

DN-3306-C
Version: 2013Cap B 1
Revision: 2022

Material Safety Data Sheet

SECTION 1.**CHEMICAL PRODUCT CHEMICAL IDENTIFICATION**

Product Name: **Capping Solution-B1**
Chemical Name /Combination Acetic Anhydride & Acetonitrile (40:60)
Catalog Number: **DN-3306-C**
Synonym/Trade Name: DNA Synthesis Capping Solution-B1; Acetic Anhydride with Acetonitrile
Identified uses DNA Synthesis & Peptide synthesis
Manufacturer or supplier's ChemGenes India Pvt. Ltd
207, Regency Plaza, 5-Park Road
Lucknow-226 001,U.P, India,
Ph: +91 86874 21036,
Email: info@chemgenesindia.com

SECTION 2.**COMPOSITION/INFORMATION ON INGREDIENTS**

Component: Acetic Anhydride
CAS#: 108-24-7
EC # (EINECS): 203-564-8
Percentage: 40%
M.W.: 102.09

Component: Acetonitrile Anhydrous
CAS#: 75-05-8
EC # (EINECS): 200-835-2
Percentage: 60%
M.W.: 41.05

SECTION 3.**HAZARDS IDENTIFICATION**

Classification of the substance or mixture Classification (REGULATION (EC) No 1272/2008)

Flammable liquid, Category 2, H225
Acute toxicity, Category 4, Oral, H302
Acute toxicity, Category 4, Inhalation, H332
Skin corrosion, Category 1B, H314
Specific target organ toxicity - single exposure, Category 3, H335
For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification (67/548/EEC or 1999/45/EC)

F Highly flammable R11
C Corrosive R34
Xn Harmful R20/21/22

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

For the full text of the R-phrases mentioned in this Section, see Section 16.

Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms



Signal word

Danger

Hazard statements

H225 Highly flammable liquid and vapour. H302 Harmful if swallowed.

H314 Causes severe skin

burns and eye damage. H332 Harmful if inhaled.

H335 May cause respiratory irritation.

Precautionary statements

Prevention

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

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

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Storage

P403 + P235 Store in a well-ventilated place. Keep cool.

Reduced labelling (≤ 125 ml)

Hazard pictograms



Signal word

Danger

Hazard statements

H314 Causes severe skin burns and eye damage.

Precautionary statements

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P301 + P330 +

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P308 + P311 IF exposed or concerned: Call a POISON CENTER or doctor/ physician.

Contains: acetonitrile, Acetic anhydride

Other hazards

None known.

SECTION 4. FIRST AID MEASURES

Description of first aid measures

General advice

First aider needs to protect himself.

After inhalation: fresh air. If breathing stops: immediately apply artificial respiration, if necessary oxygen. Immediately call in physician.

After skin contact: wash off with plenty of water. Remove contaminated clothing. Call a physician immediately.

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

Most important symptoms and effects, both acute and delayed

Irritation and corrosion, Risk of blindness!

Cough, Shortness of breath, respiratory arrest, Dizziness, Unconsciousness, Headache, Spasm, cardiac arrest

The following applies to cyanogen compounds/ nitriles in general: utmost caution! Release of hydrocyanic acid is possible - blockade of cellular respiration. Cardiovascular disorders, dyspnoea, unconsciousness.

Indication of any immediate medical attention and special treatment needed No information available.

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO₂), Dry powder

Unsuitable extinguishing media

Water, Foam

Special hazards arising from the substance or mixture

Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air at ambient temperatures.

Pay attention to flashback.

May not get in touch with:

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

Water

Caution! in contact with water product releases:

Organic acids

Development of hazardous combustion gases or vapours possible in the event of fire.

Fire may cause evolution of:

nitrogen oxides

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

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not let product enter drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area. Do not inhale vapours.

Reference to other sections

Indications about waste treatment see section 13.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Observe label precautions.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

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

Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Recommended storage temperature see product label.

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

Control parameters

Contains no substances with occupational exposure limit values.

Exposure controls Engineering measures

Technical measures and appropriate working operations should be given priority over the use of

personal protective equipment. See section 7.1.

Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye/face protection

Tightly fitting safety goggles

Hand protection

Full contact:

Glove material: butyl-rubber

Glove thickness: 0.7 mm

Break through time: > 480 min

Splash contact:

Glove material: polychloroprene

Glove thickness: 0.65 mm

Break through time: > 30 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, 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 EN374

Other protective equipment

Flame retardant antistatic protective clothing

Respiratory protection

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

required when vapours/aerosols are generated. Recommended Filter type: Filter A-(P2)
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 Do not let product enter drains. Risk of explosion.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Form:	liquid
Colour:	clear
Odour characteristic	
Odour Threshold:	No information available.
pH:	No information available.
Melting point:	No information available.
Boiling point:	No information available.
Flash point:	9.4 °C Method: c.c.
Evaporation rate-	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure-	No information available.
Relative vapour density-	No information available.
Density-	0.90 g/cm ³ at 20 °C
Relative density-	No information available.
Water solubility-	No information available.
Partition coefficient:	n- octanol/water-No information available.
Auto-ignition temperature-	No information available.
Decomposition temperature-	No information available.
Viscosity, dynamic-	No information available.
Explosive properties-	Not classified as explosive.
Oxidizing properties-	none
Other data	none

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Vapours may form explosive mixture with air.

Chemical stability
sensitive to moisture

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

heat-sensitive

Possibility of hazardous reactions

Violent reactions possible with: perchlorates, fuming sulfuric acid, conc. sulfuric acid, Acids, Ammonia, Potassium hydroxide, nitrates, Sodium hydroxide, Water

Risk of explosion with: ethanol, potassium permanganate, Strong oxidizing agents, perchloric acid, Nitric acid, hydrogen peroxide, chromium (VI) oxide
Conditions to avoid Warming.

Incompatible materials

various plastics, rubber, Iron, Copper

Hazardous decomposition products in the event of fire: See section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects Mixture

Acute oral toxicity

Acute toxicity estimate: 763.56 mg/kg Calculation method

absorption

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach., Pulmonary failure possible after aspiration of vomit., Nausea, Bloody vomiting

Acute inhalation toxicity

Acute toxicity estimate: 11 mg/l; vapour Calculation method

absorption

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

Acute dermal toxicity

Acute toxicity estimate : 2,115 mg/kg Calculation method

absorption

Skin irritation

Mixture causes burns.

Eye irritation

Mixture causes serious eye damage. Risk of blindness!

Sensitisation

This information is not available.

Germ cell mutagenicity

This information is not available.

Carcinogenicity

This information is not available.

Reproductive toxicity

This information is not available.

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

Teratogenicity

This information is not available.

Specific target organ toxicity - single exposure

Mixture may cause respiratory irritation.

Specific target organ toxicity - repeated exposure

This information is not available.

Aspiration hazard

This information is not available.

Further information

Decomposition of the substance with tissue moisture.

After absorption:

Dizziness, Headache, Convulsions, Unconsciousness, respiratory arrest, cardiac arrest, Changes in the blood count

Damage to: Kidney

The following applies to cyanogen compounds/ nitriles in general: utmost caution! Release of hydrocyanic acid is possible - blockade of cellular respiration. Cardiovascular disorders, dyspnoea, unconsciousness.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Components

acetonitrile

Acute oral toxicity

LD50 mouse: 617 mg/kg OECD Test Guideline 401

Acute inhalation toxicity

LC50 mouse: 6.022 mg/l; 4 h ; vapour OECD Test Guideline 403

Acute dermal toxicity

LD50 rabbit: > 2,000 mg/kg

OECD Test Guideline 402 (Regulation (EC) No 1272/2008, Annex VI)

Skin irritation

rabbit

Result: No skin irritation OECD Test Guideline 404

Eye irritation

rabbit

Result: Eye irritation OECD Test Guideline 405

Sensitisation

Buehler Test guinea pig Result: negative

Method: OECD Test Guideline 406

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

Repeated dose toxicity
rat
male and female Inhalation vapour
91 d
NOAEL: 0.681 mg/l
(External MSDS)
Germ cell mutagenicity Genotoxicity in vivo
In vivo micronucleus test mouse
Result: negative
Method: OECD Test Guideline 474

Genotoxicity in vitro
Ames test
Salmonella typhimurium Result: negative (External MSDS)

Mutagenicity (mammal cell test):
Mouse lymphoma test Result: negative
Method: OECD Test Guideline 476

Acetic anhydride
Acute oral toxicity
LD50 rat: 1,780 mg/kg (RTECS)
Acute inhalation toxicity
LC50 rat: > 0.5 - < 2 mg/l; 4 h ; vapour (External MSDS)
Acute dermal toxicity
LD50 rabbit: 4,320 mg/kg (RTECS)

Skin irritation
rabbit
Result: slight irritation (IUCLID)
Eye irritation
rabbit
Result: Severe irritations (IUCLID)

Repeated dose toxicity
rat Inhalation
NOAEL: 1 mg/l
OECD Test Guideline 413

Germ cell mutagenicity Genotoxicity in vitro Ames test
Result: negative (IUCLID)

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

SECTION 12. ECOLOGICAL INFORMATION MIXTURE

Toxicity

No information available.

Persistence and degradability No information available.

Bioaccumulative potential No information available.

Mobility in soil

No information available.

Results of PBT and vPvB assessment

Substance(s) in the mixture do(es) not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII, or a PBT/vPvB assessment was not conducted.

Other adverse effects

Discharge into the environment must be avoided.

Components

acetonitrile

Toxicity to fish

semi-static test LC50 *Oryzias latipes* (Orange-red killifish): > 100 mg/l; 96 h OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

semi-static test EC50 *Daphnia magna* (Water flea): > 1,000 mg/l; 48 h OECD Test Guideline 202

semi-static test NOEC *Daphnia magna* (Water flea): 960 mg/l; 21 d OECD Test Guideline 202

Toxicity to algae

static test EC50 *Pseudokirchneriella subcapitata* (green algae): > 1,000 mg/l; 72 h OECD Test Guideline 201

static test NOEC *Pseudokirchneriella subcapitata* (green algae): > 1,000 mg/l; 72 h OECD Test Guideline 201

IC5 *Scenedesmus quadricauda* (Green algae): 7,300 mg/l; 8 d (IUCLID) (maximum permissible toxic concentration)

Toxicity to bacteria

EC5 *Pseudomonas putida*: 680 mg/l; 16 h (IUCLID) (maximum permissible toxic concentration)

Biodegradability

70 %; 21 d

OECD Test Guideline 310 Readily biodegradable.

Bioaccumulation

Bioconcentration factor (BCF): 0.3

Lepomis macrochirus (Bluegill sunfish) (Does not significantly accumulate in organisms.)

Distribution among environmental compartments

Adsorption/Soil log K_{oc}: 1.21

Mobile in soils (Lit.)

DN-3306-C
Version: 2013

Cap B 1
Revision: 2022

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

Stability in water

DT50

> 9,999 d at pH: 7

(calculated) Hydrolyses slowly.

Acetic anhydride

Toxicity to fish

LC50 *Leuciscus idus* (Golden orfe): 265 mg/l; 48 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates

EC50 *Daphnia magna* (Water flea): 55 mg/l; 24 h (IUCLID)

EC5 *E.sulcatum*: 78 mg/l; 72 h (Lit.) (maximum permissible toxic concentration)

Toxicity to algae

IC5 *Scenedesmus quadricauda* (Green algae): 4,000 mg/l; 16 h (Lit.) (maximum permissible toxic concentration) Cell multiplication inhibition test EC10 *Desmodesmus subspicatus* (green algae): 3,400 mg/l; 8 d (External MSDS)

Toxicity to bacteria

EC50 *Photobacterium phosphoreum*: 11 mg/l; 15 min (Lit.)

Cell multiplication inhibition test EC10 *Pseudomonas putida*: 1,150 mg/l; 16 h (External MSDS)

Biodegradability

> 95 %; 5 d

OECD Test Guideline 302B Easily eliminable.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. TRANSPORT INFORMATION

Land transport (ADR/RID)

UN number	UN 2924
Proper shipping name	Flammable Liquid, Corrosive, N.O.S. (Cont. Acetonitrile, Acetic Anhydride)
Class	3 (8)
Packing group	II
Environmentally hazardous	--
Special precautions for user	yes
Tunnel restriction code	D/E

DN-3306-C
Version: 2013Cap B 1
Revision: 2022

Inland waterway transport (ADN)	Not relevant
Air transport (IATA)	
UN number	UN 2924
Proper shipping name	Flammable Liquid, Corrosive, N.O.S. (Cont. Acetonitrile, Acetic Anhydride)
Class	3 (8)
Packing group	II
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)	
UN number	UN 2924
Proper shipping name	Flammable Liquid, Corrosive, N.O.S. (Cont. Acetonitrile, Acetic Anhydride)
Class	3 (8)
Packing group	II
Environmentally hazardous	--

14.6 Special precautions for user

yes

EmS F-E S-C

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not relevant**SECTION 15. Regulatory information**Safety, health and environmental regulations/legislation specific for the substance or mixture
National legislation

Storage class 3

Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

SECTION 16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. ChemGenes India Pvt. Ltd. shall not be held liable for any damage resulting from handling or from contact with the above product.

-----End of MSDS-----