# THYMOL

# ALPHA CHEMICALS PTY LTD

Chemwatch Hazard Alert Code: **3**

Chemwatch: **22001**
Version No: **8.1**
Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Issue Date: **29/06/2020**
Print Date: **05/11/2021**
S.GHS.AUS.EN

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

### Product Identifier

| | |
|---|---|
| **Product name** | THYMOL |
| **Chemical Name** | thymol |
| **Synonyms** | C10-H14-O; m-cresol, 6-isopropyl-; p-cymene, 3-hydroxy-; p-cymen-3-o1; 3-p-cymenol; 3-hydroxy-p-cymene; 3-hydroxy-1-methyl-4-isopropylbenzene; 3 hydroxy 1 methyl 4 isopropylbenzene; isopropyl cresol; 2-isopropyl-5-methylphenol; 1-methyl-3-hydrocy-4-isopropylbenzene; 3-methyl-6-isopropylphenol; 5-methyl-2-isopropyl-1-phenol; 5-methyl-2-(1-methylethyl)phenol; phenol, 2-1sopropyl-5-methyl-; thyme camphor; thymic acid; m-thymol; Taymol; Code: 00002328 |
| **Proper shipping name** | CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (contains thymol) |
| **Chemical formula** | C10H14O |
| **Other means of identification** | Not Available |
| **CAS number** | 89-83-8 |

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

| | |
|---|---|
| **Relevant identified uses** | Mold and mildew preventative, microscopy, preservative antioxidant, flavouring, lab reagent, synthetic menthol. [~Fragrance ~]<br>Fungicide.<br>Fungicide Resistance Action Committee - FRAC Code 46<br>Fungal membrane integrity disruptor<br>Code F7 Target cell membrane disruption: Group: plant extracts (terpene hydrocarbons, terpene alcohols, terpene phenols)<br>Risk of resistance not known<br>In perfumery/ flavouring. |

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

| | |
|---|---|
| **Registered company name** | **ALPHA CHEMICALS PTY LTD** |
| **Address** | 4 ALLEN PLACE WETHERILL PARK NSW 2099 Australia |
| **Telephone** | 61 (0)2 9982 4622 |
| **Fax** | Not Available |
| **Website** | ~ |
| **Email** | shane@alphachem.com.au |

### Emergency telephone number

| | |
|---|---|
| **Association / Organisation** | **ALPHA CHEMICALS PTY LTD** |
| **Emergency telephone numbers** | 61 (0)418 237 771 |
| **Other emergency telephone numbers** | Not Available |

## SECTION 2 Hazards identification

### Classification of the substance or mixture

**HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.**

**ChemWatch Hazard Ratings**

| | | Min | Max |
|---|---|---|---|
| Flammability | 1 | | |
| Toxicity | 2 | | |
| Body Contact | 3 | | |
| Reactivity | 1 | | |
| Chronic | 0 | | |

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

| | |
|---|---|
| **Poisons Schedule** | Not Applicable |

| | |
|---|---|
| **Classification [1]** | Corrosive to Metals Category 1, Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 1B, Serious Eye Damage/Eye Irritation Category 1, Hazardous to the Aquatic Environment Long-Term Hazard Category 2 |
| ***Legend:*** | *1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI* |

### Label elements

| | |
|---|---|
| **Hazard pictogram(s)** |  |
| **Signal word** | **Danger** |

### Hazard statement(s)

| | |
|---|---|
| **H290** | May be corrosive to metals. |
| **H302** | Harmful if swallowed. |
| **H314** | Causes severe skin burns and eye damage. |
| **H411** | Toxic to aquatic life with long lasting effects. |

### Precautionary statement(s) Prevention

| | |
|---|---|
| **P260** | Do not breathe dust/fume. |
| **P264** | Wash all exposed external body areas thoroughly after handling. |
| **P280** | Wear protective gloves, protective clothing, eye protection and face protection. |
| **P234** | Keep only in original packaging. |
| **P270** | Do not eat, drink or smoke when using this product. |
| **P273** | Avoid release to the environment. |

### Precautionary statement(s) Response

| | |
|---|---|
| **P301+P330+P331** | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. |
| **P303+P361+P353** | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. |
| **P305+P351+P338** | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| **P310** | Immediately call a POISON CENTER/doctor/physician/first aider. |
| **P363** | Wash contaminated clothing before reuse. |
| **P390** | Absorb spillage to prevent material damage. |
| **P391** | Collect spillage. |
| **P301+P312** | IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider if you feel unwell. |

### Precautionary statement(s) Storage

| | |
|---|---|
| **P405** | Store locked up. |

### Precautionary statement(s) Disposal

| | |
|---|---|
| **P501** | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |

## SECTION 3 Composition / information on ingredients

### Substances

| CAS No | %[weight] | Name |
|---|---|---|
| 89-83-8 | >98 | thymol |

***Legend:*** *1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available*

### Mixtures

See section above for composition of Substances

## SECTION 4 First aid measures

### Description of first aid measures

| | |
|---|---|
| **Eye Contact** | If this product comes in contact with the eyes:<br>▸ Immediately hold eyelids apart and flush the eye continuously with running water.<br>▸ 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.<br>▸ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.<br>▸ Transport to hospital or doctor without delay.<br>▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |
| **Skin Contact** | If skin or hair contact occurs:<br>▸ Immediately flush body and clothes with large amounts of water, using safety shower if available.<br>▸ Quickly remove all contaminated clothing, including footwear. |

**Continued...**

| | |
|---|---|
| | • Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.<br>• Transport to hospital, or doctor. |
| **Inhalation** | • If fumes or combustion products are inhaled remove from contaminated area.<br>• Lay patient down. Keep warm and rested.<br>• Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.<br>• Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.<br>• Transport to hospital, or doctor.<br>• Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema.<br>• Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs).<br>• As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested.<br>• Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered.<br>**This must definitely be left to a doctor or person authorised by him/her.**<br>(ICSC13719) |
| **Ingestion** | • For advice, contact a Poisons Information Centre or a doctor at once.<br>• Urgent hospital treatment is likely to be needed.<br>• If swallowed do **NOT** induce vomiting.<br>• If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.<br>• Observe the patient carefully.<br>• Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.<br>• Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.<br>• Transport to hospital or doctor without delay. |

### Indication of any immediate medical attention and special treatment needed

Poisoning may resemble phenol intoxication.
For acute or short term repeated exposures to strong acids:

- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

INGESTION:

- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- **DO NOT** attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
- Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
- Charcoal has no place in acid management.
- Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

- Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjuctival cul-de-sacs. Irrigation should last at least 20-30 minutes. **DO NOT** use neutralising agents or any other additives. Several litres of saline are required.
- Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

[Ellenhorn and Barceloux: Medical Toxicology]

For acute or short term repeated exposures to phenols/ cresols:

- Phenol is absorbed rapidly through lungs and skin. [Massive skin contact may result in collapse and death]*
- [Ingestion may result in ulceration of upper respiratory tract; perforation of oesophagus and/or stomach, with attendant complications, may occur. Oesophageal stricture may occur.]*
- An initial excitatory phase may present. Convulsions may appear as long as 18 hours after ingestion. Hypotension and ventricular tachycardia that require vasopressor and antiarrhythmic therapy, respectively, can occur.
- Respiratory arrest, ventricular dysrhythmias, seizures and metabolic acidosis may complicate severe phenol exposures so the initial attention should be directed towards stabilisation of breathing and circulation with ventilation, intubation, intravenous lines, fluids and cardiac monitoring as indicated.
- [Vegetable oils retard absorption; do NOT use paraffin oils or alcohols. Gastric lavage, with endotracheal intubation, should be repeated until phenol odour is no longer detectable; follow with vegetable oil. A saline cathartic should then be given.]* ALTERNATIVELY: Activated charcoal (1g/kg) may be given. A cathartic should be given after oral activated charcoal.
- Severe poisoning may require slow intravenous injection of methylene blue to treat methaemoglobinaemia.
- [Renal failure may require haemodialysis.]*
- Most absorbed phenol is biotransformed by the liver to ethereal and glucuronide sulfates and is eliminated almost completely after 24 hours. [*Ellenhorn and Barceloux: Medical Toxicology*] *[*Union Carbide*]

BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker who has been exposed to the Exposure Standard (ES or TLV):

| Determinant | Index | Sampling Time | Comments |
|---|---|---|---|
| 1. Total phenol in blood | 250 mg/gm creatinine | End of shift | B, NS |

B: Background levels occur in specimens collected from subjects **NOT** exposed

NS: Non-specific determinant; also seen in exposure to other materials

## SECTION 5 Firefighting measures

### Extinguishing media

**Continued...**

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

### Special hazards arising from the substrate or mixture

| | |
|---|---|
| **Fire Incompatibility** | - Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |

### Advice for firefighters

| | |
|---|---|
| **Fire Fighting** | - Alert Fire Brigade and tell them location and nature of hazard.<br>- Wear full body protective clothing with breathing apparatus.<br>- Prevent, by any means available, spillage from entering drains or water course.<br>- Use fire fighting procedures suitable for surrounding area.<br>- **Do not** approach containers suspected to be hot.<br>- Cool fire exposed containers with water spray from a protected location.<br>- If safe to do so, remove containers from path of fire.<br>- Equipment should be thoroughly decontaminated after use. |
| **Fire/Explosion Hazard** | - Combustible.<br>- Slight fire hazard when exposed to heat or flame.<br>- Acids may react with metals to produce hydrogen, a highly flammable and explosive gas.<br>- Heating may cause expansion or decomposition leading to violent rupture of containers.<br>- May emit acrid smoke and corrosive fumes.<br>Combustion products include:<br>carbon monoxide (CO)<br>carbon dioxide (CO2)<br>other pyrolysis products typical of burning organic material. |
| **HAZCHEM** | 2X |

## SECTION 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

See section 8

### Environmental precautions

See section 12

### Methods and material for containment and cleaning up

| | |
|---|---|
| **Minor Spills** | - Remove all ignition sources.<br>- Clean up all spills immediately.<br>- Avoid contact with skin and eyes.<br>- Control personal contact with the substance, by using protective equipment.<br>- Use dry clean up procedures and avoid generating dust.<br>- Place in a suitable, labelled container for waste disposal.<br>- Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.<br>- Check regularly for spills and leaks. |
| **Major Spills** | - Clear area of personnel and move upwind.<br>- Alert Fire Brigade and tell them location and nature of hazard.<br>- Wear full body protective clothing with breathing apparatus.<br>- Prevent, by any means available, spillage from entering drains or water course.<br>- Consider evacuation (or protect in place).<br>- Stop leak if safe to do so.<br>- Contain spill with sand, earth or vermiculite.<br>- Collect recoverable product into labelled containers for recycling. |

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 Handling and storage

### Precautions for safe handling

| | |
|---|---|
| **Safe handling** | - Avoid all personal contact, including inhalation.<br>- Wear protective clothing when risk of exposure occurs.<br>- Use in a well-ventilated area.<br>- Avoid contact with moisture.<br>- Avoid contact with incompatible materials.<br>- When handling, **DO NOT** eat, drink or smoke.<br>- Keep containers securely sealed when not in use.<br>- Avoid physical damage to containers.<br>- Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions)<br>- Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame.<br>- Establish good housekeeping practices.<br>- Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.<br>- Use continuous suction at points of dust generation to capture and minimise the accumulation of dusts. Particular attention should be given to overhead and hidden horizontal surfaces to minimise the probability of a "secondary" explosion. According to NFPA Standard 654, dust layers 1/32 in.(0.8 mm) thick can be sufficient to warrant immediate cleaning of the area.<br>- Do not use air hoses for cleaning. |

Continued...

| | |
|---|---|
| **Other information** | ‣ Store in original containers.<br>‣ Keep containers securely sealed.<br>‣ Store in a cool, dry, well-ventilated area.<br>‣ Store away from incompatible materials and foodstuff containers.<br>‣ Protect containers against physical damage and check regularly for leaks.<br>‣ Observe manufacturer's storage and handling recommendations contained within this SDS. |

### Conditions for safe storage, including any incompatibilities

| | |
|---|---|
| **Suitable container** | ‣ **DO NOT** use aluminium or galvanised containers<br>‣ Check regularly for spills and leaks<br>‣ Lined metal can, lined metal pail/ can.<br>‣ Plastic pail.<br>‣ Polyliner drum.<br>‣ Packing as recommended by manufacturer.<br>‣ Check all containers are clearly labelled and free from leaks.<br>For low viscosity materials<br>‣ Drums and jerricans must be of the non-removable head type.<br>‣ Where a can is to be used as an inner package, the can must have a screwed enclosure.<br>For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids (between 15 C deg. and 40 deg C.):<br>‣ Removable head packaging;<br>‣ Cans with friction closures and<br>‣ low pressure tubes and cartridges<br>may be used.<br>-<br>Where combination packages are used, and the inner packages are of glass, porcelain or stoneware, there must be sufficient inert cushioning material in contact with inner and outer packages unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic. |
| **Storage incompatibility** | For thymol:<br>‣ Avoid storage, acetanilide, antipyrine, camphor, choral hydrate, menthol, quinine sulfate, salol and urethane<br>‣ Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.<br>‣ Phenols are incompatible with strong reducing substances such as hydrides, nitrides, alkali metals, and sulfides.<br>‣ Avoid use of aluminium, copper and brass alloys in storage and process equipment.<br>‣ Heat is generated by the acid-base reaction between phenols and bases.<br>‣ Phenols are sulfonated very readily (for example, by concentrated sulfuric acid at room temperature), these reactions generate heat.<br>‣ Phenols are nitrated very rapidly, even by dilute nitric acid.<br>‣ Nitrated phenols often explode when heated. Many of them form metal salts that tend toward detonation by rather mild shock.<br>‣ Avoid oxidising agents, acids, acid chlorides, acid anhydrides, chloroformates.<br>‣ Segregate from alkalies, oxidising agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates. |

## SECTION 8 Exposure controls / personal protection

### Control parameters

#### Occupational Exposure Limits (OEL)

#### INGREDIENT DATA

Not Available

#### Emergency Limits

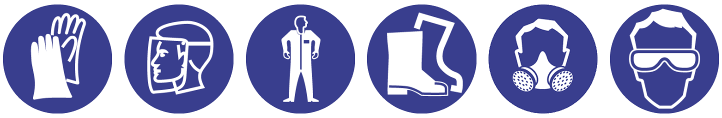
| Ingredient | TEEL-1 | TEEL-2 | TEEL-3 |
|---|---|---|---|
| thymol | 2.9 mg/m3 | 32 mg/m3 | 190 mg/m3 |

| Ingredient | Original IDLH | Revised IDLH |
|---|---|---|
| thymol | Not Available | Not Available |

#### Occupational Exposure Banding

| Ingredient | Occupational Exposure Band Rating | Occupational Exposure Band Limit |
|---|---|---|
| thymol | E | ≤ 0.01 mg/m³ |
| ***Notes:*** | *Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.* | |

### Exposure controls

| | |
|---|---|
| **Appropriate engineering controls** | 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.<br>The basic types of engineering controls are:<br>Process controls which involve changing the way a job activity or process is done to reduce the risk.<br>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.<br>Employers may need to use multiple types of controls to prevent employee overexposure.<br>‣ Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction. |
| **Personal protection** |  |

Continued...

| | |
|---|---|
| **Eye and face protection** | - Chemical goggles.<br>- Full face shield may be required for supplementary but never for primary protection of eyes.<br>- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. |
| **Skin protection** | See Hand protection below |
| **Hands/feet protection** | - Wear chemical protective gloves, e.g. PVC.<br>- Wear safety footwear or safety gumboots, e.g. Rubber<br>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.<br>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.<br>Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.<br>Suitability and durability of glove type is dependent on usage. |
| **Body protection** | See Other protection below |
| **Other protection** | - Overalls.<br>- PVC Apron.<br>- PVC protective suit may be required if exposure severe.<br>- Eyewash unit.<br>- Ensure there is ready access to a safety shower. |

### Respiratory protection

· Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.

· The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).

· Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.

· Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.

· Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)

· Use approved positive flow mask if significant quantities of dust becomes airborne.

· Try to avoid creating dust conditions.

## SECTION 9 Physical and chemical properties

### Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance** | White crystals with aromatic odour and taste. Soluble in alcohol, carbon disulfide, chloroform, glacial acetic acid, ether and fixed or volatile oils. Soluble in alkali hydroxides. Slightly soluble in water and glycerol. |

| | | | |
|---|---|---|---|
| **Physical state** | Divided Solid | **Relative density (Water = 1)** | 0.979 |
| **Odour** | Not Available | **Partition coefficient n-octanol / water** | Not Available |
| **Odour threshold** | Not Available | **Auto-ignition temperature (°C)** | Not Available |
| **pH (as supplied)** | Not Applicable | **Decomposition temperature** | Not Available |
| **Melting point / freezing point (°C)** | 48.51 | **Viscosity (cSt)** | Not Applicable |
| **Initial boiling point and boiling range (°C)** | 233 | **Molecular weight (g/mol)** | 150.24 |
| **Flash point (°C)** | 102 | **Taste** | Not Available |
| **Evaporation rate** | Not Available | **Explosive properties** | Not Available |
| **Flammability** | Not Applicable | **Oxidising properties** | Not Available |
| **Upper Explosive Limit (%)** | Not Available | **Surface Tension (dyn/cm or mN/m)** | Not Applicable |
| **Lower Explosive Limit (%)** | Not Available | **Volatile Component (%vol)** | Not Available |
| **Vapour pressure (kPa)** | 0.13 @ 64C | **Gas group** | Not Available |
| **Solubility in water** | Partly miscible | **pH as a solution (%)** | Not Applicable |
| **Vapour density (Air = 1)** | 5.2 | **VOC g/L** | Not Applicable |

## SECTION 10 Stability and reactivity

| | |
|---|---|
| **Reactivity** | See section 7 |
| **Chemical stability** | - Contact with alkaline material liberates heat |
| **Possibility of hazardous reactions** | See section 7 |
| **Conditions to avoid** | See section 7 |
| **Incompatible materials** | See section 7 |

Continued...

| | |
|---|---|
| **Hazardous decomposition products** | See section 5 |

## SECTION 11 Toxicological information

### Information on toxicological effects

| | |
|---|---|
| **Inhaled** | Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.<br>If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result<br>in excessive exposures.<br><br>Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage. There may be dizziness, headache, nausea and weakness.<br>If phenols are absorbed via the lungs, systemic effects may occur affecting the cardiovascular and nervous systems. Inhalation can result in profuse perspiration, intense thirst, nausea, vomiting, diarrhoea, cyanosis, restlessness, stupor, falling blood pressure, hyperventilation, abdominal pain, anaemia, convulsions, coma, swelling and inflammation of the lung.<br>Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual. |
| **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.<br>The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.<br>Some phenol derivatives can cause damage to the digestive system. If absorbed, profuse sweating, thirst, nausea, vomiting, diarrhoea, cyanosis, restlessness, stupor, low blood pressure, gasping, abdominal pain, anaemia, convulsions, coma and lung swelling can happen followed by pneumonia.<br>Ingestion of acidic corrosives may produce burns around and in the mouth, the throat and oesophagus. Immediate pain and difficulties in swallowing and speaking may also be evident.<br>Thymol resembles phenol in its actions on the whole body, but it is less toxic. Swallowing may cause burning pain in the gullet, nausea, abdominal pain, vomiting, dizziness, convulsions, coma, bluing of the extremities, central excitement, and stoppage of the heart and breathing. |
| **Skin Contact** | The material can produce chemical burns following direct contact with the skin.<br>Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.<br>Phenol and its derivatives can cause severe skin irritation if contact is maintained, and can be absorbed to the skin affecting the cardiovascular and central nervous system. Effects include sweating, intense thirst, nausea and vomiting, diarrhoea, cyanosis, restlessness, stupor, low blood pressure, hyperventilation, abdominal pain, anaemia, convulsions, coma, lung swelling followed by pneumonia.<br>Open cuts, abraded or irritated skin should not be exposed to this material<br>Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue.<br>Entry into the blood-stream, through, for example, cuts, abrasions 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. |
| **Eye** | The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.<br>If applied to the eyes, this material causes severe eye damage.<br>Irritation of the eyes may produce a heavy secretion of tears (lachrymation).<br>Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns. Mild burns of the epithelia generally recover rapidly and completely.<br>Some phenol derivatives may produce mild to severe eye irritation with redness, pain and blurred vision. Permanent eye injury may occur; recovery may also be complete or partial. |
| **Chronic** | May cause kidney and liver damage.<br>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.<br>Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs.<br>Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis, caused by particles less than 0.5 micron penetrating and remaining in the lung.<br>Long-term exposure to phenol derivatives can cause skin inflammation, loss of appetite and weight, weakness, muscle aches and pain, liver damage, dark urine, loss of nails, skin eruptions, diarrhoea, nervous disorders with headache, salivation, fainting, discolouration of the skin and eyes, vertigo and mental disorders, and damage to the liver and kidneys. |

**thymol**

| TOXICITY | IRRITATION |
|---|---|
| dermal (rat) LD50: >2000 mg/kg[1] | Eye : Severe * |
| Oral(Mouse) LD50; 640 mg/kg[2] | Eye: adverse effect observed (irritating)[1] |
| | Skin (rabbit): Corrosive * |
| | Skin: adverse effect observed (corrosive)[1] |
| | Skin: adverse effect observed (irritating)[1] |

| | |
|---|---|
| ***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* |

| | |
|---|---|
| **THYMOL** | *US EPA Biopesticide Registration Action Document<br>For acid mists, aerosols, vapours<br>Test results suggest that eukaryotic cells are susceptible to genetic damage when the pH falls to about 6.5. Cells from the respiratory tract have not been examined in this respect. Mucous secretion may protect the cells of the airway from direct exposure to inhaled acidic mists (which also protects the stomach lining from the hydrochloric acid secreted there).<br>These substances are intravenous anaesthetic agents. They have a very low level of acute toxicity; they may cause skin irritation.�Repeated exposure may irritate the stomach. There is no evidence of this group of substances causing mutation or adverse effects on reproduction. However, at high doses, there may be reduction of newborn weight and reduced survival in early lactation period.<br>Thymol is found in the naturally occurring herb, thyme, used as a food seasoning. No adverse effects on humans have been identified. Animal testing shows that thymol is a severe eye irritant and can cause clouding of the cornea and inflammation of the iris if instilled into the eye, and it can also have a corrosive effect on skin. Thymol is not thought to cause genetic damage or mutations or cause hormonal disturbances. |

**Continued...**

Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. 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. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production.

| | | | |
|---|---|---|---|
| **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 either not available or does not fill the criteria for classification*
✓ *– Data available to make classification*

## SECTION 12 Ecological information

### Toxicity

| | Endpoint | Test Duration (hr) | Species | Value | Source |
|---|---|---|---|---|---|
| **thymol** | EC50 | 48h | Crustacea | 4.5mg/l | 2 |
| | BCF | 1008h | Fish | 7.8-19 | 7 |
| | NOEC(ECx) | 72h | Algae or other aquatic plants | 1.9mg/l | 2 |
| | EC50 | 72h | Algae or other aquatic plants | 7.7mg/l | 2 |
| | LC50 | 96h | Fish | 3mg/l | 2 |
| ***Legend:*** | *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - 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* | | | | |

log Kow : 3.3 COD : 2.2 ThOD : 2.77
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
**Ecotoxicity:**
The tolerance of water organisms towards pH margin and variation is diverse. Recommended pH values for test species listed in OECD guidelines are between 6.0 and almost 9.
Acute testing with fish showed 96h-LC50 at about pH 3.5
For Alkylphenols:
Environmental Fate: The alkylphenolics may be divided into three groups. Group I: Ortho-substituted mono-alkylphenols. Group II: Para-substituted mono-alkylphenols. Group III: Di- and tri-substituted mixed alkyl phenols. None of the alkylphenols will be ionized significantly at environmental or physiological pHs. Water solubility and vapor pressure decreases with increasing molecular weight and with increasing octanol/water partition coefficient (log Kow). A few lower molecular weight phenols will be present in significant quantities (>10%) in the air and water compartments.
Atmospheric Fate: Direct photolysis is not expected to be a significant route of loss for any of the alkylphenols; however, indirect photolysis (atmospheric oxidation) has been estimated for all substances.
For Alkylphenols and their Ethoxylates, or Propoxylates (APE):
Environmental fate: Alkylphenols are found everywhere in the environmental, when released. Releases are generally as wastes; they are extensively used throughout industry and in the home. Alkylphenol ethoxylates are widely used surfactants in domestic and industrial products, which are commonly found in wastewater discharges and in sewage treatment plant effluents. These substances can �load� considerably in various environmental compartments.
Atmospheric Fate: Alkylphenols released to the atmosphere will exist in the vapor phase and are thought to be degraded by reaction with hydroxyl radicals, with a calculated half-life, for nonylphenol, of 0.3 days. However, emissions to the air will be limited.
Terrestrial Fate: These substances will adsorb to organic soil substances. Adsorption decreases as certain chains in the chemical get longer and increases if water is present.
For Phenols:
Ecotoxicity - Phenols with log Pow >7.4 are expected to exhibit low toxicity to aquatic organisms however; the toxicity of phenols with a lower log Pow is variable. Dinitrophenols are more toxic than predicted from QSAR estimates. Hazard information for these groups is not generally available.
Prevent, by any means available, spillage from entering drains or water courses.
**DO NOT** discharge into sewer or waterways.

### Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|---|---|---|
| thymol | HIGH | HIGH |

### Bioaccumulative potential

| Ingredient | Bioaccumulation |
|---|---|
| thymol | LOW (BCF = 48) |

### Mobility in soil

| Ingredient | Mobility |
|---|---|
| thymol | LOW (KOC = 2188) |

**Continued...**

## SECTION 13 Disposal considerations

### Waste treatment methods

| | |
|---|---|
| **Product / Packaging disposal** | - Containers may still present a chemical hazard/ danger when empty.<br>- Return to supplier for reuse/ recycling if possible.<br>Otherwise:<br>- If container can not 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.<br>- Where possible retain label warnings and SDS and observe all notices pertaining to the product.<br>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.<br>A Hierarchy of Controls seems to be common - the user should investigate:<br>- Reduction<br>- Reuse<br>- Recycling<br>- Disposal (if all else fails)<br>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. 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. In most instances the supplier of the material should be consulted.<br>- **DO NOT** allow wash water from cleaning or process equipment to enter drains.<br>- It may be necessary to collect all wash water for treatment before disposal.<br>- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.<br>- Where in doubt contact the responsible authority.<br>Recycle wherever possible.<br>- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.<br>- Treat and neutralise at an approved treatment plant. Treatment should involve: Mixing or slurrying in water; Neutralisation with soda-lime or soda-ash followed by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material)<br>- Decontaminate empty containers with 5% aqueous sodium hydroxide or soda ash, followed by water. Observe all label safeguards until containers are cleaned and destroyed. |

## SECTION 14 Transport information

### Labels Required

| | |
|---|---|
| |  |
| **Marine Pollutant** |  |
| **HAZCHEM** | 2X |

### Land transport (ADG)

<table>
<tr><td><b>UN number</b></td><td>3261</td></tr>
<tr><td><b>UN proper shipping name</b></td><td>CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (contains thymol)</td></tr>
<tr><td><b>Transport hazard class(es)</b></td><td><table><tr><td>Class</td><td>8</td></tr><tr><td>Subrisk</td><td>Not Applicable</td></tr></table></td></tr>
<tr><td><b>Packing group</b></td><td>III</td></tr>
<tr><td><b>Environmental hazard</b></td><td>Environmentally hazardous</td></tr>
<tr><td><b>Special precautions for user</b></td><td><table><tr><td>Special provisions</td><td>223 274</td></tr><tr><td>Limited quantity</td><td>5 kg</td></tr></table></td></tr>
</table>

### Air transport (ICAO-IATA / DGR)

<table>
<tr><td><b>UN number</b></td><td>3261</td></tr>
<tr><td><b>UN proper shipping name</b></td><td>Corrosive solid, acidic, organic, n.o.s. * (contains thymol)</td></tr>
<tr><td><b>Transport hazard class(es)</b></td><td><table><tr><td>ICAO/IATA Class</td><td>8</td></tr><tr><td>ICAO / IATA Subrisk</td><td>Not Applicable</td></tr><tr><td>ERG Code</td><td>8L</td></tr></table></td></tr>
<tr><td><b>Packing group</b></td><td>III</td></tr>
<tr><td><b>Environmental hazard</b></td><td>Environmentally hazardous</td></tr>
<tr><td><b>Special precautions for user</b></td><td><table><tr><td>Special provisions</td><td>A3 A803</td></tr><tr><td>Cargo Only Packing Instructions</td><td>864</td></tr><tr><td>Cargo Only Maximum Qty / Pack</td><td>100 kg</td></tr></table></td></tr>
</table>

**Continued...**

| | |
|---|---|
| Passenger and Cargo Packing Instructions | 860 |
| Passenger and Cargo Maximum Qty / Pack | 25 kg |
| Passenger and Cargo Limited Quantity Packing Instructions | Y845 |
| Passenger and Cargo Limited Maximum Qty / Pack | 5 kg |

### Sea transport (IMDG-Code / GGVSee)

| | |
|---|---|
| **UN number** | 3261 |
| **UN proper shipping name** | CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (contains thymol) |
| **Transport hazard class(es)** | IMDG Class: 8<br>IMDG Subrisk: Not Applicable |
| **Packing group** | III |
| **Environmental hazard** | Marine Pollutant |
| **Special precautions for user** | EMS Number: F-A , S-B<br>Special provisions: 223 274<br>Limited Quantities: 5 kg |

### Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

### Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

| Product name | Group |
|---|---|
| thymol | Not Available |

### Transport in bulk in accordance with the ICG Code

| Product name | Ship Type |
|---|---|
| thymol | Not Available |

## SECTION 15 Regulatory information

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

**thymol is found on the following regulatory lists**

| | |
|---|---|
| Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals | Australian Inventory of Industrial Chemicals (AIIC) |
| Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6 | |

### National Inventory Status

| National Inventory | Status |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use | Yes |
| Canada - DSL | Yes |
| Canada - NDSL | No (thymol) |
| China - IECSC | Yes |
| Europe - EINEC / ELINCS / NLP | Yes |
| Japan - ENCS | Yes |
| Korea - KECI | Yes |
| New Zealand - NZIoC | Yes |
| Philippines - PICCS | Yes |
| USA - TSCA | Yes |
| Taiwan - TCSI | Yes |
| Mexico - INSQ | Yes |
| Vietnam - NCI | Yes |
| Russia - FBEPH | No (thymol) |
| ***Legend:*** | *Yes = All CAS declared ingredients are on the inventory*<br>*No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.* |

## SECTION 16 Other information

| | |
|---|---|
| **Revision Date** | 29/06/2020 |
| **Initial Date** | 12/05/2005 |

### SDS Version Summary

| Version | Date of Update | Sections Updated |
|---|---|---|

Continued...

| Version | Date of Update | Sections Updated |
|---|---|---|
| 7.1 | 27/06/2017 | Chronic Health, Classification, Environmental, Spills (minor), Toxicity and Irritation (Other) |
| 8.1 | 29/06/2020 | Acute Health (eye), Physical Properties, Toxicity and Irritation (Other), Use |

## Other information

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.

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.

## Definitions and abbreviations

PC－TWA: Permissible Concentration-Time Weighted Average
PC－STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
ES: Exposure Standard
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index
AIIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIoC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances