



## MATERIAL SAFETY DATA SHEET

Version Number:- 02

PRODUCT NAME: PERCHLORIC ACID 0.1 N SOLUTION

CAS Number: NA

**1. IDENTIFICATION:**

**Product Code** : 91702

**Company Name** : ADVENT CHEMBIO PRIVATE LIMITED

**Address** : W-279, MIDC, TTC INDUSTRIAL AREA, THANE-BELAPUR ROAD, RABALE,  
NAVI MUMBAI - 400 701, MAHARASHTRA, INDIA.

**E-mail** : [sales@adventchembio.com](mailto:sales@adventchembio.com)

**WEBSITE** : [www.adventchembio.com](http://www.adventchembio.com)

**Company Phone Number** : +91 77770 84837

**2. HAZARDS IDENTIFICATION:****Hazard classification****Physical hazards**

**Flammable liquids** : Category 3

**Health hazards**

**Skin corrosion** : Sub-Category 1A

**Serious eye damage** : Category 1

**Labels elements** :

**Hazard symbol** : 

**Signal word** : Danger

**Hazard statement** : Flammable liquid and vapor.  
Causes severe skin burns and eye damage.

**Precautionary statement**

**Prevention** : Obtain special instructions before use.  
Do not breathe dust/ fume/ gas/ mist/ vapors/ spray. Do not handle until all safety precautions have been read and understood.  
Wear protective gloves/ protective clothing/ eye protection/ face protection.  
Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.  
Keep container tightly closed. Ground/ bond container and receiving equipment.  
Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
Use only non-sparking tools. Take precautionary measures against static discharge.

**Response** : IF exposed or concerned: Get medical advice/ attention.  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.



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IF INHALED: Remove person to fresh air and keep comfortable for breathing.

- Storage** : Store in a dry & well-ventilated place. Keep container tightly closed. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- Disposal** : Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
- Other hazards which do not result in GHS classification** : 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.

## 3. COMPOSITION/ INFORMATION ON INGREDIENTS:

Component	CAS Number	Classification	Concentration
Acetic Acid	64-19-7	Flam. Liq. 3; Skin Corr. 1A; Eye Dam. 1; H226, H314, H318 Concentration limits: $\geq 90\%$ : Skin Corr. 1A, H314; $25 - < 90\%$ : Skin Corr. 1B, H314; $10 - < 25\%$ : Skin Irrit. 2, H315; $10 - < 25\%$ : Eye Irrit. 2, H319; $> 80\%$ : Flam. Liq. 3, H226;	$\geq 90 - \leq 100\%$
Perchloric Acid	7601-90-3	Ox. Liq. 1; Met. Corr. 1; Acute Tox. 4; Skin Corr. 1A; Eye Dam. 1; STOT RE 2; H271, H290, H302, H314, H318, H373 Concentration limits: $\geq 50\%$ : Skin Corr. 1A, H314; $10 - < 50\%$ : Skin Corr. 1B, H314; $1 - < 10\%$ : Skin Irrit. 2, H315; $1 - < 10\%$ : Eye Irrit. 2, H319; $> 50\%$ : Ox. Liq. 1, H271; $\leq 50\%$ : Ox. Liq. 2, H272; $1 - 50\%$ : Ox. Liq. 2, H272;	$\geq 0,1 - < 1\%$
Acetic Anhydride	108-24-7	Flam. Liq. 3; Acute Tox. 4; Acute Tox. 2; Skin Corr. 1B; Eye Dam. 1; H226, H302, H330, H314, H318 Concentration limits: $\geq 25\%$ : Skin Corr. 1B, H314; $5 - < 25\%$ : Skin Irrit. 2, H315; $5 - < 25\%$ : Eye Dam. 1, H318; $1 - < 5\%$ : Eye Irrit. 2, H319; $\geq 5\%$ : STOT SE 3, H335;	$\geq 0,1 - < 1\%$



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**4. FIRST AID MEASURES:**

<b>General information</b>	:	Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
<b>Ingestion</b>	:	Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
<b>Inhalation</b>	:	Move to fresh air. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms persist.
<b>Skin contact</b>	:	Immediately flush with plenty of water for at least 15 minutes. Get medical attention.
<b>Eye contact</b>	:	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.
<b>Most important symptoms/effects, acute and delayed</b>	:	The most important known symptoms and effects are described in the labelling.
<b>Indication of immediate medical attention and special treatment needed</b>	:	No data available.

**5. FIRE FIGHTING MEASURES:**

**General information** : Flammable liquid and vapor.

**Suitable (and unsuitable) extinguishing media**

**Suitable extinguishing media** : Water Foam Carbon dioxide (CO<sub>2</sub>) Dry powder

**Unsuitable extinguishing media** : For this substance/mixture no limitations of extinguishing agents are given.

**Specific hazards arising from the chemical** : Carbon oxides, Combustible.  
Fire may cause evolution of: Acetic acid vapours  
Vapors are heavier than air and may spread along floors.  
Forms explosive mixtures with air at elevated temperatures.  
Development of hazardous combustion gases or vapours possible in the event of fire. Has a fire-promoting effect due to release of oxygen.

**Special protective equipment and precautions for firefighters**

**Special firefighting procedures** : Fight fire from a protected location. Move containers from fire area if you can do so without risk.

**Special protective equipment for fire-fighters** : Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

**6. ACCIDENTAL RELEASE MEASURES:**

**Personal precautions, protective equipment and emergency procedures** : ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).  
Avoid breathing mists or vapors. Keep upwind. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away.

**Methods and material for** : Eliminate all ignition sources if safe to do so. Use only non-sparking tools. Take



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<b>containment and cleaning up</b>	precautionary measures against static discharges. Stop leak if possible without any risk. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.
<b>Notification Procedures</b>	: Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.
<b>Environmental precautions</b>	: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

**7. HANDLING AND STORAGE:**

<b>Precautions for safe handling</b>	Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Wear protective gloves/protective clothing/eye protection/ face protection. Avoid contact with eyes, skin, and clothing. Do not breathe the mist or vapor. Use only with adequate ventilation. Wash hands thoroughly after handling.
<b>Conditions for safe storage, including any incompatibilities</b>	: Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a dry, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks.

**8. EXPOSURE CONTROLS PERSONAL PROTECTION:****Appropriate engineering**

**controls** : No data available

**Individual protection measures, such as personal protective equipment**

<b>General information</b>	: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.
<b>Eye/face protection</b>	: Wear safety glasses with side shields (or goggles).
<b>Hand protection</b>	: Chemical resistant gloves.
<b>Other</b>	: Wear suitable protective clothing.
<b>Respiratory protection</b>	: Recommended Filter type: filter E-(P2)
<b>Hygiene measures</b>	: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower. Avoid contact with eyes, skin, and clothing.



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**9. PHYSICAL AND CHEMICAL PROPERTIES:**

Appearance	: Clear colorless solution.
Odor	: of acetic acid
Water Solubility	: at 20 °C insoluble
Formula	: NA
Molecular Weight	: NA
Density	: 1.06 g/cm <sup>3</sup> at 20°C
pH	: 0.1 at 20°C
% Volatiles by volume @ 21C (70F)	: No data available
Boiling Point	: No data available
Melting Point	: No data available
Flash Point	: 40 °C
Vapor Density (Air=1)	: No data available
Vapor Pressure (mm Hg)	: No data available
Evaporation Rate (BuAc=1)	: No data available

**10. STABILITY AND REACTIVITY:**

Reactivity	: Vapor/air-mixtures are explosive at intense warming.
Chemical stability	: Material is stable under ambient conditions.. Risk of explosion with: peroxi compounds, fuming sulfuric acid, phosphorus halides, hydrogen peroxide, chromium(VI) oxide, potassium permanganate, Peroxides, Strong oxidizing agents
Possibility of hazardous reactions	: Risk of ignition or formation of inflammable gases or vapours with: Iron, Zinc, Magnesium, Mild steel Possible formation of: Hydrogen Violent reactions possible with: strong alkalis, anhydrides, Aldehydes, alkali hydroxides, nonmetallic halides, ethanolamine, Acetaldehyde, Alcohols, halogen-halogen compounds, chlorosulfonic acid chromosulfuric acid, Potassium hydroxide, Nitric acid
Conditions to avoid	: Heating
Incompatible materials	: No data available
Hazardous decomposition products	: In the event of fire: see section 5



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**11. TOXICOLOGICAL INFORMATION:****Information on toxicological effects****Acute toxicity (list all possible routes of exposure)**

**Acute toxicity** : Acute toxicity estimate Inhalation - 4 h - > 20 mg/l – vapor  
Dermal: No data available

**Repeated dose toxicity** : No data available.  
**Product**

**Skin corrosion/irritation** : Mixture causes severe burns.  
**Product**

**Serious eye damage/eye** : Mixture causes serious eye damage.  
**irritation Product** : Risk of blindness

**Respiratory or skin** : No data available  
**sensitization Product**

**Carcinogenicity Product** : No data available

**IARC Monographs on the**  
**Evaluation of Carcinogenic** : No data available  
**Risks to Humans**

**US. National Toxicology**  
**Program (NTP) Report on** : No data available  
**Carcinogens**

**US. OSHA Specifically**  
**Regulated Substances (29** : No data available  
**CFR 1910.1001-1050**

**Germ cell mutagenicity** : No data available.

**Reproductive toxicity** : No data available  
**Product**

**Specific target organ**  
**toxicity - single exposure** : No data available  
**Product**

**Specific target organ**  
**toxicity - repeated** : No data available  
**exposure Product**

**Aspiration hazard Product** : No data available

**Other effects** : No data available

**Components** :

**Acetic Acid****Acute toxicity**

LD50 Oral - Rat - 3.310 mg/kg

LC50 Inhalation - Mouse - 4 h - 2.819 mg/l - vapor

Dermal: No data available

**Skin corrosion/irritation**

Skin - Rabbit

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Result: Causes burns. - 4 h

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Causes burns. - 4 h

Remarks: Causes serious eye damage.

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

Test Type: Ames test

Test system: Salmonella typhimurium Result:

negative

Test Type: Mutagenicity (mammal cell test): chromosome aberration. Test system: Chinese hamster ovary cells

Result: negative

Method: Mutagenicity (micronucleus test) Species: Rat - male and female - Bone marrow Result: negative

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**Perchloric Acid****Acute toxicity**

LD50 Oral - Rat - 1.100 mg/kg Remarks:

Behavioral:Excitement. Lungs, Thorax, or

Respiration:Dyspnea.

Nutritional and Gross Metabolic:Changes in:Body temperature decrease.

Acute toxicity estimate Oral - 1.100 mg/kg

Inhalation: No data available

Dermal: No data available

**Skin corrosion/irritation**

Remarks: Causes severe burns.

**Serious eye damage/eye irritation**

Remarks: Causes serious eye damage.

**Respiratory or skin sensitization**

No data available

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**Germ cell mutagenicity**

Test Type: Ames test

Test system: Salmonella typhimurium Result:  
negative**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**May cause damage to organs through prolonged or repeated exposure.  
- Thyroid**Aspiration hazard**

No data available

**Acetic Anhydride****Acute toxicity**

LD50 Oral - Rat - male and female - 630 mg/kg

Acute toxicity estimate Oral - 630 mg/kg

LC50 Inhalation - Rat - 4 h - &gt; 0,5 - &lt; 2 mg/l - vapor Acute toxicity estimate

Inhalation - 0,5001 mg/l - vapor

Dermal: No data available

**Skin corrosion/irritation**

Skin - in vitro test

Result: Causes burns. - 4 h Remarks:

**Serious eye damage/eye irritation**

Eyes - Rat

Result: Corrosive - 24 h Remarks:

Remarks: Causes serious eye damage.

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Result: negative

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster ovary cells Result: negative

Species: Rat - male and female - Bone marrow Result:

negative





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**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**12. ECOLOGICAL INFORMATION:****Ecotoxicity****Acute hazards to the aquatic environment**

**Fish Product** : No data available.

**Aquatic invertebrates Product** : No data available.

**Chronic hazards to the aquatic environment**

**Fish Product** : No data available.

**Aquatic invertebrates Product** : No data available.

**Toxicity to Aquatic Plants Product:** : No data available.

**Persistence and degradability**

**Biodegradation Product** : No data available.

**BOD/COD ratio Product** : No data available.

**Bioaccumulative potential**

**Bioconcentration factor (BCF) Product** : No data available on bioaccumulation.

**Partition coefficient n-octanol / water (log Kow) Product** : No data available.

**Mobility in soil** : No data available.

**Other adverse effects** : No data available.

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### Components

acetic acid	<b>Toxicity to fish</b> :semi-static test LC50 - Oncorhynchus mykiss (rainbow trout) - > 1.000 mg/l - 96 h <b>Toxicity to daphnia and other aquatic invertebrates</b> : static test EC50 - Daphnia magna (Water flea) - > 1.000 mg/l - 48 h <b>Toxicity to algae</b> : static test EC50 - Skeletonema costatum - > 1.000 mg/l - 72 h <b>Toxicity to bacteria</b> : EC5 - Pseudomonas putida - 2.850 mg/l - 16 h Remarks: neutral microtox test EC50 - Photobacterium phosphoreum - 11 mg/l - 15 min
Perchloric acid	<b>Toxicity to fish</b> : flow-through test EC50 - Lepomis macrochirus (Bluegill sunfish) - 1.470 mg/l - 96 h <b>Toxicity to daphnia and other aquatic invertebrates</b> : static test EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h <b>Toxicity to algae</b> : static test ErC50 - Pseudokirchneriella subcapitata (green algae) - > 435,7 mg/l - 72 h <b>Toxicity to bacteria</b> : static test EC50 - activated sludge - > 1.000 mg/l - 3 h <b>Toxicity to fish(Chronic toxicity)</b> : semi-static test NOEC - Danio rerio (zebra fish) - 10 mg/l - 12 Weeks
Acetic anhydride	<b>Toxicity to fish</b> : semi-static test LC50 - Oncorhynchus mykiss (rainbow trout) - > 300,82 mg/l - 96 h <b>Toxicity to daphnia and other aquatic invertebrates</b> : static test EC50 - Daphnia magna (Water flea) - > 1.000 mg/l - 48 h <b>Toxicity to algae</b> : static test ErC50 - Skeletonema costatum - > 300,82 mg/l - 72 h <b>Toxicity to bacteria</b> : static test NOEC - Pseudomonas putida - 1.150 mg/l - 16 h

### 13. DISPOSAL CONSIDERATION:

Disposal instructions	: Discharge, treatment, or disposal may be subject to national, state, or local laws. Disposal recommendations are based on uncontaminated material.
Contaminated packaging	: Since emptied containers retain product residue, follow label warnings even after container is emptied.

### 14. TRANSPORT INFORMATION:

	UN No.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
ADR/RID	UN 2789	Perchloric Acid 0.1 N Solution	8 (3)	II	No
IMDG	UN 2789	Perchloric Acid 0.1 N Solution	8 (3)	II	No
IATA	UN 2789	Perchloric Acid 0.1 N Solution	8 (3)	II	No

### 15. REGULATORY INFORMATION:

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.  
Safety, health and environmental regulations/legislation specific for the substance or mixture  
No Data Available.

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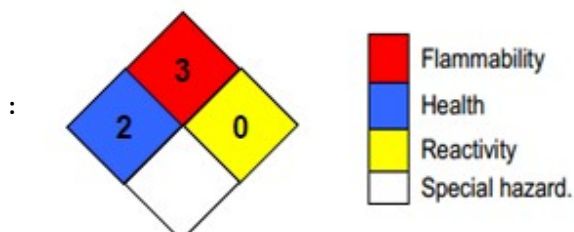
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## 16. OTHER INFORMATION:

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

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