

Otto Chemie Pvt Ltd

An ISO 9001 : 2015 & GMP Certified Company
Office : No 603, 6th Floor, Tardeo AC Market, 87, Tardeo Road,
Tardeo, Mumbai, Maharashtra 400034, India (BHARAT)
Tel : + 91 98200 41841 Email : info@ottokemi.com Web : www.ottokemi.com

Creation Date: 30-06-2026

Revision Date: 25-11-2031

MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1: Product identifiers

Product Name: Ammonia ca. 2M solution in methanol
Product Code: A 3796
CAS No: 7664-41-7

1.2. Relevant identified uses of the substance or mixture and uses advised against
Use : Industrial. For professional use only.

1.3. Details of the supplier of the safety data sheet

Company identification
OTTO CHEMIE PVT LTD
No 603, 6th Floor, Tardeo AC Market, 87, Tardeo Road,
Tardeo, Mumbai, Maharashtra 400034, India (BHARAT)

1.4. Emergency telephone number

Phone no. : + 91 98200 41841 (10 : 00 am – 06 : 00 pm)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable gases, Category 2

Gases under pressure, Liquefied gas
explode if heated.

Acute toxicity, Category 3

Skin corrosion, Sub-category 1B

Serious eye damage, Category 1

Short-term (acute) aquatic hazard,

Category 1

Long-term (chronic) aquatic hazard,

Category 2

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms

Signal word

Hazard statements

H221: Flammable gas.

H280: Contains gas under pressure; may

H331: Toxic if inhaled.

H314: Causes severe skin burns and eye
damage.

H318: Causes serious eye damage.

H400: Very toxic to aquatic life.

H411: Toxic to aquatic life with long lasting
effects.

:
: Danger

: H221 Flammable gas.

H280 Contains gas under pressure; may explode if heated.

H314 Causes severe skin burns and eye damage.

H331 Toxic if inhaled.

H410 Very toxic to aquatic life with long lasting
effects.

: EUH071 Corrosive to the respiratory tract.

: Prevention:

Statements

P210 Keep away from heat, hot surfaces, sparks,
open flames and other ignition sources. No smoking.

P260 Do not breathe gas.

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

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off
immediately all contaminated clothing.

Rinse skin with water.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with
water for several minutes. Remove contact
lenses, if present and easy to do. Continue
rinsing.

Supplemental Hazard
Statements

Precautionary

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Reduced Labelling (<= 125 ml)

Hazard pictograms

Signal word

Hazard Statements

H331

H314

H221

Precautionary Statements

P260

P280

P303 + P361 + P353

P305 + P351 + P338

Supplemental Hazard information (EU)

EUH071

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

EC-No. : 231-635-3

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)	M-Factor, SCL, ATE
ammonia anhydrous	7664-41-7 231-635-3	>= 90 - <= 100	M-Factor (Acuteaquatic toxicity):10

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : First aiders need to protect themselves.

Show this safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air. Immediately call in physician.

If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

Call a physician immediately.

In case of eye contact : After eye contact: rinse out with plenty of water.

Immediately call in ophthalmologist.

Remove contact lenses.

If swallowed : After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation).

Call a physician immediately.

Storage:

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

P410 + P403 Protect from sunlight. Store in a wellventilated place.

:

Danger

Toxic if inhaled.

Causes severe skin burns and eye damage.

Flammable gas.

Do not breathe gas.

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

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

Corrosive to the respiratory tract.

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Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2 GHS label elements) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

: Carbon dioxide (CO₂)

Foam

Dry powder

Unsuitable extinguishing media

: Water

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting

: Not combustible.

Pay attention to flashback.

Ambient fire may liberate hazardous vapours.

Hazardous combustion products

: Nitrogen oxides (NO_x)

5.3 Advice for firefighters

Special protective equipment for firefighters

: Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information : Remove container from danger zone and cool with water.

Suppress (knock down) gases/vapours/mists with a water spray jet.

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Advice for non-emergency personnel:

Do not breathe gas.

Avoid substance contact.

Ensure adequate ventilation.

Evacuate the danger area, observe emergency procedures, consult an expert.

Wear appropriate personal protective equipment, as indicated in Section 8.

6.2 Environmental precautions

Environmental precautions

: Do not let product enter drains.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Stop flow of gas, move leaking cylinder to open air if without risk.

6.4 Reference to other sections

For disposal considerations see section 13.

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SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Work under hood. Do not inhale substance/mixture.

Avoid generation of vapours/aerosols.

Advice on protection
against fire and explosion

: Keep away from open flames, hot surfaces and
sources of ignition.

Hygiene measures : Immediately change contaminated clothing. Apply
preventive skin protection. Wash hands and face after
working with substance.

Temperature class : T1

For precautions see section 2 GHS label elements

7.2 Conditions for safe storage, including any incompatibilities

Further information on

storage conditions

: Tightly closed. Keep locked up or in an area accessible
only to qualified or authorised persons. Keep away
from combustible materials and sources of ignition.

Storage class (TRGS 510) : 2A, Gases

Further information on

storage stability

: Contents under pressure.

Recommended storage

temperature

: Recommended storage temperature see product label.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006

Substance name End Use Exposure

routes

Potential health

effects

Value

ammonia

anhydrous

Worker

DNEL, acute

Dermal Systemic effects 6,8 mg/kg

Worker

DNEL,

longterm

Dermal Systemic effects 6,8 mg/kg

Worker

DNEL, acute

Inhalation Systemic effects 47,6 mg/m³

Worker

DNEL, acute

Inhalation Local effects 36 mg/m³

Worker

DNEL,

longterm

Inhalation Systemic effects 47,6 mg/m³

Worker

DNEL,

longterm

Inhalation Local effects 14 mg/m³

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Consumer
DNEL, acute
Dermal Systemic effects 68 mg/kg
Consumer
DNEL,
Dermal Systemic effects 68 mg/kg
longterm
Consumer
DNEL, acute
Inhalation Systemic effects 23,8 mg/m³
Consumer
DNEL, acute
Inhalation Local effects 7,2 mg/m³
Consumer
DNEL,
longterm
Inhalation Systemic effects 23,8 mg/m³
Consumer
DNEL,
longterm
Inhalation Local effects 2,8 mg/m³
Consumer
DNEL, acute
Oral Systemic effects 6,8 mg/kg
Consumer
DNEL,
longterm
Oral Systemic effects 6,8 mg/kg
Predicted No Effect Concentration (PNEC) according to Regulation (EC) No.
1907/2006
Substance name Environmental Compartment Value
ammonia anhydrous Fresh water 0,0011 mg/l
Aquatic intermittent release 0,0068 mg/l
Marine water 0,00011 mg/l
8.2 Exposure controls
Individual protection measures, such as personal protective equipment (PPE)
Eye/face protection : Use equipment for eye protection tested and
approved under appropriate government standards
such as NIOSH (US) or EN 166(EU).
Tightly fitting safety goggles
Hand protection
Material : butyl-rubber
Break through time : 480 min
Glove thickness : 0,7 mm
Protective index : Full contact
Manufacturer : Butoject® (KCL 898)
Material : butyl-rubber
Break through time : 480 min
Glove thickness : 0,7 mm
Protective index : Splash contact
Manufacturer : Butoject® (KCL 898)
Remarks : This recommendation applies only to the product
stated in the safety data sheet, supplied by us and
for the designated use. When dissolving in or mixing
with other substances and under conditions deviating
from those stated in EN 16523-1 please contact the
supplier of CE-approved gloves (e.g. KCL GmbH, D36124 Eichenzell, Internet: www.kcl.de).
Skin and body protection : Flame retardant antistatic protective clothing.
Respiratory protection : required when vapours/aerosols are generated.
Our recommendations on filtering respiratory
protection are based on the following standards: DIN

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EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter

type:

: Filter type K

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

Environmental exposure controls

Advice : Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state

: Liquid

Form

: Liquefied gas

Colour

: colourless

Odour

: stinging, Do not attempt to smell the product as it is

hazardous.

Odour Threshold

: 0,02 ppm

Melting point/ range

: -78 °C

Method: lit.

: -33 °C

Method: lit.

: Tci: 40,1

The product is not flammable.

Boiling point/boiling range

: 25 %(V)

Flammability

: 16 %(V)

Upper explosion limit /

Upper flammability limit

Lower explosion limit /

Lower flammability limit

Flash point

: Not applicable

Autoignition temperature

: 651 °C

Decomposition

: > 450 °C

temperature

pH

: ca. 10 - 12 (20 °C)

Concentration: 50 g/l

Viscosity

Viscosity, dynamic

: 0,254 mPa.s (-33 °C)

Viscosity, kinematic

: No data available

Flow time

: No data available

Solubility(ies)

Water solubility

: 531 g/l (20 °C)

Method: OECD Test Guideline 105

Partition coefficient: noctanol/water:

Not applicable for inorganic substances

Vapour pressure

: 8.600 hPa (20 °C)

Relative density

: No data available

Density

: 0,7 g/cm3 (-33 °C)

liquid

Relative vapour density

: 0,6

(Air = 1.0)

9.2 Other information

Explosives

: No data available

Oxidizing properties

: none

Burning rate

: No data available

Self-ignition

: 651 °C

Evaporation rate

: Not applicable

Oxidizing potential

: -3.090 mV

Molecular weight

: 17,03 g/mol

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SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Hazardous reactions : Exothermic reaction with:

Acetaldehyde
Acrolein
boron triiodide
boron trifluoride
Bromine
hydrogen bromide
Hydrogen chloride gas
chromyl chloride
dimethylsulfate
nitrogen oxides
Hydrogen fluoride
Carbon dioxide (CO₂)
mercaptans
chlorates
nitryl compounds
Phosgene
Oxides of phosphorus
Acids
hydrogen sulphide
sulphur dioxide
chromium(VI) oxide
metal catalysts
Barium
halogen-halogen compounds
halogen compounds
hypochlorous acid
phosphorus hydrogen
tetra methylammonium amide
propinyl chloride
Ethylene oxide
polymerisation

A risk of explosion and/or of toxic gas formation exists with the following substances:

Ammonium salts
antimony hydride
Calcium
Chlorine
Chlorites
Fluorine
halogens
perchlorates
sodium hypochlorite
strong oxidising agents
Mercury
mercury compounds
sulfur
silver
silver salt
silver oxide
hydrogen peroxide
nitrogen trichloride
azides
halogen oxides
Nitro compounds

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chlorinated solvents
Hydrocarbons
with
Air
Oxygen
with
Catalyst
Risk of ignition or formation of inflammable gases or
vapours with:
Boron
Boranes
Nitric acid
silicon-hydrogen
Generates dangerous gases or fumes in contact with:
Carbon monoxide
with
heat
Possible formation of:
Hydrogen cyanide (hydrocyanic acid)
10.4 Conditions to avoid
Conditions to avoid : no information available
10.5 Incompatible materials
Materials to avoid : various metals
10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Toxicity to Animals:

Oral LD50 Rat: 1500 mg/kg; Dermal LD50 Rabbit: 2000mg/kg Inhalation LC50 Rat: > 50mg/L.

Chronic Effects on Humans: CARCINOGENIC EFFECTS: Classified None. by NTP, None. by OSHA, None. by NIOSH.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of inhalation (lung irritant).

Special Remarks on Toxicity

to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

SECTION 12: Ecological information

12.1 Toxicity

Components:

ammonia anhydrous:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 0,068 mg/l

End point: mortality

Exposure time: 96 h

Test Type: flow-through test

Analytical monitoring: yes

Remarks: (in analogy to similar products)

(ECHA)

The value is given in analogy to the following
substances: ammonium sulphate

Toxicity to daphnia and

other aquatic

invertebrates

: LC50 (Daphnia magna (Water flea)): 101 mg/l

End point: mortality

Exposure time: 48 h

Test Type: static test

Analytical monitoring: yes

Remarks: (ECHA)

EC50 (Daphnia pulex): 1,16 mg/l

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Exposure time: 48 h

Remarks: (Lit.)

M-Factor (Acute aquatic toxicity)

: 10

Toxicity to fish (Chronic toxicity)

: NOEC: 0,048 mg/l

Exposure time: 31 d

Species: *Ictalurus punctatus*

Test Type: flow-through test

Method: OECD Test Guideline 215

Toxicity to daphnia and other aquatic

invertebrates (Chronic toxicity)

: LC50: 4,07 mg/l

End point: mortality

Exposure time: 96 h

Species: *Daphnia magna* (Water flea)

Test Type: flow-through test

Method: US-EPA

Remarks: (in analogy to similar products)

The value is given in analogy to the following substances: ammonium chloride

NOEC: 0,79 mg/l

End point: mortality

Exposure time: 96 h

Species: *Daphnia magna* (Water flea)

Test Type: flow-through test

Method: US-EPA

Remarks: (in analogy to similar products)

The value is given in analogy to the following substances: ammonium chloride

12.2 Persistence and degradability

Components:

ammonia anhydrous:

Biodegradability : Result: rapidly biodegradable

Remarks: Readily biodegradable.

12.3 Bioaccumulative potential

Components:

ammonia anhydrous:

Partition coefficient: octanol/water

: Remarks: Not applicable for inorganic substances

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment

: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

No data available

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SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Pressurised gas bottle: dispose of only in empty condition!

SECTION 14: Transport information

14.1 UN number or ID number

ADR : UN 1005
IMDG : UN 1005
IATA : UN 1005

Not permitted for transport

14.2 UN proper shipping name

ADR : AMMONIA, ANHYDROUS
IMDG : AMMONIA, ANHYDROUS
IATA : Ammonia, anhydrous
Not permitted for transport

14.3 Transport hazard class(es)

Class Subsidiary risks

ADR : 2 2.3, 8
IMDG : 2.3 8
IATA : Not permitted for transport

14.4 Packing group

ADR : Not assigned by regulation
Packing group : Not assigned by regulation
Classification Code : 2TC
Hazard Identification : 268

Number

Labels : 2.3 (8)

Tunnel restriction code : (C/D)

IMDG

Packing group : Not assigned by regulation

Labels

EmS Code : 2.3 (8)

IATA (Cargo) : F-C, S-U

IATA_P (Passenger) : Not permitted for transport

14.5 Environmental hazards

ADR

Environmentally hazardous : yes

IMDG

Marine pollutant : yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)

: Conditions of restriction for the following entries should be considered:

Number on list 40

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).

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: Not applicable
Regulation (EU) No 2024/590 on substances that
deplete the ozone layer
: Not applicable
Regulation (EU) 2019/1021 on persistent organic
pollutants (recast)
: Not applicable
REACH - List of substances subject to
authorisation (Annex XIV)
: Not applicable
Seveso III: Directive 2012/18/EU of the
European Parliament and of the Council
on the control of major-accident hazards
involving dangerous substances.
H2 ACUTE TOXIC
P2 FLAMMABLE GASES
E1 ENVIRONMENTAL HAZARDS
15.2 Chemical safety assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other Information

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.

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DISCLAIMER

Otto Chemie Pvt Ltd - products are only for laboratory use only. Not for drug, medicinal, household or any other use. No liability accepted for mishandling in use - please test before use
Otto Chemie Pvt Ltd - shall not be responsible for any damage resulting from handling or from contact with the above product.
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This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product