



Safety Data Sheet

1. Product Identification

Trade name: **HARDENER A**
 SDS Number: A-109E-E2S
 Manufacturer's name: Murakami Screen (Singapore) Pte. Ltd.
 Address ; 35 Loyang Drive, Singapore
 Phone number ; (+65)6546-0355
 FAX number ; (+65)6546-0365

Recommended use of chemical and restrictions on use :

Material for screen printing. Not intended for other applications

2. Hazard identification

GHS classification :

Physical hazards ;

Explosives	Not applicable
Flammable gases	Not applicable
Flammable aerosols	Not applicable
Oxidizing gases	Not applicable
Gases under pressure	Not applicable
Flammable liquids	Not classified
Flammable solids	Not applicable
Self-reactive substances and mixtures	Not classified
Pyrophoric liquids	Not classified
Pyrophoric solids	Not applicable
Self-heating substances and mixtures	Classification not possible
Substances and mixtures, which in contact with water, emit flammable gases	Not classified
Oxidizing liquids	Classification not possible
Oxidizing solids	Not applicable
Organic peroxides	Not applicable
Corrosive metals	Classification not possible

Health hazards ;

Acute toxicity (Oral)	Classification not possible
Acute toxicity (Dermal)	Classification not possible
Acute toxicity (Inhalation: Gases)	Classification not possible
Acute toxicity (Inhalation: Vapours)	Classification not possible
Acute toxicity (Inhalation: Dusts and Mists)	Classification not possible
Skin corrosion/irritation	Category 1
Eye damage/eye irritation	Category 1
Respiratory sensitization	Category 1
Skin sensitization	Not classified
Germ cell mutagenicity	Classification not possible
Carcinogenicity	Classification not possible
Reproductive toxicity	Classification not possible
Specific target organ toxicity (Single exposure)	Category 2 (respiratory system)
Specific target organ toxicity (Repeated exposure)	Category 2 (respiratory system)

Aspiration hazard	Classification not possible
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Environmental hazards;

Hazardous to the aquatic environment (Acute toxicity)

Category 3

Hazardous to the aquatic environment (Chronic toxicity)

Classification not possible

Hazardous to the ozone layer

Classification not possible

Pictogram and Symbol:



Corrosion

Health Hazard

Signal Word:

Danger

H314 Causes severe skin burns and eye damage

H318 Causes serious eye damage

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

H371 May cause damage to organs (respiratory system)

H373 May cause damage to organs (respiratory system) through prolonged or repeated exposure

H402 Harmful to aquatic life

Precautionary statements:

Prevention;

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

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

P284 Wear respiratory protection.

Response;

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

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

Rinse skin with water/shower.

P304+P340 +P310 IF INHALED: Remove person fresh air and keep comfortable for breathing and

immediately call a POISON CENTER/doctor

P305+P351+P338+P310 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do.

Continue rinsing. Immediately call a POISON CENTER/doctor

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

P310 Immediately call a POISON CENTER/doctor/...

P314 Get medical advice/attention if you feel unwell.

P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor/....

P361 Take off immediately all contaminated clothing.

P363 Wash contaminated clothing before reuse.

Storage;

P405 Store locked up.

Disposal;

P501 Dispose of contents / container in accordance with local / regional / national / international regulations.



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3. Composition/information on ingredients

Substance or Mixture: Mixture

Ingredients and concentration ranges:

Chemical name		Water	Hydrochloric acid
wt%		>98wt%	<2wt%
CAS No.		7732-18-5	7647-01-0
Global Inventories	TSCA (USA)	Listed	Listed
	ENCS (Japan)	-	Listed
	EC No. (EU)	Listed	Listed
	IECSC (China)	Listed	Listed

4. First aid measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Get medical advice / attention if you feel unwell.

Get medical advice / attention if experiencing respiratory symptoms.

Skin Contact: Remove / Take off all contaminated clothing immediately.

Wash with plenty of soap and water.

Get immediate medical advice / attention, if skin irritation or rash occurs.

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

Rinse with clean water for at least 15 minutes and then seek medical attention if necessary.

When rinsing, open your eyelids with fingers to insure saturation of water.

Seek medical attention if the problem persists.

Ingestion: Rinse mouth. Do not induce vomiting.

Get immediate medical advice / attention.

Do not give an unconscious person anything to drink.

If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

Protection for personnel administering first aid:

Wear appropriate protective equipment if necessary.

5. Firefighting measures

Extinguishing media:

Suitable extinguishing media; This product does not burn. Use an extinguishing agent suitable for the surrounding fires.

Specific hazards arising from the product:

When exposed to high temperatures, this product may generate hydrogen chloride.

Specific extinguishing measures:

Cut off the combustion source to the origin of fire and extinguish by using the appropriate fire extinguishing media.

Remove all containers possible to a safe place promptly.

If not possible to remove, cool down the area. Work from windward and use respiratory equipment if necessary.

Special protective equipment and precautions:

Wear appropriate protective wear (heat-proof) including air respirators.



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6. Accidental release measures

Personal precautions, protective equipment and emergency procedures :

- Avoid breathing mist / vapors.
- Remove ignition sources in the area and work from windward.
- Clean up immediately when it spills on the floor or any surface. (The floor surface becomes slippery).
- Prohibit entry other than related personnel.
- Ventilate released area.
- Do not touch and/or walk in the spills.
- The worker wears an appropriate protective equipment, and avoids eyes, the skin contacts, and inhalations. (refer to Item 8)

Environmental precautions :

- Avoid releasing to the environment.
- Collect spillage.
- If the pollution of water pipes or waterways occur, contact relevant organizations.
- Clean the area and avoid entry into plumbing system.

Methods and materials for recovery and neutralization:

- Collect into open container by absorbing with cloths, rags, sand or etc. and then rinse with plenty of water.
- Contain the flow path with blankets or sand bags and collect into an appropriate container for large spills.
- After recovery, neutralize with slaked lime, soda ash, etc. and rinse with plenty of water.
- Prevent the inflow into drains, sewer, basement, or enclosed areas.
- Wear appropriate protective equipment throughout the process.

7. Handling and storage

Handling:

- Seal container after use.
- Avoid improper handling like tipping over, dropping, strong impact to or dragging the container.
- Wash hands thoroughly and rinse mouth after handling.
- Do not eat, drink or smoke when using this product.
- Do not carry contaminated gloves and protective equipment into rest / break areas.
- Prohibit entry to work areas other than related personnel.
- Wear proper protective equipment to avoid inhalation and contact with eyes and skin.

Storage:

- Keep container tightly closed.
- Store in a dark light-safe area.

8. Exposure controls/personal protection

Management density :

Not specified.

Exposure limit values :

Hydrochloric acid 37% (7647-01-0) 2ppm (ACGIH)

Engineering measures:

- It is desirable to install a local exhaust system as necessary.
- Provide safety shower and eye / hand wash stations and identify the area clearly.



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Personal protective equipment:	Wear following protective equipment as necessary and accordingly. Inspect equipment on a regular basis by using a protective equipment maintenance chart.
Respiratory protection;	Wearing organic vapor gas mask is preferred.
Eye protection;	Wearing protective glasses.
Hand protection;	Acid-resistant protective gloves
Skin protection;	Wearing protective clothing (long sleeve uniform) that organic solvent or the chemical do not infiltrate easily is preferred.

9. Physical and chemical properties

Appearance (physical state, color, etc.):

Physical state;	Clear Liquid
Color;	Transparence
Odour:	Pungent odor
pH:	<2.0
Melting point/freezing point:	Approx 0°C
Relative density:	Approx 1mg/cm3
Solubility:	dispersible, soluble

10. Stability and reactivity

Reactivity:	Decomposes upon heating and produces hydrogen chloride. Heavily corrodes many metals and concrete. Reacts violently with bases: release of heat Reacts with strong oxidizers: release hydrogen chloride gas
Chemical stability:	When exposed to high temperatures, the products may release hydrogen chloride.
Conditions to avoid:	Incompatible materials
Incompatible materials:	Strong bases. Metals. Strong oxidizers
Hazardous decomposition products:	Hydrogen chloride. Hydrogen.

11. Toxicological information

Acute toxicity(Oral):	
Information on product;	No information available, Classification not possible based on the calculation.
Information on ingredients;	
Hydrochloric acid (37%)	Category 4. Oral, rat LD50=700 mg/kg
Acute toxicity (Transdermal):	
Information on product;	No information available, Classification not possible based on the calculation.
Information on ingredients;	
Hydrochloric acid (37%)	Not classified. Dermal, rabbit LD ₅₀ =5010mg/kg
Acute toxicity(Inhalation):	
Information on product;	No information available, Classification not possible based on the calculation.
Information on ingredients;	No information available.



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Skin corrosion/irritation :

Information on product ; No information available, Category 1 based on the pH (<2.0).

Information on ingredients ;
Hydrochloric acid (37%) Category 1

Serious eye damage/irritation :

Information on product ; No information available, Category 1 based on the pH (<2.0).

Information on ingredients ;
Hydrochloric acid (37%) Category 1

Respiratory sensitization :

Information on product ; No information available, Category 1 based on the calculation.

Information on ingredients ;
Hydrochloric acid (37%) Category 1

Skin sensitization :

Information on product ; No information available, Not classified based on the calculation.

Information on ingredients ;
Hydrochloric acid (37%) Not classified.

Germ cell mutagenicity :

Information on product ; No information available, Classification not possible based on the calculation.

Information on ingredients ; No information available.

Carcinogenicity :

Information on product ; No information available, Classification not possible based on the calculation.

Information on ingredients ; No information available.

Reproductive toxicity :

Information on product ; No information available, Classification not possible based on the calculation.

Information on ingredients ; No information available.

STOT-single exposure :

Information on product ; No information available, Category 2 (respiratory system) based on the calculation.

Information on ingredients ;
Hydrochloric acid (37%) Category 2 (respiratory system)

STOT-repeated exposure :

Information on product ; No information available, Category 2 (respiratory system) based on the calculation.

Information on ingredients ;
Hydrochloric acid (37%) Category 2 (respiratory system)

Aspiration hazard :

Information on product ; No information available, Classification not possible based on the calculation.

Information on ingredients ; No information available.



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12. Ecological information

Acute aquatic toxicity:

Information on product; No information available, Category 3 based on the calculation.

Information on ingredients;

Hydrochloric acid (37%) LC50 (Gambusia affinis) 282mg/l (96h)

Chronic aquatic toxicity:

Information on product; No information available, Classification not possible based on the calculation.

Information on ingredients; No information available.

Persistence and degradability:

Information on product; No information available.

Information on ingredients; No information available.

Bioaccumulative potential:

Information on product; No information available.

Information on ingredients; No information available.

Other adverse effects:

Information on product; The product is not allowed to run into drain or waterways.

Information on ingredients; No information available.

13. Disposal considerations

Dispose of contents / container in accordance with local / regional / national / international regulations.

14. Transport information

Avoid direct sunlight during transportation. Confirm the container has no damage, corrosion, leakage before transportation. Take measures to prevent the load from tipping, falling and damages.

Verify the container has no leaks when transporting and take preventative measure when loading so that the cargo does not tip, fall or get damaged during transit.

UN classification:

UN number; 1789

UN proper shipping name; HYDROCHLORIC ACID

Transport hazard class(es); 8

Packing group; III

Environmental hazards (Marine pollutant): Z

Land transport ADR / RID: Transport in accordance with ADR/RID

Maritime transport IMDG: Transport in accordance with IMDG

Air transport ICAO and IATA: Transport in accordance with ICAO/IATA

15. Regulatory information

The product must be used, stored, and transported in accordance with local / regional / national / international

16. Other information

Handling of described contents:

The information contained herein is given in good faith and accurate to the best of our knowledge. No warranty is given, expressed, or implied.

The product must not be used for any purposes other than those specified under heading 1 without first obtaining written handling instructions.

The information given on this safety data sheet must be regarded as a description of the safety requirements relating to our product and not a guarantee of its properties.

Moreover, it is likely to be revised based on a revision of the law and a new finding.

This product is developed for general industry. Please use it after confirming safety in your company for special applications.

Reference citations:

Raw material company submitting SDS

The Chemical Daily Co.,Ltd. "2011 version 15911 chemical products" (2011)