

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Mixture
Product name	: Hydrochloric Acid 28-36%
EC Index-No.	: 017-002-01-X
EC-No.	: 231-595-7
REACH registration No	: 01-2119484862-27-XXXX
Type of product	: Mineral acids
Formula	: HCl (In aqueous solution)
Synonyms	: Hydrogen chloride solution, Muriatic acid
Product group	: Raw material

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Industrial/Professional use spec	: Industrial For professional use only
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1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Fluid Science Limited
Unit 5 Pride Point, Ashcroft Road
Knowsley Industrial Park
Liverpool L33 7TW
United Kingdom

1.4. Emergency telephone number

Emergency number +44 (0) 1244 506 860 (9am-5.30pm GMT Monday to Friday)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Corrosive to metals, Category 1	H290
Skin corrosion/irritation, Category 1A	H314
Serious eye damage/eye irritation, Category 1	H318
Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation	H335

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

May be corrosive to metals. May cause respiratory irritation. Causes severe skin burns and eye damage. Causes serious eye damage.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS05

GHS07

Signal word (CLP)

: Danger

Hazard statements (CLP)

: H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.
H335 - May cause respiratory irritation.

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Precautionary statements (CLP)	: P234 - Keep only in original packaging. P260 - Do not breathe vapours, spray, mist. P264 - Wash hands thoroughly after handling. P271 - Use only outdoors or in a well-ventilated area. P280 - Wear protective gloves, protective clothing, face protection, eye protection. 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 or shower. P304+P340 - IF INHALED: Remove person to fresh air and keep 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. P310 - Immediately call a doctor. P312 - Call a doctor if you feel unwell. P321 - Specific treatment (see supplemental first aid instruction on this label). P390 - Absorb spillage to prevent material damage. P403+P233 - Store in a well-ventilated place. Keep container tightly closed. P405 - Store locked up. P406 - Store in corrosive resistant container with a resistant inner liner. P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
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2.3. Other hazards

PBT: not relevant – no registration required

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of REACH annex II

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). Call a physician immediately.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. If breathing is difficult, trained personnel should give oxygen.
First-aid measures after skin contact	: Take off immediately all contaminated clothing. Rinse immediately with plenty of water for 15 minutes. Call a physician immediately.
First-aid measures after eye contact	: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
First-aid measures after ingestion	: Do NOT induce vomiting. Rinse mouth. Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects	: Causes severe skin burns and eye damage.
Symptoms/effects after inhalation	: Possible respiratory damage following repeated or prolonged inhalation. Cough. Sore throat. Shortness of breath. Delayed fatal pulmonary oedema possible. May cause respiratory irritation.
Symptoms/effects after skin contact	: Burns.
Symptoms/effects after eye contact	: Direct contact may result in corneal injury. Serious damage to eyes.
Symptoms/effects after ingestion	: Possible oesophageal perforation. Burns.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Use extinguishing media appropriate for surrounding fire. Sand. Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media	: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Not flammable.
Hazardous decomposition products in case of fire	: Hydrogen chloride.

5.3. Advice for firefighters

Firefighting instructions	: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Evacuate unnecessary personnel. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

Emergency procedures : Ventilate area.

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Stop leak without risks if possible.

Methods for cleaning up : Take up liquid spill into absorbent material. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Absorb spillage to prevent material damage. Ventilate well. Collect spillage. Store away from other materials. Small spills may be neutralized with lime water slurry or soda ash and flushed with large amounts of cold water. Then wash with water and detergent.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : May be corrosive to metals.

Precautions for safe handling : Provide good ventilation in process area to prevent formation of vapour. Use only outdoors or in a well-ventilated area. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray. Wear personal protective equipment.

Handling temperature : 15 - 25 °C NEVER pour water into this substance; when dissolving or diluting always add it slowly to the water.

Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Comply with applicable regulations.

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : alkalis. Store in corrosive resistant container with a resistant inner liner. Store locked up. Keep container tightly closed.

Incompatible products : Strong bases. Strong acids.

Incompatible materials : Sources of ignition. Direct sunlight. Metals.

Storage temperature : 15 - 25 °C

Information on mixed storage : Oxidizing agents and reducing agents. alkaline products.

Storage area : Protect from freezing.

Special rules on packaging : Keep only in original container. Store in a closed container.

Packaging materials : Store in Steel container with a resistant inner liner.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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EU - Occupational Exposure Limits	
Local name	Hydrogen chloride
IOELV TWA (mg/m ³)	8 mg/m ³
IOELV TWA (ppm)	5 ppm
IOELV STEL (mg/m ³)	15 mg/m ³
IOELV STEL (ppm)	10 ppm
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC

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United Kingdom - Occupational Exposure Limits	
Local name	Hydrogen chloride
WEL TWA (mg/m ³)	2 mg/m ³ gas and aerosol mists
WEL TWA (ppm)	1 ppm gas and aerosol mists
WEL STEL (mg/m ³)	8 mg/m ³ gas and aerosol mists
WEL STEL (ppm)	5 ppm gas and aerosol mists
Regulatory reference	EH40/2005 (Third edition, 2018). HSE

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DNEL/DMEL (Workers)

Acute - local effects, inhalation	15 mg/m ³
Long-term - local effects, inhalation	8 mg/m ³

DNEL/DMEL (General population)

Acute - local effects, inhalation	15 mg/m ³
Long-term - local effects, inhalation	8 mg/m ³

8.2. Exposure controls

Appropriate engineering controls:

Ensure operatives are trained to minimise exposures. Ensure good ventilation of the work station. Facilities: shower, eye shower.

Personal protective equipment:

Avoid all unnecessary exposure.

Materials for protective clothing:

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Hand protection:

Wear protective gloves. Nitrile-rubber protective gloves

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
	Butyl rubber, Nitrile rubber (NBR), Polyvinylchloride (PVC)	6 (> 480 minutes)	0.5 mm		EN ISO 374
	Natural rubber	5 (> 240 minutes)	0.5 mm		EN ISO 374

Eye protection:

Chemical goggles or face shield. Safety glasses

Type	Use	Characteristics	Standard
Safety goggles	Use splash goggles when eye contact due to splashing is possible	tightly fitting safety goggles	EN 166

Skin and body protection:

Acid-resistant clothing. Rubber boots

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

Device	Filter type	Condition	Standard
Gas filters	Type E - Sulfur dioxide and hydrogen chloride (acidic gases)	Short term exposure	EN 143

Personal protective equipment symbol(s):



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Environmental exposure controls:

Avoid release to the environment.

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear, colorless liquid.
Molecular mass	: 36.46 g/mol
Colour	: Colourless.
Odour	: Pungent. Irritating. sharp.
Odour threshold	: 0.3 ppm (Gaseous hydrogen chloride)
pH	: No data available
pH solution	: < 1
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: 60 - 90 °C
Flash point	: No data available
Auto-ignition temperature	: Product is not self igniting
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: 14.5 kPa (36% HCl)
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: 1.18 g/cm ³ (36% HCl)
Solubility	: completely miscible.
Log Pow	: No data available
Viscosity, kinematic	: 1.686 mm ² /s
Viscosity, dynamic	: 1.99 mPa·s (36% HCl)
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Thermal decomposition generates : Corrosive vapours.

10.2. Chemical stability

The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions

Generate heat, gases. on contact with incompatible materials. No polymerization. Gives off hydrogen by reaction with metals. Reacts exothermically with (strong) oxidizers: release of toxic and corrosive gases/vapours chlorine.

10.4. Conditions to avoid

Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases. oxidizing materials. Sodium hypochlorite. May be corrosive to metals. metals.

10.6. Hazardous decomposition products

Thermal decomposition generates : Hydrogen chloride.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified

LC50, acute, Inhalation, rat	4701 ppm (30 minutes, HCl gas)
LC50, acute, Inhalation, rat	8.3 mg/l (30 minutes, HCl aerosol)

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Skin corrosion/irritation	: Causes severe skin burns and eye damage.
Serious eye damage/irritation	: Causes serious eye damage.
Respiratory or skin sensitisation	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Germ cell mutagenicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Reproductive toxicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
STOT-single exposure	: May cause respiratory irritation.
STOT-repeated exposure	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Aspiration hazard	: Not classified
Additional information	: Based on available data, the classification criteria are not met

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Viscosity, kinematic	1.686 mm ² /s
Potential adverse human health effects and symptoms	: Corrosive. Causes severe burns.
Other information	: 'Corrosive': substances and preparations which may destroy living tissue on contact.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Before neutralisation, the product may represent a danger to aquatic organisms.
Ecology - water	: Most aquatic species do not tolerate pH lower than 5.5 for any extended period.
Acute aquatic toxicity	: Not classified
Chronic aquatic toxicity	: Not classified.

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LC50 fish 1	20.5 mg/l
EC50 Daphnia 1	0.45 mg/l
EC50 72h algae (1)	0.73 mg/l
NOEC chronic algae	0.364 mg/l

12.2. Persistence and degradability

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Persistence and degradability	Not biodegradable.
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12.3. Bioaccumulative potential

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Bioaccumulative potential	No bioaccumulation.
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12.4. Mobility in soil

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Mobility in soil	Hydrochloric acid will be neutralized by naturally occurring alkalinity. The acid will permeate the soil, dissolving some soil and then neutralize.
Ecology - soil	Mobile. Soluble material/quickly disperses in water.

12.5. Results of PBT and vPvB assessment

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PBT: not relevant – no registration required	
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12.6. Other adverse effects

Other adverse effects	: High concentration in receiving water will injure aquatic life by pH effect.
Additional information	: Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
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Product/Packaging disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
Ecology - waste materials	: Avoid release to the environment.
European List of Waste (LoW) code	: 06 01 02* - hydrochloric acid

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
UN 1789	UN 1789	UN 1789	UN 1789	UN 1789
14.2. UN proper shipping name				
HYDROCHLORIC ACID	HYDROCHLORIC ACID	Hydrochloric acid	HYDROCHLORIC ACID	HYDROCHLORIC ACID
Transport document description				
UN 1789 HYDROCHLORIC ACID, 8, II, (E)	UN 1789 HYDROCHLORIC ACID, 8, II	UN 1789 Hydrochloric acid, 8, II	UN 1789 HYDROCHLORIC ACID, 8, II	UN 1789 HYDROCHLORIC ACID, 8, II
14.3. Transport hazard class(es)				
8	8	8	8	8
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No

No supplementary information available

14.6. Special precautions for user

Overland transport

Classification code (ADR)	: C1
Special provisions (ADR)	: 520
Limited quantities (ADR)	: 1I
Excepted quantities (ADR)	: E2
Packing instructions (ADR)	: P001, IBC02
Mixed packing provisions (ADR)	: MP15
Portable tank and bulk container instructions (ADR)	: T8
Portable tank and bulk container special provisions (ADR)	: TP2
Tank code (ADR)	: L4BN
Vehicle for tank carriage	: AT
Transport category (ADR)	: 2
Hazard identification number (Kemler No.)	: 80
Orange plates	:



Tunnel restriction code (ADR)	: E
EAC code	: 2R

Transport by sea

Packing instructions (IMDG)	: P001
IBC packing instructions (IMDG)	: IBC02

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IBC special provisions (IMDG)	: B20
Tank instructions (IMDG)	: T8
Tank special provisions (IMDG)	: TP2
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-B
Stowage category (IMDG)	: C
Properties and observations (IMDG)	: Colourless liquid. An aqueous solution of the gas hydrogen chloride. Highly corrosive to most metals. Causes burns to skin, eyes and mucous membranes.

Air transport

PCA Excepted quantities (IATA)	: E2
PCA Limited quantities (IATA)	: Y840
PCA limited quantity max net quantity (IATA)	: 0.5L
PCA packing instructions (IATA)	: 851
PCA max net quantity (IATA)	: 1L
CAO packing instructions (IATA)	: 855
CAO max net quantity (IATA)	: 30L
Special provisions (IATA)	: A3
ERG code (IATA)	: 8L

Inland waterway transport

Classification code (ADN)	: C1
Special provisions (ADN)	: 520
Limited quantities (ADN)	: 1 L
Excepted quantities (ADN)	: E2
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP, EP
Number of blue cones/lights (ADN)	: 0

Rail transport

Classification code (RID)	: C1
Special provisions (RID)	: 520
Limited quantities (RID)	: 1L
Excepted quantities (RID)	: E2
Packing instructions (RID)	: P001, IBC02
Mixed packing provisions (RID)	: MP15
Portable tank and bulk container instructions (RID)	: T8
Portable tank and bulk container special provisions (RID)	: TP2
Tank codes for RID tanks (RID)	: L4BN
Transport category (RID)	: 2
Colis express (express parcels) (RID)	: CE6
Hazard identification number (RID)	: 80

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

Contains no REACH substances with Annex XVII restrictions

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

Contains no substance subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

Substance(s) are not subject to Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC.

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

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SECTION 16: Other information

Abbreviations and acronyms:	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
NOEC	No-Observed Effect Concentration
PBT	Persistent Bioaccumulative Toxic
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

Full text of H- and EUH-statements:	
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.

SDS EU (REACH Annex II)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.