SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended by Commission Regulation (EU) 2020/878

Version 6.10
Revision Date 24.12.2025
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GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

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

1.1 Product identifiers

Product name : Phenol

Product Number : P5566
Brand : Sigma-Aldrich
Index-No. : 604-001-00-2
REACH No. : 01-2119471329-32-XXXX
CAS-No. : 108-95-2

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

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Merck Life Science S.A.S
80 Rue de Luzais
F-38297 SAINT QUENTIN FALLAVIER CEDEX

Telephone : +33 (0)1 85 16 94 34
E-mail address : servicetechnique@merckgroup.com

1.4 Emergency telephone number

Emergency Phone # : +33 (0)9 75 18 14 07 (CHEMTREC)
+33 (0)1 45 42 59 59 (I.N.R.S.)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Acute toxicity, Category 3	H301: Toxic if swallowed.
Acute toxicity, Category 3	H331: Toxic if inhaled.
Acute toxicity, Category 3	H311: Toxic in contact with skin.
Skin corrosion, Sub-category 1B	H314: Causes severe skin burns and eye damage.

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Serious eye damage, Category 1	H318: Causes serious eye damage.
Germ cell mutagenicity, Category 2	H341: Suspected of causing genetic defects.
Specific target organ toxicity - repeated exposure, Category 2, Nervous system, Kidney, Liver, Skin	H373: May cause damage to organs through prolonged or repeated exposure.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements :

H301 + H311 + H331	Toxic if swallowed, in contact with skin or if inhaled.
H314	Causes severe skin burns and eye damage.
H341	Suspected of causing genetic defects.
H373	May cause damage to organs (Nervous system, Kidney, Liver, Skin) through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P260	Do not breathe dust.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Reduced Labelling (<= 125 ml)

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Hazard pictograms :



Signal word	Danger
Hazard Statements	
H341	Suspected of causing genetic defects.
H314	Causes severe skin burns and eye damage.
H301 + H311 + H331	Toxic if swallowed, in contact with skin or if inhaled.
Precautionary Statements	
P260	Do not breathe dust.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

2.3 Other hazards

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.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name : Hydroxybenzene

Index-No. : 604-001-00-2

EC-No. : 203-632-7

Components

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Chemical name	CAS-No. EC-No.	Concentration (% w/w)	M-Factor, SCL, ATE
Phenol	108-95-2 203-632-7	>= 90 - <= 100	specific concentration limit Skin Corr. 1B; H314 >= 3 % Skin Irrit. 2; H315 1 - < 3 % Eye Irrit. 2; H319 1 - < 3 % Acute toxicity estimate Acute oral toxicity: 100,1 mg/kg Acute inhalation toxicity (dust/mist): 0,51 mg/l Acute dermal toxicity: 660 mg/kg

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : First aiders need to protect themselves.
Show this safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air. Immediately call in physician.
If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact : After contact with skin: rinse out with polyethylene glycol 400 or a mixture of polyethylene glycol 300/ethanol 2:1 and wash with plenty of water. If neither is available wash with plenty of water.
Immediately take off contaminated clothing.
Call a physician immediately.

In case of eye contact : After eye contact: rinse out with plenty of water.
Immediately call in ophthalmologist.
Remove contact lenses.

If swallowed : If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available

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within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.
Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Water Foam Carbon dioxide (CO2) Dry powder
Unsuitable extinguishing media	:	For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting	:	Combustible. Vapours are heavier than air and may spread along floors. Forms explosive mixtures with air on intense heating. Development of hazardous combustion gases or vapours possible in the event of fire.
Hazardous combustion products	:	Carbon oxides

5.3 Advice for firefighters

Special protective equipment for fire-fighters	:	Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
Further information	:	Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances.

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Avoid substance contact.
Ensure adequate ventilation.
Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

6.2 Environmental precautions

Environmental precautions : Do not let product enter drains.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10).
Take up carefully. Dispose of properly. Clean up affected area.
Avoid generation of dusts.

6.4 Reference to other sections

For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Work under hood. Do not inhale substance/mixture.

Advice on protection against fire and explosion : Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures : Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Further information on storage conditions : Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorised persons.

Storage class (TRGS 510) : 6.1A, Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

Recommended storage temperature : 2 - 8 °C

Further information on storage stability : Handle and store under inert gas.
Light sensitive.

7.3 Specific end use(s)

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Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006

Substance name	Environmental Compartment	Value
Hydroxybenzene	Fresh water	0,0077 mg/l
	Marine water	0,00077 mg/l
	Fresh water sediment	0,0915 mg/kg
	Marine sediment	0,00915 mg/kg
	Soil	0,136 mg/kg
	Sewage treatment plant	2,1 mg/l

8.2 Exposure controls

Personal protective equipment

Eye/face protection : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Tightly fitting safety goggles

Hand protection

Material	:	Viton®
Break through time	:	480 min
Glove thickness	:	0,7 mm
Protective index	:	Full contact
Manufacturer	:	Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Material	:	Viton®
Break through time	:	480 min
Glove thickness	:	0,7 mm
Protective index	:	Splash contact
Manufacturer	:	Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Remarks : This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Skin and body protection : Flame retardant antistatic protective clothing.

Respiratory protection : required when dusts/vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying

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standards relating to the used respiratory protection system.

Recommended Filter type: : Filter A-(P3)

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.
These measures have to be properly documented.

Environmental exposure controls

Advice : Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	solid
Color	:	No data available
Odor	:	stinging
Odor Threshold	:	0,005 ppm
Melting point/ range	:	38 °C
Boiling point/boiling range	:	181,8 °C (1.013 hPa)
Flammability	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	81 °C(ca. 1.013 hPa) Method: DIN 51758, closed cup
Autoignition temperature	:	715 °C
Decomposition temperature	:	No data available
pH	:	6,0
Viscosity		
Viscosity, dynamic	:	3,437 Pas (50,00 °C)

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Viscosity, kinematic	:	No data available
Flow time	:	No data available
Solubility(ies) Water solubility	: :	 87 g/l (25 °C)
Partition coefficient: n-octanol/water	:	log Pow: 1,47 (30 °C) pH: 3 - 8 (ECHA) Bioaccumulation is not expected.
Vapor pressure	:	0,53 hPa (20,0 °C)
Relative density	:	No data available
Density	:	1,13 g/cm3 (25 °C) Method: DIN 51757
Relative vapour density	:	3,2 (20 °C) (Air = 1.0)

9.2 Other information

Explosives	:	Not classified as explosive.
Oxidizing properties	:	none
Burning rate	:	No data available
Self-ignition	:	715 °C ca. 1.013 hPa
Evaporation rate	:	No data available
Surface tension	:	38,2 mN/m, 50,0 °C
Molecular weight	:	94,11 g/mol

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SECTION 10: Stability and reactivity

10.1 Reactivity

Forms explosive mixtures with air on intense heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .
Contains the following stabiliser(s):
Hypophosphorous acid(0,15 %)

10.3 Possibility of hazardous reactions

Hazardous reactions : Exothermic reaction with:

Aluminium
Aldehydes
halogens
hydrogen peroxide
iron(III) compounds
Oxidizing agents
Strong acids
Strong bases
formaldehyde
Risk of explosion with:

nitrites
nitrates
salts of oxyhalogenic acids
peroxi compounds

10.4 Conditions to avoid

Conditions to avoid : Strong heating.

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Acute toxicity estimate Oral - 100,1 mg/kg
(Calculation method)
Acute toxicity estimate Oral - 100,1 mg/kg
(Expert judgement)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Acute toxicity estimate Inhalation - 4 h - 0,51 mg/l - dust/mist(Calculation method)

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Acute toxicity estimate Inhalation - 4 h - 0,51 mg/l - dust/mist

(Expert judgement)
Symptoms: Irritation, Lung oedema
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Acute toxicity estimate Dermal - 660 mg/kg
(Calculation method)
LD50 Dermal - Rat - female - 660 mg/kg
(OECD Test Guideline 402)
Acute toxicity estimate Dermal - 660 mg/kg
(ATE value derived from LD50/LC50 value)

Skin corrosion/irritation
Skin - In vitro study
Result: Causes burns.
(OECD Test Guideline 431)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Corrosive
(OECD Test Guideline 405)
Remarks: Causes serious eye damage.
Risk of blindness!

Respiratory or skin sensitization
Sensitisation test: - Guinea pig
Result: negative
Remarks: (IUCLID)

Germ cell mutagenicity
Suspected of causing genetic defects.
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster ovary cells
Metabolic activation: Metabolic activation
Method: OECD Test Guideline 473
Result: positive
Test Type: Mutagenicity (mammal cell test): micronucleus.
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: positive

Carcinogenicity
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
May cause damage to organs through prolonged or repeated exposure.
- Nervous system, Kidney, Liver, Skin
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

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Aspiration hazard
No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Circulatory collapse, tachypnea, paralysis, Convulsions, Coma., necrosis of mouth and G.I. Tract, Jaundice, respiratory failure, cardiac arrest
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Phenol:

Toxicity to fish	:	LC50 (Onchorhynchus clarki): 8,9 mg/l Exposure time: 96 h Test Type: flow-through test Analytical monitoring: yes Method: US-EPA
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Ceriodaphnia dubia (water flea)): 3,1 mg/l End point: Immobilization Exposure time: 48 h Test Type: static test Analytical monitoring: yes Method: US-EPA
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (algae)): 61,1 mg/l Exposure time: 96 h Test Type: static test Method: US-EPA
Toxicity to microorganisms	:	IC50 (microorganisms): 21 mg/l Exposure time: 24 h Test Type: static test Remarks: (ECHA)

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Toxicity to fish (Chronic toxicity)	:	NOEC: 0,077 mg/l Exposure time: 60 d Species: Fish Test Type: semi-static test Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0,16 mg/l End point: Growth inhibition Exposure time: 16 d Species: Daphnia magna (Water flea) Test Type: semi-static test Remarks: (ECHA)

12.2 Persistence and degradability

Components:

Phenol:

Biodegradability	:	Test Type: aerobic Inoculum: activated sludge Concentration: 100 mg/l Result: Readily biodegradable. Biodegradation: 62 % Exposure time: 100 h Method: OECD Test Guideline 301C

12.3 Bioaccumulative potential

Components:

Phenol:

Bioaccumulation	:	Species: Danio rerio (zebra fish) Exposure time: 5 h Temperature: 25 °C Concentration: 2 mg/l Bioconcentration factor (BCF): 17,5 Method: OECD Test Guideline 305 Remarks: Does not bioaccumulate.
Partition coefficient: n-octanol/water	:	log Pow: 1,47 (30 °C) pH: 3 - 8 Remarks: (ECHA) Bioaccumulation is not expected.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

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.

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Components:

Phenol:

Assessment : Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

No data available

12.7 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

14.1 UN number or ID number

ADR : UN 1671

IMDG : UN 1671

IATA : UN 1671

14.2 UN proper shipping name

ADR : PHENOL, SOLID

IMDG : PHENOL, SOLID

IATA : Phenol, solid

14.3 Transport hazard class(es)

	Class	Subsidiary risks

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ADR	:	6.1
IMDG	:	6.1
IATA	:	6.1

14.4 Packing group

ADR

Packing group	:	II
Classification Code	:	T2
Hazard Identification Number	:	60
Labels	:	6.1
Tunnel restriction code	:	(D/E)

IMDG

Packing group	:	II
Labels	:	6.1
EmS Code	:	F-A, S-A

IATA (Cargo)

Packing instruction (cargo aircraft)	:	676
Packing instruction (LQ)	:	Y644
Packing group	:	II
Labels	:	Division 6.1 - Toxic substances

IATA_P (Passenger)

Packing instruction (passenger aircraft)	:	669
Packing instruction (LQ)	:	Y644
Packing group	:	II
Labels	:	Division 6.1 - Toxic substances

14.5 Environmental hazards

ADR

Environmentally hazardous	:	yes

IMDG

Marine pollutant	:	yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

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REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Conditions of restriction for the following entries should be considered: Number on list 75: If you intend to use this product as tattoo ink, please contact your vendor.
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	:	Not applicable
Regulation (EU) No 2024/590 on substances that deplete the ozone layer	:	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast)	:	Not applicable
REACH - List of substances subject to authorisation (Annex XIV)	:	Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	H2	ACUTE TOXIC
	E2	ENVIRONMENTAL HAZARDS

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

H314	:	Causes severe skin burns and eye damage.
H315	:	Causes skin irritation.
H319	:	Causes serious eye irritation.

Full text of other abbreviations

Skin Corr.	:	Skin corrosion
Skin Irrit.	:	Skin irritation
Eye Irrit.	:	Eye irritation

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; IARC -

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International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Other information	:	The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.
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REG_EU / EN

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Annex: Exposure scenario

Identified uses:

Use: Industrial use

SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
SU 3, SU9, SU 10: Industrial uses: Uses of substances as such or in preparations at industrial sites, Manufacture of fine chemicals, Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
PC19: Intermediate **PC21:** Laboratory chemicals
PROC1: Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC10:** Roller application or brushing **PROC15:** Use as laboratory reagent
ERC2, ERC6a, ERC6b: Formulation of preparations, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids

Use: Professional use

SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
PC21: Laboratory chemicals
PROC15: Use as laboratory reagent
ERC2, ERC6a, ERC6b: Formulation of preparations, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids

1. Short title of Exposure Scenario: Industrial use

Main User Groups	:	**SU 3**
Sectors of end-use	:	**SU 3, SU9, SU 10**
Chemical product category	:	**PC19, PC21**
Process categories	:	**PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC15**

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Environmental Release Categories : **ERC2, ERC6a, ERC6b:**

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC2

Daily amount per site (Msafe) : 4.078 kg

Environment factors not influenced by risk management

Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Other given operational conditions affecting environmental exposure

Number of emission days per year : 10
Emission or Release Factor: Air : 2,5 %
Emission or Release Factor: Water : 0,03 %
Emission or Release Factor: Soil : 0,01 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2.000 m3/d
Sludge Treatment : Can be landfilled, when in compliance with local regulations.

2.1 Contributing scenario controlling environmental exposure for: ERC6a

Daily amount for wide dispersive uses (Msafe) : 4.073 kg

Environment factors not influenced by risk management

Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Other given operational conditions affecting environmental exposure

Number of emission days per year : 20
Emission or Release Factor: Air : 5,0 %
Emission or Release Factor: Water : 0,03 %
Emission or Release Factor: Soil : 0,1 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2.000 m3/d
Sludge Treatment : Can be landfilled, when in compliance with local regulations.

2.1 Contributing scenario controlling environmental exposure for: ERC6b

Daily amount for wide dispersive uses (Msafe) : 1.630 kg

Environment factors not influenced by risk management

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Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100

Other given operational conditions affecting environmental exposure

Number of emission days per year	: 20
Emission or Release Factor: Air	: 0,1 %
Emission or Release Factor: Water	: 5,0 %
Emission or Release Factor: Soil	: 0,03 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	: Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	: 2.000 m3/d
Sludge Treatment	: Can be landfilled, when in compliance with local regulations.

2.4 Contributing scenario controlling worker exposure for: PROC1, PROC2

Product characteristics

Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Low volatile liquid
Process Temperature	: < 56 °C

Frequency and duration of use

Frequency of use	: < 8 hours/day
Frequency of use	: 5 days/week

Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor without local exhaust ventilation (LEV)

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374., Tightly fitting safety goggles

Additional good practice advice beyond the REACH Chemical Safety Assessment

Wear suitable coveralls to prevent exposure to the skin.

2.5 Contributing scenario controlling worker exposure for: PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15

Product characteristics

Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Low volatile liquid
Process Temperature	: < 56 °C

Frequency and duration of use

Frequency of use	: < 8 hours/day
Frequency of use	: 5 days/week

Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor with LEV and good general ventilation

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

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Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training., Tightly fitting safety goggles

Additional good practice advice beyond the REACH Chemical Safety Assessment
Wear suitable coveralls to prevent exposure to the skin.

2.6 Contributing scenario controlling worker exposure for: PROC10

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 25 %.
Physical Form (at time of use)	:	Low volatile liquid
Process Temperature	:	< 56 °C

Frequency and duration of use

Frequency of use	:	< 8 hours/day
Frequency of use	:	5 days/week

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor with LEV and good general ventilation

Organisational measures to prevent /limit releases, dispersion and exposure
Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training., Tightly fitting safety goggles

Additional good practice advice beyond the REACH Chemical Safety Assessment
Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR*
ERC2	ECETOC TRA		Water		4,078t/day	1
ERC6a	ECETOC TRA		Water		4,073t/day	1
ERC6b	ECETOC TRA		Water		1,63t/day	1

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR*
PROC1	ECETOC TRA 3	longterm, inhalative, systemic			< 0,01
PROC1	ECETOC TRA 3	longterm, dermal, systemic			< 0,01

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PROC1		longterm, combined, systemic			0,01
PROC2	ECETOC TRA 3	longterm, inhalative, systemic			0,49
PROC2	ECETOC TRA 3	longterm, dermal, systemic			0,22
PROC2		longterm, combined, systemic			0,71

*Risk characterisation ratio

PROC3	ECETOC TRA 3	longterm, inhalative, systemic			0,1
PROC3	ECETOC TRA 3	longterm, dermal, systemic			0,03
PROC3		longterm, combined, systemic			0,13
PROC4	ECETOC TRA 3	longterm, inhalative, systemic			0,17
PROC4	ECETOC TRA 3	longterm, dermal, systemic			0,28
PROC4		longterm, combined, systemic			0,45
PROC5	ECETOC TRA 3	longterm, inhalative, systemic			0,17
PROC5	ECETOC TRA 3	longterm, dermal, systemic			0,56
PROC5		longterm, combined, systemic			0,73
PROC8a	ECETOC TRA 3	longterm, inhalative, systemic			0,34
PROC8a	ECETOC TRA 3	longterm, dermal, systemic			0,56
PROC8a		longterm, combined, systemic			0,9
PROC8b	ECETOC TRA 3	longterm, inhalative, systemic			0,09
PROC8b	ECETOC TRA 3	longterm,			0,56

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		dermal, systemic			
PROC8b		longterm, combined, systemic			0,64
PROC9	ECETOC TRA 3	longterm, inhalative, systemic			0,17
PROC9	ECETOC TRA 3	longterm, dermal, systemic			0,28
PROC9		longterm, combined, systemic			0,45
PROC15	ECETOC TRA 3	longterm, inhalative, systemic			0,17
PROC15	ECETOC TRA 3	longterm, dermal, systemic			0,01
PROC15		longterm, combined, systemic			0,19

*Risk characterisation ratio

PROC10	ECETOC TRA 3	longterm, inhalative, systemic			0,21
PROC10	ECETOC TRA 3	longterm, dermal, systemic			0,67
PROC10		longterm, combined, systemic			0,87

*Risk characterisation ratio

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool ScIDeEx® at www.merckmillipore.com/scideex.
Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).
For scaling of environmental exposure assessments, please refer to the ECT tool at http://www.reachcentrum.eu/consortium/phenol-derivatives-reach-consortium-149.html

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1. Short title of Exposure Scenario: Professional use

Main User Groups	: **SU 22**
Sectors of end-use	: **SU 22**
Chemical product category	: **PC21**
Process categories	: **PROC15**
Environmental Release Categories	: **ERC2, ERC6a, ERC6b:**

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC2

Daily amount per site (Msafe) : 4.078 kg

Environment factors not influenced by risk management

Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100

Other given operational conditions affecting environmental exposure

Number of emission days per year	: 10
Emission or Release Factor: Air	: 2,5 %
Emission or Release Factor: Water	: 0,03 %
Emission or Release Factor: Soil	: 0,01 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	: Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	: 2.000 m3/d
Sludge Treatment	: Can be landfilled, when in compliance with local regulations.

2.1 Contributing scenario controlling environmental exposure for: ERC6a

Daily amount for wide dispersive uses (Msafe) : 4.073 kg

Environment factors not influenced by risk management

Dilution Factor (River)	: 10
Dilution Factor (Coastal Areas)	: 100

Other given operational conditions affecting environmental exposure

Number of emission days per year	: 20
Emission or Release Factor: Air	: 5,0 %
Emission or Release Factor:	: 0,03 %

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Water
Emission or Release Factor: Soil : 0,1 %

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2.000 m3/d
Sludge Treatment : Can be landfilled, when in compliance with local regulations.

2.1 Contributing scenario controlling environmental exposure for: ERC6b

Daily amount for wide dispersive uses (Msafe) : 1.630 kg

Environment factors not influenced by risk management
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Other given operational conditions affecting environmental exposure
Number of emission days per year : 20
Emission or Release Factor: Air : 0,1 %
Emission or Release Factor: Water : 5,0 %
Emission or Release Factor: Soil : 0,03 %

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2.000 m3/d
Sludge Treatment : Can be landfilled, when in compliance with local regulations.

2.4 Contributing scenario controlling worker exposure for: PROC15

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Low volatile liquid
Process Temperature : < 56 °C

Frequency and duration of use
Frequency of use : < 8 hours/day
Frequency of use : 5 days/week

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor with local exhaust ventilation (LEV)

Organisational measures to prevent /limit releases, dispersion and exposure
Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., Tightly fitting safety goggles

Additional good practice advice beyond the REACH Chemical Safety Assessment
Wear suitable coveralls to prevent exposure to the skin.

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3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR*
ERC2	ECETOC TRA		Water		4,078t/day	1
ERC6a	ECETOC TRA		Water		4,073t/day	1
ERC6b	ECETOC TRA		Water		1,63t/day	1

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR*
PROC15	ECETOC TRA 3	longterm, inhalative, systemic			0,49
PROC15	ECETOC TRA 3	longterm, dermal, systemic			0,06
PROC15		longterm, combined, systemic			0,55

*Risk characterisation ratio

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool ScIDeEx® at www.merckmillipore.com/scideex.
Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).
For scaling of environmental exposure assessments, please refer to the ECT tool at http://www.reachcentrum.eu/consortium/phenol-derivatives-reach-consortium-149.html

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