INEOS ChlorVinyls

SAFETY DATA SHEET

Based upon Regulation (EC) No. 1907/2006, as amended by Regulation (EC) No. 453/2010

2-chlorobenzaldehyde

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

1.1 Product identifier:

Product name	: 2-chlorobenzaldehyde
Synonyms	: benzaldehyde, 2-chloro-; ortho-chlorobenzaldehyde
Registration number REACH	: 01-2119458949-15-0001
Product type REACH	: Substance/mono-constituent (Organic)
CAS number	: 89-98-5
EC index number	: 605-011-00-X
EC number	: 201-956-3
RTECS number	: CU5075000
Molecular mass	: 140.57 g/mol
Formula	: C7H5ClO

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

1.2.1 Relevant identified uses

Intermediate under strictly controlled conditions

1.2.2 Uses advised against

No uses advised against known

1.3 Details of the supplier of the safety data sheet:

Supplier of the SDS

INEOS ChlorVinyls Belgium NV
Heilig Hartlaan 21
BE-3980 Tessenderlo
Tel: +32 13 61 23 00

sds.responsible@ineos.com

1.4 Emergency telephone number:

24h/24h: +32 14 58 45 45 (BIG)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation EC No 1272/2008

Class	Category	Hazard statement code(s)
Skin Corr.	category 1B	H314: Causes severe skin burns and eye damage.
Skin Sens.	category 1	H317: May cause an allergic skin reaction.

2.1.2 Classification according to Directive 67/548/EEC-1999/45/EC

C; R34 - Causes burns.
R43 - May cause sensitisation by skin contact.

2.2 Label elements:

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

Hazard pictograms


Signal word Danger

H-statements

H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.

P-statements

P280	Wear protective gloves, protective clothing and eye protection/face protection.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

2.3 Other hazards:

SECTION 3: Composition/information on ingredients

3.1 Substances:

Name (REACH Registration No)	CAS No EC No	Conc.	Classification according to DSD/ DPD	Classification according to CLP	Note	Remark
2-chlorobenzaldehyde (01-2119458949-15)	89-98-5 201-956-3		C; R34 R43	Skin Corr. 1B; H314 Skin Sens. 1; H317	(1)	Mono-constituent

(1) For R-phrases and H-statements in full: see heading 16

3.2 Mixtures:

Not applicable

SECTION 4: First aid measures

4.1 Description of first aid measures:

General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Wash immediately with lots of water (15 minutes)/shower. Remove clothing while washing. Do not apply (chemical) neutralizing agents. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface >10%: take victim to hospital.

After eye contact:

Rinse immediately with plenty of water for 15 minutes. Do not apply neutralizing agents. Take victim to an ophthalmologist.

After ingestion:

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Immediately consult a doctor/medical service.

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

4.2.1 Acute symptoms

After inhalation:

Irritation of the respiratory tract. Irritation of the nasal mucous membranes.

After skin contact:

Caustic burns/corrosion of the skin.

After eye contact:

Corrosion of the eye tissue.

After ingestion:

No effects known.

4.2.2 Delayed symptoms

No effects known.

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

If applicable and available it will be listed below.

SECTION 5: Firefighting measures

5.1 Extinguishing media:

5.1.1 Suitable extinguishing media:

Water spray. Polyvalent foam. Alcohol-resistant foam. BC powder. Carbon dioxide.

5.1.2 Unsuitable extinguishing media:

No unsuitable extinguishing media known.

5.2 Special hazards arising from the substance or mixture:

On burning: release of toxic and corrosive gases/vapours (phosgene, hydrogen chloride, carbon monoxide - carbon dioxide).

5.3 Advice for firefighters:

5.3.1 Instructions:

Cool tanks/drums with water spray/remove them into safety. Use water moderately and if possible collect or contain it. Take account of toxic fire-fighting water. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water.

5.3.2 Special protective equipment for fire-fighters:

Heat/fire exposure: compressed air/oxygen apparatus. Gloves. Face-shield. Corrosion-proof suit. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

No naked flames. Large spills/in confined spaces: consider evacuation.

6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

6.1.2 Protective equipment for emergency responders

Gloves. Face-shield. Corrosion-proof suit. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit.

Suitable protective clothing

See heading 8.2

6.2 Environmental precautions:

Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Prevent soil and water pollution. Prevent spreading in sewers.

6.3 Methods and material for containment and cleaning up:

Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite or kieselguhr. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4 Reference to other sections:

See heading 13.

SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

7.1 Precautions for safe handling:

Use earthed equipment. Keep away from naked flames/heat. At temp > flashpoint: use spark-/explosionproof appliances. Finely divided: spark- and explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Gas/vapour heavier than air at 20°C. Observe strict hygiene. Keep container tightly closed. Remove contaminated clothing immediately. Do not discharge the waste into the drain.

7.2 Conditions for safe storage, including any incompatibilities:

7.2.1 Safe storage requirements:

Provide for a tub to collect spills. May be stored under nitrogen. Meet the legal requirements. Store in a dry area. Store in a dark area. Ventilation at floor level. Keep locked up. 20 - 40 °C.

7.2.2 Keep away from:

Water/moisture, (strong) bases, reducing agents, oxidizing agents, heat sources.

7.2.3 Suitable packaging material:

Glass, steel with plastic inner lining, HDPE.

7.2.4 Non suitable packaging material:

No data available

7.3 Specific end use(s):

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer .

SECTION 8: Exposure controls/personal protection

8.1 Control parameters:

8.1.1 Occupational exposure

a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

b) National biological limit values

If limit values are applicable and available these will be listed below.

8.1.2 Sampling methods

If applicable and available it will be listed below.

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 DNEL/PNEC values

If applicable and available it will be listed below.

8.1.5 Control banding

If applicable and available it will be listed below.

8.2 Exposure controls:

This safety data sheet is consistent with the specific conditions relied on to justify the registration in accordance with Article 17 or 18 of Regulation (EC) No. 1907/2006.
Following general controls are applicable: Comply with the legal requirements. Rigorous containment by technical means during the whole lifecycle. Procedural and control technologies in place to minimize emissions and exposure. Restricted to properly trained and authorized personnel. Special operating procedures in case of cleaning and maintenance. Procedural and/or control technologies in case of accident and waste generation. Handling procedures well documented and strictly supervised.

8.2.1 Appropriate engineering controls

Use earthed equipment. Keep away from naked flames/heat. At temp > flashpoint: use spark-/explosionproof appliances. Finely divided: spark- and explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Carry operations in the open/under local exhaust/ ventilation or with respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

Observe strict hygiene. Keep container tightly closed. Do not eat, drink or smoke during work.

a) Respiratory protection:

High gas/vapour concentration: gas mask with filter type A.

b) Hand protection:

Gloves.

Materials	Breakthrough time	Thickness
butyl rubber	>8 h	0.30 mm
viton	>8 h	0.70 mm

c) Eye protection:

Face shield.

d) Skin protection:

Corrosion-proof clothing.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties:

Physical form	Liquid
Odour	Irritating/pungent odour
Odour threshold	No data available
Colour	Colourless to light yellow
Particle size	Not applicable (liquid)
Explosion limits	No data available
Flammability	No data available on direct fire hazard
Log Kow	2.44 ; Experimental value ; OECD 117: Partition Coefficient (n-octanol/water), HPLC method ; 25 °C
Dynamic viscosity	No data available
Kinematic viscosity	No data available
Melting point	11.9 °C
Boiling point	213.6 °C ; 1013 hPa
Flash point	97 °C ; 1013 hPa
Evaporation rate	No data available
Vapour pressure	0.46 hPa ; 20 °C
Relative vapour density	4.9

Solubility	water ; 1.47 g/l ; 20 °C
Relative density	1.2481 ; 20 °C
Decomposition temperature	> 500 °C
Auto-ignition temperature	360 °C ; 1013 hPa
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	3.7 ; 0.03 %

Physical hazards

No physical hazard class

9.2 Other information:

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity:

Temperature above flashpoint: higher fire/explosion hazard. Substance has acid reaction.

10.2 Chemical stability:

Unstable on exposure to moisture. Unstable on exposure to air. Unstable on exposure to light.

10.3 Possibility of hazardous reactions:

Oxidizes slowly on exposure to air. Reacts exothermically with many compounds e.g.: with (some) bases, with (strong) oxidizers and with (strong) reducers.

10.4 Conditions to avoid:

Use earthed equipment. Keep away from naked flames/heat. At temp > flashpoint: use spark-/explosionproof appliances. Finely divided: spark- and explosionproof appliances. Finely divided: keep away from ignition sources/sparks.

10.5 Incompatible materials:

Oxidizing agents, reducing agents, (strong) bases, water/moisture, heat sources.

10.6 Hazardous decomposition products:

On burning: release of toxic and corrosive gases/vapours (phosgene, hydrogen chloride, carbon monoxide - carbon dioxide).

SECTION 11: Toxicological information

11.1 Information on toxicological effects:

11.1.1 Test results

Acute toxicity

2-chlorobenzaldehyde

Route of exposure	Parameter	Method	Value	Exposure time	Species	Gender	Value determination
Oral	LD50	OECD 401	3150 mg/kg bw		Rat	Female	Experimental value
Oral	LD50	OECD 401	>=3150-<=5000 mg/kg bw		Rat	Male	Experimental value
Inhalation (vapours)	LC50	OECD 403	> 1.203 mg/l	4 h	Rat	Male/female	Experimental value

Corrosion/irritation

2-chlorobenzaldehyde

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination
Eye	Not irritating	OECD 405			Rabbit	Experimental value
Skin	Corrosive	OECD 404			Rabbit	Experimental value

Conclusion

Corrosive to the skin

Respiratory or skin sensitisation

2-chlorobenzaldehyde

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Gender	Value determination
Skin	Sensitizing	OECD 429			Mouse		Experimental value

Conclusion

May cause an allergic skin reaction.

Specific target organ toxicity

2-chlorobenzaldehyde

No data available

Conclusion

No data available

Mutagenicity (in vitro)

2-chlorobenzaldehyde

Result	Method	Test substrate	Effect	Value determination
Negative	Ames test	Bacteria (S.typhimurium)		Experimental value
Negative	Micronucleus test	Chinese hamster lung fibroblasts		Experimental value

Mutagenicity (in vivo)

2-chlorobenzaldehyde

Result	Method	Exposure time	Test substrate	Gender	Organ	Value determination
Negative	Micronucleus test		Mouse	Male		Experimental value

Carcinogenicity

2-chlorobenzaldehyde

No data available

Reproductive toxicity

2-chlorobenzaldehyde

No data available

Conclusion CMR

Not classified for carcinogenicity

Not classified for mutagenic or genotoxic toxicity

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

2-chlorobenzaldehyde

No data available

Conclusion

No data available

SECTION 12: Ecological information

12.1 Toxicity:

2-chlorobenzaldehyde

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	OECD 203	14.83 mg/l	96 h	Brachydanio rerio	STATIC SYSTEM	Fresh water	Experimental value
Acute toxicity invertebrates	EC50	OECD 202	30 mg/l	24 h	Daphnia magna	STATIC SYSTEM	Fresh water	Experimental value
Toxicity algae and other aquatic plants	EC50	OECD 201	16.8 mg/l	72 h	Desmodesmus subspicatus	STATIC SYSTEM	Fresh water	Experimental value
Toxicity algae and other aquatic plants	NOEC	OECD 201	2.25 mg/l	72 h	Desmodesmus subspicatus	STATIC SYSTEM	Fresh water	Experimental value
Toxicity aquatic micro-organisms	EC50	OECD 209	132 mg/l	3 h	Bacteria	STATIC SYSTEM	Fresh water	Experimental value

12.2 Persistence and degradability:

2-chlorobenzaldehyde

Biodegradation water

Method	Value	Duration	Value determination
OECD 301C: Modified MITI Test (I)	63 %	20 day(s)	Experimental value
OECD 302B: Inherent Biodegradability: Zahn-Wellens/EMPA Test	100 %	13 day(s)	Experimental value
OECD 302B: Inherent Biodegradability: Zahn-Wellens/EMPA Test	> 95 %	10 day(s)	Experimental value

Conclusion

Readily biodegradable in water

Inherently biodegradable

12.3 Bioaccumulative potential:

2-chlorobenzaldehyde

Log Kow

Method	Value	Temperature	Value determination
OECD 117: Partition Coefficient (n-octanol/water), HPLC method	2.44	25 °C	Experimental value

Conclusion

Low potential for bioaccumulation (Log Kow <=3)

12.4 Mobility in soil:

2-chlorobenzaldehyde

Volatile organic compounds (VOC)	100 %

12.5 Results of PBT and vPvB assessment:

Substance does not meet the screening criteria for persistency nor bioaccumulation so is neither PBT nor vPvB.

12.6 Other adverse effects:

2-chlorobenzaldehyde

Global warming potential (GWP)

No data available

Ozone-depleting potential (ODP)

Ozone layer	Not dangerous for the ozone layer (Council Regulation (EC) no 1005/2009)

SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

13.1 Waste treatment methods:

13.1.1 Provisions relating to waste

Waste material code (Directive 2008/98/EC, decision 2001/118/EC).
16 03 05* (organic wastes containing dangerous substances). Depending on branch of industry and production process, also other EURAL codes may be applicable. Hazardous waste according to Directive 2008/98/EC.

13.1.2 Disposal methods

Recycle/reuse. Remove to an incinerator for chlorinated waste materials with energy recovery. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Do not discharge into drains or the environment.

13.1.3 Packaging/Container

Waste material code packaging (Directive 2008/98/EC).
15 01 10* (packaging containing residues of or contaminated by dangerous substances).

SECTION 14: Transport information

Road (ADR)

14.1 UN number:

UN number	3265

14.2 UN proper shipping name:

Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.

Techn./chem. name ADR	2-chlorobenzaldehyde

14.3 Transport hazard class(es):

Hazard identification number	80
Class	8
Classification code	C3

14.4 Packing group:

Packing group	II
Labels	8

14.5 Environmental hazards:

Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	274
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

Rail (RID)

14.1 UN number:

UN number	3265

14.2 UN proper shipping name:

Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Techn./chem. name RID	2-chlorobenzaldehyde

14.3 Transport hazard class(es):

Hazard identification number	80
Class	8
Classification code	C3

14.4 Packing group:

Packing group	II
Labels	8

14.5 Environmental hazards:

Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	274
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

Inland waterways (ADN)

14.1 UN number:

UN number	3265

14.2 UN proper shipping name:

Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Techn./chem. name ADN	2-chlorobenzaldehyde

14.3 Transport hazard class(es):

Class	8
Classification code	C3

14.4 Packing group:

Packing group	II
Labels	8

14.5 Environmental hazards:

Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	274
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

Sea (IMDG)

14.1 UN number:

UN number	3265

14.2 UN proper shipping name:

Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Techn./chem. name IMO	2-chlorobenzaldehyde

14.3 Transport hazard class(es):

Class	8

14.4 Packing group:

Packing group	II
Labels	8

14.5 Environmental hazards:

Marine pollutant	-
Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	274
Limited quantities	

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:

Annex II of MARPOL 73/78	

Air (ICAO-TI/IATA-DGR)

14.1 UN number:

UN number	3265

14.2 UN proper shipping name:

Proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Techn./chem. name ICAO	2-chlorobenzaldehyde

14.3 Transport hazard class(es):

Class	8

14.4 Packing group:

Packing group	II
Labels	8

14.5 Environmental hazards:

Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	A3
Cargo transport: maximum net quantity per packaging	30 L
Passenger and cargo transport: limited quantities: maximum net quantity per packaging	0.5 L

SECTION 15: Regulatory information

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

National legislation

- The Netherlands

Waterbezwaarlijkheid (for NL)	9
Waste identification other lists of waste materials	LWCA (the Netherlands): KGA category 04

- Germany

WGK	1	Classification water polluting based on the R-phrases in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 3)

15.2 Chemical safety assessment:

No chemical safety assessment is required; registered as an isolated intermediate. This safety data sheet is consistent with the specific conditions relied on to justify the registration in accordance with Article 17 or 18 of Regulation (EC) No. 1907/2006.

SECTION 16: Other information

Labelling according to Directive 67/548/EEC-1999/45/EC (DSD/DPD)

Enumerated in substance list Annex I of directive 67/548/EEC and extended with additional risk phrases

Labels

C

R-phrases

34	Causes burns
43	May cause sensitisation by skin contact

S-phrases

(01/02)	(Keep locked up and out of the reach of children)

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)

Full text of any R-phrases referred to under headings 2 and 3:

R34 Causes burns

R43 May cause sensitisation by skin contact

Full text of any H-statements referred to under headings 2 and 3:

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

(*) = INTERNAL CLASSIFICATION BY BIG

PBT-substances = persistent, bioaccumulative and toxic substances

DSD Dangerous Substance Directive

DPD Dangerous Preparation Directive

CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)