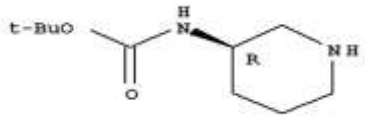
Date of compilation	:	March 12, 2012
File Name	:	0670Gj Ghs04 Div.3 sds (R)-3-[tert-Butoxycarbonyl)amino]piperidine
Revision Number	:	04
Date of Issue	:	February 26, 2021
Revision Due Date	:	January, 2024
Supersedes date	:	January 13, 2020
Supersedes version	:	0670Gj Ghs03 Div.3 sds (R)-3-[tert-Butoxycarbonyl)amino]piperidine

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

PRODUCT NAME	: (R)-3-[N-(tert-Butoxycarbonyl)amino]piperidine
CAS RN	: 309956-78-3
EC#	: 685-989-2
SYNONYMS	: (R)-3-Boc-aminopiperidine;Carbamicacid, (3R)-3- piperidinyl-, 1,1-dimethylethyl ester (9CI);(3R)-3-((tert-Butyloxycarbonyl)amino)]piperidine;(R)-3-[N-(tert-Butoxycarbonyl)amino]piperidine;(R)-Piperidin-3-ylcarbamic acid tert-butylester;(R)-tert-Butyl(piperidin-3- yl)carbamate;tert-Butyl(R)-piperidin-3-ylcarbamate
SYSTEMATIC NAME	: (R)-3-[N-(tert-Butoxycarbonyl)amino]piperidine
MOLECULAR FORMULA	: $C_{10}H_{20}N_2O_2$
STRUCTURAL FORMULA	



1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

(R)-3-[N-(tert-Butoxycarbonyl)amino]piperidine is an organic intermediate used in the manufacture of active pharmaceuticals ingredients(API).

Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Ingrevia Limited
FACTORY & REGISTERED OFFICE: Jubilant Ingrevia Limited., Bhartiagram, Gajraula, District: Amroha, Uttar Pradesh-244223, India

HEAD OFFICE: Jubilant Ingrevia Limited., Plot 1-A, Sector 16-A,Institutional Area, Noida, Uttar Pradesh, 201301 - India
T: FACTORY & REGISTERED OFFICE:T +91-5924-252353 to 252360 Contact Department-Safety: Ext. 7424
HEAD OFFICE: T +91-120-4361000 E-mail: support@jubl.com

1.4. Emergency telephone number

CHEMTEL 24-HOUR EMERGENCY TELEPHONE NUMBERS :
North America: 1-800-255-3924
International: +1-813-248-0585
India: 000-800-100-4086
Brazil: 0-800-591-6042
Mexico: 01-800-099-0731
China: 400-120-0751

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Skin corrosion/irritant: Category 2
Serious eye damage/eye irritation: Category 1
Specific target organ toxicity: Category 3
(After single exposure)
Chronic aquatic toxicity (Category 2)

2.2. Label Elements

Hazard Pictogram: GHS 05, GHS 07 and GHS 09

Signal Word: Danger!

HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS

- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.
- H411 Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

- P264: Wash hands thoroughly after handling.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
- P271: Use only outdoors or in a well-ventilated area.
- P273: Avoid release to the environment.
- P302+352: IF ON SKIN: Wash with plenty of soap and water.
- P321: Specific treatment (see … on this label).
- P332+313: If skin irritation occurs: Get medical advice/attention.
- P362: Take off contaminated clothing and wash before reuse.
- P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
- P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P310: Immediately call a POISON CENTER or doctor/physician.
- P391: Collect spillage.
- P403+233: Store in a well ventilated place. Keep container tightly closed.
- P405: Store locked up.
- P501: Dispose of the container as per local norms and regulations.

SECTION 3: Composition/information on ingredients

Chemical	CAS #	Purity(GC)	GHS-US classification
(R)-3-[N-(tert-Butoxycarbonyl) amino]piperidine	309956-78-3	>98% w/w	Skin corrosion/irritant: Category 2 Serious eye damage/eye irritation: Category 1 Specific target organ toxicity: Category 3 (After single exposure) Chronic aquatic toxicity (Category 2)

SECTION 4: First aid measures

4.1. Description of first aid measures

Key symptoms

Acute effects

- It is Irritating to eyes and skin on contact. It causes respiratory irritation. It is irritating to mucous membranes and upper respiratory tract. It may causes drowsiness or dizziness Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

FIRST AID:

- **Eyes**: If in eyes rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do so. Continue rinsing. Seek medical attention.
- **Skin:** Immediately take off all contaminated clothing. Wash thoroughly with water for at least 15 minutes. Wash contaminated clothes before reuse. Seek immediate medical attention.
- **Inhalation:** If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
- **Ingestion**: If swallowed call a poison center if you feel unwell. Rinse mouth. INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.
- **Chronic Health Effects:** Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

SECTION 5 : FIRE-FIGHTING MEASURES

Extinguishing media

***Appropriate extinguishing media*:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special Protective Equipment and Precautions for Fire Fighter

- Evacuate the area and fight fires from a safe distance.
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions or as per locally valid procedures.
- Fire fighters must wear Self Contained Breathing Apparatus (SCBA) and full protective clothing. The chemical is harmful in contact with skin.
- Report any run-off of fire waters contaminated with this chemical as per local and federal procedures applicable.

Unusual fire and explosion hazard

- Toxic vapors may be released on thermal decomposition including nitrogen oxides, carbon monoxide and Carbon dioxide.
- High vapor concentration may result in an explosion hazard.
- Vapors are heavier than air. May travel considerable distance from source and flashback.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

Minor Spills

- Clean up all spills immediately following relevant Standard Operating Procedures.
- Avoid breathing vapors and contact with skin and eyes.
- Shut off leak source if possible.
- Shut off all possible sources of ignition.
- Wear protective clothing, boots, impervious gloves and safety glasses.
- Wipe up.
- Decontaminate all equipment.

Major Spill

- Alert Emergency Responders and tell them location and nature of hazard.
- Shut off all possible sources of ignition and increase ventilation.
- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Clear area of personnel and move upwind.
- Stop leaks if possible.
- Prevent, by any means available, spillage from entering drains or water and watercourses.
- Collect recoverable product into labeled containers for recycling, recovery or disposal.
- Pick up and arrange disposal without creating dust. Sweep up and shovel
- Clean up all tools and equipment.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

- Avoid formation of dust and aerosols.
- Wear protective gloves/clothing and eye/face protection.
- Wash thoroughly after handling.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Launder contaminated clothing before re-use.
- If on skin or hair, IMMEDIATELY remove all contaminated clothing and rinse/shower with plenty of water.
- Use in a well ventilated place/Use protective clothing commensurate with exposure levels.

Storage

- Store at ambient temperature in a dry and well ventilated place.
- Store away from incompatible materials.
- Keep container tightly closed.

SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

- **Exposure Limits Values**

Chemical name	ACGIH	NIOSH	OSHA-Final PELs
(R)-3-[N-(tert-Butoxycarbonyl) amino]piperidine	None Listed	None Listed	None Listed

Exposure Controls
This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Measures: Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protection:

Eye/face Protection: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection: Long sleeved clothing.
Respiratory Protection: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures: Handle in accordance with good industrial hygiene and safety practice.
General Industrial hygiene:

- Immediately change contaminated clothing.
- Apply skin protective barrier cream.
- Wash hands and face after working with the substance.
- Under no circumstances eat or drink at the workplace.
- Do not inhale substances, work under hood.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

- **Information on basic physical and chemical properties.**

Sr.No.	Parameter	Typical value
1.	Appearance	What to off white solid powder
2.	Odor	Characterstic
3.	Melting point	116-121ºC
4.	Boiling point	304.8±31.0 °C at Press: 760 Torr(Estimated)
5.	Flash point	138.2°C
6.	Evaporation rate (n-BuAc=1)	Not available
7.	Explosive limits	Not available
8.	Vapor pressure	0.00201mm Hg at Temp: 25°C (Estimated)
9.	Vapor density (air=1)	Not available
10.	Density	1.02 g/cm^3
11.	Solubility in water	Slightly soluble in water
12.	Solubility in organic solvents	Soluble in methanol, n-butanol,ethanol
13.	pH	Not available
14.	Log Kow (octonol/water)	1.6 (Estimated)
15.	Auto-ignition temperature	Not available
16.	Decomposition temperature	Not available
17.	Viscosity	Not available
18.	Molecular Weight	200.28
19.	pKa (@250C)	12.37±0.20 (Most Acidic) at 25ºC(Estimated)
20.	304.8 °C at 760 mmHg	304.8 °C at 760 mmHg
21.	Flammability	Non Flammable

22.	Oxidizer	Not available
23.	Corrosive material	Not available
24.	Explosive material	Not available

SECTION 10: STABILITY AND REACTIVITY

- **Stability:** Stable under normal temperatures and conditions.
- **Conditions to avoid:** Avoid contact with incompatible chemicals.
- **Incompatible chemicals:** Strong Acids, Strong Alkaline solutions and Oxidizing agents.
- **Hazardous decomposition:** When heated to decomposition it emits toxic fumes of nitrogen oxides and Carbon oxides.
- **Hazardous Polymerization**: Not expected

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

(a)Acute Toxicity:

- (R)-3-[N-(tert-Butoxycarbonyl) amino] piperidine is irritating to eyes, skin and respiratory system.

RTECS: CAS# 309956-78-3, not available in RTECS

LD50/LC50: No data available

(b) Skin corrosion/irritation

- Causes skin irritation.

(c) Serious eye damage/irritation

- Causes serious eye damage.

(d) Respiratory or skin sensitization

- No data available

(e) Germ cell mutagenicity

- No data available.

(f) Carcinogenicity

- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

(g) Reproductive toxicity

- No data is available.

(h) STOT-single exposure

- May cause respiratory irritation.

(i) STOT- repeated exposure:

- No data is available.

(j) Aspiration Hazards:

- No data is available.

Symptoms related to the physical, chemical and toxicological characteristics:

Skin contact may result in inflammation characterized by itching, scaling, reddening, blistering, pain or dryness. Eye contact may result in redness, pain or severe eye damage. Inhalation may cause irritation of the lungs and respiratory system. Overexposure may result in serious illness or death.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

(A) Ecotoxicity:

- Fathead minnow LC50 (96 hr)- 27.02 mg/l (Predicted LC50 from concensus method- USEPA Tool)
- Daphnia magna LC50 (48 hr)- ~1.51 mg/l (Predicted LC50 from concensus method-USEPA Tool)

(B) Persistence and Degradability

Not readily biodegradable

(C) Bioaccumulative Potential (Estimated)

BCF=5.282 (Estimated)

(D) Mobility (Predicted):

- Log Koc= 2.375
- Henry's Law Constant: 4.74E-011 atm-m3/mole
- Log Kow = 1.60

(E) Environment Fate:

Based on the environmental modeling, this material has a low potential to get absorbed in the organic matter of soil and is non-volatile from water bodies. Since this is an estimated result it is recommended that the material should not be disposed into the environment. The material should never be disposed into the sewage.

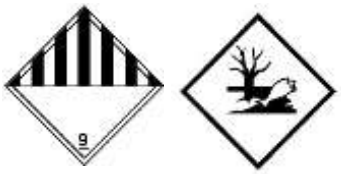
SECTION 13: Disposal considerations

Waste treatment methods

- **Disposal of waste:** Chemical waste generators must determine whether a discarded chemical is classified as hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification. Observe all federal, state and local regulations when disposing of the substance.
- **Disposal of packaging:** Do not reuse containers. Dispose of as unused product.

SECTION 14: Transport information

- This substance is considered to be Hazardous for transport by Air/Rail/Road and Sea and thus regulated by IATA/ICAO/ARD/RID/IMO/IMDG.

S.No	Agency	UN Number	Proper Shipping name	Hazard Class	Packing Group
Land Transport	US DOT	UN 3077	Environmental Hazardous substance. n.o.s { R)-3-(BOCAMINO)PIPERIDINE}	9	III
Maritime Transport	IMDG	UN 3077	ENVIRONMENTAL HAZARDOUS SUBSTANCE. N.O.S { R)-3-(BOCAMINO)PIPERIDINE}	9	III
Air Transport	IATA	UN 3077	Environmental Hazardous substance. n.o.s { R)-3-(BOCAMINO) PIPERIDINE}	9	III
Hazard Label		**Environmental Hazard**			

Environmental hazards

- It is expected that this chemical is a marine pollutant and is Harmful to the Aquatic environment.

SECTION 15: REGULATORY INFORMATION

- **European Union Information**

Classification as per CLP Regulation EC 1272/2008

Skin irrt Cat.2; Eye irri. Cat 1; STOT SE Cat 3, Chronic aquatic toxicity (Category 2)

Hazard Statements: H315; H318; H335; H411

Chemical Inventory Lists:	Status
TSCA:	Not Listed
EC inventory:	685-989-2
Canada(DSL/NDSL):	Not Listed
Japan:	Not listed
Korea:	Not listed
Australia:	Not listed
China: IECSC	Not listed

US information

TSCA

- CAS# 309956-78-3 is not listed on the TSCA, 12 b and TSCA chemicals on reporting rules list.

EPA

- CAS# 309956-78-3 is not listed on the EPA inventory.

OSHA:

- None of the chemicals in this product are considered highly hazardous by OSHA.

WHIMS Canada – DSL/NDSL

- CAS# 309956-78-3 is not listed in DSL/NDSL**.**

SECTION 16: OTHER INFORMATION

a) Compilation information of safety data sheet

Date of compilation	: March 12, 2012
Chemical	: (R)-3-[N-(tert-Butoxycarbonyl)amino]piperidine
CAS #	: 309956-78-3
File Name	: 0670Gj Ghs04 Div.3 sds (R)-3-[N-(tert-Butoxycarbonyl)amino]piperidine
Revision Number	: 04
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Supersedes date	: January 13, 2020

b) A key or legend to aberrations and acronyms used in the safety data sheet

- PBT =Persistent Bioaccumulative and Toxic.
- vPvB= Very Persistent and Very Bioaccumulative.
- SCBA= Self Contained Breathing Apparatus.
- RTECS= Registry of Toxic Effects of Chemical Substances.
- NTP=National Toxicology Programm.
- IARC= International Agency for Research on Cancer.
- EPA=Environmental Protection Agency.
- TSCA= Toxic Substances Control Act.
- CERCLA= Comprehensive Environmental Response, Compensation, and Liability Act.
- SARA= Superfund Amendments and Reauthorization Act.
- NFPA= National Fire Protection Association.
- WHIMS= Workplace Hazardous Materials Information System.
- DSL/NDSL= Domestic/Non-Domestic Substances List.
- CSR=Chemical Safety Report.
- BCF = Bio Concentration Factor.
- DNEL = Derived No Effect Level.
- PNEC = Predicted No Effect Concentration.
- TLV = Threshhold Limit Value.
- ACGIH = American Conference of Governmental Industrial Hygienists.
- REACH = Registration, Evaluation .Authorisation and Restriction of Chemicals.
- CLP = Classification, Labelling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonised System.
- ADR = Accord europeen relative au transport international de marchandises.
- IMDG-Code = International Maritime Code for Dangerous Goods.
- EmS = Emergency measures on Sea.
- ICAO = International Civil Aviation Organization.
- IATA/DGR= International Air Transport Association/Dangerous Goods Regulation.

c) Key Literature reference and sources for data

Biographical reference and data sources

- CLP REG (regulation) (EC) no. 1272/2008, last modification by regulation (EC) no. 790/2009
- DIR 67/548/EWG, last modification by DIR 2009/2/EC
- REG (EC) no. 1907/2006, last modification by REG (EC) Nr. 453/2009.
- Degussa Antwerpen N.V Antwerpen4 ; European Chemicals Bureau; IUCLID Dataset.
- European Chemicals Bureau; IUCLID Dataset, Nicotinic Acid (59-67-6) (2000 CD-ROM edition).
- [(1) Naik MN et al; Soil BiolBiochem 4: 313-23 (1972) (2) Sims GK, Sommers LE; J Environ Qual 14: 580-4 (1985) (3) Pitter P, Simanova J; SbVysSkChem-TechnolPraze, (Oddil) F: TechnolVodyProstredi 22: 93-113(1978)]

- [(1) Naik MN et al; Soil BiolBiochem 4: 313-23 (1972) (2) Adrian NR, Suflita JM; Environ ToxicolChem 13: 1551-57 (1994)]

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intented to describe the product for the purposes of health,safety and environmental requirements only.It should not therefore be construed as guaranteeing any specific property of the product.

(End of Safety Data Sheet)