



Name: 3N HCl in n-Butanol (3N Hydrochloric Acid in 1-Butanol)
 Code: 1-000902-400, 1-201006-200, 1-201007-200, 1-201008-200, 1-201009-200, 1-201009-500, 1-201010-200,
 1-201012-200, 1-201014-200

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SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

- 1.1 Product Identifier
 - Name 3N HCl in n-Butanol (3N Hydrochloric Acid in 1-Butanol)
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- 1.2 Use of Substance/Mixture
 - Use Analytical Solvent
- 1.3 Details of Manufacturer/Supplier
 - Company Regis Technologies, Inc.
 8210 N. Austin Avenue
 Morton Grove, IL 60053
 847-967-6000; 800-323-8144 (toll free)
 Email: cservice@registech.com
 www.registech.com
- 1.4 Emergency Telephone
 - INFOTRAC 800-535-5053 [U.S.A.]

SECTION 2 HAZARDS IDENTIFICATION

- 2.1 Classification of the Substance or Mixture
 - GHS Classification
 - Physical Hazards
 - Flammable Liquid Category 3 H226
 - Health Hazards
 - Acute toxicity (oral) Category 4 H302
 - Skin Corrosion / Irritation Category 2 H315
 - Serious Eye Damage / Irritation Category 1 H318
 - Specific Target Organ Toxicity – Single Exposure, Respiratory Irritation Category 3 H335
 - Specific Target Organ Toxicity – Single Exposure, Narcotic Effects Category 3 H336

GHS Label Elements

Pictograms or hazard symbols



Signal Word Danger

Hazard Statement

- H226 – Flammable liquid and vapor.
- H302 – Harmful if swallowed.
- H315 – Causes skin irritation.
- H318 – Causes serious eye damage.
- H335 – May cause respiratory irritation.
- H336 – May cause drowsiness or dizziness.

Precautionary Statements

- [Prevention] P210 – Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P241 + P242 + P243 – Use explosion-proof equipment and only non-sparking tools. Take precautionary measures against static discharge.
- P261 – Avoid breathing vapors.
- P280 – Wear protective gloves/eye protection/face protection
- P281 – Use personal protective equipment as required.

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[Response] P264 – Wash hands thoroughly after handling.
 P362 – Take off contaminated clothing and wash before reuse.
 P302+P352 – IF ON SKIN: Wash with plenty of soap and water.
 P332+P313 – If skin irritation occurs: Get medical advice/attention.
 P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 [Storage] P308+P313 – IF exposed or concerned: Get medical advice/attention.
 P402 + P404 – Store in a dry place. Store in a closed container.
 P403 + P235 – Store in a well-ventilated place. Keep cool.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Name 3N HCl in n-Butanol (3N Hydrochloric Acid in 1-Butanol)

Synonyms 3N Hydrochloric Acid in Butan-1-ol

Hazardous components

Component	Classification	Concentration
1-Butanol CAS No. 71-36-3 EC No. 200-751-6 Formula C ₄ H ₁₀ O Molecular Mass 74.12	Flam. Liq. 3; Acute Tox. 4; Skin Irr. 2; Eye Dam. 1; STOT SE 3; STOT RE 3; H226; H302, H315, H318, H335, H336	84-86%
Hydrochloric acid CAS No. 7647-01-0 EC No. 231-595-7 Formula HCl Molecular Mass 36.46	Met. Corr 1; Skin Irr. 2; Eye Irr. 2; STOT-SE 3; H290; H315; H319	11-14%

For full test of the H-Statements mentioned in this Section, see Section 16.

SECTION 4 FIRST AID MEASURES

4.1 Description of first aid measures

Eye contact: Rinse eyes with plenty of water for at least 15 minutes; lift eyelids occasionally. If irritation persists, consult physician.
 Skin contact: Immediately remove contaminated clothing and shoes, then wash skin with soap and plenty of water. If irritation persists, consult physician.
 Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and keep person warm and at rest. Consult physician.
 Ingestion: Give large amounts of water or milk (maximum two glasses). Avoid vomiting. Consult physician immediately.
 Physician note: Symptomatic and supportive care. There is no specific antidote.

4.2 Most important symptoms and effects, both acute and delayed.
 May irritate and cause redness and pain. Narcotic effect.

4.3 Indication of immediate medical attention and special treatment needed.
 Vapors have a narcotic effect and may cause headache, fatigue, dizziness, and nausea..

SECTION 5 FIRE-FIGHTING MEASURES

5.1 Suitable Extinguishing Media
 Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the chemical.
 Flammable liquid and vapor.
 Emits toxic fumes under fire conditions: carbon oxides, hydrogen chloride gas

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5.3 Advice for fire-fighters
 Wear personal protective equipment for corrosive flammable organic/acid conditions. Wear self-contained breathing apparatus (SCBA), if necessary.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment, and emergency procedures
 For non-emergency personnel - Do not breath vapors. Avoid material contact. Evacuate unnecessary personnel from area, observe emergency procedures, consult an expert.

For emergency responders – Protective equipment for corrosive flammable organic/acid vapor conditions. See Section 8.3.

6.2 Environmental precautions
 Prevent material from entering drains.

6.3 Methods of clean up
 Evacuate unnecessary people from area. Isolate spilled material.
 Ventilate area. Eliminate all ignition sources. Use spark proof tools.
 If neat or in solution, mix with sand or similar inert adsorbent material or spill pillow.
 Sweep up, seal in appropriate hazardous waste container, and hold for proper waste disposal.
 Keep out of water supplies and sewers. Wash spill site after material pickup is complete.

SECTION 7 HANDLING AND STORAGE

7.1 Safe Handling Precautions
 Wear appropriate protective equipment to avoid contact with skin, eyes, or inhalation of vapors.
 Keep away from sources of ignition – No smoking. prevent electrostatic charges.
 Handle in a dry, well ventilated area. Use local exhaust if vapor can be generated.
 Ground and bond containers or use inert gas purge when transferring or handling material.
 Use spark proof tools and explosion proof equipment.
 Readily absorbed through skin. Wash thoroughly after handling. Immediately remove contaminated clothing.
 Empty containers retain product residue, (liquid/vapor), and can be dangerous.
 See Section 8 Below.

7.2 Storage Conditions
 Hygroscopic—Store under inert gas, in a tightly sealed container. Store in a cool, dry, well ventilated place and store in a place for flammable liquids, away from incompatible materials (See Section 10.).
 Recommended storage temperature: 2 – 8 °C (35-46 °F)

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
 Exposure limits: 3N HCl in n-Butanol – No known specified limits for the mixture.

n-Butanol [Butan-1-ol] (71-36-3)
 OSHA – PEL = 100 ppm (300 mg/m³) TWA; Ceiling (skin) = 50 ppm (150 mg/m³)
 ACGIH – TLV = 20 ppm (61 mg/m³) TWA; Ceiling (skin) = 50 ppm

3N HCl in n-Butanol, butan-1-ol, (71-36-3) –
 OSHA – Ceiling Limit = 5 ppm (7 mg/m³)
 ACGIH – STEL = 5 ppm (7.5 mg/m³) TWA; Ceiling Limit = 5 ppm (7.5 mg/m³)

Environmental Do not empty into drains.

8.2 Appropriate engineering controls
 Safety shower and eye wash
 Local exhaust and mechanical ventilation required. Hood recommended. Fume scrubber.

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8.3 Personal protection

Eye/Face Chemical safety eyewear or goggles
 Hand Compatible chemical-resistant gloves: Rubber (e.g., natural rubber, neoprene, nitrile, or equivalent), Silver Shield®, Viton®
 Respiratory NIOSH/MSHA or European Standard approved respirator for organic/acid gas, dust, and mists, if exposure limits are exceeded or irritation or other symptoms are experienced.
 Dermal (not hand) Protective Clothing (e.g., lab coat)--flame retardant anti-static material recommended.
 Hygiene Avoid inhalation, ingestion; contact with eyes, skin, and clothing; and prolonged or repeated exposure. Wash thoroughly after handling. Wash contaminated clothing before reuse. Discard contaminated footwear.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on physical and chemical data

Form	Liquid
Appearance	Clear, colorless
Odor	Characteristic
Odor threshold	No data available for mixture. 10 ppm (n-Butanol); 1-5 ppm (HCl)
pH	No data available
Melting/freezing point	No data available
Initial boiling point and boiling range:	110°C (229°F) at 1.013 hPa (Lit)
Flammability (liquid, solid)	
Flash Point	35°C (95°F) Method: closed cup
Flammable limits (%v/v)	UEL (upper explosive limit) 9.4%
	LEL (lower explosive limit) 1.4%
Autoignition temperature	No data available
Decomposition temperature	No data available
OSHA Flammability Class	IC
Evaporation Rate	No data available
Vapor pressure (mmHg)	6.4 hPa 20°C (68°F)
Vapor density (air=1):	No data available
Relative density	0.955 at 20°C (68°F)
Water Solubility	Totally miscible
Water reactive	No
Partition coefficient: N-octanol/water	log Pow = 0.88 (1-butanol)
Dynamic viscosity	No data available

SECTION 10 STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical Stability

Stable under recommended storage conditions. (See Section 7).

10.3 Possibility of hazardous reactions

Risk of ignition or formation of inflammable gases or vapors with strong oxidizing reagents, chromium (VI) oxide
 Exothermic reaction possible with: alkali metals, aluminum, strong reducing agents, acid chlorides

10.4 Conditions to avoid

Avoid incompatibilities. Protect from heat and ignition sources.
 Keep out of water supplies and sewers.

10.5 Incompatible materials

Acids, acid chlorides, acid anhydrides, strong mineral acids, alkali metals, amines, strong bases, chromium (VI) oxide
 Strong oxidizers, strong reducing agents, metals (aluminum, copper, copper alloys), moisture (hygroscopic)

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10.6 Hazardous decomposition products
 Combustion carbon oxides, hydrogen chloride

SECTION 11 TOXICOLOGICAL INFORMATION.....

11.1 Toxicological Information

Acute toxicity

Oral

1-Butanol

1-Butanol: LD50 Oral – Rat: 790 mg/kg
 Fatty liver degeneration; Kidney, Ureter, Bladder & Blood: Other changes.

Inhalation

1-Butanol: LC50 Inhalation – Rat: 8000 ppm (4 hr)

Dermal

1-Butanol: LD50 Dermal – Rabbit 3484 mg/kg

Skin corrosion/irritation

1-Butanol: Skin Rabbit: 20 mg/24 hr skin, moderate; 405 mg/24 hr skin, moderate

Serious eye damage/irritation

1-Butanol: Eye Rabbit: 2 mg/24 hr, severe; Eyes – Rabbit, result: Blindness

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC

Hydrochloric acid: Group 3 — No classifiable as a human carcinogen.

NTP

No data available

OSHA

No data available

Reproductive toxicity/Teratogenicity

No data available

STOT-single exposure

May cause drowsiness or dizziness. May cause respiratory irritation.

STOT-repeated exposure

No data available.

Aspiration hazard

No data available

RTECS Number

EO1400000 (1-butanol); MW4025000 (hydrochloric acid)

11.2 Further Information

Additional symptoms

Vomiting, gastrointestinal disturbance, drying, cracking of skin, skin irritation.

SECTION 12 ECOLOGICAL INFORMATION.....

12.1 Ecotoxicity

Toxicity to Fish

1-Butanol: Bleak (*Alburnus alburnus*) LC50 2250-2240 mg/L 96 hour

Toxicity to Crustacea

1-Butanol: *Daphnia magna* (Water flea) LC50 1983 mg/L 48 hour

Toxicity to Algae

No data available

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

1-Butanol: *Oncorhynchus mykiss* (rainbow trout), 24 h, 921 mg/l
 BCF = 0.88 [1-Butanol]; Bioconcentration potential in aquatic organisms is low.

12.4 Motility in soil

No data available

12.5 Results of PBT and vPvB assessment

No data available

12.5 Other adverse effects

Additional ecological information

No data available
 Do not discharge into the environment.

SECTION 13 DISPOSAL CONSIDERATIONS.....

13.1 Disposal methods

U . S. EPA Waste Codes

D001, D002 , F003

Waste Characterization
 (per U. S. regulations)

RCRA Hazard Class (40CFR 261): Ignitable, corrosive
 Generator is responsible for proper waste characterization. NOTE: U. S. state hazardous waste regulations may differ considerably from U. S. Federal regulations.

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Waste Disposal That which cannot be recovered or recycled, should be disposed of in accordance with all applicable international, national, regional, state, and local laws. Do NOT dump into any sewer, on ground, or into any body of water. Empty containers or equipment rinsate may be considered hazardous under regulations. Refer to the European Waste Catalogue (EWC) for appropriate code for disposal in the EC.

SECTION 14 TRANSPORT INFORMATION

14.1 DOT (US)
 UN Number: 2924 Class: 3+8 Packing Group: III
 Proper shipping name: Flammable liquids, corrosive, n.o.s. (n-butanol, hydrochloric acid)

14.2 IMDG
 UN Number: 2924 Class: 3+8 Packing Group: III EMS-No: F-E, S-C
 Proper shipping name: FLAMMABLE LIQUIDS, CORROSIVE, N.O.S. (n-butanol, hydrochloric acid)

14.3 IATA
 UN Number: 2924 Class: 3+8 Packing Group: III
 Proper shipping name: Flammable liquids, corrosive, n.o.s. (n-butanol, hydrochloric acid)

SECTION 15 REGULATORY INFORMATION

15.1 Safety, health and Environmental regulations specific for the product in question.
 NFPA: H3 F3 R0 HMIS: H3* F3 PH0 (*chronic health hazards)

15.2 Chemical Inventory Lists
 Reviews, Standards, and Regulations

..... 3N HCl in.....Hydrochloric	n-Butanol
..... n-Butanol..... Acid	
CAS number.....	NL..... 7647-01-071-36-3
TSCA:.....	NL..... YY
This compound is sold strictly for FDA or research and development use.	
EINECS:.....	NL..... YY
Number.....	NA..... 231-595-7200-751-6
CERCLA [Section 103 (40 CFR 302.4)]:.....	NL..... Y NL
RQ (lbs).....	NA..... 5,000 5,000
RCRA Waste Code.....	NA..... NA U031 (pure only)
OSHA Process Safety [29 CFR 1910.119]:.....	NL..... Y NL
TQ (lbs).....	NA..... 5,000 NA
Clean Air Act	
[Section 112r (40 CFR 68)]:.....	NL..... Y NL
TQ (lbs).....	NA..... 15,000 NA
Contains Ozone Depleters (Class I or Class II).....	N..... N N
State Lists:.....	NL..... YY
States.....	NL..... NL..... CA, FL, MA MN, NJ, PA
On CA 65 Significant Risk Level.....	NL..... NL NL
SARA Title III Notification [40 CFR 302.4]:	
Section 302/304 (EHS) Ingredient	
[40 CFR 355.3].....	NL..... NL* NL
TPQ (lbs).....	NA..... NA* NA
RQ (lbs).....	NA..... NA* NA
Section 313 Ingredient [40 CFR 372.65].....	NL..... Y* Y
*gas form of hydrogen chloride is reportable differently than the aqueous form, hydrochloric acid. The gas form of HCl is reportable under SARA 303/304 with a 500 lb TPQ/RQ and is a SARA 313 reportable chemical.	
SARA Hazards Acute..... Y Chronic..... Y Fire.....Y Pressure N Reactivity..... N	

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SECTION 16..... **OTHER INFORMATION**.....

16.1 Full test of H-Statements referred to under Section 2 and 3.

Acute Tox.	Acute Toxicity
Eye Dam.	Eye Damage
Flam. Liq.	Flammable Liquids
H290	May be corrosive to metals.
H226	Flammable liquid and vapor.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H320	Causes serious eye damage.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
Met. Corr.	Metal Corrosion
Skin Irr.	Skin Irritation
STOT-SE	Specific Target Organ Toxicity – Single Exposure

The above information is believed to be correct to the best of our present state knowledge, but does not purport to be all-inclusive and shall be used only as a guide. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.

This is the last page of this MSDS.

Prepared by Regis Technologies, Inc.