapor Density (air = 1)</b>	not available
<b>Viscosity (cP)</b>	not available
<b>Solubility(ies)</b>	not available
<b>Partition coefficient (n-octanol/water)</b>	not available
<b>Thermal Stability Properties</b>	
<b>Autoignition Temperature</b>	not applicable
<b>Thermal Decomposition</b>	not applicable
<b>Initial boiling point and boiling range</b>	not available
<b>Explosive Limits, LEL (Volume %)</b>	not applicable
<b>Explosive Limits, UEL (Volume %)</b>	not applicable
<b>Flash Point</b>	not applicable
<b>Flammability (solid, gas)</b>	not applicable

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** Stable at normal temperatures and pressure.

**Stability:**  Stable  Unstable

**Possible Hazardous Reactions:** None listed.

**Conditions to Avoid:** Contact with combustible or incompatible materials.

**Incompatible Materials:** Acids, combustible materials, halo carbons, amines, bases, oxidizing materials, metals, halogens, metal salts, metal oxides, reducing agents, peroxides, metal carbide, cyanides.

**Fire/Explosion Information:** See Section 5, "Fire Fighting Measures".

**Hazardous Decomposition:** Thermal decomposition will produce oxides of nitrogen and sodium.

**Hazardous Polymerization:**  Will Occur  Will Not Occur

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## 11. TOXICOLOGICAL INFORMATION

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**Route of Exposure:**  Inhalation  Skin  Ingestion

**Symptoms Related to the Physical, Chemical and Toxicological Characteristics:** Burning pain; severe skin corrosion and eye damage.

**Potential Health Effects (Acute, Chronic and Delayed):**

**Inhalation:** Inhalation of nitric acid can damage the mucous membranes and upper respiratory tract. Short term exposure may cause irritation and inflammation of the upper respiratory tract, coughing, choking, sore throat, shortness of breath, headache, dizziness, and nausea. Long term exposure to acid fumes may cause damage to teeth, bronchial irritation, chronic cough, bronchial pneumonia, and gastrointestinal disturbances. Sodium chloride may cause respiratory tract irritation.

**Skin Contact:** Nitric acid can cause severe skin burns. Severity of the damage depends on the concentration and duration of exposure. Effects of acid burns may be delayed. Sodium chloride may cause irritation.

**Eye Contact:** Nitric acid can cause severe eye irritation, corneal burns, permanent eye damage, or blindness. Severity of the damage depends on the concentration and duration of exposure. Contact with sodium chloride may cause irritation.

**Ingestion:** If ingested, nitric acid can cause severe burns and damage to the gastrointestinal tract. Short term ingestion of sodium chloride may cause gastrointestinal irritation, fever, digestive issues, disorientation, convulsions, and coma. Chronic ingestion of sodium chloride can result in changes in blood pressure.

**Numerical Measures of Toxicity:**

**Acute Toxicity:** Not classified.

Nitric acid: Rat, Inhalation LC50: 130 mg/m<sup>3</sup> (4 h)

Sodium chloride: Rat, Inhalation LC50: >42 g/m<sup>3</sup> (1 h)  
Rat, Oral LD50: 3 g/kg  
Rabbit, Dermal LD50: >10 g/kg

**Skin Corrosion/Irritation:** This SRM contains >1 % of nitric acid and it is classified as Category 1B.

**Serious Eye damage/Eye irritation:** This SRM contains >1 % nitric acid and it is classified as Category 1.

**Respiratory Sensitization:** No data available.

**Skin Sensitization:** No data available.

**Germ Cell Mutagenicity:** No data available.

**Carcinogenicity:** Not classified.

**Listed as a Carcinogen/Potential Carcinogen** \_\_\_\_\_ Yes \_\_\_\_\_ X No  
Nitric acid and sodium chloride are not listed by NTP, IARC or OSHA as carcinogens.

**Reproductive Toxicity:** Not classified.

Nitric acid, Rat, Oral TDLo: 21 150 mg/kg (pregnant 1 d to 21 d)

Nitric acid, Rat, Oral TDLo: 2345 mg/kg (pregnant 18 d)

Sodium chloride, Rat, Oral TDLo: 145 g/kg (prior to copulation 7 d, pregnant 1 d to 22 d)

**Specific Target Organ Toxicity, Single Exposure:** No data available.

**Specific Target Organ Toxicity, Repeated Exposure:** No data available.

**Aspiration Hazard:** No data available.

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## 12. ECOLOGICAL INFORMATION

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### Ecotoxicity Data

Nitric acid: Fish, mosquitofish (*Gambusia affinis*) LC50: 72 mg/L (96 h)

Sodium chloride: Fish, bluegill (*Lepomis macrochirus*) LC50 (flow-through): 5560 mg/L to 6080 mg/L (96 h)

Invertebrate: water flea (*Daphnia magna*) EC50: 1000 mg/L IUCLID (48 h)

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No bioaccumulation for sodium chloride.

**Mobility in Soil:** No data available.

**Other Adverse effects:** No data available.

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## 13. DISPOSAL CONSIDERATIONS

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**Waste Disposal:** Dispose of waste in accordance with all applicable federal, state, and local regulations. Nitric acid subject to disposal regulations: U.S. EPA 40 CFR 262, Hazardous Waste Numbers: D001, D002.

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## 14. TRANSPORTATION INFORMATION

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**U.S. DOT and IATA:** UN1760, Corrosive liquid, n.o.s. (contains nitric acid), Hazard Class 8, Packing Group II.

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## 15. REGULATORY INFORMATION

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### U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Nitric acid, 1000 lbs. (454 kg) RQ

SARA Title III Section 302 (40 CFR 355.30): Nitric acid, 1000 lbs. (454 kg) TPQ

SARA Title III Section 304 (40 CFR 355.40): Nitric acid, 1000 lbs. (454 kg) EPCRA RQ

SARA Title III Section 313 (40 CFR 372.65): 1 % de minimis concentration (nitric acid)

OSHA Process Safety (29 CFR 1910.119): Regulated for nitric acid at higher concentrations  
500 lbs. TQ (≥94.5 % by weight).

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH: Yes  
CHRONIC HEALTH: No  
FIRE: No  
REACTIVE: No  
PRESSURE: No

**State Regulations:** Not listed under California Proposition 65.

**U.S. TSCA Inventory:** Nitric acid and sodium chloride are listed.

**TSCA 12(b), Export Notification:** Not listed.

**Canadian Regulations:** WHMIS Information is not provided for this material.

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## 16. OTHER INFORMATION

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**Issue Date:** 15 October 2021

**Sources:** ChemAdvisor, Inc., MSDS *Nitric Acid*, 09 December 2015.

ChemAdvisor, Inc., MSDS *Sodium Chloride*, 09 December 2015.

PubChem, National Library of Medicine, *Nitric Acid*, available at <https://pubchem.ncbi.nlm.nih.gov/compound/944> (accessed Sep 2021).

### Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
ALI	Annual Limit on Intake	OSHA	Occupational Safety and Health Administration
CAS	Chemical Abstracts Service	PEL	Permissible Exposure Limit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	RCRA	Resource Conservation and Recovery Act
CFR	Code of Federal Regulations	REL	Recommended Exposure Limit
DOT	Department of Transportation	RM	Reference Material
EC50	Effective Concentration, 50 %	RQ	Reportable Quantity
EINECS	European Inventory of Existing Commercial Chemical Substances	RTECS	Registry of Toxic Effects of Chemical Substances
EPCRA	Emergency Planning and Community Right-to-Know Act	SARA	Superfund Amendments and Reauthorization Act
IARC	International Agency for Research on Cancer	SCBA	Self-Contained Breathing Apparatus
IATA	International Air Transport Association	SRM	Standard Reference Material
IDLH	Immediately Dangerous to Life and Health	STEL	Short Term Exposure Limit
LC50	Lethal Concentration, 50 %	STOT	Specific Target Organ Toxicity
LD50	Lethal Dose, 50 %	TLm	Threshold Limit, median
LEL	Lower Explosive Limit	TLV	Threshold Limit Value
MSDS	Material Safety Data Sheet	TPQ	Threshold Planning Quantity
NIOSH	National Institute for Occupational Safety and Health	TSCA	Toxic Substances Control Act
NIST	National Institute of Standards and Technology	TWA	Time Weighted Average
n.o.s.	Not Otherwise Specified	UEL	Upper Explosive Limit
NRC	Nuclear Regulatory Commission	WHMIS	Workplace Hazardous Materials Information System

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