

Phenol

Safety data sheet in the 16-section GHS format · CAS 108-95-2

Velora Chemicals Private Limited
Ahmedabad, Gujarat, India
+91 99255 22674 · info@velorachemicals.com

1. Identification of the substance and of the supplier

Product name	Phenol
Synonyms	carbolic acid, hydroxybenzene, phenol crystals, molten phenol, C ₆ H ₅ OH
C.A.S. number	108-95-2
Molecular formula	C ₆ H ₅ OH (C ₆ H ₆ O)
Grade supplied	99.9% min
Product group	Solvents & Organic Chemicals
Identified uses	Phenolic resins, Bisphenol-A, Pharmaceutical intermediates, Caprolactam, Alkylphenols & surfactants, Laboratory & disinfection
Supplier	Velora Chemicals Private Limited
Emergency contact	Medical, fire or spill emergency — call the emergency services first: 112 (all-India), 101 fire, 108 ambulance. Velora Chemicals Private Limited does not at present operate a 24-hour chemical emergency advice line, and this sheet does not pretend otherwise. Every consignment despatched by road carries an emergency information panel under rule 134 of the Central Motor Vehicles Rules 1989 bearing a number from which expert advice on this material can be obtained, and the producer's safety data sheet issued with the consignment carries the producer's own 24-hour number where one is operated. For product, grade and documentation queries in business hours: +91 99255 22674.

2. Hazards identification

GHS signal word	Danger
Hazard classification	EU HARMONISED classification, Annex VI to CLP (index 604-001-00-2), reported by PubChem from Regulation (EC) No 1272/2008 and corroborated by over 99 % notifier agreement in the ECHA C&L Inventory: Acute Tox. 3 oral - H301 (toxic if swallowed); Acute Tox. 3 dermal - H311 (toxic in contact with skin); Acute Tox. 3 inhalation - H331 (toxic if inhaled); Skin Corr. 1B - H314 (causes severe skin burns and eye damage); Muta. 2 - H341 (suspected of causing genetic defects); STOT RE 2 - H373 (may cause damage to organs through prolonged or repeated exposure). Signal word Danger; pictograms GHS06, GHS05 and GHS08. All three acute toxicity routes are Category 3. In addition, SUPPLIER SELF-CLASSIFICATION notified to ECHA adds Aquatic Chronic 2 - H411 at 13.6 % of reports, and ILO ICSC 0070 also mentions respiratory irritation (H335) and aquatic toxicity; these are not part of the harmonised entry. Note that a separate Japanese NITE-CMC classification carries stricter entries (including Repr. 1B H360, STOT SE 1 H370 and STOT RE 1 H372); that is a non-EU national classification and should not be substituted for the Annex VI entry without saying so.

3. Composition / information on ingredients

Substance	Phenol
C.A.S. number	108-95-2

Molecular weight	94.11 g/mol
Composition	99.9% min
4. First-aid measures	
Eye contact	Flush the exposed or irritated eyes immediately with copious amounts of water or saline for at least 15 minutes, holding the eyelids apart (ATSDR). Remove contact lenses if easily possible and continue rinsing. Get immediate medical attention - phenol causes severe eye damage and can cause blindness.
Skin contact	CRITICAL - WATER ALONE IS THE WRONG ANSWER, AND SMALL AMOUNTS OF WATER MAKE THE INJURY WORSE. Remove contaminated clothing rapidly, cutting it away if necessary. Then irrigate or wipe the exposed area immediately and repeatedly with LOW-MOLECULAR-WEIGHT POLYETHYLENE GLYCOL - PEG 300 or PEG 400 (ATSDR Medical Management Guidelines for phenol, quoted: 'Remove contaminated clothing rapidly and either irrigate or wipe exposed areas immediately and repeatedly with low-molecular-weight polyethylene glycol (PEG 300 or PEG 400)'). ATSDR warns explicitly that 'lesser amounts of water will merely dilute the phenol and expand the area of exposure' - limited-volume rinsing, a splash from a tap or a wetted cloth spreads the phenol over a larger area of skin and increases dermal absorption rather than removing it. If PEG 300 or PEG 400 is not immediately available, use a high-volume, high-pressure emergency shower delivering copious flooding water (ATSDR) - volume and flow are what make water acceptable; ILO ICSC 0070 gives vegetable oil as a further alternative ('To remove substance use polyethylene glycol 300 or vegetable oil'). After PEG decontamination, wash with soap and water for at least 15 minutes (ATSDR). Get immediate medical attention in every case. Two further warnings: phenol is a local anaesthetic, so a serious burn can be painless and the extent of exposure is routinely underestimated by the casualty; and phenol is absorbed through intact skin in lethal quantities (Acute Tox. 3 dermal, H311), so a skin exposure is a systemic poisoning that requires medical observation even where the skin injury looks minor. PEG 300 or PEG 400 must be physically stocked at every point where phenol is handled - this first-aid instruction is unusable if the decontaminant is not on site.
Inhalation	Remove the person to fresh air and keep at rest in a half-upright position. Administer supplemental oxygen by mask to a person who has respiratory symptoms, and treat bronchospasm with aerosolised bronchodilators - these are measures for trained medical personnel (ATSDR). If breathing has stopped, give artificial respiration. Refer immediately for medical attention.
Ingestion	Treat as a medical emergency. Rinse the mouth with water. Do NOT induce emesis or vomiting (ATSDR: 'In cases of ingestion, do not induce emesis') - phenol is corrosive and vomiting re-exposes the oesophagus and risks aspiration. Give one or two glasses of water to drink if the person is fully conscious and able to swallow (ICSC 0070). Do not give anything by mouth to an unconscious or convulsing person. For an alert and asymptomatic person, medical personnel may administer a slurry of activated charcoal at 1 g/kg - usual adult dose 60-90 g, child dose 25-50 g (ATSDR). Get immediate medical attention and arrange hospital transfer; phenol is toxic if swallowed (H301) and systemic effects can be rapid and severe.
5. Fire-fighting measures	
Flash point	79 C closed cup (ILO ICSC 0070; NIOSH 175 F = 79.4 C). The INEOS producer SDS gives 81 C closed cup, and Merck via PubChem gives 85 C open cup. Publish 79-81 C closed cup and name the method. Combustible, but the toxic and corrosive hazards dominate the risk picture, not flammability.
Suitable extinguishing media	This material has a flash point and burns. Use alcohol-resistant foam, dry chemical powder or carbon dioxide; water spray or fog to cool surrounding surfaces and containers. Confirm the medium against the producer's safety data sheet for the grade supplied.

Unsuitable extinguishing media	Do not use a high-pressure water jet: it will spread the material and the fire. A vapour flash-back to the source and re-ignition of cooled but still-hot material are both foreseeable; do not approach a container that may be pressurised or a pool fire without cover.
Special hazards arising from the substance	Hazardous gases and decomposition products may be formed in a fire, from this substance or from its packaging and the materials stored with it. Packaging and pallets are themselves a substantial fire load.
Advice for fire-fighters	Fire-fighters must wear self-contained breathing apparatus and full protective clothing. Keep unnecessary personnel away and upwind. Prevent firefighting run-off from entering drains, surface water or groundwater.

6. Accidental release measures

Keep unnecessary personnel away and upwind, and ventilate. Wear the protective equipment in section 8, including respiratory protection, before approaching. Eliminate ignition sources and prohibit smoking before approaching. Avoid raising dust, and never blow a spilled powder down with compressed air. Dry-collect — vacuum with a HEPA-filtered unit, or sweep gently without raising dust — into labelled, closable containers for disposal under section 13. A spill inside a vessel, tank, silo, container or pit is a confined-space job: test the atmosphere and work under permit. A fine powder makes a floor slippery, especially once wet, so treat every wetted surface as slippery until it has been washed and dried. Prevent entry to drains, surface water and groundwater. Do not return spilled material to the original container; a damaged bag should be overpacked into a labelled outer rather than decanted into an unmarked one.

7. Handling and storage

- Phenol is toxic by swallowing, by skin contact and by breathing it (GHS Acute Tox. 3 by all three routes), corrosive to skin (Skin Corr. 1B), a suspected mutagen, and toxic to organs on repeated exposure. Treat any skin contact as a systemic emergency, not as a burn.
- Skin absorption is the main route of occupational poisoning. A splash over even a modest area can cause central nervous system depression, liver and kidney damage and, in severe cases, death. Because of the anaesthetic effect the person may not feel much.
- First aid for skin contact is not water. Remove contaminated clothing immediately and decontaminate by irrigating or repeatedly wiping the area with low-molecular-weight polyethylene glycol — PEG 300 or PEG 400 — until there is no detectable phenol odour. PEG is the preferred first-line decontaminant and should be stocked wherever phenol is handled. If none is available use a high-volume deluge shower: small amounts of water merely dilute the phenol and spread the exposed area. Get medical attention in every case, including apparently minor contact, and tell the clinicians it is phenol.
- Full chemical protection: impervious gloves and suit, face shield over goggles, and respiratory protection wherever vapour or molten material is handled. An emergency shower and eyewash within seconds of the working position, not across the yard, and PEG 300 or 400 stocked at the point of use.
- Transport classification depends on the form: UN 1671 phenol, solid; UN 2312 phenol, molten; UN 2821 phenol, solutions — all Class 6.1, packing group II (packing group III for weak solutions). Molten phenol is carried hot in insulated tanks and carries a thermal burn hazard on top of everything else.
- Store away from oxidisers and strong acids and bases, out of sunlight and under nitrogen where colour matters — phenol pinks on exposure to air and light, normally without a commercially meaningful loss of assay. It is combustible but not readily ignited.
- It is harmful to aquatic life and tainting at very low concentrations. Never allow spillage or washings to reach a drain or watercourse; phenolic effluent needs its own treatment step.
- Phenol is a hazardous chemical listed in Schedule 1 of the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989. In Gujarat it is scheduled above 3 per cent concentration under the Poisons (Regulation and Control of Sale and Use of Acid) Rules, 2014 — so all commercial-strength material is caught — and selling it or holding it for sale requires a licence in Form A held by the seller, with every sale recorded against the purchaser's government photo identity. Velora holds that Form A licence, and our licence particulars are provided with the quotation. We quote only where the licence position can be documented at both ends.

Storage: Keep locked up and restrict access to trained personnel only. Keep the container tightly closed in a well-ventilated area and protect from light (phenol discolours to pink and red on exposure to light and air). Use steel containers (INEOS). Recommended storage temperatures per INEOS: 50-60 C for liquid/molten phenol, 15-25 C for solid phenol. Store separated

from food and feedstuffs, and away from solvents, aluminium, aldehydes, halogens, peroxides, acids, bases and oxidising agents. Bund the area and ensure no access to drains or surface water. Provide a safety shower and eyewash AND a stock of PEG 300 or PEG 400 at the storage and handling points. For molten storage, control the heat-tracing temperature - overheating accelerates discolouration and vapour release, and the vapour is toxic by inhalation.

8. Exposure controls / personal protection

Engineering controls. Enclose every transfer, tipping, bag-slitting and sampling point and fit local exhaust extraction at each, and keep airborne concentrations below the limit in force at the place of use. Provide an eyewash within reach of the working position, and a safety shower wherever the material is classified corrosive or irritant or is handled in quantity. Do not eat, drink or smoke in the handling area; wash before breaks. Where no limit is stated above, occupational exposure limits vary by jurisdiction: check the limit in force at the place of use and the producer's sheet for the grade supplied, and record which value your assessment adopted. Select eye, skin and respiratory protection on the strength of a measured or modelled exposure assessment, not on this sheet alone.

9. Physical and chemical properties

Appearance	Colourless to light-pink or white deliquescent crystals, needles or crystalline mass with a characteristic sweet, acrid, medicinal odour. Darkens to pink or red on exposure to air and light (normal oxidation, not necessarily off-specification). Supplied and handled as a colourless liquid above about 41 C. Liquefies with approximately 8 % water (NIOSH).
Physical state	Solid at ambient temperature (melting point 40.9 C), but commonly stored, shipped and handled MOLTEN as a liquid above about 41 C. The physical state on any given day depends on ambient temperature, which matters in India.
Melting / freezing point	40.9 C (INEOS producer SDS; PubChem/CRC 40.91 C; NIOSH 109 F; ILO ICSC 0070 gives 41 C)
Boiling point	181.8 C (PubChem/CRC; 181.75 C at 101.3 kPa per Kirk-Othmer; INEOS 181 C; NIOSH 359 F; ICSC 0070 gives 182 C)
Relative density	1.06-1.07 g/cm ³ at 20 C (PubChem/Merck 1.071 g/cm ³ ; NIOSH specific gravity 1.06; INEOS 1.07 g/cm ³ at 20 C). Denser than water - phenol sinks, which matters for spill response.
Solubility in water	84 g/L at 20 C and 87 g/L at 25 C (INEOS); 82,800 mg/L at 25 C (PubChem); about 9 % at 25 C (NIOSH). Fully miscible with water above about 68 C (INEOS). Freely soluble in ethanol, ether, glycerol and most organic solvents. Partial water solubility is what allows small amounts of water to carry phenol INTO the skin - see skin first aid.
pH	4 to 5 in a 10 g/L (1 % w/v) aqueous solution at 20 C (INEOS producer SDS). Weakly acidic (pKa about 10); phenol is not a strong acid, and its severe skin and eye damage is caused by protein denaturation and coagulation, not by acidity. Do not present it as an acid burn.
Flash point	79 C closed cup (ILO ICSC 0070; NIOSH 175 F = 79.4 C). The INEOS producer SDS gives 81 C closed cup, and Merck via PubChem gives 85 C open cup. Publish 79-81 C closed cup and name the method. Combustible, but the toxic and corrosive hazards dominate the risk picture, not flammability.
Auto-ignition / ignition temperature	Not available
Explosive / dust-explosion properties	Not available
Vapour pressure	Not available
Vapour density	Not available
Partition coefficient (log Pow)	Not available

Particle characteristics	Not available
Molecular weight	94.11 g/mol

10. Stability and reactivity

Incompatible materials	Oxidising agents (fire and explosion hazard - ICSC 0070), aldehydes, isocyanates, nitrites, nitrides and Friedel-Crafts catalysts such as aluminium chloride (INEOS). NIOSH adds calcium hypochlorite and acids. Also incompatible with strong bases, halogens and peroxides, and must be kept away from food and feedstuffs. Attacks many metals, rubber and several plastics, so vessel, gasket, hose and glove materials must be selected specifically for phenol service (INEOS lists metals, rubber, various plastics and alloys as unsuitable materials of construction).
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Conditions to avoid	Keep locked up and restrict access to trained personnel only. Keep the container tightly closed in a well-ventilated area and protect from light (phenol discolours to pink and red on exposure to light and air). Use steel containers (INEOS). Recommended storage temperatures per INEOS: 50-60 C for liquid/molten phenol, 15-25 C for solid phenol. Store separated from food and feedstuffs, and away from solvents, aluminium, aldehydes, halogens, peroxides, acids, bases and oxidising agents. Bund the area and ensure no access to drains or surface water. Provide a safety shower and eyewash AND a stock of PEG 300 or PEG 400 at the storage and handling points. For molten storage, control the heat-tracing temperature - overheating accelerates discolouration and vapour release, and the vapour is toxic by inhalation.
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11. Toxicological information

The health hazards classified for this substance are listed in section 2, and the corresponding first-aid measures in section 4. Numerical toxicological endpoints are not reproduced here: refer to the producer's safety data sheet for the grade supplied, and to the ECHA and PubChem entries for the substance.

12. Ecological information

Where section 2 or section 14 classifies this substance as hazardous to the aquatic environment, prevent any release to drains, surface water or groundwater and treat aqueous effluent before discharge. Otherwise, refer to the producer's sheet.

13. Disposal considerations

Dispose of the substance and its container through an authorised facility under the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 where the waste is scheduled under those Rules, and otherwise as non-hazardous industrial waste, in each case under the conditions of the State Pollution Control Board consent in force at the site. Whether a particular waste stream is scheduled depends on the substance and on what it has been mixed with, so classify the waste before consigning it. Do not reuse empty containers for any other purpose.

14. Transport information

UN number	Three entries apply depending on the form shipped, all confirmed by the INEOS producer SDS: UN 1671 for phenol as a solid; UN 2312 for phenol molten; UN 2821 for phenol solutions.
Class	6.1 (Toxic) for all three entries - UN 1671, UN 2312 and UN 2821
Packing group	II. The INEOS producer SDS declares Packing Group II for the solid (UN 1671), the molten (UN 2312) and the solution (UN 2821) entries. Caveat: for UN 2821 PHENOL SOLUTION the packing group depends on the concentration and resulting toxicity of the particular solution, and the UN Model Regulations dangerous goods list accommodates more than one packing group under that entry. The packing group for any solution you actually ship must be re-derived from the UN dangerous goods list against that solution's concentration - this has not been confirmed here for dilute solutions, so do not publish PG II as universal for UN 2821.

Proper shipping name	PHENOL, SOLID (UN 1671, Class 6.1, PG II); PHENOL, MOLTEN (UN 2312, Class 6.1, PG II); PHENOL SOLUTION (UN 2821, Class 6.1, PG II subject to the concentration caveat above). Choose the entry that matches the form actually offered for transport. Shipping molten phenol under UN 1671 - or solid phenol under UN 2312 - is a declaration error, and because phenol's melting point sits at 40.9 C, material loaded as a solid can arrive as a liquid; the entry is determined by the condition in which it is offered for carriage.
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15. Regulatory information

Supply in India is subject to the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 where the substance is scheduled, and to any product-specific licensing named on the product page. Classification and labelling follow the GHS as adopted in the jurisdiction of use.

Note: The skin first aid is the single most important line on any phenol document and is routinely got wrong. Low-molecular-weight polyethylene glycol - PEG 300 or PEG 400 - is the decontaminant, not water. ATSDR states in terms that lesser amounts of water merely dilute the phenol and expand the area of exposure, so a small-volume water rinse spreads the burn and drives absorption. Water is acceptable only as high-volume, high-pressure flooding from an emergency shower where PEG is unavailable. A phenol page that says 'wash with plenty of water' without this qualification is dangerous, and PEG must actually be stocked where phenol is handled for the instruction to mean anything. Note also that INEOS's own SDS wording ('Flush with water followed by polyethylene glycol and/or large quantities of water') is looser than the ATSDR guidance - follow ATSDR. Second, phenol burns can be PAINLESS because phenol is a local anaesthetic, and phenol is absorbed through intact skin in lethal amounts (H311), so the severity of an exposure cannot be judged from pain or from the appearance of the skin. Third, three UN numbers apply and the correct one depends on the physical form offered for carriage: UN 1671 solid, UN 2312 molten, UN 2821 solutions, all Class 6.1. Because the melting point is 40.9 C - below Indian summer ambient temperature in much of the country - material can change state in transit or in the warehouse, so form, storage temperature and the declared UN entry have to be managed together rather than assumed. For UN 2821 solutions, re-derive the packing group from the UN dangerous goods list against the actual concentration instead of copying PG II across. Fourth, phenol is only weakly acidic (pKa about 10) and its corrosivity is protein coagulation, not acidity - do not describe or treat it as an acid burn, and do not attempt neutralisation. Fifth, pink or red discolouration is normal air and light oxidation and is not by itself evidence of contamination. Sixth, publish the pH only with its stated concentration (4-5 at 10 g/L).

16. Other information

Version	1.0
Date of issue	07 October 2026
Supersedes	No previous version
Regulatory basis as at the date of issue	EU CLP Regulation 1272/2008 as amended, including Annex VI harmonised classifications; UN Model Regulations and the IMDG Code Amendment 42-24, mandatory from 1 January 2026; ADR 2025; and, in India, the Manufacture, Storage and Import of Hazardous Chemical Rules 1989 and the Central Motor Vehicles Rules 1989.

How this sheet was compiled and what governs. This sheet was prepared by Velora Chemicals Private Limited as the supplier, from PubChem, the ECHA CLP inventory including Annex VI harmonised classifications, ILO International Chemical Safety Cards and published producer safety data sheets. Values that could not be confirmed from those sources are shown as "Not available" rather than estimated. **The producer's safety data sheet for the specific grade and lot supplied is the governing document** and is issued with the consignment; where the two differ, the producer's sheet prevails. This sheet carries no warranty of the properties of any particular batch. Velora Chemicals Private Limited is a bulk supplier and trader, not a manufacturer.

Sources consulted: <https://wwwn.cdc.gov/TSP/MMG/MMGDetails.aspx?mmgid=144&toxid=27>;
<https://www.inchem.org/documents/icsc/icsc/eics0070.htm>; <https://www.cdc.gov/niosh/npg/npgd0493.html>;
<https://pubchem.ncbi.nlm.nih.gov/compound/996>;
https://pubchem.ncbi.nlm.nih.gov/rest/pug_view/data/compound/996/JSON?heading=GHS%20Classification;
https://pubchem.ncbi.nlm.nih.gov/rest/pug_view/data/compound/996/JSON?heading=Experimental%20Properties;
<https://www.ineos.com/businesses/ineos-phenol/>