

Formic acid

33015-1L

Version 1.5

Revision Date 17.12.2022

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

1.1. Product identifier

Product name : Formic acid

SDS-number : 000000020237

Type of product : Substance

Remarks : SDS according to Art. 31 of Regulation (EC) 1907/2006.
In accordance to the Article 14 (1) of the REACH Regulation
(EC) No 1907/2006, exposure estimation and risk
characterisation is not required.

Chemical name : formic acid

Index-No. : 607-001-00-0

REACH Registration
Number : no data available

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

Use of the
Substance/Mixture : Laboratory chemicals

Uses advised against : none

1.3. Details of the supplier of the safety data sheet

Company	: Honeywell International Inc. 115 Tabor Road 07950-2546 Morris Plains USA	Honeywell International, Inc. 115 Tabor Road Morris Plains, NJ 07950-2546 USA
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Telephone :
For further information,
please contact: : SafetyDataSheet@Honeywell.com

1.4. Emergency telephone number

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Emergency telephone : +1-703-527-3887 (ChemTrec-Transport)
number : +1-303-389-1414 (Medical)
Country based Poison : see chapter 15.1
Control Center

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Flammable liquids Category 3
H226 Flammable liquid and vapour.
Acute toxicity Category 4 - Oral
H302 Harmful if swallowed.
Acute toxicity Category 3 - Inhalation
H331 Toxic if inhaled.
Skin corrosion Category 1A
H314 Causes severe skin burns and eye damage.
Serious eye damage Category 1
H318 Causes serious eye damage.

2.2. Label elements

REGULATION (EC) No 1272/2008

Hazard pictograms :



Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H331 Toxic if inhaled.
EUH071 Corrosive to the respiratory tract.

Precautionary statements : P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 Wear protective gloves/protective

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P284	clothing/eye protection/face protection. In case of inadequate ventilation wear respiratory protection.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302 + P352	IF ON SKIN: Wash with plenty of water.
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.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.

2.3. Other hazards

No information available. Results of PBT and vPvB assessment, see chapter 12.5.

SECTION 3: Composition/information on ingredients

3.1. Substance

Chemical name	CAS-No. Index-No. REACH Registration Number EC-No.	Classification 1272/2008	Concentration	Remarks
formic acid	64-18-6 607-001-00-0 200-579-1	Flam. Liq. 3; H226 Acute Tox. 4; H302; Oral Acute Tox. 3; H331; Inhalation Skin Corr. 1A; H314 Eye Dam. 1; H318 EUH071	100 %	Skin Irrit. 2; H315:2 - < 10 % Eye Irrit. 2; H319:2 - < 10 % Skin Corr. 1B; H314:10 - < 90 % Skin Corr. 1A; H314:>= 90 %

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3.2. Mixture

Not applicable

Occupational Exposure Limit(s), if available, are listed in Section 8.
For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice:

First aider needs to protect himself. Immediately take off contaminated clothing and rinse body with plenty of water.

Inhalation:

If inhaled, remove to fresh air. Call a physician immediately.

Skin contact:

Wash off immediately with plenty of water for at least 15 minutes. Take off immediately all contaminated clothing. Call a physician immediately.

Eye contact:

In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Protect unharmed eye.

Ingestion:

Rinse mouth with water. Do NOT induce vomiting. Call a physician immediately.

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

No data available

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

Treat symptomatically.

See Section 11 for more detailed information on health effects and symptoms.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Water spray
Foam
Carbon dioxide (CO₂)
Dry powder

Extinguishing media which shall not be used for safety reasons:

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Fire may cause evolution of:
Carbon monoxide

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective suit.
No unprotected exposed skin areas.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Wear personal protective equipment. Unprotected persons must be kept away. Remove all sources of ignition.

6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so.

6.3. Methods and materials for containment and cleaning up

Soak up with inert absorbent material.
Pick for disposal in tightly closed containers

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Personal protection through wearing a tightly closed chemical protection suit and a self-contained breathing apparatus.

6.4. Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling:

Wear personal protective equipment. Use only in well-ventilated areas. Use only acid resistant equipment.

Advice on protection against fire and explosion:

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment. Vapours may form explosive mixtures with air.

Hygiene measures:

Separate rooms are required for washing, showering and changing clothes. Keep working clothes separately. Take off all contaminated clothing immediately. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday. When using do not eat or drink.

7.2. Conditions for safe storage, including any incompatibilities

Further information on storage conditions:

Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.

7.3. Specific end use(s)

no additional data available

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits:

Components	Basis / Value type	Value / Form of exposure	Exceeding Factor	Remarks
formic acid	EH40 WEL TWA	9,6 mg/m3 5 ppm		
formic acid	EH40 WEL			Listed
formic acid	EU ELV TWA	9 mg/m3 5 ppm		Indicative

TWA - Time weighted average

DNEL/ PNEC-Values

Component	End-use/impact	Exposure duration	Value	Exposure routes	Remarks
formic acid	Consumers / Long-term local effects		3 mg/m3	Inhalation	
formic acid	Workers / Long-term local effects		9,5 mg/m3	Inhalation	
formic acid	Consumers / Long-term systemic effects		3 mg/m3	Inhalation	
formic acid	Workers / Long-term systemic effects		9,5 mg/m3	Inhalation	

Component	Environmental compartment / Value	Remarks

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formic acid	Fresh water: 2 mg/l	
formic acid	Marine water: 0,2 mg/l	
formic acid	Fresh water sediment: 13,4 mg/kg	
formic acid	Marine sediment: 1,34 mg/kg	
formic acid	Soil: 1,5 mg/kg	
formic acid	Sewage treatment plant: 7,2 mg/l	

8.2. Exposure controls

Occupational exposure controls

The Personal Protective Equipment must be in accordance with EN standards:respirator EN 136, 140, 149; safety glasses EN 166; protective suit: EN 340, 463, 468, 943-1, 943-2; gloves EN 374, 511; safety shoes EN-ISO 20345.

Do not breathe vapours or spray mist.

Engineering measures

Use with local exhaust ventilation.

Personal protective equipment

Respiratory protection:

In the case of vapour formation use a respirator with an approved filter.

Hand protection:

Glove material: Viton®

Break through time: > 480 min

Glove thickness: 0,7 mm

Vitoject® 890

Gloves must be inspected prior to use.

Replace when worn.

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Remarks: Supplementary note: The specifications are based on information and tests from similar substances by analogy.
Due to varying conditions (e.g.temperature or other strains) it must be considered that the usage of a chemical protective glove in practice may be much shorter than the permeation time determined in accordance with EN 374.
Since actual conditions of practical use often deviate from standardised conditions according EN 374 the glove manufacturer recommends to use the chemical protective glove in practice not longer than 50% of the recommended permeation time.
Manufacturer's directions for use should be observed because of great diversity of types .
Suitable gloves tested according EN 374 are supplied e.g. from KCL GmbH, D-36124 Eichenzell, Vertrieb@kcl.de

Eye protection:
Safety goggles

Skin and body protection:
acid-proof protective clothing

Environmental exposure controls

Handle in accordance with local environmental regulations and good industrial practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	liquid
Colour	:	colourless
Odour	:	stinging
molecular weight	:	46,03 g/mol
Melting point/range	:	4 °C Method: OECD Test Guideline 102
Boiling point/boiling range	:	ca. 100,4 °C at 1.013 hPa Method: OECD Test Guideline 103
Upper explosion limit	:	38 %(V)

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		No data available
Lower explosion limit	:	12 %(V) 42 °C
Flash point	:	49,5 °C
Auto-ignition temperature	:	No data available
Decomposition temperature	:	350 °C Decomposition temperature
pH	:	acidic
Auto-ignition temperature	:	528 °C
Viscosity, kinematic	:	1,41 mm ² /s at 20 °C
Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	No data available
Vapour pressure	:	42 hPa at 20 °C Method: OECD 104
Density	:	1,22 g/cm ³ at 20 °C Method: OECD Test Guideline 109
Relative vapour density	:	No data available

9.2 Other Information

Evaporation rate	:	No data available
Viscosity, dynamic	:	1,72 mPa.s at 20 °C

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SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under recommended storage conditions.

10.2. Chemical stability

350 °C
Decomposition temperature

10.3. Possibility of hazardous reactions

Heating can release hazardous gases.
Hazardous polymerisation does not occur.

10.4. Conditions to avoid

Keep away from heat and sources of ignition.

10.5. Incompatible materials

Alkalis
Amines
Strong oxidizing agents

10.6. Hazardous decomposition products

Carbon monoxide

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity:

LD50

Species: Rat

Value: 730 mg/kg

Method: OECD Test Guideline 401

Acute dermal toxicity:

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No data available

Acute inhalation toxicity:

LC50

Species: Rat

Value: 7,85 mg/l

Exposure time: 4 h

Method: OECD Test Guideline 403

Skin irritation:

Species: Rabbit

Result: Causes severe burns.

Classification: Corrosive

Method: OECD

Eye irritation:

Species: Rabbit

Result: Risk of serious damage to eyes.

Method: OECD Test Guideline 405

Respiratory or skin sensitisation:

Buehler Test

Species: Guinea pig

Result: non-sensitizing

Method: OECD Test Guideline 406

Carcinogenicity:

Species: Rat

Test substance: REACH dossier "read-across"

Note: Animal testing did not show any carcinogenic effects.

Germ cell mutagenicity:

Test Method: sister chromatid exchange assay

Cell type: Chinese hamster fibroblasts

Metabolic activation: with and without metabolic activation

Result: negative

Method: OECD Test Guideline 479

Test Method: Ames test

Metabolic activation: with and without metabolic activation

Result: negative

Method: OECD Test Guideline 471

Test Method: In vitro gene mutation study in mammalian cells

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Cell type: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: negative
Method: OECD Test Guideline 476

Species: *Drosophila melanogaster* (vinegar fly)
Method: OECD Test Guideline 477
Result: negative

Reproductive toxicity:

Test Type: Two-generation study
Species: Rat
Route of Application: Oral
General Toxicity - Parent: NOAEL: 1.000 mg/kg bw/d
General Toxicity F1: NOAEL: 1.000 mg/kg bw/d
Remarks: REACH dossier "read-across"
Method: OECD Test Guideline 414
Species: Rabbit
Route of Application: Oral
General Toxicity Maternal: NOAEL: 1.000 mg/kg bw/d
Teratogenicity: NOAEL: 1.000 mg/kg bw/d
Developmental Toxicity: NOAEL: 1.000 mg/kg bw/d
Embryo-foetal toxicity: NOAEL: 1.000 mg/kg bw/d

Remarks: REACH dossier "read-across"

Aspiration hazard:
No data available

11.2. Information on other hazards

Endocrine disrupting properties
No data available

Other information:
No data available

SECTION 12: Ecological information

12.1. Toxicity

Toxicity to fish:
LC50
static test
Species: *Danio rerio* (zebra fish)

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Value: 130 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Test substance: REACH dossier "read-across"

Toxicity to aquatic plants:

EC50
Growth rate
Species: Pseudokirchneriella subcapitata (green algae)
Value: 1.240 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Test substance: REACH dossier "read-across"

Toxicity to aquatic invertebrates:

EC50
Immobilization
Species: Daphnia magna (Water flea)
Value: 365 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Test substance: REACH dossier "read-across"

Chronic toxicity to aquatic invertebrates:

NOEC
semi-static test
Species: Daphnia magna (Water flea)
Value: ≥ 100 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211
Test substance: anhydrous substance

12.2. Persistence and degradability

Biodegradability:

Biodegradation: 100 %
Result: Readily biodegradable
Method: OECD 301 E

12.3. Bioaccumulative potential

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Bioaccumulation is unlikely.

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6. Endocrine disrupting properties

No data available

12.7. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product:

Dispose according to legal requirements.

Packaging:

Legal requirements are to be considered in regard of reuse or disposal of used packaging materials

Further information:

Provisions relating to waste:
EC Directive 2006/12/EC; 2008/98/EEC
Regulation No. 1013/2006

For personal protection see section 8.

SECTION 14: Transport information

14.1 UN number

ADR/RID:1779

IMDG:1779

IATA:1779

14.2 UN proper shipping name

ADR/RID:FORMIC ACID

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IMDG:FORMIC ACID
IATA:Formic acid

14.3 Transport hazard class(es)

ADR/RID: 8 (3)

IMDG: 8 (3)

IATA: 8 (3)

14.4 Packaging group

ADR/RID: II

IMDG: II

IATA: II

14.5 Environmental hazards

ADR/RID:no

Marine pollutant: no

14.6 Special precautions for user

IMDG Code segregation group (SGG1) – ACIDS,

14.7 Maritime transport in bulk according to IMO instruments

No data available

SECTION 15: Regulatory information

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

Basis	Value	Remarks
Directive 2012/18/EC Listed in Regulation : H2: ACUTE TOXIC Number in Regulation: 1.1.2	Quantity: 50.000 kg Quantity: 200.000 kg	
Directive 2012/18/EC Listed in Regulation : P5c: FLAMMABLE LIQUIDS Number in Regulation: 1.2.5.3	Quantity: 5.000.000 kg Quantity: 50.000.000 kg	
Substances of very high concern (SVHC)		This product does not contain substances of very high concern according to Regulation (EC) No Article 57 above the respective regulatory 1907/2006 (REACH), concentration limit of $\geq 0.1\%$ (w/w).

Poison Control Center

Country	Phone Number	Country	Phone Number
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Austria	+4314064343
Belgium	070 245245
Bulgaria	(+35929154233
Croatia	(+3851)23-48-342
Cyprus	+357 2240 5611
Czech Republic	+420224919293; +420224915402
Denmark	82121212
Estonia	16662; (+372)6269390
Finland	9471977
France	+33(0)145425959
Greece	+30 210 779 3777
Hungary	(+36-80)201-199
Iceland	5432222
Ireland	+353(1)8092166
Italy	0382 24444
Germany	Berlin : 030/19240
	Bonn : 0228/19240
	Erfurt : 0361/730730
	Freiburg : 0761/19240
	Göttingen : 0551/19240
	Homburg : 06841/19240
	Mainz : 06131/19240
Munich : 089/19240	
Latvia	+37167042473

Liechtenstein	+41 442515151
Lithuania	+370532362052
Luxembourg	070245245; (+352)80002-5500
Malta	+356 2395 2000
Netherlands	030-2748888
Norway	22591300
Poland	+48 42 25 38 400
Portugal	800250250
Romania	+40 21 318 3606
Slovakia (NTIC)	+421 2 54 774 166
Slovenia	+386 1 400 6051
Spain	+34915620420
Sweden	112 (begär Giftinformation);+46104566786
Switzerland	145
United Kingdom	(+44) 844 892 0111

Other inventory information

US. Toxic Substances Control Act
On TSCA Inventory

Australia. Inventory of Industrial Chemicals (AIIC), as amended
On the inventory, or in compliance with the inventory

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Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)
All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List
On the inventory, or in compliance with the inventory

Korea. Existing Chemicals Inventory (KECI)
On the inventory, or in compliance with the inventory

Philippines. Inventory of Chemicals and Chemical Substances (PICCS)
On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances (IECSC)
On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
On the inventory, or in compliance with the inventory

Taiwan Chemical Substance Inventory (TCSI)
On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Text of H-statements referred to under heading 3

formic acid : H226 Flammable liquid and vapour.
H302 Harmful if swallowed.
H331 Toxic if inhaled.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
EUH071 Corrosive to the respiratory tract.

Further information

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All directives and regulations refer to amended versions.
Vertical lines in the left hand margin indicate a relevant amendment from the previous version.

Abbreviations:

EC European Community
CAS Chemical Abstracts Service
DNEL Derived no effect level
PNEC Predicted no effect level
vPvB Very persistent and very bioaccumulative substance
PBT Persistent, bioaccumulative und toxic substance

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user.

This information should not constitute a guarantee for any specific product properties.
