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

1.1 Product identifier

Trade name	:	Phenol
Product code	:	S1223
Registration number EU	:	01-2119471329-32-0001
CAS-No.	:	108-95-2
Other means of identification	:	Hydroxybenzene, Phenyl hydroxide, Phenylic acid

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

Use of the Substance/Mixture	:	Use as an intermediate in industrial chemicals manufacture.
Recommended restrictions on use	:	Restricted to professional users., Do not use in the manufacture or preparation of foods, drugs, or cosmetics. This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the supplier.

1.3 Details of the supplier of the safety data sheet

Company	:	**Shell Chemicals Europe B.V.** PO Box 2334 3000 CH Rotterdam Netherlands
Telephone	:	+31 (0)10 441 5137 / +31 (0)10 441 5191
Telefax	:	+31 (0)20 716 8316 / +31 (0)20 713 9230
E-mail address of person responsible for the SDS	:	sccmsds@shell.com

1.4 Emergency telephone number

Emergency telephone number	:	+44 (0) 1235 239 670 (This telephone number is available 24 hours per day, 7 days per week) National Poison Counselling Centre (UZEM) – 114

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification T.R. SEA No 28848

Acute toxicity, Category 3	H301: Toxic if swallowed.

Acute toxicity, Category 3	H311: Toxic in contact with skin.
Acute toxicity, Category 3	H331: Toxic if inhaled.
Skin corrosion, Category 1B	H314: Causes severe skin burns and eye damage.
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, Kidney	H373: May cause damage to organs through prolonged or repeated exposure.
, Liver	
, Skin	
, Respiratory system	
, Heart	

2.2 Label elements

Labelling T.R. SEA No 28848

Hazard pictograms :

Signal word : Danger

Hazard statements :

PHYSICAL HAZARDS:
Not classified as a physical hazard under GHS criteria.
HEALTH HAZARDS:

H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H341	Suspected of causing genetic defects.
H373	May cause damage to organs (Kidney, Liver, Skin, Respiratory system, Heart) through prolonged or repeated exposure.

ENVIRONMENTAL HAZARDS:
Not classified as an environmental hazard under GHS criteria.

Precautionary statements : **Prevention:**

P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ protective clothing/

	eye protection/ face protection.
Response:	
P302 + P352	IF ON SKIN: Wash with plenty of water and soap.
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 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
Storage:	
	No precautionary phrases.
Disposal:	
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards

Risk of explosion if heated under confinement.
Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.
If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name : Phenol, 108-95-2

Hazardous components

Chemical name	CAS-No. EC-No. Registration number	T.R. SEA No 28848	Concentration (% w/w)
Phenol	108-95-2 203-632-7	Acute Tox.3; H301 Acute Tox.3; H311 Acute Tox.3; H331 Skin Corr.1B; H314 Eye Dam.1; H318 Muta.2; H341 STOT RE2; H373	<= 100

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : DO NOT DELAY.

Keep victim calm. Obtain medical treatment immediately.

Protection of first-aiders	:	When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
If inhaled	:	Call emergency number for your location / facility. Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardio-Pulmonary Resuscitation as required and transport to the nearest medical facility.
In case of skin contact	:	Call emergency number for your location / facility. DO NOT DELAY. Rescuers should AVOID DIRECT CONTACT. Rescuers should wear protective clothing and gloves while treating patients whose skin is contaminated with phenol. Rapid skin decontamination is critical. To remove phenol from a small affected body area (10% of body area or less, e.g. a finger, hand or arm), remove any contaminated clothing and swab the area promptly and repeatedly with cotton soaked in PEG-300 or PEG-400 (polyethylene glycol-300 or 400). If possible, immerse the contaminated area directly in PEG-300 or PEG-400. If a larger body area has been contaminated, immediately remove all phenol-contaminated clothing and shoes under a shower with lukewarm, gently flowing water. After several minutes flushing, decontaminate the affected areas with repeated swabbing or spraying with PEG-300 or PEG-400. If PEG-300 or PEG-400 is not available, do not delay removing contaminated clothing and flushing the affected area with lukewarm, gently flowing water for at least 60 minutes. DO NOT INTERRUPT FLUSHING. Transport to the nearest medical facility for additional treatment. Double-bag contaminated clothing and personal belongings for disposal. All burns should receive medical attention.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Transport to the nearest medical facility for additional treatment. All burns should receive medical attention.
If swallowed	:	Call emergency number for your location / facility. If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Rinse mouth. Do not induce vomiting. If victim is alert, rinse mouth and drink 1/2 to 1 glass of water to help dilute the material. Do not give liquids to a drowsy, convulsing, or unconscious person.

Transport to nearest medical facility for additional treatment.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Phenol can be rapidly absorbed through skin causing systemic poisoning and possibly death.
Phenol has local anesthetic properties, and can cause extensive damage before pain is felt.
Corrosive to skin.
Contact with the skin can cause chemical burns, redness, swelling, and tissue damage.
Corrosive to eyes.
Contact can cause severe eye damage including chemical burns, pain, clouding of the eye surface, inflammation of the eye, and may result in permanent loss of vision.

Swallowing of corrosive chemicals may cause immediate pain and burning in the mouth, throat, and stomach followed by vomiting and diarrhea.

Burns and tearing of the esophagus and stomach are possible.
Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.
Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back, or general oedema (swelling from fluid retention).

Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye colour), fatigue, bleeding or easy bruising and sometimes pain and swelling in the upper right abdomen.

Heart damage may be evidenced by shortness of breath and, in severe cases, by collapse (cardiac arrest).
Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, lightheadedness, headache, nausea and loss of coordination.
Continued inhalation may result in unconsciousness and death.
Symptoms may vary by the agent. Symptoms may extend to being locally corrosive to involving generalized systems including respiratory system, circulatory system, central nervous system (CNS), and may lead to death.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!
Artificial respiration and/or oxygen may be necessary.
Call a doctor or poison control center for guidance.
Treat symptomatically.

Transport to the nearest medical facility for additional treatment.
Absorption through the skin may occur on prolonged or repeated exposure.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	:	Do not use water in a jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Material will not burn unless preheated. Carbon monoxide may be evolved if incomplete combustion occurs.

5.3 Advice for firefighters

Special protective equipment for firefighters	:	Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).
Specific extinguishing methods	:	Standard procedure for chemical fires.
Further information	:	Clear fire area of all non-emergency personnel. Keep adjacent containers cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Observe all relevant local and international regulations. Avoid inhaling vapour and/or mists. Stay upwind and keep out of low areas. Avoid contact with the skin. Isolate hazard area and deny entry to unnecessary or unprotected personnel. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.

Local authorities should be advised if significant spillages cannot be contained.
Avoid contact with skin, eyes and clothing.
Isolate hazard area and deny entry to unnecessary or unprotected personnel.
Do not breathe fumes, vapour.
Do not operate electrical equipment.

6.2 Environmental precautions

Environmental precautions : Remove all possible sources of ignition in the surrounding area.
Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
Attempt to disperse the vapour or to direct its flow to a safe location, for example by using fog sprays.
Take precautionary measures against static discharge.
Ensure electrical continuity by bonding and grounding (earthing) all equipment.
Ventilate contaminated area thoroughly.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : If molten allow to congeal.
Attempt to disperse the vapour or to direct its flow to a safe location, for example by using fog sprays.
Do not use water in a jet.
For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely
For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet., For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet. Proper disposal should be evaluated based on regulatory status of this material (refer to Section 13), potential contamination from subsequent use and spillage, and regulations governing disposal in the local area.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures : Avoid breathing of or direct contact with material. Only use in

well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.
Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Ensure that all local regulations regarding handling and storage facilities are followed.

Advice on safe handling	:	Avoid exposure. Obtain special instructions before use. Avoid inhaling vapour and/or mists. Ventilate workplace in such a way that the Occupational Exposure Limit (OEL) is not exceeded. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk. The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable. Do not empty into drains.
Hygiene measures	:	Wash hands before eating, drinking, smoking and using the toilet.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.
Storage class (TRGS 510)	:	11, Combustible Solids
Other data	:	A reliable fixed sprinkler/deluge system should be installed. Must be stored in a diked (bunded) well- ventilated area, away from sunlight, ignition sources and other sources of heat. Tanks must be specifically designed for use with this product. Tanks should be fitted with a vapour recovery system. Nitrogen blanket recommended. Tanks should be fitted with heating coils in areas where ambient conditions can result in handling temperatures below the freezing point/pour point of the product. Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions. These include issuing of work permits, gas-freeing of tanks, using a manned harness and lifelines and wearing air-supplied breathing apparatus.

Packaging material : Suitable material: Stainless steel.
Unsuitable material: Aluminium alloys., Copper., Zinc., For containers, or container linings avoid copper, copper alloys, zinc., For lines and fittings, avoid copper, copper alloys, zinc., Natural and synthetic rubbers.

7.3 Specific end use(s)

Specific use(s) : Please refer to section 16 and/or the annexes for the registered uses under REACH.

Ensure that all local regulations regarding handling and storage facilities are followed.
See additional references that provide safe handling practices for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity).
IEC/TS 60079-32-1: Electrostatic hazards, guidance

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Phenol	108-95-2	TWA (8 Hour)	2 ppm 8 mg/m3	TR OEL
Further information	A skin notation assigned to the OEL identifies the possibility of significant uptake through the skin.			
		STEL 15 min	4 ppm 16 mg/m3	TR OEL
Further information	A skin notation assigned to the OEL identifies the possibility of significant uptake through the skin.			
		TWA	2 ppm 8 mg/m3	2009/161/EU
Further information	Identifies the possibility of significant uptake through the skin, Indicative			
		STEL	4 ppm 16 mg/m3	2009/161/EU
Further information	Identifies the possibility of significant uptake through the skin, Indicative			

Biological occupational exposure limits

No biological limit allocated.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

phenol : End Use: Workers
Exposure routes: Inhalation

Potential health effects: Acute local effects
Value: 16 mg/m3
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term systemic effects
Value: 8 mg/m3
End Use: Workers
Exposure routes: Dermal
Potential health effects: Long-term systemic effects
Value: 1,23 mg/kg bw/day
End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Long-term systemic effects
Value: 1,32 mg/m3
End Use: Consumers
Exposure routes: Dermal
Potential health effects: Long-term systemic effects
Value: 0,4 mg/kg bw/day
End Use: Consumers
Exposure routes: Oral
Potential health effects: Long-term systemic effects
Value: 0,4 mg/kg bw/day

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

phenol : Exposure assessments have not been presented for the environment therefore PNEC values not required.

8.2 Exposure controls

Engineering measures

Use sealed systems as far as possible.
Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.
Local exhaust ventilation is recommended.
Eye washes and showers for emergency use.
Firewater monitors and deluge systems are recommended.
The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:

Personal protective equipment

Eye protection : Wear goggles for use against liquids and gas, combined with face shield.

Hand protection

Remarks : Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739)

made from the following materials may provide suitable chemical protection. Longer term protection: Viton. Butyl rubber. Incidental contact/Splash protection: Nitrile rubber gloves.

Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. When handling heated product, wear heat resistant gloves, safety hat with chin strap, face shield (preferably with a chin guard), safety glasses, heat resistant coveralls (with cuffs over gloves and legs over boots), neck protection and heavy duty boots, e.g. leather for heat resistance.

Skin and body protection : Where risk of splashing or in spillage clean up, use chemical resistant one-piece overall with integral hood, chemical resistant knee length boots and chemical resistant gloves. Otherwise use chemical resistant apron and gauntlets.
When handling heated product, wear heat resistant gloves, safety hat with chin strap, face shield (preferably with a chin guard), safety glasses, heat resistant coveralls (with cuffs over gloves and legs over boots), neck protection and heavy duty boots, e.g. leather for heat resistance.

Respiratory protection : In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material.
If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation.
Check with respiratory protective equipment suppliers.
Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.
Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.
Where respiratory protective equipment is required, use a full-face mask.
Select a filter suitable for organic gases and vapours [boiling

point >65 °C (149 °F)].

Protective measures	:	Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
Thermal hazards	:	When handling heated product, wear heat resistant gloves, safety hat with chin strap, face shield (preferably with a chin guard), safety glasses, heat resistant coveralls (with cuffs over gloves and legs over boots), neck protection and heavy duty boots, e.g. leather for heat resistance.

Environmental exposure controls

General advice	:	Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Section 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water. Information on accidental release measures are to be found in section 6.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	White crystals below 109º F. Clear liquid on melting.
Colour	:	Data not available
Odour	:	Phenolic, sweet
Odour Threshold	:	< 0,05 ppm
pH	:	Data not available
Melting point/freezing point	:	Typical 40,7 °C
Boiling point/boiling range	:	181 °C
Flash point	:	79,4 °C Method: Tag closed cup
Evaporation rate	:	Data not available

Flammability		
Flammability (solid, gas)	:	Not applicable
Lower explosion limit and upper explosion limit / flammability limit		
Upper explosion limit	:	8,6 %(V)
Lower explosion limit	:	1,5 %(V)
Vapour pressure	:	0,35 kPa (50 °C)
Relative vapour density	:	3,2
Relative density	:	1,1 Method: ASTM D4052
Density	:	1.071 kg/m3 (20 °C) Method: ASTM D4052
Solubility(ies)		
Water solubility	:	Moderate
Partition coefficient: n-octanol/water	:	log Pow: < 1,47
Auto-ignition temperature	:	716 °C
Decomposition temperature	:	Data not available
Viscosity		
Viscosity, dynamic	:	3,6 mPa.s (50 °C) Method: ASTM D445
		< 50 mPa.s (41 °C) Method: ASTM D445
Viscosity, kinematic	:	3,4 mm2/s (50 °C) Method: ASTM D445
		1,1 mm2/s (100 °C) Method: ASTM D445
		2,6 mm2/s (60 °C)

		Method: ASTM D445
		4,2 mm2/s (41 °C) Method: ASTM D445
Explosive properties	:	Not applicable
Oxidizing properties	:	Data not available

9.2 Other information

Surface tension	:	Data not available
Conductivity	:	3,5 µS/cm at 50 °C Method: ASTM D-4308
		Electrical conductivity: > 10,000 pS/m
		A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid, This material is not expected to be a static accumulator.
Molecular weight	:	94,1 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

10.2 Chemical stability

No hazardous reaction is expected when handled and stored according to provisions
Reacts with strong oxidising agents.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Stable under normal conditions.

10.4 Conditions to avoid

Conditions to avoid	:	Exposure to air. Exposure to sunlight. Do not store or handle in aluminium equipment at temperatures above 120 ºF (48.9 ºC). Prevent vapour accumulation. Avoid heat, sparks, open flames and other ignition sources. In certain circumstances product can ignite due to static electricity.

10.5 Incompatible materials

Materials to avoid : Aluminum
Zinc.
Avoid contact with strong oxidizing agents, copper and copper alloys.
Avoid contact with calcium hypochlorite.

10.6 Hazardous decomposition products

Hazardous decomposition products are not expected to form during normal storage.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Information on likely routes of exposure : Skin and eye contact are the primary routes of exposure although exposure may occur through inhalation or following accidental ingestion.
This material penetrates the intact skin and eye rapidly as a liquid or mist, producing severe burns.

Acute toxicity

Components:

Phenol:

Acute oral toxicity : LD 50 (Rat): 340 - 530 mg/kg
Method: Test(s) equivalent or similar to OECD Test Guideline 401
Remarks: Toxic if swallowed.

Acute inhalation toxicity : LC 50 (Rat, female): > 900 mg/m3
Exposure time: 8 h
Test atmosphere: Aerosol
Method: Test(s) equivalent or similar to OECD Test Guideline 403
Remarks: Toxic if inhaled.

Acute dermal toxicity : LD 50 (Rat, female): 660 mg/kg bw
Method: Test(s) equivalent or similar to OECD Test Guideline 402
Remarks: Toxic in contact with skin.

Skin corrosion/irritation

Components:

Phenol:

Species: Rabbit
Method: Acceptable non-standard method.
Remarks: Causes severe skin burns and eye damage.
Contact with hot material can cause thermal burns which may result in permanent skin damage and/or blindness.

Serious eye damage/eye irritation

Components:

Phenol:
Species: Rabbit
Method: Test(s) equivalent or similar to OECD Test Guideline 405
Remarks: Causes serious eye irritation.
Contact with hot material can cause thermal burns which may result in permanent skin damage and/or blindness.

Respiratory or skin sensitisation

Components:

Phenol:
Species: Guinea pig
Method: Test(s) equivalent or similar to OECD Test Guideline 406
Remarks: Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Components:

Phenol:

Genotoxicity in vitro	:	Method: Test(s) equivalent or similar to OECD Test Guideline 473 Remarks: Suspected of causing genetic defects.
	:	Method: Test(s) equivalent or similar to OECD Test Guideline 476 Remarks: Suspected of causing genetic defects.
	:	Method: Test(s) equivalent or similar to OECD Test Guideline 487 Remarks: Suspected of causing genetic defects.
Genotoxicity in vivo	:	Species: Mouse Method: Test(s) equivalent or similar to OECD Test Guideline 474 Remarks: Suspected of causing genetic defects.
Germ cell mutagenicity- Assessment	:	This product does not meet the criteria for classification in categories 1A/1B.

Carcinogenicity

Components:

Phenol:
Species: Rat, (male and female)
Application Route: Oral
Method: Test(s) equivalent or similar to OECD Test Guideline 453

Remarks: Based on available data, the classification criteria are not met.
IARC Group 3: Not classifiable as to its carcinogenicity to humans.

Carcinogenicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Material	SEA Carcinogenicity Classification
Phenol	No carcinogenicity classification.

Material	Other Carcinogenicity Classification
Phenol	IARC: Group 3: Not classifiable as to its carcinogenicity to humans

Reproductive toxicity

Components:

Phenol:

Effects on fertility : Species: Rat
Sex: male and female
Application Route: Oral

Method: Equivalent or similar to OECD Test Guideline 416
Remarks: Based on available data, the classification criteria are not met.

Effects on foetal development : Species: Rat, female
Application Route: Oral
Method: Test(s) equivalent or similar to OECD Test Guideline 414
Remarks: Based on available data, the classification criteria are not met.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

STOT - single exposure

Components:

Phenol:

Remarks: Based on available data, the classification criteria are not met.

STOT - repeated exposure

Components:

Phenol:

Target Organs: Kidney, Liver, Skin, Central nervous system
Remarks: May cause damage to organs or organ systems through prolonged or repeated exposure.
Kidney: can cause kidney damage.

Liver: can cause liver damage.
Respiratory system: caused breathing difficulty in animals.
Heart: can cause heart damage

Repeated dose toxicity

Components:

Phenol:
Species: Rat, male and female
Application Route: Oral
Method: Test(s) equivalent or similar to OECD Test Guideline 451
Target Organs: Kidney, Liver, Skin, Central nervous system

Species: Rat, male and female
Application Route: Inhalation
Test atmosphere: vapour
Method: Test(s) equivalent or similar to OECD Test Guideline 412
Target Organs: Kidney, Liver, Skin, Central nervous system

Species: Rabbit
Application Route: Dermal
Method: Literature data
Target Organs: Kidney, Liver, Skin, Central nervous system

Aspiration toxicity

Components:

Phenol:
Based on available data, the classification criteria are not met.

Further information

Product:

Remarks: Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Components:

Phenol:
Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Phenol:

Toxicity to fish (Acute toxicity)	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 8,9 mg/l Exposure time: 96 h

Method: Other guideline method.
Remarks: Very toxic.

Remarks: LL/EL/IL50 > 1 <= 10 mg/l

Toxicity to daphnia and other aquatic invertebrates (Acute toxicity)	:	EC50 (Ceriodaphnia dubia (water flea)): 3,1 mg/l Exposure time: 48 h Method: Other guideline method. Remarks: Very toxic. Remarks: LL/EL/IL50 > 1 <= 10 mg/l
Toxicity to algae (Acute toxicity)	:	EC50 (Pseudokirchneriella subcapitata (algae)): 61,1 mg/l Exposure time: 96 h Method: Other guideline method. Remarks: Harmful Remarks: LL/EL/IL50 >10 <= 100 mg/l
Toxicity to bacteria (Acute toxicity)	:	IC50 (Nitrosomonas): 21 mg/l Exposure time: 24 h Method: Other guideline method. Remarks: Harmful Remarks: LL/EL/IL50 >10 <= 100 mg/l
Toxicity to fish (Chronic toxicity)	:	NOEC: 0,077 mg/l Exposure time: 60 d Species: Mrigal (Cirrhinus mrigala) Method: Other guideline method. Remarks: Data not available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0,46 mg/l Exposure time: 16 d Species: Daphnia magna (Water flea) Method: Other guideline method. Remarks: Data not available

12.2 Persistence and degradability

Components:

Phenol:

Biodegradability	:	Biodegradation: 62 % Exposure time: 100 h Method: OECD Test Guideline 301C Remarks: Readily biodegradable.

12.3 Bioaccumulative potential

Components:

Phenol:

Bioaccumulation	:	Species: Danio rerio (zebra fish) Bioconcentration factor (BCF): 17,5 Method: OECD Test Guideline 305 Remarks: Contains components with the potential to bioaccumulate.

12.4 Mobility in soil

Components:

Phenol:

Mobility	:	Remarks: If the product enters soil, one or more constituents will or may be mobile and may contaminate groundwater.

12.5 Results of PBT and vPvB assessment

Components:

Phenol:

Assessment	:	The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB..

12.6 Other adverse effects

Product:

Further 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.
Additional ecological information	:	Remarks: Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Components:

Phenol:

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water

courses.
Waste product should not be allowed to contaminate soil or water.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.
Local regulations may be more stringent than regional or national requirements and must be complied with.

Contaminated packaging : Drain container thoroughly.
After draining, vent in a safe place away from sparks and fire.

SECTION 14: Transport information

14.1 UN number

ADR : UN 2312

RID : UN 2312

IMDG : UN 2312

IATA : UN 1671

14.2 UN proper shipping name

ADR : PHENOL, MOLTEN

RID : PHENOL, MOLTEN

IMDG : PHENOL, MOLTEN

IATA : PHENOL, SOLID

14.3 Transport hazard class(es)

ADR : 6.1

RID : 6.1

IMDG : 6.1

IATA : 6.1

14.4 Packing group

ADR

Packing group	:	II
Classification Code	:	T1
Hazard Identification Number	:	60
Labels	:	6.1

RID

Packing group	:	II
Classification Code	:	T1
Hazard Identification Number	:	60
Labels	:	6.1

IMDG
Packing group : II
Labels : 6.1

IATA
Packing group : II
Labels : 6.1

14.5 Environmental hazards

ADR
Environmentally hazardous : no

RID
Environmentally hazardous : no

IMDG
Marine pollutant : no

14.6 Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

14.7 Maritime transport in bulk according to IMO instruments

Pollution category : Y
Ship type : 2
Product name : Phenol

Additional Information **:** This product may be transported under nitrogen blanketing. Nitrogen is an odourless and invisible gas. Exposure to nitrogen enriched atmospheres displaces available oxygen which may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry.

Transport in bulk according to Annex II of Marpol and the IBC Code

SECTION 15: Regulatory information

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

KKDIK (30105 (Bis)) - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex 17) : Conditions of restriction for the following entries should be considered: Entry number 3

Other regulations : The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Regulations on the health and safety precautions for chemicals in the workplace. Regulations on the fire protection of buildings. Regulations on the prevention of industrial accidents and the reduction of their effects.

The components of this product are reported in the following inventories:

AIIC	:	Listed
DSL	:	Listed
IECSC	:	Listed
ENCS	:	Listed
KECI	:	Listed
NZIoC	:	Listed
PICCS	:	Listed
TCSI	:	Listed
TSCA	:	Listed

15.2 Chemical safety assessment

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

SECTION 16: Other information

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 Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships car-

rying 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 Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; 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 - Organization 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

Prepared by

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Certified Qualification date	:	15.05.2024
Certificate number	:	TÜV/11.241.01
Expiry date		15.05.2029

Further information

Training advice	:	Provide adequate information, instruction and training for operators.
Other information	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
Sources of key data used to compile the Safety Data Sheet	:	The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

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

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