



# SAFETY DATA SHEET (S.D.S.)

## 1. IDENTIFICATION

**Product Name:** ADENA 3378  
**Product Number:** AD3378  
**Synonyms:** Water Treatment Compound, Liquid  
**CAS Number:** Mixture  
**Product Use:** Corrosion Inhibitor  
**Manufacturer/Supplier:** Adena Technologies.  
**Address:** 101 Technology Lane  
Export, Pa 15632  
www.adenatechnologies.com  
**General Information:** 888-247-2312  
**Chemical Emergency Number:** 1-800-255-3924

## 2. HAZARD(S) IDENTIFICATION

### GHS Classification:

Health (Appendix A)	Environmental	Physical (App. B)
Acute Toxicity – Category 3 (inhalation), Category 4 (oral), Category 4 (dermal) Eye Corrosion - Category 1 Skin Corrosion – Category 1B Skin Sensitization -Category1 Mutagenicity – not applicable Carcinogenicity – not applicable Reproductive—Category 2 (fertility) Target Organ Toxicity—Chronic, Category 3	Aquatic Toxicity – Chronic 3	Corrosive Liquid – Category 1 Flammable Liquid – Category 3

### GHS Label:

#### Symbols:





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<u>Hazard Statements</u>	<u>Precautionary Statements</u>
<b>DANGER!</b> Flammable liquid and vapor. May be corrosive to metals. Toxic in contact with skin. Harmful if swallowed. Causes severe skin burns and eye damage. Harmful to aquatic life	Wear protective gloves/protective clothing/eye protection/face protection. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Take precautionary measures against static discharge. Do not breathe dust or mist. Avoid release to the environment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product. Wash with plenty of water and soap thoroughly after handling. Keep container tightly closed. Keep only in original container. Use only non-sparking tools. Ground/bond container and receiving equipment.

## Precautionary Statements (Response):

Immediately call a POISON CENTER or doctor/physician.

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

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water.

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

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

IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Absorb spillage to prevent material damage.

In case of fire: Use water spray, dry powder, foam or carbon dioxide for extinction.

Precautionary Statements (Storage): Store locked up.

Store in corrosive resistant container with a resistant inner liner.

Store in a well-ventilated place. Keep cool.

## Precautionary Statements (Disposal):

Dispose of contents/container to hazardous or special waste collection point.

## Emergency overview

DANGER:

CORROSIVE.

FLAMMABLE LIQUID.

HARMFUL BY INHALATION, IN CONTACT WITH SKIN AND IF

SWALLOWED. CORROSIVE TO THE SKIN, EYES AND

RESPIRATORY SYSTEM.

CAUSES BURNS.

RISK OF SERIOUS DAMAGE TO EYES.

HARMFUL IF ABSORBED THROUGH THE SKIN.



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EYE WASH FOUNTAINS AND SAFETY SHOWERS MUST BE EASILY ACCESSIBLE.  
WEAR NIOSH-CERTIFIED CHEMICAL GOGGLES.  
WEAR CHEMICAL RESISTANT PROTECTIVE GLOVES.  
WEAR FULL FACE SHIELD IF SPLASHING HAZARD EXISTS.  
AVOID CONTACT WITH THE SKIN, EYES AND CLOTHING. WEAR PROTECTIVE CLOTHING.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT NAME	CAS NO.	CONCENTRATION %
MORPHOLINE	110-91-8	23-25
CYCLOHEXYLAMINE	108-91-8	53-55
DEMINERALIZED WATER	7732-18-5	BALANCE

(SEE SECTION 8 FOR EXPOSURE LIMITS)

### 4. FIRST-AID MEASURES

**General advice:**

Remove contaminated clothing.

**If inhaled:**

Keep patient calm, remove to fresh air, and seek medical attention. Immediately administer a corticosteroid from a controlled/metered dose inhaler.

**If on skin:**

Immediately wash thoroughly with plenty of water, apply sterile dressings, and consult a skin specialist.

**If in eyes:**

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

**If swallowed:**

Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

### Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11. Further symptoms are possible.0

### 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media:** water spray, dry powder, foam, carbon dioxide

**Fire Fighting Procedures:** Do not flush down sewers or other drainage systems.



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Exposed firefighters must wear NIOSH-approved positive pressure self-contained breathing apparatus with full-face mask and full protective clothing.

**Unusual Fire and Explosion Hazards:** None known.

**Combustion Products:** Thermal decomposition products may include oxides of carbon and nitrogen.

### 6. ACCIDENTAL RELEASE MEASURES

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. (Also see Section 8).

Protective clothing should be worn for spills and leaks.

Small spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal. Large spills: Dike far ahead of liquid spill for later disposal.

Do not flush to sewer or waterways. Prevent release to the environment if possible. Refer to Section 15 for spill/release reporting information.

### 7. HANDLING AND STORAGE

#### Handling

Do not get in eyes, on skin or on clothing. Do not breathe vapors or mists. Keep container closed. Use only with adequate ventilation. Use good personal hygiene

practices. Wash hands before eating, drinking, smoking. Remove contaminated clothing and clean before re-use..

#### Storage

Store in tightly closed containers in cool, dry, well-ventilated area away from heat, sources of ignition and incompatibles. Store at ambient or lower temperature. Store out of direct sunlight. Keep containers tightly closed and upright when not in use. Protect against physical damage.

Empty containers may contain harmful residue or vapors.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls:** Local exhaust ventilation may be necessary to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source. Provide mechanical ventilation for confined spaces. Use explosion-proof ventilation equipment.

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### Personal Protective Equipment (PPE)



**Eye Protection:** Wear chemical safety goggles and face shield. Have eye-wash stations available where eye contact can occur.

**Skin Protection:** Avoid skin contact. Wear gloves impervious to conditions of use. Additional protection may be necessary to prevent skin contact including use of apron, face shield, boots or full body protection. A safety shower should be located in the work area. Recommended protective materials include:

Butyl rubber and for limited contact Teflon.

**Respiratory Protection:** If exposure limits are exceeded, NIOSH approved respiratory protection should be worn. A NIOSH approved respirator for organic vapors is generally acceptable for concentrations up to 10 times the PEL. For higher concentrations, unknown concentrations and for oxygen deficient atmospheres, use a NIOSH approved air-supplied respirator. Engineering controls are the preferred means for controlling chemical exposures. Respiratory protection may be needed for non-routine or emergency situations. Respiratory protection must be provided in accordance with OSHA 29 CFR 1910.134.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Flashpoint:** ~125°F

**Lower Flammability Limit:** Not known

**Upper Flammability Limit:** Not known

**Autoignition Temperature:** Not known

**Boiling Point:** 125°C @ 760 mm Hg

**Specific Gravity:** 0.94 g/ml @ 20°C

**Melting Point:** not known

**% Volatile:** 100%

**Vapor Pressure:** not known

**Evaporation Rate (Water=1):** not known



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**Viscosity:** 10-20 cP @ 25°C

**% Solubility in Water:** complete

**pH:** 12.5-13.0

**Odor/Appearance:** Clear to pale yellow liquid with a sharp amine odor.

## 10. STABILITY AND REACTIVITY

### Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:

May be corrosive to metals.

Oxidizing properties:

Based on its structural properties the product is not classified as oxidizing.

### Chemical stability

The product is stable if stored and handled as prescribed/indicated.

### Possibility of hazardous reactions

Exothermic reaction.

### Conditions to avoid

Avoid all sources of ignition: heat, sparks and open flame. Avoid electro-static charge.

### Incompatible materials

Acids and oxidizers

### Hazardous decomposition products

Possible thermal decomposition products: carbon oxides, nitrogen oxides.

## 11. TOXICOLOGICAL INFORMATION

### Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact.

Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

### Acute Toxicity/Effects

#### Acute toxicity

Assessment of acute toxicity: Moderate toxicity after single ingestion. Pronounced toxicity after short-term skin contact. Virtually nontoxic by inhalation. The inhalation of a highly enriched or saturated vapor-air-mixture represents an acute hazard.

#### Oral



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Type of value: LD50 Species:  
rat  
Value: 600-700 mg/kg

### Inhalation

Type of value: LC50 Species:  
rat  
Value: >20 mg/l  
Exposure time: 4 h

Species: rat Value:  
(IRT)  
Exposure time: 10 min  
No Mortality within the stated exposition time as shown in animal studies, however, deaths occurred after longer exposure.

### Dermal

Type of value: LD50 Species:  
rabbit  
Value: > 400 - <500 mg/kg  
Literature data.

### Irritation / corrosion

Assessment of irritating effects: Corrosive! Damages skin and eyes. May cause severe damage to the eyes.

### Skin

Species: rabbit Result:  
Corrosive. Method: BASF-  
Test

### Eye

Species: rabbit  
Result: Risk of serious damage to eyes. Method:  
BASF-Test

## **Chronic Toxicity/Effects**

### Genetic toxicity

Assessment of mutagenicity: Most of the results from the available studies show no evidence of a mutagenic effect.

### Carcinogenicity

Assessment of carcinogenicity: In long-term studies in rats and mice in which the substance was given by

feed, a carcinogenic effect was not observed. Literature data.

### Reproductive toxicity

Assessment of reproduction toxicity: On the basis of animal study findings show no effect on fertility.  
Literature data.

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## Teratogenicity

Assessment of teratogenicity: The substance did not cause malformations in animal studies. When given in high doses embryo toxicity was observed. Literature data.

## **Symptoms of Exposure**

The most important known symptoms and effects are described in the labelling. Additional symptoms are possible

## **12. ECOLOGICAL INFORMATION**

### **Toxicity**

#### Aquatic toxicity

Assessment of aquatic toxicity:

Acutely harmful for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

#### Toxicity to fish

LC50 (96 h) 80 mg/l, Oncorhynchus mykiss (static)

The details of the toxic effect relate to the nominal concentration. The study was carried out in soft water. Literature data.

#### Aquatic invertebrates

EC50 (24 h) 50 mg/l, Daphnia magna (DIN 38412 Part 11, static)

The details of the toxic effect relate to the nominal concentration. Literature data.

#### Aquatic plants

EC50 (96 h) 70 mg/l (growth rate), Selenastrum capricornutum (static) Literature data.

### **Microorganisms/Effect on activated sludge**

#### Toxicity to microorganisms OECD

Guideline 209 static

activated sludge, domestic/EC50 (3 h): 800 mg/l

Literature data. The details of the toxic effect relate to the nominal concentration.

### **Persistence and degradability**

#### Assessment biodegradation and elimination (H2O)

Readily biodegradable (according to OECD criteria). Literature data.

#### Elimination information

90 - 100 % BOD of the ThOD (20 d) (OECD 301D; EEC 92/69, C.4-E) (aerobic, activated sludge, domestic)





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## Bioaccumulative potential

### Assessment bioaccumulation potential

Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

## Mobility in soil

### Assessment transport between environmental compartments

The substance will slowly evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is not expected.

## 13. DISPOSAL CONSIDERATIONS

### **Waste disposal of substance:**

Dispose of in accordance with national, state and local regulations.

### **Container disposal:**

If containers are not empty, they must be disposed of in a RCRA-licensed facility. RCRA empty containers may be landfilled at a licensed facility; other containers must be disposed of in a RCRA licensed facility.

**RCRA:** D001

## 14. TRANSPORT INFORMATION

### **U.S. Department of Transportation (DOT) Proper Shipping Name:**

UN2920, CORROSIVE LIQUID, FLAMMABLE, N.O.S. (CONTAINS: CYCLOHEXYLAMINE), 8, 3, PG II  
ERG 132



**Labels Required:**

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations**

### **Comprehensive Environmental Response and Liability Act of 1980 (CERCLA):**

#### CERCLA RQ

#### CAS Number

#### Chemical name

No components  
are listed

If appropriate, immediately report to the National Response Center (800/424-8802) as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies.



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**49CFR 172.101, APPENDIX A, TABLE 1, REPORTABLE QUANTITY**  
**NO COMPONENTS ARE LISTED**

**Toxic Substances Control Act (TSCA):** All components of this product are included on the TSCA inventory.

**Clean Water Act (CWA):** not applicable

**Clean Air Act (CAA):** cyclohexylamine, 108-91-8, CAA112(r) TPQ, 15000lbs.

## **Superfund Amendments and Reauthorization Act (SARA) Title III Information:**

### **SARA Section 311/312 (40 CFR 370) Hazard Categories:**

Immediate Hazard: X      Delayed Hazard: X      Fire Hazard: X  
Pressure Hazard:      Reactivity Hazard:

**This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313 (40 CFR 372)**

<b>Component:</b>	<b>CAS Number:</b>	<b>Maximum %</b>
Not applicable		

**State Regulations: RTK**

**Morpholine, CAS# 110-91-8 (MA, PA, NJ)**

**Cyclohexylamine. CAS# 108-91-8 (MA, PA)**

**California:** This product contains the following chemicals(s) known to the State of California to cause cancer, birth defects or other reproductive harm:

<b>Component:</b>	<b>CAS Number:</b>	<b>%</b>
Morpholine	110-91-8	23-25

## **International Regulations**

**Canadian Environmental Protection Act:** All of the components of this product are included on the Canadian Domestic Substances list (DSL).

## **Canadian Workplace Hazardous Materials Information System (WHMIS):**

Class E      Corrosive

## **16. OTHER INFORMATION**

**National Fire Protection Association (NFPA) Ratings:** This information is intended solely for the use of individuals trained in the NFPA system.



# **SAFETY DATA SHEET (S.D.S.)**

**Health: 3**

**Flammability: 2**

**Reactivity: 0**

**Revision Indicator:** New MSDS, May 12, 2015

**Prepared by:** Dean Norwood, Technical Director

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