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

### 1.1 Product identifier

| | | |
|---|---|---|
| Trade name | : | Phenol |
| Product code | : | S1223 |
| 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. |
| Uses advised against | : | Restricted to professional users., This product must not be used in applications other than the above without first seeking the advice of the supplier., Do not use in the manufacture or preparation of foods, drugs, or cosmetics. |

### 1.3 Details of the supplier of the safety data sheet

| | | |
|---|---|---|
| Manufacturer/Supplier | : | **SHELL MARKETS (MIDDLE EAST) LIMITED**<br>CHEMICALS<br>PO Box 307<br>JEBEL ALI, DUBAI<br>Unit.Arab Emir. |
| Telephone | : | |
| Telefax | : | |
| Contact for Safety Data Sheet | : | |

### 1.4 Emergency telephone number

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**GHS Classification**

| | | |
|---|---|---|
| Flammable liquids | : | Category 4 |
| Acute toxicity (Oral) | : | Category 3 |
| Acute toxicity (Dermal) | : | Category 3 |
| Acute toxicity (Inhalation) | : | Category 3 |
| Skin corrosion | : | Category 1B |
| Serious eye damage | : | Category 1 |
| Germ cell mutagenicity | : | Category 2 |

| | | |
|---|---|---|
| Specific target organ toxicity - repeated exposure | : | Category 2 (Kidney, Liver, Skin, Respiratory system, Heart) |
| Short-term (acute) aquatic hazard | : | Category 2 |

## 2.2 Label elements

### GHS-Labelling

Hazard pictograms :

Signal word : Danger

Hazard statements :

PHYSICAL HAZARDS:
H227 Combustible liquid.
HEALTH HAZARDS:
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H331 Toxic if inhaled.
H341 Suspected of causing genetic defects.
H373 May cause damage to organs through prolonged or repeated exposure.
ENVIRONMENTAL HAZARDS:
H401 Toxic to aquatic life.

Precautionary statements :

**Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P273 Avoid release to the environment.
**Response:**
P370 + P378 In case of fire: Use appropriate media to extinguish.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
**Storage:**
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P235 Keep cool.
P405 Store locked up.
**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

**Hazardous components**

| Chemical name | CAS-No. | Concentration (% w/w) |
|---|---|---|
| Phenol | 108-95-2 | <= 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.<br>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.<br>All burns should receive medical attention. |
| In case of eye contact | : | Immediately flush eye(s) with plenty of water.<br>Remove contact lenses, if present and easy to do. Continue rinsing.<br>Transport to the nearest medical facility for additional treatment.<br>All burns should receive medical attention. |
| If swallowed | : | Call emergency number for your location / facility.<br>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.<br>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.<br>Phenol has local anesthetic properties, and can cause extensive damage before pain is felt.<br>Corrosive to skin.<br>Contact with the skin can cause chemical burns, redness, swelling, and tissue damage.<br>Corrosive to eyes.<br>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, light-headedness, 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.<br>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.<br>Avoid inhaling vapour and/or mists.<br>Stay upwind and keep out of low areas.<br>Avoid contact with the skin.<br>Isolate hazard area and deny entry to unnecessary or unprotected personnel.<br>Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.<br>Local authorities should be advised if significant spillages cannot be contained.<br>Avoid contact with skin, eyes and clothing.<br>Isolate hazard area and deny entry to unnecessary or unprotected personnel.<br>Do not breathe fumes, vapour.<br>Do not operate electrical equipment. |

**6.2 Environmental precautions**

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

Ventilate contaminated area thoroughly.

### 6.3 Methods and materials for containment and cleaning up

| | | |
|---|---|---|
| Methods for cleaning up | : | If molten allow to congeal.<br>Attempt to disperse the vapour or to direct its flow to a safe location, for example by using fog sprays.<br>Do not use water in a jet.<br>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<br>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

| | | |
|---|---|---|
| General Precautions | : | 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.<br>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.<br>Ensure that all local regulations regarding handling and storage facilities are followed. |

### 7.1 Precautions for safe handling

| | | |
|---|---|---|
| Advice on safe handling | : | Avoid exposure. Obtain special instructions before use.<br>Avoid inhaling vapour and/or mists.<br>Ventilate workplace in such a way that the Occupational Exposure Limit (OEL) is not exceeded.<br>Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks.<br>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.

Product Transfer : Lines should be purged with nitrogen before and after product transfer. Steam coils may be used as a heating medium. Refer to guidance under Handling section.

**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.

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.

Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

**7.3 Specific end use(s)**

Specific use(s) : Not applicable

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**

**Biological occupational exposure limits**

No biological limit allocated.

**Monitoring Methods**

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.
Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/
Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hse.gov.uk/
Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA) , Germany http://www.dguv.de/inhalt/index.jsp
L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

### 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**

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

| | | |
|---|---|---|
| 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.<br><br>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.<br><br>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)].

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.

Hygiene measures : Wash hands before eating, drinking, smoking and using the toilet.

**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<br>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 | : | 1,1Method: ASTM D4052 |
| Density | : | 1.071 kg/m3 (20 °C)<br>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)<br>Method: ASTM D445 |
| | | < 50 mPa.s (41 °C)<br>Method: ASTM D445 |
| Viscosity, kinematic | : | 3,4 mm2/s (50 °C)<br>Method: ASTM D445 |
| | | 1,1 mm2/s (100 °C)<br>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 : Hazardous decomposition products are not expected to form during normal storage.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Basis for assessment : Information given is based on product testing.
Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

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<br>Remarks: Suspected of causing genetic defects. |
| | : | Method: Test(s) equivalent or similar to OECD Test Guideline 476<br>Remarks: Suspected of causing genetic defects. |
| | : | Method: Test(s) equivalent or similar to OECD Test Guideline 487<br>Remarks: Suspected of causing genetic defects. |
| | : | Test species: MouseMethod: Test(s) equivalent or similar to OECD Test Guideline 474<br>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.

| Material | GHS/CLP 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:**
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:**
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

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

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**

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

## SECTION 12: Ecological information

**12.1 Toxicity**

Basis for assessment : Incomplete ecotoxicological data are available for this product.

The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

**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 %<br>Exposure time: 100 h<br>Method: OECD Test Guideline 301C<br>Remarks: Readily biodegradable. |

### 12.3 Bioaccumulative potential

**Product:**

| | | |
|---|---|---|
| Partition coefficient: n-octanol/water | : | log Pow: < 1,47 |

**Components:**

**Phenol :**

| | | |
|---|---|---|
| Bioaccumulation | : | Species: Danio rerio (zebra fish)<br>Bioconcentration factor (BCF): 17,5<br>Method: OECD Test Guideline 305<br>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

no data available

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

| | | |
|---|---|---|
| Product | : | Recover or recycle if possible.<br>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.<br><br>Do not dispose into the environment, in drains or in water courses.<br>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.

Local legislation

## SECTION 14: Transport information

**14.1 UN number**

**ADR** : 2312
**IMDG** : 2312
**IATA** : 1671

**14.2 Proper shipping name**

**ADR** : PHENOL, MOLTEN
**IMDG** : PHENOL, MOLTEN
**IATA** : PHENOL, SOLID

**14.3 Transport hazard class**

**ADR** : 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

**IMDG**
Packing group : II
Labels : 6.1

**IATA**
Packing group : II
Labels : 6.1

**14.5 Environmental hazards**

**ADR**
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**

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

**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 |

## SECTION 16: Other information

Abbreviations and Acronyms : The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists
ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road

AICS = Australian Inventory of Chemical Substances
ASTM = American Society for Testing and Materials
BEL = Biological exposure limits
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
CAS = Chemical Abstracts Service
CEFIC = European Chemical Industry Council
CLP = Classification Packaging and Labelling
COC = Cleveland Open-Cup
DIN = Deutsches Institut fur Normung
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DSL = Canada Domestic Substance List
EC = European Commission
EC50 = Effective Concentration fifty
ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals
ECHA = European Chemicals Agency
EINECS = The European Inventory of Existing Commercial Chemical Substances
EL50 = Effective Loading fifty
ENCS = Japanese Existing and New Chemical Substances Inventory
EWC = European Waste Code
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer
IATA = International Air Transport Association
IC50 = Inhibitory Concentration fifty
IL50 = Inhibitory Level fifty
IMDG = International Maritime Dangerous Goods
INV = Chinese Chemicals Inventory
IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables
KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty
LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading
LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level
OE_HPV = Occupational Exposure - High Production Volume
PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of Chemicals
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit

TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

**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). |

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.