SAFETY DATA SHEET

According to US Regulation 29 CFR 1910.1200 (HazCom 2012)

1. Identification

Product identifier: Phenol, Liquified

Other means of identification

Product No.: 0025, 0221, 0610, 2859, 2864, 2865

Recommended restrictions

Recommended use: For Laboratory, Research or Manufacturing Use.
Restrictions on use: Not determined.

Details of the supplier of the safety data sheet

Company Name:	Avantor Performance Materials, LLC
Address:	100 Matsonford Rd, Suite 200 Radnor, PA 19087
Telephone:	Customer Service: 855-282-6867
Contact Person:	Product Information Compliance
E-mail:	info@avantormaterials.com

Emergency telephone number:

CHEMTREC: 1-800-424-9300 within US and Canada (24 hrs/day, 7 days/week)

2. Hazard(s) identification

Hazard Classification

Physical Hazards

Flammable liquids	Category 4

Health Hazards

Acute toxicity (Oral)	Category 3
Acute toxicity (Dermal)	Category 3
Acute toxicity (Inhalation - vapor)	Category 3
Skin Corrosion/Irritation	Category 1B
Serious Eye Damage/Eye Irritation	Category 1
Germ Cell Mutagenicity	Category 2
Specific Target Organ Toxicity - Repeated Exposure	Category 2[1.]

Target Organs

1. Kidney, Liver, Skin, Central nervous system

Unknown toxicity - Health

Acute toxicity, oral	0 %
Acute toxicity, dermal	0 %
Acute toxicity, inhalation, vapor	88 %
Acute toxicity, inhalation, dust or mist	88 %

Environmental Hazards

Acute hazards to the aquatic environment	Category 1

Unknown toxicity - Environment

Acute hazards to the aquatic environment	0 %
Chronic hazards to the aquatic environment	88 %

Label Elements

Hazard Symbol:

Signal Word: Danger

Hazard Statement:
Combustible liquid.
Toxic if swallowed.
Toxic if inhaled.
Toxic in contact with skin.
Causes severe skin burns and eye damage.
Suspected of causing genetic defects.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life.

Precautionary Statements

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Wash hands thoroughly after handling. Avoid release to the environment.

Response: Immediately call a POISON CENTER/doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Collect spillage.

Storage: Store in a well-ventilated place. Keep cool. Store locked up.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC): None.

3. Composition/information on ingredients

Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Phenol	108-95-2	88.00 - 92.00%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

Ingestion: Call a physician or poison control center immediately. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Inhalation: Move to fresh air. Call a physician or poison control center immediately. If breathing stops, provide artificial respiration.

Skin Contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician or poison control center immediately. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Symptoms: Toxic if swallowed. Toxic in contact with skin. Toxic if inhaled. Corrosive to skin and eyes.

Hazards: None known.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: Combustible liquid and vapor.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media: Avoid water in straight hose stream; will scatter and spread fire.

Specific hazards arising from the chemical: Combustible liquid. Contact with strong oxidizers may cause fire. Heat may cause the containers to explode.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Keep upwind. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. See Section 8 of the SDS for Personal Protective Equipment.

Methods and material for containment and cleaning up: In case of leakage, eliminate all ignition sources. Take precautionary measures against static discharges. Stop leak if possible without any risk. Use non-sparking tools. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures: Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk. Inform authorities if large amounts are involved.

Environmental Precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling: DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Use personal protective equipment as required. Take action to prevent static discharges. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Avoid contact with eyes, skin, and clothing. Do not breathe mist or vapor. Do not taste or swallow. Do not eat, drink or smoke when using the product. Wear protective gloves/protective clothing/eye protection/face protection. Use only with adequate ventilation. Wash hands thoroughly after handling. See Section 8 of the SDS for Personal Protective Equipment.

Conditions for safe storage, including any incompatibilities: Keep away from food, drink and animal feeding stuffs. Keep container tightly closed. Keep in a cool, well-ventilated place. Store in a dry place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
Phenol	SKIN_DES	Can be absorbed through the skin.	US. ACGIH Threshold Limit Values (2011)
	TWA	5 ppm	US. ACGIH Threshold Limit Values (2011)
	REL	5 ppm 19 mg/m3	US. NIOSH: Pocket Guide to Chemical

				Hazards (2010)
	Ceil_Time	15.6 ppm	60 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	SKIN_DES	Can be absorbed through the skin.		US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	5 ppm	19 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	SKIN_DES	Can be absorbed through the skin.		US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	SKIN_FINAL	Can be absorbed through the skin.		US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	TWA	5 ppm	19 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	TWA	5 ppm	19 mg/m3	US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008)
	SKIN_DES	Can be absorbed through the skin.		US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008)
	AN ESL		5 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010)
	AN ESL		19 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (07 2011)
	TWA PEL	5 ppm	19 mg/m3	US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (08 2010)
	SKIN_DES	Can be absorbed through the skin.		US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (08 2010)
	ST ESL	Screening levels that have the odor designations represent the levels of constituents in the air at which the odor would be a nuisance.	150 µg/m3	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018)
	ST ESL	Screening levels that have the odor designations represent the levels of constituents in the air at which the odor would be a nuisance.	39 ppb	US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018)

Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
Phenol (Phenol with hydrolysis: Sampling time: End of shift.)	250 mg/g (Creatinine in urine)	ACGIH BEI (03 2013)

Appropriate Engineering Controls No data available.

Individual protection measures, such as personal protective equipment

General information: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.

Eye/face protection: Wear safety glasses with side shields (or goggles) and a face shield.

Skin Protection

Hand Protection:	Chemical resistant gloves
Other:	Wear suitable protective clothing and gloves.
Respiratory Protection:	In case of inadequate ventilation use suitable respirator.
Hygiene measures:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned. Provide eyewash station and safety shower.

9. Physical and chemical properties

Appearance

Physical state:	Liquid
Form:	Liquid
Color:	Colorless
Odor:	No data available.
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	182 °C
Flash Point:	79 °C (Pensky-Martens Closed Cup)
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	0.1 kPa
Vapor density:	No data available.
Density:	1.06 g/ml (20 °C)
Relative density:	1.06 (20 °C)
Solubility(ies)	
Solubility in water:	Soluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	715 °C
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Hazardous polymerization does not occur.
Conditions to avoid:	Heat, sparks, flames. Contact with incompatible materials.

Incompatible Materials: Strong oxidizing agents. Acids. Calcium hypochlorite. Aluminum.

Hazardous Decomposition Products: Thermal decomposition may release oxides of carbon. By heating and fire, irritating vapors/gases may be formed. By heating and fire, toxic vapors/gases may be formed.

11. Toxicological information

Information on likely routes of exposure

Inhalation: Toxic if inhaled.

Skin Contact: Toxic in contact with skin. Causes severe skin burns.

Eye contact: Causes serious eye damage.

Ingestion: Toxic if swallowed. May cause burns of the gastrointestinal tract if swallowed.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral
Product: ATEmix (Rat): 108.7 mg/kg

Dermal
Product: ATEmix (Rabbit) 923.91 mg/kg

Inhalation
Product: ATEmix (Rat, 4 h) 3.26 mg/l Vapour

Repeated dose toxicity
Product: No data available.

Skin Corrosion/Irritation
Product: Causes severe skin burns.

Serious Eye Damage/Eye Irritation
Product: Causes serious eye damage.

Respiratory or Skin Sensitization
Product: Not a skin nor a respiratory sensitizer.

Carcinogenicity
Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogenic components identified

Germ Cell Mutagenicity

In vitro
Product: Suspected of causing genetic defects.

In vivo
Product: Suspected of causing genetic defects.

Reproductive toxicity
Product: No data available.

Specific Target Organ Toxicity - Single Exposure
Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure
Product: Liver, Nervous System, Skin, Kidney - May cause damage to organs through prolonged or repeated exposure.

Target Organs
Specific Target Organ Toxicity - Repeated Exposure: Kidney, Liver, Skin, Central nervous system

Aspiration Hazard
Product: Not classified

Other effects: None known.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish
Product: No data available.

Specified substance(s):
Phenol — LC 50 (Fathead minnow (Pimephales promelas), 96 h): 20.5 - 70.6 mg/l
LC 50 (Bluegill (Lepomis macrochirus), 96 h): 11.5 - 31.49 mg/l
LC 50 (Guppy (Poecilia reticulata), 96 h): 31 - 53.68 mg/l

Aquatic Invertebrates
Product: No data available.

Specified substance(s):
Phenol — EC 50 (Water flea (Daphnia pulicaria), 48 h): 4.24 - 13 mg/l
EC 50 (Ceriodaphnia dubia, 48 h): 3.1 - 20 mg/l
LC 50 (Baetis rhodani, 48 h): 18.5 mg/l
LC 50 (Palaemonetes pugio, 48 h): 11 mg/l

Chronic hazards to the aquatic environment:

Fish
Product: No data available.

Specified substance(s):
Phenol — LC 50 (Oncorhynchus mykiss, 30 d): 0.08 mg/l
NOAEL (Pimephales promelas, 30 d): 0.75 mg/l

LOAEL (Pimephales promelas, 30 d): 2.5 mg/l

Aquatic Invertebrates

Product: No data available.

Specified substance(s):

Phenol
NOAEL (Daphnia magna, 11 d): 0.5 - 0.8 mg/l
LC 50 (Daphnia magna, 11 d): 4 mg/l
NOAEL (Daphnia magna, 21 d): < 0.1 mg/l
EC 50 (Daphnia magna, 21 d): 0.48 mg/l

Toxicity to Aquatic Plants

Product: No data available.

Specified substance(s):

Phenol: LC 50 (Duckweed (Lemna minor), 72 h): 1,500 mg/l

Persistence and Degradability

Biodegradation

Product: There are no data on the degradability of this product.

BOD/COD Ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow)

Product: No data available.

Specified substance(s):

Phenol: Log Kow: 1.46

Mobility in soil: The product is water soluble and may spread in water systems.

Other adverse effects: Very toxic to aquatic organisms.

13. Disposal considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws.

Contaminated Packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN Number:	UN 2821
UN Proper Shipping Name:	Phenol solutions
Transport Hazard Class(es)	
Class:	6.1
Label(s):	6.1
Packing Group:	II
Marine Pollutant:	No

Special precautions for user: Not determined.

IMDG

UN Number: UN 2821
UN Proper Shipping Name: PHENOL SOLUTION
Transport Hazard Class(es)
Class: 6.1
Label(s): 6.1
EmS No.: F-A, S-A
Packing Group: II
Marine Pollutant: No
Special precautions for user: Not determined.

IATA

UN Number: UN 2821
Proper Shipping Name: Phenol solution
Transport Hazard Class(es):
Class: 6.1
Label(s): 6.1
Packing Group: II
Marine Pollutant: No
Special precautions for user: Not determined.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
Phenol	1000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Skin Corrosion or Irritation
Serious eye damage or eye irritation
Germ Cell Mutagenicity
Specific target organ toxicity (single or repeated exposure)

SARA 302 Extremely Hazardous Substance

Chemical Identity	Reportable quantity	Threshold Planning Quantity
Phenol	1000 lbs.	- -- -

SARA 304 Emergency Release Notification

Chemical Identity	Reportable quantity
Phenol	1000 lbs.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
Phenol	500 lbs.

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
Phenol	10000 lbs.	25000 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3):

Chemical Identity	Reportable quantity
Phenol	Reportable quantity: 1000 lbs.

US State Regulations

US. California Proposition 65

No ingredient requiring a warning under CA Prop 65.

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity
Phenol

US. Massachusetts RTK - Substance List

Chemical Identity
Phenol

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity
Phenol

US. Rhode Island RTK

Chemical Identity
Phenol

International regulations

Montreal protocol

Not applicable

Stockholm convention

Not applicable

Rotterdam convention

Not applicable

Kyoto protocol

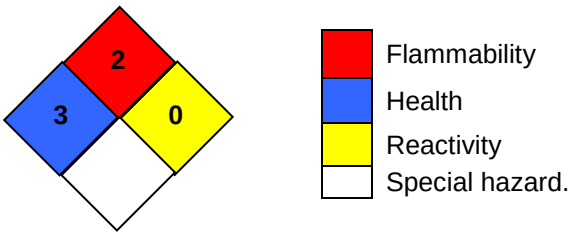
Not applicable

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Japan (ENCS) List:	On or in compliance with the inventory
Japan ISHL Listing:	Not in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Mexico INSQ:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Philippines PICCS:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory

16.Other information, including date of preparation or last revision

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date:	04-16-2021
Revision Information:	Not relevant.
Version #:	1.3
Source of information:	Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, information from the Toxicology Data Network (TOXNET), European Chemical Agency (ECHA) substance dossiers, IARC Monographs, US National Toxicology Program data, the Agency for Toxic Substances and Disease Registry, other manufacturer's SDSs and other sources, as appropriate.
Further Information:	No data available.

Disclaimer:

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