

Material Safety Data Sheet

Phenol



1. Product and company identification

| | |
|------------------------------|---|
| Product name | : Phenol |
| Synonym | : Carboic acid, hydroxybenzene, benzenol, monophenol, phenyl hydroxide, phenyl alcohol, phenic acid, phenylic acid, and phenylic alcohol. |
| Material uses | : The largest end use is in phenol-formaldehyde resin used in wood adhesives as well as molding and laminating resins, paints, varnishes and enamels. Phenol may also be used in manufacturing of nylon, herbicides, pharmaceuticals and preservatives. |
| Supplier/Manufacturer | : InterAtlas Chemical Inc. 63 Church Street, Suite 403 St. Catharines, ON CANADA L2R 3C4 Tel. 905.684.9991 Fax. 905.684.4504 www.interatlaschemical.com |
| MSDS authored by | : KMK Regulatory Services Inc. |
| In case of emergency | : CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3887 |

2. Hazards identification

Emergency overview

| | |
|-------------------------------|--|
| Physical state | : Crystalline solid or white powder, or syrupy liquid. |
| Color | : Colorless to pink. |
| Odor | : Characteristic, sweet. |
| Signal word | : DANGER! |
| Hazard statements | : COMBUSTIBLE SOLID. MAY BE FATAL IF SWALLOWED. CAUSES EYE AND SKIN BURNS. HARMFUL IF ABSORBED THROUGH SKIN. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. |
| Precautionary measures | : Keep away from heat, sparks and flame. Do not ingest. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling. |
| OSHA/HCS status | : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). |

Potential acute health effects

| | |
|-------------------|---|
| Inhalation | : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. |
| Ingestion | : May be fatal if swallowed. May cause burns to mouth, throat and stomach. |
| Skin | : Death has occurred from 64 sq. in. of skin exposure. Corrosive to the skin. Causes burns. |
| Eyes | : Corrosive to eyes. Causes burns. |

Potential chronic health effects

| | |
|------------------------------|---|
| Chronic effects | : Contains material that may cause target organ damage, based on animal data. |
| Carcinogenicity | : No known significant effects or critical hazards. |
| Mutagenicity | : No known significant effects or critical hazards. |
| Teratogenicity | : No known significant effects or critical hazards. |
| Developmental effects | : No known significant effects or critical hazards. |
| Fertility effects | : No known significant effects or critical hazards. |
| Target organs | : Contains material which may cause damage to the following organs: kidneys, lungs, liver, spleen, upper respiratory tract, skin, eyes, pancreas. |

Over-exposure signs/symptoms

| | |
|-------------------|---------------------|
| Inhalation | : No specific data. |
|-------------------|---------------------|

2. Hazards identification

- Ingestion** : Adverse symptoms may include the following:
stomach pains
- Skin** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Eyes** : Adverse symptoms may include the following:
pain
watering
redness
- Medical conditions aggravated by over-exposure** : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

3. Composition/information on ingredients

United States

| Name | CAS number | % |
|----------|------------|-------------|
| Phenol | 108-95-2 | 99.6 - 99.9 |
| O-Cresol | 95-48-7 | 0.05 - 0.20 |

Canada

| Name | CAS number | % |
|----------|------------|-------------|
| Phenol | 108-95-2 | 99.6 - 99.9 |
| O-Cresol | 95-48-7 | 0.05 - 0.20 |

Mexico

| Name | CAS number | UN number | % | IDLH | Classification | | | |
|----------|------------|-----------|-------------|---------|----------------|---|---|---------|
| | | | | | H | F | R | Special |
| Phenol | 108-95-2 | UN1671 | 99.6 - 99.9 | 250 ppm | 4 | 1 | 0 | |
| O-Cresol | 95-48-7 | UN2076 | 0.05 - 0.20 | 250 ppm | 3 | 2 | 1 | |

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

- Eye contact** : Immediately flush eyes with plenty of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Call medical doctor or poison control center immediately. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Call medical doctor or poison control center immediately.
- Protection of first-aiders** : If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

Flammability of the product : Combustible material.

Extinguishing media

Suitable : Use dry chemical, CO₂, water spray (fog) or foam.

Not suitable : Do not use water jet.

Special exposure hazards : Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Hazardous decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions : Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Vacuum or sweep up material and place in a designated, labeled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Empty containers retain product residue and can be hazardous. Keep away from heat, sparks and flame.

Storage : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

United States

| Ingredient | Exposure limits |
|------------|--|
| Phenol | <p>ACGIH TLV (United States, 2/2010). Absorbed through skin. TWA: 19 mg/m³ 8 hour(s). TWA: 5 ppm 8 hour(s).</p> <p>NIOSH REL (United States, 6/2009). Absorbed through skin. CEIL: 60 mg/m³ 15 minute(s). CEIL: 15.6 ppm 15 minute(s). TWA: 19 mg/m³ 10 hour(s). TWA: 5 ppm 10 hour(s).</p> <p>OSHA PEL (United States, 11/2006). Absorbed through skin. TWA: 19 mg/m³ 8 hour(s). TWA: 5 ppm 8 hour(s).</p> |

Canada

| Occupational exposure limits | | TWA (8 hours) | | | STEL (15 mins) | | | Ceiling | | | |
|------------------------------|-----------------|---------------|-------------------|-------|----------------|-------------------|-------|---------|-------------------|-------|-----------|
| Ingredient | List name | ppm | mg/m ³ | Other | ppm | mg/m ³ | Other | ppm | mg/m ³ | Other | Notations |
| Phenol | US ACGIH 2/2010 | 5 | 19 | - | - | - | - | - | - | - | [1] |
| | AB 4/2009 | 5 | 19 | - | - | - | - | - | - | - | [1] |
| | BC 10/2009 | 5 | - | - | - | - | - | - | - | - | [1] |
| | ON 7/2010 | 5 | 19 | - | - | - | - | - | - | - | [1] |
| | QC 6/2008 | 5 | 19 | - | - | - | - | - | - | - | [1] |

[1]Absorbed through skin.

Mexico

Occupational exposure limits

| Ingredient | Exposure limits |
|------------|--|
| Phenol | <p>NOM-010-STPS (Mexico, 9/2000). Absorbed through skin. LMPE-CT: 38 mg/m³ 15 minute(s). LMPE-CT: 10 ppm 15 minute(s). LMPE-PPT: 19 mg/m³ 8 hour(s). LMPE-PPT: 5 ppm 8 hour(s).</p> |

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : Personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. Use explosion-proof ventilation equipment.

Hygiene measures : Ensure that eyewash stations and safety showers are close to the workstation location. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Personal protection

Respiratory : Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Recommended: Wear appropriate dust respirator when ventilation is inadequate.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: >8 hours (breakthrough time): Viton®, neoprene or PVC.

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. Recommended: Splash goggles or face shield.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: (Overall./Rubber apron and/on long sleeves./Boots.)

Environmental exposure controls : In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

| | |
|-----------------------------------|--|
| Physical state | : Crystalline solid or white powder, or syrupy liquid. |
| Flash point | : Closed cup: 85°C (185°F) [Pensky-Martens.] |
| Auto-ignition temperature | : 715°C (1319°F) |
| Flammable limits | : Lower: 1.7% Upper: 8.6% |
| Color | : Colorless to pink. |
| Odor | : Characteristic, sweet. |
| Molecular weight | : 94.12 |
| Molecular formula | : C ₆ H ₅ OH |
| pH | : 9.9 [in aqueous solutions] |
| Boiling/condensation point | : 181.11°C (358°F) |
| Melting/freezing point | : 40.56°C (105°F) |
| Relative density | : 1.071 |
| Vapor pressure | : 0.048 kPa (0.36 mm Hg) [20°C] |
| Vapor density | : 3.24 [Air = 1] |
| Volatility | : 100% (v/v) |
| Odor threshold | : 0.05 ppm |
| Evaporation rate | : <0.01 (butyl acetate = 1) |

10. Stability and reactivity

| | |
|---|--|
| Chemical stability | : The product is stable. |
| Conditions to avoid | : Avoid all possible sources of ignition (spark or flame). |
| Incompatible materials | : Reactive or incompatible with the following materials: Strong oxidizers, especially calcium hypochlorite, aluminum chloride (contact with these may cause fires and explosions) violent reaction with nitric acid, and acids.. |
| Hazardous decomposition products | : Decomposition products may include the following materials: carbon dioxide carbon monoxide |
| Possibility of hazardous reactions | : Under normal conditions of storage and use, hazardous reactions will not occur. |

11. Toxicological information

Acute toxicity

| Product/ingredient name | Result | Species | Dose | Exposure |
|-------------------------|-----------------------|---------|-----------------------|----------|
| Phenol | LC50 Inhalation Vapor | Rat | 316 mg/m ³ | 4 hours |
| | LD50 Dermal | Rabbit | 630 mg/kg | - |
| | LD50 Dermal | Rat | 669 mg/kg | - |
| | LD50 Oral | Rat | 317 mg/kg | - |

Irritation/Corrosion

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|-------------------------|------------------------|---------|-------|----------|-------------|
| Phenol | Eyes - Mild irritant | Rabbit | - | - | - |
| | Eyes - Severe irritant | Rabbit | - | - | - |
| | Skin - Severe irritant | Pig | - | - | - |
| | Skin - Mild irritant | Rabbit | - | - | - |
| | Skin - Severe irritant | Rabbit | - | - | - |

Carcinogenicity

Classification

| Product/ingredient name | ACGIH | IARC | EPA | NIOSH | NTP | OSHA |
|-------------------------|-------|------|-----|-------|-----|------|
| Phenol | A4 | 3 | - | None. | - | - |

11. Toxicological information

IDLH : Not available.

Synergistic products : Not available.

12. Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

| Product/ingredient name | Result | Species | Exposure |
|-------------------------|------------------------------------|--|----------|
| Phenol | Acute LC50 800 ug/L Marine water | Crustaceans - Archaeomysis kokuboi - Juvenile (Fledgling, Hatchling, Weanling) | 48 hours |
| | Acute LC50 3000 ug/L Fresh water | Daphnia - Ceriodaphnia dubia - <24 hours | 48 hours |
| | Acute LC50 1.75 ug/L Fresh water | Fish - Cyprinus carpio - LARVAE - 8 mm | 96 hours |
| | Chronic NOEC 2200 ug/L Fresh water | Daphnia - Daphnia magna - <=24 hours | 48 hours |

13. Disposal considerations






Waste disposal : The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

International transport regulations

| Regulatory information | UN number | Proper shipping name | Classes | PG* | Label | Additional information |
|------------------------------|------------------|---------------------------------|---------|-----|---|--|
| DOT Classification | UN1671 or UN2312 | PHENOL, SOLID or PHENOL, MOLTEN | 6.1 | II |  | Reportable quantity 1000 lbs. (454 kg) |
| TDG Classification | UN1671 or UN2312 | PHENOL, SOLID or PHENOL, MOLTEN | 6.1 | II |  | - |
| Mexico Classification | UN1671 or UN2312 | PHENOL, SOLID or PHENOL, MOLTEN | 6.1 | II |  | - |
| IMDG Class | UN1671 or UN2312 | PHENOL, SOLID or PHENOL, MOLTEN | 6.1 | II |  | - |
| IATA-DGR Class | UN1671 or UN2312 | PHENOL, SOLID or PHENOL, MOLTEN | 6.1 | II |  | - |

PG* : Packing group

Exemption to the above classification may apply.

AERG : 153

15. Regulatory information

United States

- HCS Classification** : Highly toxic material
Corrosive material
Target organ effects
- U.S. Federal regulations** : **United States inventory (TSCA 8b)**: All components are listed or exempted.
SARA 302/304/311/312 extremely hazardous substances: Phenol
SARA 302/304 emergency planning and notification: Phenol
SARA 302/304/311/312 hazardous chemicals: Phenol
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
Phenol: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Phenol
Clean Water Act (CWA) 311: Phenol; Phenol, 2-methyl-
- Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)** : Listed
- Clean Air Act Section 602 Class I Substances** : Not listed
- Clean Air Act Section 602 Class II Substances** : Not listed
- DEA List I Chemicals (Precursor Chemicals)** : Not listed
- DEA List II Chemicals (Essential Chemicals)** : Not listed

SARA 313

| | Product name | CAS number | Concentration |
|--|--------------|------------|---------------|
| Form R - Reporting requirements | Phenol | 108-95-2 | 99.6 - 99.9 |
| Supplier notification | Phenol | 108-95-2 | 99.6 - 99.9 |

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations

- Massachusetts** : The following components are listed: Phenol
- New York** : The following components are listed: Phenol
- New Jersey** : The following components are listed: Phenol
- Pennsylvania** : The following components are listed: Phenol
- California Prop. 65**

Not available.

Canada

- WHMIS (Canada)** : Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class E: Corrosive material

Canadian lists

- Canadian NPRI** : The following components are listed: Phenol
- CEPA Toxic substances** : None of the components are listed.
- Canada inventory** : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

15. Regulatory information

Mexico

Classification :



International regulations

International lists :

- Australia inventory (AICS):** All components are listed or exempted.
- China inventory (IECSC):** All components are listed or exempted.
- Japan inventory:** All components are listed or exempted.
- Korea inventory:** All components are listed or exempted.
- New Zealand Inventory of Chemicals (NZIoC):** All components are listed or exempted.
- Philippines inventory (PICCS):** All components are listed or exempted.

16. Other information

Label requirements : COMBUSTIBLE SOLID. MAY BE FATAL IF SWALLOWED. CAUSES EYE AND SKIN BURNS. HARMFUL IF ABSORBED THROUGH SKIN. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Hazardous Material Information System (U.S.A.) : **Health** : 4 * **Flammability** : 2 **Physical hazards** : 0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.) : **Health** : 4 **Flammability** : 2 **Instability** : 0

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Canada

WHMIS (Canada) :



References :

- ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - Official Mexican Standards NOM-018-STPS-2000 and NOM-004-SCT2-1994.

History

Date of issue : 12/15/2010
Date of previous issue : 04/15/2009
Version : 2

16. Other information

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.