

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 03/29/2017

Reviewed on 03/29/2017

1 Identification

- **Product Identifier**

- **Trade name: 35% N + 3% HF**

- **Product Number: ng-35N3HF**

- **Relevant identified uses of the substance or mixture and uses advised against:**

For professional use only.

- **Product Description** 35% Nitric Acid 3% Hydrofluoric Acid Solution

- **Application of the substance / the mixture:** Wet Etch 353

- **Details of the Supplier of the Safety Data Sheet:**

- **Manufacturer/Supplier:**

NuGeneration Technologies, LLC (dba NuGenTec)

1155 Park Avenue, Emeryville, CA 94608

salesteam@nugentec.com

1-888-996-8436 or 1-707-820-4080 for product information

www.nugentec.com

- **Emergency telephone number:**

PERS Emergency Response: Domestic and Canada - 1-800-633-8253, International 1-801-629-0667

2 Hazard(s) Identification

- **Classification of the substance or mixture:**



GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 3 H311 Toxic in contact with skin.



GHS05 Corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

STOT SE 3 H335 May cause respiratory irritation.

- **Label elements:**

- **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms:**



GHS05



GHS06



GHS07

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• **Signal word:** *Danger*

• **Hazard-determining components of labeling:**

Nitric Acid

Hydrofluoric acid

• **Hazard statements:**

H301+H311 Toxic if swallowed or in contact with skin.

H332 Harmful if inhaled.

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

• **Precautionary statements:**

P260 Do not breathe dusts or mists.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

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.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.

P302+P352 IF ON SKIN: Wash with plenty of water.

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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.

P312 Call a POISON CENTER/doctor if you feel unwell.

P321 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P363 Wash contaminated clothing before reuse.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

• **Classification system:**

• **NFPA ratings (scale 0 - 4)**



Health = 3

Fire = 0

Reactivity = 0

• **HMIS-ratings (scale 0 - 4)**



Health = 3

Fire = 0

Reactivity = 0

• **Hazard(s) not otherwise classified (HNOC):** *None known*

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3 Composition/Information on Ingredients

- **Non-hazardous components:**

7732-18-5	Water, distilled water, deionized water	62%
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- **Chemical characterization: Mixtures**

- **Description:** Mixture: consisting of the following components.

- **Dangerous Components:**

CAS: 7697-37-2	Nitric Acid ⚠ Ox. Liq. 2, H272; ⚠ Skin Corr. 1A, H314	35%
CAS: 7664-39-3 RTECS: MW 7875000	Hydrofluoric acid ⚠ Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; ⚠ Skin Corr. 1A, H314	3%

4 First-Aid Measures

- **Description of first aid measures:**

- **General information:**

Immediately remove any clothing soiled by the product.

In case of irregular breathing or respiratory arrest provide artificial respiration.

- **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Consult doctor if symptoms persist.

In case of unconsciousness place patient stably in side position for transportation.

- **After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

Rub in Ca-gluconate solution or Ca-gluconate gel immediately.

Seek immediate medical advice.

- **After eye contact:**

Get medical attention immediately.

Hold eyelids apart and flush eyes with plenty of water for at least 20 minutes.

- **After swallowing:**

Do not induce vomiting.

Drink copious amounts of water and provide fresh air. Immediately call a doctor.

- **Information for doctor:**

- **Most important symptoms and effects, both acute and delayed:**

No further relevant information available.

- **Indication of any immediate medical attention and special treatment needed:**

No further relevant information available.

5 Fire-Fighting Measures

- **Extinguishing media:**

- **Suitable extinguishing agents:**

CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

- **Special hazards arising from the substance or mixture:**

If incinerated, product will release the following toxic fumes: Oxides of Nitrogen (NO_x) and Hydrofluoric Acid gas.

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Trade name: 35% N + 3% HF**· Advice for firefighters:****· Protective equipment:**

As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

6 Accidental Release Measures

· Personal precautions, protective equipment and emergency procedures:

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation.

Use respiratory protective device against the effects of fumes/dust/aerosol.

Keep people at a distance and stay upwind.

Avoid contact with skin, eyes and clothing.

· Environmental precautions:

Dilute with plenty of water.

Do not allow to enter sewers/surface or ground water.

· Methods and material for containment and cleaning up:

Absorb with liquid-binding material (i.e. sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose contaminated material as waste according to section 13.

Ensure adequate ventilation.

Dispose of the collected material according to regulations.

· Reference to other sections:

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and Storage

· Handling**· Precautions for safe handling:**

Ensure good ventilation/exhaustion at the workplace.

Prevent formation of aerosols.

· Information about protection against explosions and fires:

Keep protective respiratory device available.

· Conditions for safe storage, including any incompatibilities:

Store away from strong bases, strong oxidizing agents and strong reducing agents.

· Storage

· Requirements to be met by storerooms and receptacles: No special requirements.

· Information about storage in one common storage facility: Not required.

· Further information about storage conditions: Keep receptacle tightly sealed.

· Specific end use(s): No further relevant information available.

8 Exposure Controls/Personal Protection

· Additional information about design of technical systems: No further data; see section 7.

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• **Control parameters:**

All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94). Use mechanical (general) ventilation for storage areas. Use appropriate ventilation as required to keep Exposure Limits in Air below TLV & PEL limits.

• **Components with occupational exposure limits:**

7697-37-2 Nitric Acid

PEL	Long-term value: 5 mg/m ³ , 2 ppm
REL	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5 mg/m ³ , 2 ppm
TLV	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5.2 mg/m ³ , 2 ppm

7664-39-3 Hydrofluoric acid

PEL	Long-term value: 3 ppm as F
REL	Long-term value: 2.5 mg/m ³ , 3 ppm Ceiling limit value: 5* mg/m ³ , 6* ppm *15-min, as F
TLV	Long-term value: 0.41 mg/m ³ , 0.5 ppm Ceiling limit value: 1.64 mg/m ³ , 2 ppm as F; Skin, BEI

• **Ingredients with biological limit values:**

7664-39-3 Hydrofluoric acid

BEI	3 mg/g creatinine urine prior to shift Fluorides (background, nonspecific)
	10 mg/g creatinine urine end of shift Fluorides (background, nonspecific)

• **Additional information:** The lists that were valid during the creation of this SDS were used as basis.

• **Exposure controls:**

• **Personal protective equipment:**

• **General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing and wash before reuse.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

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· **Breathing equipment:**



Suitable respiratory protective device recommended.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Select glove material based on penetration times, rates of diffusion and degradation.

· **Material of gloves:**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material:**

The exact break-through time has to be determined and observed by the manufacturer of the protective gloves.

· **Eye protection:**



Tightly sealed goggles

· **Body protection:**



Protective work clothing

9 Physical and Chemical Properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Liquid
Color: Colorless

· **Odor:** Acrid

· **Odor threshold:** Not determined.

· **pH-value @ 20 °C (68 °F):** < 1

· **Change in condition**

Melting point/Melting range: Not determined.

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- | | |
|---|---|
| Boiling point/Boiling range: | 100 °C (212 °F) |
| · Flash point: | None |
| · Flammability (solid, gaseous): | Not applicable. |
| · Ignition temperature: | |
| Decomposition temperature: | Not determined. |
| · Auto igniting: | Product is not self-igniting. |
| · Danger of explosion: | Product does not present an explosion hazard. |
| · Explosion limits: | |
| Lower: | 0.0 Vol % |
| Upper: | 0.0 Vol % |
| · Vapor pressure @ 20 °C (68 °F): | 23 hPa (17 mm Hg) |
| · Density @ 20 °C (68 °F): | 1.15 g/cm ³ (9.597 lbs/gal) |
| · Relative density: | Not determined. |
| · Vapor density: | Not determined. |
| · Evaporation rate: | Not determined. |
| · Solubility in / Miscibility with: | |
| Water: | Fully miscible. |
| · Partition coefficient (n-octanol/water): | Not determined. |
| · Viscosity: | |
| Dynamic: | Not determined. |
| Kinematic: | Not determined. |
| · Solvent content: | |
| Organic solvents: | 0.0 % |
| Water: | 85.0 % |
| · Other information: | No further relevant information available. |

10 Stability and Reactivity

- **Reactivity:** No further relevant information available.
- **Chemical stability:** Stable under normal conditions.
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- **Possibility of hazardous reactions:** No dangerous reactions known.
- **Conditions to avoid:** No further relevant information available.
- **Incompatible materials:** Strong bases, strong oxidizing agents and strong reducing agents.
- **Hazardous decomposition products:** Nitrogen Oxides and Hydrofluoric Acid gas.

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11 Toxicological Information

- **Information on toxicological effects:**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

7664-39-3 Hydrofluoric acid

Oral	LD50	1276 mg/kg (Rat)
	LD50 Oral	80 ml/kg (Guinea Pig)
Inhalative	LC50/4 h	2240 mg/l (Rat)

- **Primary irritant effect:**
- **On the skin:** Strong caustic effect on skin and mucous membranes.
- **On the eye:**
Strong irritant with the danger of severe eye injury.
Corrosive effect.
Causes serious eye irritation.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Toxic
Corrosive
Irritant
Swallowing will lead to a corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.
- **Carcinogenic categories:**
- **IARC (International Agency for Research on Cancer):**
Group 1 - Carcinogenic to humans
Group 2A - Probably carcinogenic to humans
Group 2B - Possibly carcinogenic to humans
Group 3 - Not classifiable as to its carcinogenicity to humans
Group 4 - Probably not carcinogenic to humans

None of the ingredients are listed.

- **NTP (National Toxicology Program):**

None of the ingredients are listed.

- **OSHA-Ca (Occupational Safety & Health Administration):**

None of the ingredients are listed.

12 Ecological Information

- **Toxicity:**

- **Aquatic toxicity:**

7664-39-3 Hydrofluoric acid

EC50	270 mg/l (Fathead Minnow)
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- **Persistence and degradability:** No further relevant information available.

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· **Transport hazard class(es):**

· **DOT**



- **Class:** 8 Corrosive substances
- **Label:** 8

· **ADR/ADN, IMDG, IATA**



- **Class:** 8 Corrosive substances
- **Label:** 8
- **Packing group:** II
- **DOT, ADR/ADN, IMDG, IATA** Not applicable.
- **Environmental hazards:** Warning: Corrosive substances
- **Special precautions for user:** F-A, S-B
- **EMS Number:** Acids
- **Segregation groups:** Not applicable.
- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.
- **Transport/Additional information:**
- **DOT**
- **Quantity limitations:** On passenger aircraft/rail: 1L
On cargo aircraft only: 30L

· **ADR/ADN**

- **Excepted quantities (EQ):** Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml
- **UN "Model Regulation":** UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, HYDROFLUORIC ACID), 8, II

15 Regulatory Information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture:**
- **SARA (Superfund Amendments and Reauthorization):**

· **Section 355 (extremely hazardous substances):**

7697-37-2	Nitric Acid
7664-39-3	Hydrofluoric acid

· **Section 313 (Specific toxic chemical listings):**

7697-37-2	Nitric Acid
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7664-39-3 Hydrofluoric acid

• **TSCA (Toxic Substances Control Act):**

All ingredients are listed or exempt from listing.

• **California Proposition 65:**

• **Chemicals known to cause cancer:**

None of the ingredients are listed.

• **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

• **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

• **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

• **Carcinogenic categories:**

• **EPA (Environmental Protection Agency):**

None of the ingredients are listed.

• **TLV (Threshold Limit Value established by ACGIH):**

None of the ingredients are listed.

• **NIOSH-Ca (National Institute for Occupational Safety and Health):**

None of the ingredients are listed.

• **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

• **Hazard pictograms:**



GHS05 GHS06 GHS07

• **Signal word: Danger**

• **Hazard-determining components of labeling:**

Nitric Acid
Hydrofluoric acid

• **Hazard statements:**

H301+H311 Toxic if swallowed or in contact with skin.
H332 Harmful if inhaled.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

• **Precautionary statements:**

P260 Do not breathe dusts or mists.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
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.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

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- P301+P310 *IF SWALLOWED: Immediately call a POISON CENTER/ doctor.*
 P301+P330+P331 *If swallowed: Rinse mouth. Do NOT induce vomiting.*
 P302+P352 *IF ON SKIN: Wash with plenty of water.*
 P303+P361+P353 *If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*
 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.*
 P312 *Call a POISON CENTER/doctor if you feel unwell.*
 P321 *Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).*
 P361+P364 *Take off immediately all contaminated clothing and wash it before reuse.*
 P363 *Wash contaminated clothing before reuse.*
 P403+P233 *Store in a well-ventilated place. Keep container tightly closed.*
 P405 *Store locked up.*
 P501 *Dispose of contents/container in accordance with local/regional/national/international regulations.*

• **National regulations:**

The product is subject to be classified according with the latest version of the regulations on hazardous substances.

• **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other Information

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied, and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

• **Date of preparation / last revision:** 03/29/2017 / 1

• **Abbreviations and acronyms:**

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road
 ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 ACGIH: American Conference of Governmental Industrial Hygienists
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 NFPA: National Fire Protection Association (USA)
 HMIS: Hazardous Materials Identification System (USA)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 PBT: Persistent, Bioaccumulative and Toxic
 vPvB: very Persistent and very Bioaccumulative
 NIOSH: National Institute for Occupational Safety and Health
 OSHA: Occupational Safety & Health Administration
 TLV: Threshold Limit Value
 PEL: Permissible Exposure Limit
 REL: Recommended Exposure Limit
 BEI: Biological Exposure Limit
 Ox. Liq. 2: Oxidizing liquids – Category 2

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Acute Tox. 2: Acute toxicity – Category 2
Acute Tox. 3: Acute toxicity – Category 3
Acute Tox. 1: Acute toxicity – Category 1
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

· * **Data compared to the previous version altered.**

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