Certificate of Analysis

Product: Phenoxyethanol

Batch Number 4516109

Best Before date: August 2026

Test	Analysis	Specification
Apperance	Colourless clear viscous liquid	Colourless clear viscous liquid
Colour (PtCo)	6.9	10 maximum
Purity% (GC)	99.87	99 minimum
Free Phenol, ppm (By HPLC)	4	5ppm Max
Water Content % (By KF)	0.22	0.5 maximum
Density at 20°C	1.107	1.105 - 1.110

Authorised signatory: **This is an electronically generated document and is valid without a signature**

Product Information – Allergens Statement

Tradename: Phenoxyethanol

We hereby declare that the above mentioned material, does not contain any of the 29 allergens listed in the EU Directives 2003/15/EC, 2002/34/EC, & 2003/16/EC to the best of our knowledge.

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21/01/2022

Product Information – CMR Statement

Tradename: Phenoxyethanol

We hereby declare that the above mentioned material does not contain any substance that is classified as a CMR substance to the best of our knowledge.

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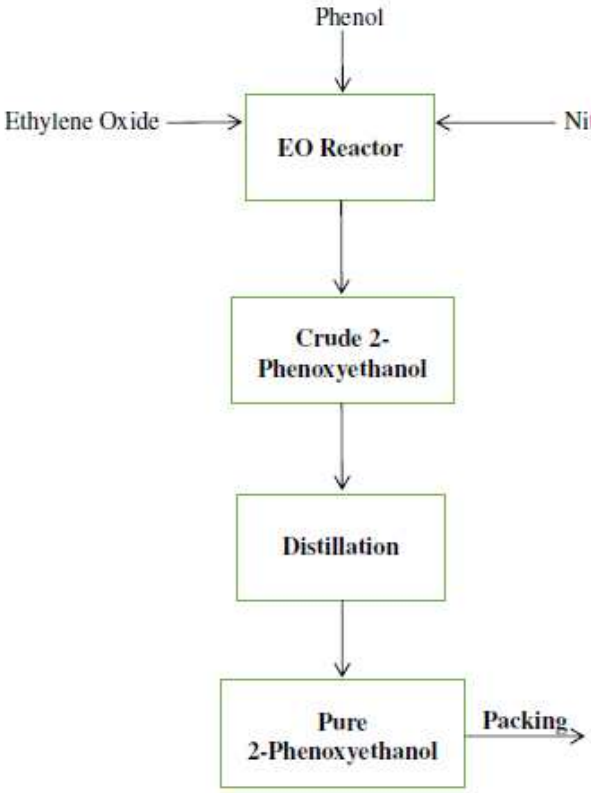
21/01/2022

2-PHENOXYETHANOL:

MANUFACTURING PROCESS FLOW CHART



Brief Manufacturing Process: Reaction of Phenol & Ethylene oxide at desired temperature gives crude 2-Phenoxyethanol further high vacuum distillation of crude 2-Phenoxyethanol gives pure 2-Phenoxyethanol.

Product Information – GMO Statement

Tradename: Phenoxyethanol

We hereby declare that the above mentioned material, is free from GMO substances and is not manufactured using any GMO substances to the best of our knowledge.

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21/01/2022

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

1.1. Product Identifier

Product name: Phenoxyethanol
CAS number: 122-99-6
INCI Name: 2-Phenoxy ethanol

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

Use of substance / mixture: Solvent. In perfumery/ flavouring. Used as solvent, intermediate for plasticizers, bactericidal agents, and fixative
for soaps and perfumes. Also as a fish anaesthetic and in the preparation of cadavers. In Japan and the EU, its
concentration in cosmetics is restricted to 1%. [~Intermediate ~]

1.3. Details of the supplier of the safety data sheet

Supplier Name: **Madar Corporation Limited**
Supplier Address: **19 - 20 Sandleheath Industrial Estate**
Fordingbridge
SP6 1PA
United Kingdom

Supplier Telephone: **+44 (0)1425 655 555**
Email: **itechnical@madarcorporation.co.uk**

1.4. Emergency telephone number

Telephone: +44 (0)1924 844820

Section 2: Hazards Identification

2.1. Classification of the substance or mixture

Classification under CLP: Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)
Classification Acute Toxicity (Oral) Category 4, Eye Irritation Category 2A

2.2. Label elements

Label Elements under CLP:

Single Word: WARNING

Precautionary Statements:

H302 Harmful if swallowed.
H319 Causes serious eye irritation.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.
P330 Rinse mouth.

Section 3: Composition/information on ingredients

3.1. Substances

Chemical identity: 2-Phenoxy ethanol

Classification: Acute Toxicity (Oral) Category 4, Eye Irritation Category 2A; H302, H319

Section 4: First aid measures

4.1. Description of first aid measures

Skin contact: If skin contact occurs: Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.

Eye contact: If this product comes in contact with the eyes: Wash out immediately with fresh running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Ingestion: IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. For advice, contact a Poisons Information Centre or a doctor. Urgent hospital treatment is likely to be needed. In the meantime, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition. If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist. If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS. Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise: INDUCE vomiting with fingers

down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. NOTE: Wear a protective glove when inducing vomiting by mechanical means.

Inhalation: If fumes, aerosols or combustion products are inhaled remove from contaminated area. Other measures are usually unnecessary.

4.2. Most important symptoms and effects, both acute and delayed

Indication of any immediate medical attention and special treatment needed
As in all cases of suspected poisoning, follow the ABCDEs of emergency medicine (airway, breathing, circulation, disability, exposure), then the
ABCDEs of toxicology (antidotes, basics, change absorption, change distribution, change elimination).
For poisons (where specific treatment regime is absent):

BASIC TREATMENT

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 L/min.
- Monitor and treat, where necessary, for pulmonary oedema.
- Monitor and treat, where necessary, for shock.
- Anticipate seizures.
- DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.

ADVANCED TREATMENT

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

BRONSTEIN, A.C. and CURRANCE, P.L.

EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994
Treat symptomatically.

Section 5: Fire-fighting measures

5.1. Extinguishing media

Extinguishing media: Water Spray or fog, Foam, Dry Chemical Powder, BCF (Where regulations permit), Carbon Dioxide

5.2. Special hazards arising from the substance or mixture

Exposure hazards: In combustion emits carbon monoxide / dioxide

5.3. Advice for fire-fighters

Advice for fire-fighters: Wear protective clothing to prevent contact with skin and eyes.

Section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details.

6.2. Environmental precautions

Environmental precautions: Refer to section 12.

6.3. Methods and material for containment and cleaning up

Clean-up procedures: Minor Spills - Remove all ignition sources. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact with the substance, by using protective equipment. Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable, labelled container for waste disposal.

Major Spills - Moderate hazard. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course. No smoking, naked lights or ignition sources. Increase ventilation. Stop leak if safe to do so. Contain spill with sand, earth or vermiculite. Collect recoverable product into labelled containers for recycling. Absorb remaining product with sand, earth or vermiculite. Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains.

6.4. Reference to other sections

See section 8 for PPE

Section 7: Handling and storage

7.1. Precautions for safe handling

Handling requirements: DO NOT allow clothing wet with material to stay in contact with skin
The substance accumulates peroxides which may become hazardous only if it evaporates or is distilled or otherwise treated to concentrate the peroxides. The substance may concentrate around the container opening for example. Purchases of peroxidisable chemicals should be restricted to ensure that the chemical is used completely before it can become peroxidised. A responsible person should maintain an inventory of peroxidisable chemicals or annotate the general chemical inventory to indicate which chemicals are subject to peroxidation. An expiration date should be determined. The chemical should either be treated to remove peroxides or disposed of before this date. The person or laboratory receiving the chemical should record a receipt date on the bottle. The individual opening the container should add an opening date. Unopened containers received from the supplier should be safe to store for 18 months. Opened containers should not be stored for more than 12 months. Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well ventilated area. Prevent concentration in hollows and sumps.
DO NOT enter confined spaces until atmosphere has been checked.
Avoid smoking, naked lights or ignition sources. Avoid contact with incompatible materials. When handling, **DO NOT** eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in original containers. Keep containers securely sealed. No smoking, naked lights or ignition sources. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storage and handling recommendations contained within this SDS.

Suitable packaging: Metal can or drum Packaging as recommended by manufacturer.
Check all containers are clearly labelled and free from leaks.

Storage Incompatibility: Glycol ethers may form peroxides under certain conditions; the potential for peroxide formation is enhanced when these substances are used in processes such as distillation where they are concentrated or even evaporated to near-dryness or dryness; storage under a nitrogen atmosphere is recommended to minimise the possible formation of highly reactive peroxides Nitrogen blanketing is recommended if transported in containers at temperatures within 15 deg C of the flash-point and at or above the flash-point - large containers may first need to be purged and inerted with nitrogen prior to loading In the presence of strong bases or the salts of strong bases, at elevated temperatures, the potential exists for runaway reactions. Contact with aluminium should be avoided; release of hydrogen gas may result- glycol ethers will corrode scratched aluminium surfaces. May discolour in mild steel/ copper; lined containers, glass or stainless steel is preferred Glycols and their ethers undergo violent decomposition in contact with 70% perchloric acid.

This seems likely to involve formation of the glycol perchlorate esters (after scission of ethers) which are explosive, those of ethylene glycol and 3-chloro-
1,2-propanediol being more powerful than glyceryl nitrate, and the former so sensitive that it explodes on addition of water . Investigation of the hazards associated with use of 2-butoxyethanol for alloy electropolishing showed that mixtures with 50- 95% of acid at 20 deg C, or 40-90% at 75 C, were explosive and initiable by sparks. Sparking caused mixtures with 40-50% of acid to become explosive, but 30% solutions appeared safe under static conditions of temperature and concentration. Avoid strong bases. Avoid reaction with oxidising agents.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Workplace exposure limits:

Ingredient	Material Name	TEEL-1	TEEL-2	TEEL-3
ethylene glycol phenyl ether	Phenoxyethanol, 2-; (Phenyl cellosolve)	20 ppm	20 ppm	44 ppm
ethylene oxide	Ethylene oxide; (Oxirane)	5 ppm	Not available	Not available

Ingredient	Original IDLH	Revised IDLH
ethylene glycol phenyl ether	Not available	Not available
ethylene oxide	800 ppm	800 [Unch] ppm

MATERIAL DATA
Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.
OSHA (USA) concluded that exposure to sensory irritants can:
• cause inflammation
• cause increased susceptibility to other irritants and infectious agents
• lead to permanent injury or dysfunction
• permit greater absorption of hazardous substances and
• acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.
Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

Exposed individuals are **NOT** reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.
Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.
The Odour Safety Factor (OSF) is defined as:
OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm
Classification into classes follows:
Class OSF Description
A 550 Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV-TWA for example) is being reached, even when distracted by working activities
B 26-550 As "A" for 50-90% of persons being distracted
C 1-26 As "A" for less than 50% of persons being distracted
D 0.18-1 10-50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached

E <0.18 As "D" for less than 10% of persons aware of being tested
CEL TWA: 25 ppm, 140 mg/m3 (skin) [Dow] Odour Safety Factor(OSF) OSF=0.0023 (ETHYLENE OXIDE)

8.2. Exposure controls

Engineering measures:

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure. General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25-0.5 m/s (50-100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5 -1 m/s (100 – 200 f/min)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1.0 – 2.5 m/s (200-500 f/min)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5 – 10m 2.5 m/s (500 - 20000 f/min)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally, decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency.

Hand protection: Protective gloves.

Eye protection: Safety glasses with side shields, Chemical goggles.

Skin protection: Protective clothing with elasticated cuffs and closed neck.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	Liquid
Melting Point:	11°C
Initial Boiling Point:	246°C
Flash Point:	121°C (Setaflash)
Solubility:	Miscible in water
Vapor Density (Air=1):	4.8
Solubility:	Miscible in water
Relative Density (Water=1):	1.1
Molecular weight (g/mol):	138.18
VOC g/L:	1079.1

9.2. Other information

Not applicable

Section 10: Stability and reactivity

10.1. Reactivity

See Section 7

10.2. Chemical stability

Chemical stability: Unstable in the presence of incompatible materials.
Product is considered stable.
Hazardous polymerisation will not occur.

10.3. Possibility of hazardous reactions

See Section 7

10.4. Conditions to avoid

Conditions to avoid: See Section 7

10.5. Incompatible materials

Incompatible materials: See Section 7

10.6. Hazardous decomposition products

Haz. decomp. products: See Section 5

Section 11: Toxicological information

11.1. Information on toxicological effects

Inhaled
The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting. Inhalation hazard is increased at higher temperatures.
Not normally a hazard due to non-volatile nature of product
Ingestion
Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. At sufficiently high doses the material may be neurotoxic (i.e. poisonous to the nervous system).
Skin Contact
Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
The material may produce mild skin irritation; limited evidence or practical experience suggests, that the material either: produces mild inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant, but mild, inflammation when applied to the healthy intact skin of animals (for up to four hours), such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (non-allergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. Repeated skin exposure to ethylene glycol phenyl ether may result in absorption of harmful amounts. Immediate symptoms may include, headache, light-headedness, and a general feeling of intoxication. After several hours, diminished sensation, and reduced finger/ hand strength have been noted.
Eye
Evidence exists, or practical experience predicts, that the material may cause severe eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Eye contact may cause significant inflammation with pain. Corneal injury may occur; permanent impairment of vision may result unless treatment is prompt and adequate. Repeated or prolonged exposure to irritants may cause inflammation characterised by a temporary redness (similar to windburn) of the conjunctiva
(conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.
Chronic
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. Exposure to the material may cause concerns for human fertility, on the basis that similar materials provide some evidence of impaired fertility in the absence of toxic effects, or evidence of impaired fertility occurring at around the same dose levels as
other toxic effects, but which are not a secondary non-specific consequence of other toxic effects.Studies with some ethylene glycol ethers and their esters indicate reproductive changes, testicular atrophy, infertility and kidney function changes. The metabolic acetic acid derivatives of the glycol ethers (alkoxyacetic acids), not the ether itself, have been found to be the proximal reproductive toxin in animals. The potency of these metabolites decrease significantly as the chain length of the ether increases. Consequently glycol ethers with longer substituents (e.g diethylene glycols, triethylene glycols) have not generally been associated with reproductive effects. One of the most sensitive indicators of toxic effects observed from many of the glycol ethers is an increase in the erythrocytic osmotic fragility in rats. This appears to be related to the development of haemoglobinuria (blood in the urine) at higher exposure levels or as a result of chronic exposure. Ethylene glycol ethers and acetates are mainly metabolised to alkoxyacetic acids but there is also a minor pathway through ethylene glycol to oxalic acid.
The main pathway of ethylene glycol ethers is associated with significant clinical or experimental health effects, but the minor pathway is also interesting because formation of urinary stones depends principally upon urinary concentration of oxalate and calcium. In one study (1) the tendency to form urinary stones was 2.4 times higher amongst silk-screen printers exposed to ethylene glycol ethers, than among office workers. (1) Laitinen J., et al: Occupational Environmental

Medicine 1996, 53 595-600 Case studies indicate that ethylene glycol phenyl ether (EGPE), is responsible for acute neurotoxic effects as well as chronic solvent-induced brain syndrome with repeated exposure. Constant irritability, impaired memory and depression may occur after 1-2 yr occupational exposure to EGPE. Other symptoms include alcohol intolerance, episodes of tachycardia and dyspnea, problems with balance and rash. Woman fish hatchery workers, constantly exposed to EGPE, underwent neurophysiological testing and were found to have persistent focal cognitive impairment. [Yearbook of Occupational & Environmental Medicine 1991] Excessive exposure may cause haemolysis, thereby impairing the ability of blood to transport oxygen. Congeners are expected to exhibit similar behaviour.

Product	Toxicity	Irritation
ethylene glycol phenyl ether	dermal (rat) LD50: 14391 mg/kg[1] Oral (rat) LD50: 1386 mg/kg[1]	Eye (rabbit): 250 ug/24h - SEVERE Eye (rabbit): 6 mg - moderate Skin (rabbit): 500 mg/24h - mild
Product	Toxicity	Irritation
ethylene oxide	Inhalation (rat) LC50: 1460 ppm/4hr[2] Inhalation (rat) LC50: 800 ppm/4hr[2] Oral (rat) LD50: 72 mg/kg[2]	Eye (rabbit): 18 mg/6h - moderate Skin (human): 1%/7 sec - irritant

Legend: 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

ETHYLENE GLYCOL PHENYL ETHER
The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. The aryl alkyl alcohol (AAA) fragrance ingredients are a diverse group of chemical structures with similar metabolic and toxicity profiles. The AAA fragrances demonstrate low acute and subchronic dermal and oral toxicity. At concentrations likely to be encountered by consumers, AAA fragrance ingredients are non-irritating to the skin.
The potential for eye irritation is minimal. With the exception of benzyl alcohol and to a lesser extent phenethyl and 2- phenoxyethyl AAA alcohols, human sensitization studies, diagnostic patch tests and human induction studies, indicate that
AAA fragrance ingredients generally have no or low sensitization potential. Available data indicate that the potential for photosensitization is low. NOAELs for maternal and developmental toxicity are far in excess of current human exposure levels. No carcinogenicity in rats or mice was observed in 2-year chronic testing of benzyl alcohol or a-methylbenzyl alcohol; the latter did induce species and gender-specific renal adenomas in male rats at the high dose. There was no to little genotoxicity, mutagenicity, or clastogenicity in the mutagenicity in vitro bacterial assays, and in vitro mammalian cell assays. All in vivo micronucleus assays were negative. It is concluded that these materials would not present a safety concern at current levels of use as fragrance ingredients The Research Institute for Fragrance Materials (RIFM) Expert Panel Bacterial cell mutagen.

ETHYLENE OXIDE
Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a nonallergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. Oxiranes (including glycidyl ethers and alkyl oxides, and epoxides) exhibit many common characteristics with respect to animal toxicology. One such oxirane is ethyloxirane; data presented here may be taken as representative. for 1,2-butylene oxide (ethyloxirane): Ethyloxirane increased the incidence of tumours of the respiratory system in male and female rats exposed via inhalation. Significant increases in nasal papillary adenomas and combined alveolar/bronchiolar adenomas and carcinomas were observed in male rats exposed to 1200 mg/m3 ethyloxirane via inhalation for 103 weeks. There was also a significant positive trend in the incidence of combined alveolar/bronchiolar adenomas and carcinomas. Nasal papillary adenomas were also observed in 2/50 high-dose female rats with none occurring in control or low-dose animals. In mice exposed chronically via inhalation, one male mouse developed a squamous cell papilloma in the nasal cavity (300 mg/m3) but other tumours were not observed. Tumours were not observed in mice exposed chronically via dermal exposure. When trichloroethylene containing 0.8% ethyloxirane was administered orally to mice for up to 35 weeks, followed by 0.4% from weeks 40 to 69, squamous-cell carcinomas of the forestomach occurred in 3/49 males (p=0.029, age-adjusted) and 1/48 females at week 106. Trichloroethylene administered alone did not induce these tumours and they were not observed in control animals . Two structurally related substances, oxirane (ethylene oxide) and methyloxirane (propylene oxide), which are also direct-acting alkylating agents, have been classified as carcinogenic for ethylene oxide: Ethylene oxide is very soluble in blood. Therefore, pulmonary uptake is expected to be fast and to depend only on the alveolar ventilation rate and the concentration of ethylene oxide in the inspired air. The rate of uptake of ethylene oxide in mice was 1.1 ug/kg body

weight, per min, at an exposure level of 1 mg/m3. This corresponds to nearly 100% absorption of ethylene oxide from 1.1 litre of air per min and per kg body weight, which is the reported rate of alveolar ventilation in resting mice. No specific information pertaining to skin absorption is available, but accidental exposure of the skin of 3 industrial workers to 1% aqueous solution of ethylene oxide was reported to have resulted in marked nausea and profuse vomiting Human exposure mainly occurs through inhalation in sterilisation facilities and in production plants. In sterilisation facilities, 8-h time-weighted average levels have usually been below 36 mg/m3, with short-term exposures of about 100 mg/m3, and peak levels of up to 1800 mg/m3. In production plants, the time-weighted average has usually been below 4 mg/m3. Ambient levels at a distance from point sources of emission have been estimated to be below the limit of detection. Exposure to residues of ethylene oxide or its reaction products, halohydrins and ethylene glycol, also occurs from fumigated foods, pharmaceutical products, and sterilised medical equipment. 2-Chloroethanol levels as high as several g/kg have been measured

in food and levels of several hundred mg/kg in medical equipment. When inhaled, ethylene oxide is readily absorbed, distributed throughout the body, and rapidly metabolized. Accordingly, most organs receive equivalent doses of the chemical and its metabolites. The degree of alkylation of proteins and DNA varies slightly between the different organs and blood. In man and rodents, the half-life of the compound in tissues has been estimated to be 9 - 10 min. Two metabolic pathways have been identified including hydrolysis to 1,2-ethanediol and conjugation with glutathione. Excretion is primarily via the urine. Ethylene oxide is moderately toxic for mammals (the LD50 for the rat is 280 - 365 mg/kg body weight; the 4-h LC50 is 2630 mg/m3). Both experimental animal and human data show that aqueous solutions of ethylene oxide are irritating for the skin and eyes; the irritant effects of ethylene oxide vapour or residues in medical equipment on the eyes and the respiratory tract have also been observed. These effects are often delayed.

Severe skin irritation is characterized by the formation of vesicles. A concentration of 10 mg/litre produced mild irritation of the human skin; a concentration of 500 g/litre was most injurious to the human skin. Allergic contact dermatitis has been reported; systemic immunologically mediated allergy is considered rare. Respiratory tract irritation increases with inhaled vapour concentration and may result in severe life-threatening pulmonary disease. Repeated exposure (2 - 8 weeks) to ethylene oxide vapour at or above 900 mg/m3 produced sensory and motor neurological impairment and may result in a peripheral neuropathy. In animals, the latter was often accompanied by muscular atrophy. Lesions in the medulla oblongata of monkeys, following 2 years of intermittent exposure (7 h/day, 5 days/week) to 90 and 180 mg/m3 indicated neuropathy in the brain, which may be related to the neuropathies observed in man and other animal species. Cardiovascular collapse and renal failure have been attributed to residues of ethylene oxide in medical equipment. Ethylene oxide alkylates DNA and is mutagenic for plants, microorganisms, insects, and mammals. Cytogenetic studies on man have shown dose-related increased frequencies of both sister chromatid exchanges (SCEs) and chromosomal aberrations; in one study, SCEs developed following daily exposure for less than 5 min per day. The evidence that ethylene oxide is a reproductive toxin is less conclusive. Where foetal developmental effects have occurred, the doses of ethylene oxide approached or equalled those producing maternal toxicity. To date, impaired male reproductive function in animals has been demonstrated only at concentrations of 90 mg/m3 or more in long-term intermittent exposures or at higher air concentrations for brief exposures. In pregnant women, the results of one study suggest that occupational exposure estimated to be an 8-h time-weighted average of 0.18 - 0.90 mg/m3, with peak concentrations up to 450 mg/m3, was associated with spontaneous abortions. However, limited exposure data prevents the establishment of a relationship between abortion rates and exposure levels. Ethylene oxide is carcinogenic for animals when administered by the intragastric, subcutaneous injection, and inhalation routes of exposure. In man, 2 studies have shown an association between ethylene oxide exposure and an excess risk of cancer, but both studies have limitations. Airborne concentrations of ethylene oxide in the 2 studies were reported to be time-weighted averages of 36 +/-18 mg/m3 and 10 - 50 mg/m3, with occasional brief exposures in excess of the odour threshold (900 - 1260 mg/m3).
WARNING: This substance has been classified by the IARC as Group 1: **CARCINOGENIC TO HUMANS**.
Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen
[*National Toxicology Program: U.S. Dep. of Health & Human Services 2002*]

Acute Toxicity	**Carcinogenicity**
Skin Irritation/Corrosion	**Reproductivity**
Serious Eye Damage/Irritation	**STOT - Single Exposure**
Respiratory or Skin sensitisation	**STOT - Repeated Exposure**
Mutagenicity	**Aspiration Hazard**

Legend:
– Data available but does not fill the criteria for classification
– Data required to make classification available
– Data Not Available to make classification

Section 12: Ecological information

12.1. Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value (mg/l)	Source
Ethylene glycol phenyl ether	LC50	96	Fish	106.514	3
Ethylene glycol phenyl ether	EC50	48	Crustacea	460	2
Ethylene glycol phenyl ether	EC50	96	Algae or other aquatic plants	429.444	3
Ethylene glycol phenyl ether	EC50	384	Crustacea	25.027	3
Ethylene glycol phenyl ether	NOEC	24	Fish	5	2
Ethylene Oxide	LC50	96	Fish	23.609	3
Ethylene Oxide	EC50	96	Algae or other aquatic plants	240	2
Ethylene Oxide	EC50	24	Fish	90	5

Phenoxyethanol

Source: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

Environmental fate:
Ether groups are generally stable to hydrolysis in water under neutral conditions and ambient temperatures. OECD guideline studies indicate ready biodegradability for several glycol ethers although higher molecular weight species seem to biodegrade at a slower rate. No glycol ethers that have been tested demonstrate marked resistance to biodegradative processes. Upon release to the atmosphere by evaporation, high boiling glycol ethers are estimated to undergo photodegradation (atmospheric half lives = 2.4-2.5 hr). When released to water, glycol ethers undergo biodegradation (typically 47-92% after 8-21 days) and have a low potential for bioaccumulation (log Kow ranges from -1.73 to +0.51).
Ecotoxicity:

Aquatic toxicity data indicate that the tri- and tetra ethylene glycol ethers are "practically non-toxic" to aquatic species. No major differences are observed in the order of toxicity going from the methyl- to the butyl ethers. Glycols exert a high oxygen demand for decomposition and once released to the environments cause the death of aquatic organisms if dissolved oxygen is depleted.
DO NOT discharge into sewer or waterways.
|log Kow : 1.16|Koc : 102|Henrys atm m3 /mol: 2.00E-07|BCF : 2-4.5|Toxicity Fish: LC50(96)22.85-30.99mg/L|Toxicity invertebrate: LC50(96)22.08mg/L|Bioacculmulation : not sig|Degradation Biological: v sig|processes Abiotic: RxnOH*

12.2. Persistence and degradability

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
Ethylene glycol phenyl ether	LOW	LOW
Ethylene oxide	LOW (Half-life = 11.88 days)	HIGH (Half-life = 381.96 days)

12.3. Bioaccumulative potential

Bio accumulative potential

Ingredient	Bioaccumulation
Ethylene glycol phenyl ether	LOW (LogKOW = 1.16)
Ethylene oxide	LOW (BCF = 0.35)

12.4. Mobility in soil

Mobility in soil

Ingredient	Mobility
Ethylene glycol phenyl ether	LOW (KOC = 12.12)
Ethylene oxide	HIGH (KOC = 1.435)

12.5. Results of PBT and vPvB assessment

PBT identification: This substance is not identified as a PBT substance.

12.6. Other adverse effects

Not applicable

Section 13: Disposal considerations

13.1. Waste treatment methods

Containers may still present a chemical hazard/ danger when empty. Return to supplier for reuse/ recycling if possible.
Otherwise: If container cannot be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
Where possible retain label warnings and SDS and observe all notices pertaining to the product. Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. A Hierarchy of Controls seems to be common - the user should investigate: Reduction Reuse Recycling Disposal (if all else fails).This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning or process equipment to enter drains.
It may be necessary to collect all wash water for treatment before disposal.
In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.

Where in doubt contact the responsible authority. Recycle wherever possible or consult manufacturer for recycling options. Consult State Land Waste Authority for disposal. Bury or incinerate residue at an approved site. Recycle containers if possible, or dispose of in an authorised landfill.

Section 14: Transport information

14.1. UN number

UN number: Not classified for transport

14.2. UN proper shipping name

UN proper shipping name: Not applicable.

14.3. Transport hazard class(es)

Transport hazard class: Not applicable.

14.4. Packing group

Packing group: Not applicable.

14.5. Environmental hazards

Environmental hazards: Not classified as environmentally hazardous according to UN Model Regulations (IMDG, ADR, RID and ADN)

14.6. Special precautions for user

Disposal operations: Must be disposed of in accordance with local and national regulations.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC code

Transport in bulk: Product will not be transported in bulk

Section 15: Regulatory information

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

ETHYLENE GLYCOL PHENYL ETHER(122-99-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS
• International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

ETHYLENE OXIDE(75-21-8) IS FOUND ON THE FOLLOWING REGULATORY LISTS
• International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
• International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has not been carried out for the substance or the mixture by the supplier.

Inventories: Austrailia – AICS – YES

Canada – DSL – YES
Canada – NDSL – NO (ethylene oxide; ethylene glycol phenyl ether)
China – IECSC – YES
Europe – EINEC/EINECS/NLP – YES
Japan – ENCS – YES
Korea – KECI – YES
New Zealand – NZIoC – YES
Phillipines – PICCS – YES
USA – TSCA – YES

YES = All ingredients are on the inventory
NO = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

Section 16: Other information

Other information

Other information: Ethylene glycol phenyl ether 122-99-6, 37220-49-8, 134367-25-2, 18249-17-7, 200260-63-5, 79586-53-1, 9004-78-8, 56257-90-0, 1219804-65-5
Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at: www.chemwatch.net
The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

Phenoxyethanol

INCI Name: 2-Phenoxyethanol
CAS No: 122-99-6
Synonyms: Phenol ethoxylate.

Specification

Appearance	Clear colourless liquid
Odour	Characteristic
Colour, PtCo	10 maximum
Purity, % (by GC)	99.0% minimum
Free Phenol, ppm (by HPLC)	5ppm Max
Water content, % w/w	0.5 maximum
Density at 20°C	1.105 – 1.110

Product Information – Vegan Statement

Tradename: Phenoxyethanol

We, hereby declares that the above mentioned product is not manufactured using animal ingredients and does not come into contact with any animal products.

This is an electronically generated document and is valid without a signature

21/01/2022