



Technical Bulletin - KPM-105

Safe Use and Handling of Nitric Acid (PV) - HNO₃

CAS Number: **7697-37-2**

Packing Group: **II**

Hazard Classification: **8, 5.1**

About Us

Kredence Electronics Materials India Pvt. Ltd has been providing high quality, photovoltaic grade chemicals to their customers throughout India and internationally since 2015. We at Kredence are committed to customer satisfaction achieved by clearly understanding the customers' needs and fulfilling those requirements through continual improvement of products, services, and the quality management system. In addition to that, **our company values the safety and well-being of our employees, customers, community, and the environment surrounding us. Our highly trained and experienced staff uses specialized equipment and technology to certify our customers receive quality service. Kredence Electronics Materials performs routine sample analysis to ensure grade specification requirements are met.**

Purpose

When working with hazardous materials on a day-to-day basis, it is important to be aware of the chemicals' properties, risks, and safety precautions that need to be followed. This Technical Bulletin serves the purpose to educate our customers and employees about the chemical nature, safety, and provisions associated with Nitric Acid (HNO₃).

Nitric Acid PV / EL Grade 65-68% is currently provided by Kredence Electronics Materials India Pvt. Ltd. (Other concentrations/ specifications can be available)

Product Overview

Nitric Acid is a highly corrosive and oxidizing mineral acid. Pure solutions are colorless, but as the solution ages and decomposes into oxides of nitrogen and water, it acquires a yellowish color. Nitric acid is formed by reacting nitrogen dioxide with water. Because nitric acid is a strong oxidizing agent, it reacts violently with many organic materials and these reactions may be explosive. The main application of HNO₃ is for the manufacture of fertilizers and explosives. In addition to these uses, nitric acid is useful as a precursor (in the synthesis of organic nitrogen compounds), rocket propellant, oxidant, analytical reagent, etchant, cleaning agent, and for metal processing and woodworking. Nitric Acid 65-68% PV / EL grade (HNO₃), which is offered by our company, is used in the photovoltaic industry for cleaning silicon wafers. Nitric acid has a highly reactive chemical property, which makes it a hazardous chemical to work with. Safety and precautionary measures need to be taken while working with this chemical. Refer to [OSHA](#) for exposure limit guidelines.

Safety

- ALWAYS wear PPE when working with HNO₃: goggles/face shield, rubber gloves, apron/ long clothing, rubber boots/ closed footwear, respiratory protection if exposure limits are exceeded
- Follow safety procedures to avoid accidents



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- Employees should be aware of the chemical properties of nitric acid
 - First-Aid kit should be readily available
 - DO NOT breathe dust, mist, or vapor. DO NOT get in eyes, on skin, or on clothing.
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Handling

- ALWAYS wear PPE to protect yourself from exposure.
 - Wash thoroughly after handling. Remove any contaminated clothing and wash before reuse.
 - Avoid secondary contamination by removing/discarding ALL contaminated wear.
 - When diluting nitric acid, slowly and carefully add the acid to water. DO NOT reverse this action.
 - DO NOT eat, drink, or smoke while handling HNO₃.
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Storage

- Store in a cool, dry, well-ventilated area away from incompatible substances.
 - DO NOT store near combustible materials OR in direct sunlight.
 - Keep the container(s) tightly closed when not in use.
 - Keep away from metals, alkalis, and organic materials.
 - Inspect containers and storage areas regularly for damage, evidence of leaks, or corrosion.
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Transport

- Transport in acid-resistant or stainless-steel containers
 - Use a trolley and/or forklift for transport within the facility.
 - DO NOT transport with incompatible materials
 - Follow proper packing group instructions
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First-Aid

Inhalation - move individual(s) to fresh air and seek immediate medical attention.

Eye Contact - Immediately flush eyes with plenty of water for at least 15 minutes to prevent further damage, seeking immediate medical attention

Skin Contact - Immediately remove contaminated clothing and wash with soap. Flush the affected area with plenty of water for at least 15 minutes. Immediate medical attention is required.

Ingestion—DO NOT induce vomiting. Rinse the mouth with water and give a glass of water or milk. NEVER perform CPR on an unconscious person unless proper equipment and trained personnel is available. Seek medical attention immediately.

*****Immediately after performing the actions listed above, seek medical help!*****

ALWAYS CONTACT MEDICAL PERSONNEL IN CASE OF AN EMERGENCY.

References

(1.) Britannica, The Editors of Encyclopaedia, "Nitric acid" *Encyclopedia Britannica*, Online, Oct. (18), 2019, Accessed 6 February 2021, <https://www.britannica.com/science/nitric-acid>.



(2.) G. A. Sands, "Transportation and Storage of Strong Nitric Acid" *Industrial & Engineering Chemistry*, 1948, 40(10), Pages 1937-1945, DOI: 10.1021/ie50466a020.

(3.) National Center for Biotechnology Information, "PubChem Compound Summary for CID 944, Nitric acid" *PubChem*, Accessed 6 February, 2021, <https://pubchem.ncbi.nlm.nih.gov/compound/Nitric-acid>.

(4.) Research Safety, "Safe Use of Nitric Acid" *UCDavis Safety Services*, The Regents of the University of California, Davis Campus, Davis, CA, SafetyNet #14, Mar.(26), 2020, Accessed: (insert date), <https://safetyservices.ucdavis.edu/safetynet/safe-use-of-nitric-acid>



Figure 1: Nitric Acid (HNO₃) PV / EL grade stored in an IBC with proper labeling. As shown in the above image, use of color coding is incorporated for easy visual identification (yellow taping for HNO₃). All HNO₃ IBCs at our facility are stored together to maintain compatibility.

Nitric Acid 68%	Photovoltaic Grade
	UN2031
Hazard messages : <ul style="list-style-type: none">• Toxic by Inhalation.• Corrosive to Metals.• Causes Severe Skin Burns.• Causes Severe Eye Damage.• Prolonged or Repeated Exposure May Cause Damage to Organs.	DANGER
Hazard Prevention : <ul style="list-style-type: none">• If contact with skin, eyes flush with plenty of water and consult a physician immediately.• If feeling uncomfortable, seek medical attention.• Put on suitable protective clothing, wear gloves and goggles/helmet.• Seal the container firmly and store it in a well ventilated area.	Nitric Acid Class 8,5.1 PG - II Molecular Weight 63.01g/mol CAS No. 7697-37-2
If you need more detailed information, please refer to the SDS.	Product Code : H0004 Pack Size : 900 Ltr.
Important: <ul style="list-style-type: none">• No liability accepted for accidents arising while handling or use.• Empty container before disposal.• Disposal to be done as per the local Govt. rules applicable.	
Kredence Performance Materials (India) Pvt. Ltd. 301, Block-C, C-Square, Sarabhai Campus, Vadodara-390023, Gujarat, India.	Customer Care Contact : Technical Service Manager Contact : +91 265 2324280 Email : info@kredencematerials.com

Figure 2: Customized product label included on all IBCs and containers that customers receive from Kredence. Label includes important product information.

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