Chlorine Gas

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Section 1. Identification

Product identifier

Product name: Chlorine Gas（Compressed）

Chemical formula: Cl_2

Recommended use of the chemical and restrictions on use

Recommended use: Industrial use and prefessional. Perform risk assement prior to use.

Restrictions on use: No data available

Details of the supplier of the safety data sheet

Company name: Shandong HuaYuTongFang Electronic Materials Co., Ltd

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Section 2. Hazard identification

Greenish-yellow gas, pungent. May cause or intensify fire, oxidizer. Contains gas under pressure, may explode if heated. Causes skin irritation and serious eye irritation. Fatal if inhaled. May cause respiratory irritation. Very toxic to aquatic life.

Emergency Overview:

GHS Classification:

Hazard class	Hazard category

Oxidizing gases	1
Gases under pressure	Compressed gas
Skin corrosion/irritation	2
Serious eye damage/eye irritation	2
Acute toxicity, inhalation	2
Specific target organ toxicity-single exposure	3
Hazardous to the aquatic environment, short-team (Acute)	Acute 1

GHS label elements:

GHS label elements:

Signal word: Danger

Hazard statements:

Hazard statement codes	Hazard statements
H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated
H315+H319	Causes skin irritation and serious eye irritation
H330	Fatal if inhaled
H314	Cause severe skin burns and eye damage.
H400	Very toxic to aquatic life

Precautionary statements:

Prevention:

Codes	Prevention precautionary statements
P220	Keep away from clothing and other combustible materials.
P233	Keep container tightly closed.

P244	Keep valves and fittings free from oil and grease.
P260	Do not breathe gas/vapors.
P264+P265	Wash skin thoroughly after handling. Do not touch eyes.
P271	Use only outdoors or with adequate ventilation.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	In case of inadequate ventilation wear respiratory protection.

Response:

Codes	Response precautionary statements
P302+P361+P354	IF ON SKIN: Take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Immediately rinse with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P316	Get emergency medical help immediately.
P340	Remove victim to fresh air and keep comfortable for breathing.
P370+P376	In case of fire: Stop leak if safe to do so.
P391	Collect spillage.

Storage:

P410+P403: Protect from sunlight when ambient temperature exceeds 52℃/125℉. Store in a well-ventilated place.

P405: Store locked up.

Disposal:

P501 Dispose of contents/containers to a licensed waste disposal contractor.

Physical hazards: May cause or intensify fire; oxidizer

Contains gas under pressure; may explode if heated

Health hazards: Causes skin irritation and serious eye irritation

	Fatal if inhaled
	May cause respiratory irritation
Environmental hazards:	Very toxic to aquatic life
Other hazards:	No data available

Section 3. Composition/information on ingredients

This product is a substance.

Hazardous components:

Components	Concentration (w/w)	CAS No.	Classification
Chlorine Gas	> 99.999%	7782-50-5	Acute Tox.2(Inhalation:gas),H330 Aquatic Acute 1, H400

Section 4. First-aid measures

Description of necessary first-aid measures:

Inhalation: Remove victim to fresh air and keep comfortable for breathing. Get emergency medical help immediately.

Skin contact: Take off immediately all contaminated clothing. Immediately flash with plenty water for several minutes.

Eye contact: Immediately and cautiously rinse with plenty water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.Get immediate medical assistance.

Ingestion: Rinse mouth. Ingestion is not considered a potential route of exposure.

Most important symptoms/effects, acute and delayed: Irritation to eyes, respiratory system and skin may include the following symptoms: burn, redness and blurred vision.

Advice for protecting first-aid responders: Gas/vapor heavier than air, may accumulate in confined spaces, particularly at or below ground level. Pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for

exposure exists refer to Section 8 for specific personal protective equipment.

Special notes to physicians: Irritating to eyes, respiratory system and skin. Treat with a corticosteroid spray as soon as possible after inhalation. Treat symptomatically. Call a POISON CENTER for advice.

Section 5. Fire-fighting measures

Suitable extinguishing media: Use extinguishing media, Water spray, Dry powder, Foam, CO_2.

Unsuitable extinguishing media: Do not use water jet to extinguish.

Specific hazards arising from the chemical: Upon exposure to intense heat or flame, cylinder will vent rapidly and or rupture violently.

Special protective equipment and precautions for fire-fighters: Wear suitable personal protective equipment, including fire-fighting helmet, coat, trousers, boots, and gloves. If potential for exposure exists, wear protective clothing for protection against chemicals. Wear self-contained breathing apparatus (SCBA) when approaching a fire in a confined space. Select fire-fighter's clothing approved to relevant Standards.

Further information: Clear fire area of all non-emergency personnel. Keep adjacent containers cool by spraying with water. Collect and treat fire-fighting water, avoiding environment pollution.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Only trained and properly protected personnel must be involved in clean-up operations.

Evacuate personnel to safe areas. Stay upwind and keep out of low areas.

Avoid contacting and leaping over the spillage.

Stop leak if safe to do so.

Inform the relevant authorities if the spillage has caused environmental contamination.

For personal protective equipment, refer to SDS Section 8.

Environmental precautions:

Prevent further leakage or spillage if safe to do so. Reduce vapour with fog or fine water spray. Keep run-off water out of sewers and water sources. Dike for water control.

Use appropriate containment to avoid environmental contamination.

Ventilate contaminated area thoroughly.

Methods and materials for containment and cleaning up:

For small amount: Absorb with inactive materials such as sand, soil, sawdust and general-purpose binder. Collect in suitable and properly labeled containers for recovery or safe disposal. Do not use water for cleanup.

For large amount: Contain spillage by dams. Pump spillage into tank trucks or special collectors for recovery or safe disposal.

For disposal considerations, refer to SDS Section 13.

Precautionary measures to prevent the occurrence of secondary disasters:

Shut off ignition sources.

Prevent from spreading or entering into drains, sewers or waterways by using sand, soil or other appropriate barriers.

Section 7. Handling and storage

Precautions for safe handling:

Avoid breathing vapor. Avoid contact with skin and eyes. Do not ingest and inhale.

Use with adequate ventilation.

Wash skin thoroughly after handling.

For personal protective equipment, refer to SDS Section 8.

For incompatible materials, refer to SDS Section 10.

For transport information, refer to SDS Section 14.

Conditions for safe storage, including any incompatibilities:

Keep in a dry, cool and well-ventilated place. Keep away from direct sunlight when ambient temperature exceeds 52℃/125℉.

Install preventive facilities protecting from fire, explosion, high temperature and lightning strike.

Protect from temperature above: 52°C.

Keep away from incompatible materials.

Keep containers tightly closed after handling.

Keep away from sources of ignition and heat.

Protect cylinders from physical damage ; do not drag, roll, slide or drop.

Section 8. Exposure controls/personal protection

Occupational Exposure Limits:

Maximum allowable concentration (MAC): 1mg/m^3 (China)

Biological occupational exposure limits:

No data available

Engineering controls:

Use local exhaust ventilation (LEV) system to maintain airborne level below exposure limit requirements. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation for some operations. Systems under pressure should be regularly checked for leakages.

Install alarm devices and ventilation facilities for emergency.

Provide emergency exits and necessary risk-eliminating area.

Provide emergency eyewash and safety shower station.

Educate and train relevant personnel for first-aid measures.

Individual protection measures:

Respiratory protection: No need for respirators under normal conditions.

If potential for exceed the exposure limit or any adverse effects exist, respirators must be worn.

Select filters for organic vapor.

Self-contained breathing apparatus (SCBA) must be worn for first-aid responders.

Eye/face protection:	Safety glasses with side shields Goggles with indirect ventilation (eyecup or cover type) if potential for splash, droplets and sprays exist.
Skin protection:	Chemical protective clothing (CPC) CPC should be easy to remove.
Hand protection:	Nitrile rubber (NBR) gloves Neoprene (CR) gloves Other chemical protective gloves
Other	Wear safety shoes while handling containers/cylinders.

Section 9. Physical and chemical properties

Physical state	Greenish-yellow gas	25 °C
Odor	Pungent	
pH	If dissolved in water, pH-value will be affected.	
Melting point/freezing point	-101.05 °C	
Boiling point	-34.05 °C	
Flash point	Not applicable	
Explosion limit	No data available	
Vapor pressure	407 kPa	
Vapor density	No data available	
Relative density (air=1)	2.473	20 °C, 1atm
Critical Temp.(℃)	144.0℃	
Solubility	Soluble in water	
Partition coefficient (log Pow) *n*-octanol/water	Not applicable	
Auto-ignition temperature	No data available	
Decomposition temperature	No data available	

Pour point	Not applicable
Dynamic viscosity	Not applicable

Section 10. Stability and reactivity

Chemical stability: Stable if stored and handled under normal conditions.

Possibility of hazardous reactions: No data available

Conditions to avoid: Moisture.

Incompatible materials: Strong alkalines, Strong reducers, Reactive chemicals.

Hazardous decomposition products: No data available

Section 11. Toxicological information

Acute toxicity:

Acute oral toxicity: No data available

Acute dermal toxicity: No data available

Acute inhalation toxicity: LD_{50} (Rat) >100 - <500 ppmV

Skin corrosion/irritation: Causes skin irritation

Serious eye damage/irritation: Causes serious eye irration

Respiratory or skin sensitization: No data available

Germ cell mutagenicity: No data available

Carcinogenicity: No data available

Reproductive toxicity: No data available

STOT-single exposure: May cause respiratory irritation

STOT-repeated exposure: No data available

Aspiration hazard: No data available

This product has not been toxicologically tested. The toxicological information above is derived from substances or mixtures of a similar structure or composition.

Section 12. Ecological information

Acute aquatic toxicity:

Fish	LC_{50} (96h)	<1 mg/L	(Zebrafish)
Crustaceans	EC_{50} (48h)	<1 mg/L	(*Daphnia magna*)
Aquatic plants	ErC_{50} (72h)	<1 mg/L	(Algae)

Chronic aquatic toxicity:

Fish	LC_{50} (96h)	No data available
Crustaceans	EC_{50} (48h)	No data available
Aquatic plants	ErC_{50} (72h)	No data available

Persistence and degradability:

Primary biodegradation:	Not applicable
The percentage biodegradation (28d):	Not applicable

Bioaccumulative potential:

Partition coefficient (*n*-octanol/water) log P_{ow}: Not applicable

Mobility in soil: No data available

Other adverse effects: No data available

This product has not been ecologically tested. The ecological information above is derived from substances or mixtures of a similar structure or composition.

Section 13. Disposal considerations

Disposal should be in accordance with applicable national and local laws and regulations.

Product: Recover if possible. Disposal of non-recyclable products via incinerators or other thermal destruction devices of licensed waste disposal contractors. Do not dump into any drains, sewers or waterways.

Packaging: Drain containers thoroughly, and then clean up before reuse or desert. Treat cleaning water from environment pollution.

Section 14. Transport information

IMDG :

UN Number: 1017

UN Proper Shipping Name: CHLORINE

Transport hazard class(es):

Class :2.3

Labels:2.3, 5.1, 8

EmS No.:F-C,S-U

Packing group: Not applicable

Environmental hazards : Marine Pollutant

Special precautions for user: -

IATA:

UN-No.(IATA): 1017

Transport Document Description：UN Forbidden，ENVIRONMENTALLY HAZARDOUS

Civil Aeronautics Law:Gases under pressure/Gases toxic under pressure(Hazardous materials notice Appended Table 1 Article 194 of the Enforcement Regulations)

RID:

UN Number: 1017

UN Proper Shipping Name: CHLORINE

Transport hazard class(es):

Class :2

Labels:2.3, 5.1, 8

Packing group: Not applicable

Environmental hazards : ENVIRONMENTALLY HAZARDOUS

Special precautions for user: -

ADR:

UN Number: UN1017

UN Proper Shipping Name :

Transport Hazard Class(es)

Class: 2

Label(s):2.3,5.1,8

Hazard No.(ADR):265

Tunnel restriction code: (C/D)

Packaging Group:-

Environmental hazards : Environmentally Hazardous

Section 15. Regulatory information

The following statutes, regulations and standards have the related prescribes on chemicals.

Provisions on the Environmental Administration of New Chemical Substances (MEE Order No. 12)

All intentional components are listed on the *Inventory Existing Chemical Substance in China* (IECSC).

Section 16. Other information

The SDS is according to GB/T 16483 and GB/T 17519.

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The information provided in this Safe Data Sheet is based on our present knowledge and experience, and is believed to be accurate and reliable at the date of publication. It is herein given as guidelines for safe transport, store and handling, not as a quality specification. However, applicable laws may differ from one location to another and may change with time. Any buyers/users intending to use this information is responsible for determining whether the information is suitable for their application and meets all safety, health and regulatory standards appropriate to and applicable for their intended use. **Shandong HuaYuTongFang Electronic Materials Co., Ltd MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** The

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