

SAFETY DATA SHEET

according to the OSHA
Hazard Communication Standard

Version 6.14
Revision Date 08/12/2026
Print Date 08/12/2026

SECTION 1. IDENTIFICATION

1.1 Product identifiers

Product name : Phenol solution

Product Number : P4682
Brand : Sigma
Index-No. : 604-001-00-2
CAS-No. : 108-95-2

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

Identified uses : Laboratory chemicals, Synthesis of substances

Restrictions on use : Not Available

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
SPRUCE ST 3050
63103 St. Louis

Telephone : (314) 771-5765
Telefax: (800) 325-5052

1.4 Emergency telephone number

Emergency Phone # : 800 424 9300 (CHEMTREC) 24/7
+1 703 527 3887 (CHEMTREC) 24/7

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Hazards for the product as supplied

Acute toxicity (Oral) : Category 3

Acute toxicity : Category 3

Sigma - P4682

Page 1 of 18

(Inhalation)

Acute toxicity (Dermal)	: Category 3
Skin corrosion	: Sub-category 1B
Serious eye damage	: Category 1
Germ cell mutagenicity	: Category 2
Specific target organ toxicity - repeated exposure	: Category 2 (Nervous system, Kidney, Liver, Skin)
Short-term (acute) aquatic hazard	: Category 2
Long-term (chronic) aquatic hazard	: Category 2

Other hazards

None known.

GHS label elements

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.

Supplemental Hazard Statements : Corrosive to the respiratory tract.

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.

P301 + P330 + P331 + P310 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/ doctor.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Immediately call a POISON CENTER/ doctor.

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

P361 + P364 Take off immediately all contaminated clothing and wash it before reuse.

P391 Collect spillage.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

CAS-No. : 108-95-2

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
Phenol	108-95-2*	$\geq 80 - \leq 100$	TSC
citric acid	77-92-9*	$\geq 3 - \leq 7$	TSC

* Indicates that the identifier is a CAS No.

SECTION 4. 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 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.
Most important symptoms and effects, both acute and delayed	: The most important known symptoms and effects are described in the labelling (see section 2 GHS label elements) and/or in section 11
Protection of first-aiders	: For personal protection see section 8.
Notes to physician	: No data available

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Foam Carbon dioxide (CO ₂) Dry powder
Unsuitable extinguishing media	: For this substance/mixture no limitations of extinguishing agents are given.

Specific hazards during fire fighting : Combustible.

Development of hazardous combustion gases or vapours possible in the event of fire.

Hazardous combustion products : Carbon oxides

Specific extinguishing methods : No data available

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

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.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Advice for non-emergency personnel:
Do not breathe vapours, aerosols.
Avoid substance contact.
Ensure adequate ventilation.
Evacuate the danger area, observe emergency procedures, consult an expert.
Advice for emergency responders:
Wear appropriate personal protective equipment, as indicated in Section 8.

Environmental precautions : Do not let product enter drains.

Methods and materials for containment and cleaning up : Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

SECTION 7. HANDLING AND STORAGE

For precautions see section 2 GHS label elements

Advice on safe handling : Work under hood. Do not inhale substance/mixture.
Avoid generation of vapours/aerosols.

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

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

Recommended storage temperature : 36 - 46 °F / 2 - 8 °C

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Phenol	108-95-2	TWA	5 ppm	ACGIH
		TWA	5 ppm 19 mg/m ³	NIOSH REL
		C	15.6 ppm 60 mg/m ³	NIOSH REL
		TWA	5 ppm 19 mg/m ³	OSHA Z-1

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Phenol	108-95-2	Phenol	Urine	End of shift (As soon as possible after exposure ceases)	250 mg/g creatinine	ACGIH BEI

Engineering measures : No data available

Personal protective equipment

Respiratory protection : required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type ABEK

The entrepreneur 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.

Hand protection

Material : butyl-rubber
Break through time : 480 min
Glove thickness : 0.3 mm
Protective index : Full contact
Manufacturer : Butoject® (KCL 897 / Aldrich Z677647, Size M)

Material : Nitrile rubber
Break through time : 60 min
Glove thickness : 0.11 mm
Protective index : Splash contact
Manufacturer : Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

Manufacturer : data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

Remarks : Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as

offering an approval for any specific use scenario.

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: No data available
Odour	: No data available
Odour Threshold pH	: No data available : ca. 4.3
Melting point	: No data available
Boiling point/boiling range	: No data available
Flash point	: No data available
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Flammability (liquids)	: No data available
Burning rate	: No data available
Upper explosion limit / Upper flammability limit	: No data available
Lower explosion limit / Lower flammability limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: No data available

Density	: No data available
Water solubility	: No data available
Partition coefficient: n-octanol/water	: No data available
Autoignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, dynamic	: No data available
Viscosity, kinematic	: No data available
Flow time	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Molecular weight	: 94.11 g/mol
Particle characteristics Particle size	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No data available
Chemical stability	: The product is chemically stable under standard ambient conditions (room temperature) .
Contains the following stabiliser(s):	: citric acid (<=5 %)
Possibility of hazardous reactions	: No data available
Conditions to avoid	: no information available
Incompatible materials	: No data available
Hazardous decomposition products	: For Hazardous combustion 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 - 105.37 mg/kg

(Calculation method)

Acute toxicity estimate Oral - 100.1 mg/kg (Phenol)

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute toxicity estimate Inhalation - 4 h - 0.5368 mg/l - dust/mist (Calculation method)

Acute toxicity estimate Inhalation - 4 h - 0.51 mg/l - dust/mist

(Phenol)

(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 - 685.22 mg/kg

(Calculation method)

LD50 Dermal - Rat - female - 660 mg/kg (Phenol)

(OECD Test Guideline 402)

No data available

Skin corrosion/irritation

Skin - In vitro study (Phenol)

Result: Causes burns.

(OECD Test Guideline 431)

Serious eye damage/eye irritation

Eyes - Rabbit (Phenol)

Result: Corrosive

(OECD Test Guideline 405)

Remarks: Causes serious eye damage.

Risk of blindness!

Respiratory or skin sensitization

Sensitisation test: - Guinea pig (Phenol)

Result: negative

Remarks: (IUCLID)

Germ cell mutagenicity

Suspected of causing genetic defects. (Phenol)

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

(Phenol)

Test system: Chinese hamster ovary cells

Metabolic activation: Metabolic activation

Method: OECD Test Guideline 473

Result: positive

Test Type: Mutagenicity (mammal cell test): micronucleus.

(Phenol)

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. (Phenol)

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

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)

Aspiration hazard

No data available

11.2 Additional Information

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 (Phenol)

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Phenol)

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence
(Phenol)

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

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 (<i>Ceriodaphnia dubia</i> (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 (<i>Pseudokirchneriella subcapitata</i> (algae)): 61.1 mg/l Exposure time: 96 h Test Type: static test Method: US-EPA
Toxicity to fish (Chronic toxicity)	: NOEC (Fish): 0.077 mg/l Exposure time: 60 d Test Type: semi-static test Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	: NOEC (<i>Daphnia magna</i> (Water flea)): 0.16 mg/l End point: Growth inhibition Exposure time: 16 d Test Type: semi-static test Remarks: (ECHA)
Toxicity to microorganisms	: IC50 (microorganisms): 21 mg/l Exposure time: 24 h Test Type: static test Remarks: (ECHA)

citric acid:

Toxicity to fish	: LC50 (<i>Leuciscus idus</i> (Golden orfe)): 440 - 760 mg/l Exposure time: 96 h Remarks: (IUCLID)
Toxicity to algae/aquatic plants	: NOEC (<i>Scenedesmus quadricauda</i> (Green algae)): 425 mg/l Exposure time: 8 h Test Type: static test Remarks: (ECHA)
Toxicity to microorganisms	: EC5 (<i>Pseudomonas putida</i>): > 10,000 mg/l Exposure time: 16 h Remarks: (maximum permissible toxic concentration) (Lit.)

Persistence and degradability

Components:

Phenol:

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

citric acid:

Biodegradability : aerobic
Result: Readily biodegradable.
Biodegradation: 97 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Biochemical Oxygen Demand (BOD) : 526 mg/g
Incubation time: 5 d
Remarks: (IUCLID)

Chemical Oxygen Demand (COD) : 728 mg/g
Remarks: (IUCLID)

Bioaccumulative potential

Components:

Phenol:

Bioaccumulation : Species: Danio rerio (zebra fish)
Bioconcentration factor (BCF): 17.5
Exposure time: 5 h
Temperature: 77 °F / 25 °C
Concentration: 2 mg/l
Method: OECD Test Guideline 305
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 1.47 (86 °F / 30 °C)
pH: 3 - 8
Remarks: (ECHA)
Bioaccumulation is not expected.

citric acid:

Partition coefficient: n-octanol/water : log Pow: -1.72 (68 °F / 20 °C)
Method: OECD Test Guideline 117
Remarks: Bioaccumulation is not expected.

Mobility in soil

No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part

Sigma - P4682

Page 13 of 18

82 Protection of Stratospheric Ozone - CAA Section
602 Class I Substances
Remarks: This product neither contains, nor was
manufactured with a Class I or Class II ODS as
defined by the U.S. Clean Air Act Section 602 (40 CFR
82, Subpt. A, App.A + B).

Components:

Phenol:

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

Endocrine disrupting properties

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : 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

International Regulations

IATA-DGR

UN/ID No. : UN 2821
Proper shipping name : Phenol solution
Class : 6.1
Packing group : II
Labels : Division 6.1 - Toxic substances
Packing instruction (cargo : 662
aircraft)
Packing instruction : 654
(passenger aircraft)

IMDG-Code

UN number : UN 2821
Proper shipping name : PHENOL SOLUTION

Class : 6.1
Packing group : II
Labels : 6.1
EmS Code : F-A, S-A
Marine pollutant : yes

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

National Regulations

49 CFR

UN/ID/NA number : UN 2821
Proper shipping name : Phenol solutions

Class : 6.1

Packing group : II
Labels : Division 6.1 - Toxic substances
ERG Code : 153
Marine pollutant : no
Poison Inhalation Hazard : No

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.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Phenol	108-95-2	1000	1052

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Phenol	108-95-2	1000	1052

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

Components	CAS-No.	Component TPQ (lbs)
Phenol	108-95-2	10000
Phenol	108-95-2	500*

*: Solid in the molten or powdered form (particles < 100 microns), in solution, or meeting the NFPA reactivity criteria

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Phenol 108-95-2 >= 90 - <= 100 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

Phenol	108-95-2	>= 90 - <= 100 %
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This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Phenol	108-95-2	>= 90 - <= 100 %
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Clean Water Act

The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 116.4A:

Phenol	108-95-2	>= 90 - <= 100 %
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The following Hazardous Chemicals are listed under the U.S. Clean Water Act, Section 311, Table 117.3:

Phenol	108-95-2	>= 90 - <= 100 %
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This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

Phenol	108-95-2	>= 90 - <= 100 %
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This product contains the following priority pollutants related to the U.S. Clean Water Act:

Phenol	108-95-2	>= 90 - <= 100 %
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US State Regulations

Massachusetts Right To Know

Phenol	108-95-2
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Pennsylvania Right To Know

Phenol	108-95-2
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Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Phenol	108-95-2
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Washington Chemicals of High Concern

Phenol	108-95-2
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The components of this product are reported in the following inventories:

US TSCA : All substances listed as active on the TSCA inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
OSHA Z-1	: USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	: 8-hour, time-weighted average
NIOSH REL / TWA	: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / C	: Ceiling value not be exceeded at any time.
OSHA Z-1 / TWA	: 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; ERG - Emergency Response Guide; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - 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); LSPN - List of Hazardous Notified Substances (Chile); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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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