HALLIBURTON

SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

Hydrochloric Acid with HAI-202, HII-124F, DCA-22001

Revision Date: 30-Oct-2014 **Revision Number:** 2

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

1.1. Product Identifier

Product Name Hydrochloric Acid with HAI-202, HII-124F, DCA-22001

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

Recommended Use Solvent

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
Halliburton House, Howemoss Place
Kirkhill Industrial Estate
Dyce
Aberdeen, AB21 0GN
United Kingdom

Emergency Phone Number: +44 1224 795277 or +1 281 575 5000

www.halliburton.com

For further information, please contact

E-Mail address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 1224 795277 or +1 281 575 5000

Emergency telephone - §45 - (EC)1272/2008	
Europe	**112**
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO):+ 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Skin Corrosion / irritation	Category 1 - H314
Serious Eye Damage / Eye Irritation	Category 1 - H318

Classification according to EU Directives 67/548/EEC or 1999/45/EC

For the full text of the R-phrases mentioned in this Section, see Section 16

Classification C - Corrosive.

Risk Phrases R34 Causes burns.

2.2. Label Elements

Hazard Pictograms

Signal Word **Danger**

Hazard Statements
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage

Precautionary Statements - EU (§28, 1272/2008)
P280 - Wear protective gloves/protective clothing/eye protection/face 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/shower
P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
P310 - Immediately call a POISON CENTER or doctor/physician
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Contains

Substances	**CAS Number**
Hydrochloric acid	7647-01-0
Formic acid	64-18-6

2.3. Other Hazards
None known

SECTION 3: Composition/information on Ingredients

Substances	EINECS	CAS Number	PERCENT (w/w)	EEC Classification	EU - CLP Substance Classification	REACH No.
Hydrochloric acid	231-595-7	7647-01-0	10 - 30%	C; R34 Xi; R37	Skin Corr. 1B (H314) Eye Dam. 1 (H318) STOT SE 3 (H335) Met. Corr. 1 (H290)	01-2119484862-27
Formic acid	200-579-1	64-18-6	1 - 5%	C; R35 R37 T; R23 R22 R10	Acute Tox. 4 (H302) Acute Tox. 3 (H331) Skin Corr. 1A (H314) Eye Dam. 1 (H318) STOT-SE 3 (H335) Flam. Liq. 3 (H226) Met. Corr. 1 (H290)	01-2119491174-37

For the full text of the R-phrases mentioned in this Section, see Section 16

3.1. Substances Not applicable
3.2. Mixtures Mixture

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.
Eyes	In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
Ingestion	Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

4.2. Most Important symptoms and effects, both acute and delayed
May cause eye and skin burns.

4.3. Indication of any immediate medical attention and special treatment needed
Notes to Physician Treat symptomatically

SECTION 5: Firefighting Measures

5.1. Extinguishing media
Suitable Extinguishing Media
Water fog, carbon dioxide, foam, dry chemical.
Extinguishing media which must not be used for safety reasons
None known.

5.2. Special hazards arising from the substance or mixture
Special Exposure Hazards
May form explosive mixtures with strong alkalis. Decomposition in fire may produce toxic gases. Reaction with steel and certain other metals generates flammable hydrogen gas. Do not allow runoff to enter waterways.

5.3. Advice for firefighters
Special Protective Equipment for Fire-Fighters
Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Use appropriate protective equipment.
See Section 8 for additional information

6.2. Environmental precautions
Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up
Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove.

6.4. Reference to other sections
See Section 8 and 13 for additional information.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling
Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse.
Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice

7.2. Conditions for safe storage, including any incompatibilities
Store away from alkalis. Store in a cool well ventilated area. Keep container closed when not in use.

7.3. Specific End Use(s)
Exposure Scenario No information available

Other Guidelines No information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK OEL	Netherlands	France OEL
Hydrochloric acid	7647-01-0	Not applicable	STEL: 5 ppm STEL: 8 mg/m³ TWA: 1 ppm TWA: 2 mg/m³	TWA: 8 mg/m³ STEL: 15 mg/m³	Not applicable
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m³	STEL: 15 ppm STEL: 28.8 mg/m³ TWA: 5 ppm TWA: 9.6 mg/m³	STEL: 5 mg/m³	5 ppm

Substances	CAS Number	Germany MAK/TRK	Spain	Portugal	Finland
Hydrochloric acid	7647-01-0	TWA: 2 ppm TWA: 3 mg/m³ MAK: 2 ppm MAK: 3.0 mg/m³	10 ppm VLA-EC; 15 mg/m³ VLA-EC VLA-ED: 5 ppm VLA-ED: 7.6 mg/m³	Not applicable	STEL: 5 ppm STEL: 7.6 mg/m³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9.5 mg/m³ MAK: 5 ppm MAK: 9.5 mg/m³	VLA-ED: 5 ppm VLA-ED: 9 mg/m³	STEL: 10 ppm TWA: 5 ppm	STEL: 10 ppm STEL: 19 mg/m³ TWA: 3 ppm TWA: 5 mg/m³

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Hydrochloric acid	7647-01-0	Not applicable	Not applicable	Not applicable	Not applicable
Formic acid	64-18-6	Not applicable	Not applicable	Not applicable	STEL: 10 ppm STEL: 18 mg/m³ TWA: 5 ppm TWA: 9 mg/m³

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Hydrochloric acid	7647-01-0	STEL: 10 ppm STEL: 15 mg/m³ TWA: 5 ppm TWA: 8 mg/m³	NDSCh: 10 mg/m³ NDS: 5 mg/m³	TWA: 8 mg/m³ STEL: 16 mg/m³	TWA: 8 mg/m³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m³	NDSCh: 15 mg/m³ NDS: 5 mg/m³	TWA: 9 mg/m³	TWA: 9 mg/m³

Substances	CAS Number	Denmark
Hydrochloric acid	7647-01-0	Not applicable
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m³

Derived No Effect Level (DNEL) No information available.

Worker

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Hazards for the eyes - local effects
Hydrochloric acid	Not available	Not available	8 mg/m³	15 mg/m³	Not available	Not available	Not available	Not available	Not available
Formic acid	Not available	Not available	9.5 mg/m³	19 mg/m³	Not available	Not available	Not available	Not available	Not available

General Population

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Long-term exposure - systemic effects, Oral	Acute / short term exposure - local effects, Oral	Hazards for the eyes - local effects
Formic acid	Not available	Not available	3 mg/m³	9.5 mg/m³	Not available	Not available	Not available	Not available	Not available	Not available	Not available

Predicted No Effect Concentration (PNEC) No information available.

Substances	Freshwater	Marine water	Intermittent release	Sewage treatment plant	Sediment (freshwater)	Sediment (marine water)	Air	Soil	Secondary poisoning
Hydrochloric acid	36 ug/L	36 ug/L	45 ug/L	36 ug/L	Not available	Not available	Not available	Not available	Not available
Formic acid	2 mg/L	0.2 mg/L	1 mg/L	7.2 mg/L	13.4 mg/kg sediment dw	1.34 mg/kg sediment dw	Not available	1.5 mg/kg soil dw	Not available

8.2. Exposure controls

Engineering Controls Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.
Acid gas respirator.

Hand Protection Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Butyl rubber gloves. (>= 0.7 mm thickness)
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

Skin Protection Full protective chemical resistant clothing. Rubber boots.

Eye Protection Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions Eyewash fountains and safety showers must be easily accessible.

Environmental Exposure Controls No information available

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid **Color:** Clear colorless
Odor: Pungent acrid **Odor Threshold:** No information available

Property	Values	Remarks/ - Method
pH:	0.8	
Freezing Point/Range	-46 °C	
Melting Point/Range	No data available	
Boiling Point/Range	No data available	
Flash Point	No data available	
Evaporation rate	No data available	
Vapor Pressure	No data available	
Vapor Density	No data available	
Specific Gravity	No data available	
Water Solubility	Miscible with water	
Solubility in other solvents	No data available	
Partition coefficient: n-octanol/water	No data available	
Autoignition Temperature	No data available	
Decomposition Temperature	No data available	
Viscosity	No data available	
Explosive Properties	No information available	
Oxidizing Properties	No information available	

9.2. Other information

VOC Content (%) No data available

SECTION 10: Stability and Reactivity

10.1. Reactivity
Not applicable
10.2. Chemical Stability
Stable
10.3. Possibility of Hazardous Reactions
Will Not Occur
10.4. Conditions to Avoid
None anticipated
10.5. Incompatible Materials
Strong alkalis.
10.6. Hazardous Decomposition Products
Flammable hydrogen gas. Chlorine. Hydrogen sulfide.

SECTION 11: Toxicological Information

11.1. Information on Toxicological Effects

Acute Toxicity

Inhalation	Causes severe respiratory irritation.
Eye Contact	May cause eye burns.
Skin Contact	May cause skin burns.
Ingestion	Causes burns of the mouth, throat and stomach.

Chronic Effects/Carcinogenicity Prolonged, excessive exposure may cause erosion of the teeth.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Hydrochloric acid	7647-01-0	No data available	5010 mg/kg (Rabbit) >5010 mg/kg (Rabbit) 1449 mg/kg (Mouse)	3124 ppm (Rat) 1 h 3.2 mg/L (Mouse) 8.3 mg/L (aerosol, Rat) 1405 ppm (Rat) 554 ppm (Mouse)
Formic acid	64-18-6	730 mg/kg (Rat)	> 2000 mg/kg (Rat) (Similar substance)	7.4 mg/L (Rat) 4h vapour 15 mg/L (Rat) 15m

Substances	CAS Number	Skin corrosion/irritation
Hydrochloric acid	7647-01-0	Causes severe burns
Formic acid	64-18-6	Corrosive to skin (rabbit)

Substances	CAS Number	Eye damage/irritation
Hydrochloric acid	7647-01-0	Causes severe burns
Formic acid	64-18-6	Corrosive to eyes (rabbit)

Substances	CAS Number	Skin Sensitization
Hydrochloric acid	7647-01-0	Did not cause sensitization on laboratory animals (guinea pig)
Formic acid	64-18-6	Did not cause sensitization on laboratory animals (guinea pig)

Substances	CAS Number	Respiratory Sensitization
Hydrochloric acid	7647-01-0	No information available
Formic acid	64-18-6	No information available

Substances	CAS Number	Mutagenic Effects
Hydrochloric acid	7647-01-0	Not regarded as mutagenic.
Formic acid	64-18-6	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.

Substances	CAS Number	Carcinogenic Effects
Hydrochloric acid	7647-01-0	Did not show carcinogenic effects in animal experiments
Formic acid	64-18-6	Did not show carcinogenic effects in animal experiments (similar substances)

Substances	CAS Number	Reproductive toxicity
Hydrochloric acid	7647-01-0	Embryo and fetotoxicity has been observed in female rats exposed to maternally toxic levels of hydrogen chloride (450 mg/m^3, 1hr.).
Formic acid	64-18-6	Did not show teratogenic effects in animal experiments. (similar substances) Animal testing did not show any effects on fertility.

Substances	CAS Number	STOT - single exposure
Hydrochloric acid	7647-01-0	Causes severe respiratory irritation.
Formic acid	64-18-6	May cause respiratory irritation.

Substances	CAS Number	STOT - repeated exposure
Hydrochloric acid	7647-01-0	No significant toxicity observed in animal studies at concentration requiring classification.
Formic acid	64-18-6	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Hydrochloric acid	7647-01-0	Not applicable
Formic acid	64-18-6	Not applicable

SECTION 12: Ecological Information

12.1. Toxicity

Ecotoxicity Effects

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Hydrochloric acid	7647-01-0	EC50: 4.7 (pH) (Chlorella vulgaris) 72 h	LC50: 282 mg/L (Gambusia affinis) LC50: 20.5 mg/L (Lepomis macrochirus) LC50: 3.25 – 3.5 (pH) (Lepomis macrochirus) 96 h	EC50(3h): >= 5 and <= 5.5 (pH) (Activated sludge, domestic)	EC50: 4.9 (pH) (Daphnia magna) 48 h
Formic acid	64-18-6	EC50: 25 mg/L (Desmodesmus subspicatus) EC50(72h): 1240 mg/L (growth rate) (Pseudokirchnerella subcapitata) (Similar substance)	LC50(96h): 175 mg/L (Lepomis Macrochirus) LC50(96h): 130 mg/L (Danio rerio) (Similar substance) LC50(96h): 1720 mg/L (Scophthalmus maximus) (Similar substance) LC50(96h): 3500 mg/L (Oncorhynchus mykiss) (similar substance)	NOEC(13d): 72 mg/L (activated sludge, domestic)	EC50(48h): 120 mg/L (Daphnia magna) EC50(48h): 450 mg/L (Daphnia magna) (similar substance) EC50(48h): 365 mg/L (Daphnia magna) (Similar substance) LC50(96h): 1308 mg/L (Crangon crangon) (Similar substance) NOEC(21d): >= 100 mg/L (Daphnia magna)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Hydrochloric acid	7647-01-0	The methods for determining biodegradability are not applicable to inorganic substances.
Formic acid	64-18-6	Readily biodegradable (100 @ 14d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Hydrochloric acid	7647-01-0	0.25

Formic acid	64-18-6	-2.1

12.4. Mobility in soil
No information available

12.5. Results of PBT and vPvB assessment

Substances	PBT and vPvB assessment
Formic acid	Not PBT/vPvB

12.6. Other adverse effects
Endocrine Disruptor Information
This product does not contain any known or suspected endocrine disruptors

SECTION 13: Disposal Considerations

13.1. Waste treatment methods
Disposal Method Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

SECTION 14: Transport Information

IMDG/IMO
UN Number: UN3264
UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Hydrochloric Acid, Formic Acid)
Transport Hazard Class(es): 8
Packing Group: II
Environmental Hazards: Not applicable
EMS: EmS F-A, S-B

RID
UN Number: UN3264
UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Hydrochloric Acid, Formic Acid)
Transport Hazard Class(es): 8
Packing Group: II
Environmental hazard: Not applicable

ADR
UN Number: UN3264
UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Hydrochloric Acid, Formic Acid)
Transport Hazard Class(es): 8
Packing Group: II
Environmental hazard: Not applicable

IATA/ICAO
UN Number: UN3264
UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Hydrochloric Acid, Formic Acid)
Transport Hazard Class(es): 8
Packing Group: II
Environmental hazard: Not applicable

14.1. UN Number: UN3264

14.2. UN Proper Shipping Name: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Hydrochloric Acid, Formic Acid)

14.3. Transport Hazard Class(es): 8

14.4. Packing Group: II

14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User: None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory Information

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

International Inventories

EINECS Inventory	This product, and all its components, complies with EINECS
US TSCA Inventory	All components listed on inventory or are exempt.
Canadian DSL Inventory	All components listed on inventory or are exempt.

Legend
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering Classes (WGK) WGK 1: Low hazard to waters.

15.2. Chemical Safety Assessment
No information available

SECTION 16: Other Information

Full text of R-phrases referred to under Sections 2 and 3
R10 Flammable.
R22 Harmful if swallowed.
R23 Toxic by inhalation.
R34 Causes burns.
R35 Causes severe burns.
R37 Irritating to respiratory system.

Key literature references and sources for data
www.ChemADVISOR.com/

Revision Date: 30-Oct-2014
Revision Note
Update to Format SECTION: 8

This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010

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End of Safety Data Sheet