CRESOL (MIXED ISOMERS)

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
CRESOL

OTHER NAMES

C7-H8-O, CH3C6H4OH, "mixed cresols", hydroxymethylbenzene, oxytoluenes, "methyl phenols", "cresylic acid", tricresols, "cresylic acids", "hydroxymethyl benzene", hydroxytoluene, "methyl phenol", "hydroxy toluene", methylphenol, metacresol, oxytoluene, cresylol, orthocresol, "phenol, methyl-", tricresol, paracresol, hydroxytoluenes

PROPER SHIPPING NAME
CRESOLS, LIQUID

PRODUCT USE
In cresol formaldehyde thermoset synthetic resins. Ore floatation; textiles scouring and degreasing agent; and as fumigant.
As a component in photographic developers.
As an organic intermediate in the manufacture of salicylaldehyde, coumarin, herbicides, surfactants, dyes, plastics, antioxidants, plasticiser tricresyl phosphate, wire and enamel solvents, and phosphate esters.
In grinding and cutting fluid formulations where cresols act as bacteriostatic agents.
As a therapeutic agent: local antiseptic, parasiticide, disinfectant, intestinal antiseptic, and sanitising agent (in soaps and emulsions).

SUPPLIER
Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

HAZARD RATINGS

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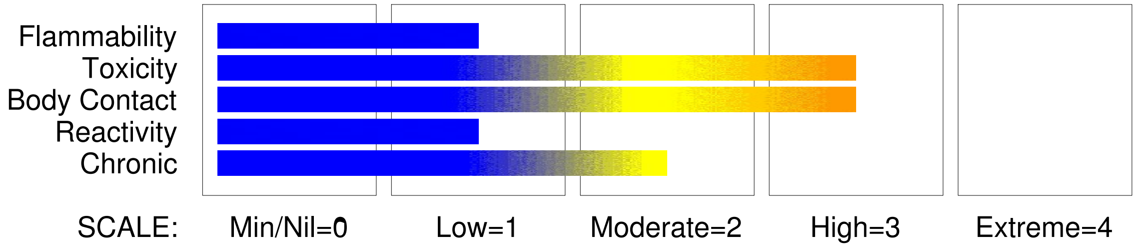

Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Dermal) Category 3
Acute Toxicity (Inhalation) Category 3
Acute Toxicity (Oral) Category 3
Skin Corrosion/Irritation Category 1C

EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H311 H301 H331 H314
Toxic in contact with skin
Toxic if swallowed
Toxic if inhaled
Causes severe skin burns and eye damage

PRECAUTIONARY STATEMENTS

Prevention

Avoid breathing dust/fume/gas/mist/vapours/spray.
Wear protective gloves/clothing and eye/face protection.
Wash hands thoroughly after handling.
Wear protective gloves/clothing
Do not breathe dust/fume/gas/mist/vapours/spray.
Use only outdoors or in a well ventilated area.
Do not breathe dust or mist.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.

Response

Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
Keep container tightly closed.
Wash contaminated clothing before reuse.
Specific treatment: refer to Label or MSDS.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
If on skin or hair: remove/take off immediately all contaminated clothing. Rinse with water/shower.
Absorb spillage to prevent material damage.
Remove/Take off immediately all contaminated clothing
Wash/Decontaminate removed clothing before reuse.
IF ON SKIN: Gently wash with plenty of soap and water.
Call a POISON CENTER or doctor/physician if you feel unwell.

Storage

Store locked up.
Store in a corrosive resistant container with a resistant inliner.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
cresols	1319-77-3	100
(ortho- , meta- and para- isomers as)		
o- cresol	95-48-7	
m- cresol	108-39-4	
p- cresol	106-44-5	
(NOTE: Also contains phenols and xylenols.)		
(Cresols according to an arbitrary standard have a boiling point below 204 deg. C. Cresylic acids have a boiling point above 204 deg. C. for 50% of the material.)		

Section 4 - FIRST AID MEASURES

SWALLOWED

- For advice, contact a Poisons Information Centre or a doctor at once.
- Urgent hospital treatment is likely to be needed.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Transport to hospital or doctor without delay.

continued...

Section 4 - FIRST AID MEASURES

EYE

If this product comes in contact with the eyes:
- Immediately hold eyelids apart and flush the eye continuously with 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.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If spilt on skin:
- Remove contaminated clothing, swab repeatedly with glycerin, PEG (polyethylene glycol), or PEG/ methylated spirit mixture or if necessary with methylated spirit alone*
- Contamination of skin with phenol and some of its derivatives may produce rapid collapse and death.
- After skin contamination, keep patient under observation for at least 24-48 hours.
- Phenol-decontaminating fluid is more effective than water in removing phenol from the skin and retarding absorption; olive oil or vegetable oil may also be used; do not use mineral oil.
- Alcohols* (methylated spirit, for example) may enhance absorption and their use alone may be ill-advised; some authorities however continue to advise the use of such treatment.
- Rapid water dilution of phenol burns may increase systemic absorption by decreasing the extent of the coagulum and thus allowing greater absorption (1).

(1) Ellenhorn and Barceloux: Medical Toxicology: Diagnosis and Treatment of Human Poisoning.

INHALED

Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema.
Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs).
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. Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered.
This must definitely be left to a doctor or person authorised by him/her.
(ICSC13719).
- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- 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.
- Transport to hospital, or doctor, without delay.

NOTES TO PHYSICIAN

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

continued...

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.

Depending on the degree of exposure, periodic medical examination is indicated. The symptoms of lung oedema often do not manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Immediate administration of an appropriate spray, by a doctor or a person authorised by him/her should be considered.

(ICSC24419/24421.

Preplacement and annual medical examinations are recommended for workers exposed to cresol. Preplacement examinations should include: (1) work histories evaluating preexisting disorders particularly of the lungs, liver, kidneys, pancreas, nervous and cardiovascular systems, and skin. (2) physical examination with emphasis on the lungs, liver, kidneys, pancreas, skin, and nervous and cardiovascular systems. (3) urinalysis that includes a microscopic examination. (4) additional tests such as complete blood counts, and liver and kidney function tests. Annual examinations should include the above tests, and monitor cases of skin abnormalities, such as scaling, crusting, or irritation. (Source: Occupational Diseases; NIOSH)

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Water spray or fog.
- Alcohol stable foam.
- Dry chemical powder.
- Carbon dioxide.

continued...

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding area.
- Do not approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).
- May emit acrid smoke.
- Mists containing combustible materials may be explosive.

Combustion products include: carbon dioxide (CO_2), other pyrolysis products typical of burning organic material.
May emit poisonous fumes.

FIRE INCOMPATIBILITY

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Personal Protective Equipment

Breathing apparatus.
Gas tight chemical resistant suit.
Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact 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

Chemical Class: phenols and cresols

For release onto land: recommended sorbents listed in order of priority.

SORBENT TYPE	RANK	APPLICATION	COLLECTION	LIMITATIONS
LAND SPILL - SMALL				

continued...

cross- linked polymer - particulate	1	shovel	shovel	R, W, SS
cross- linked polymer - pillow	1	throw	pitchfork	R, DGC, RT
wood fiber - pillow	1	throw	pitchfork	R, P, DGC, RT
foamed glass - pillow	2	shovel	shovel	R, W, P, DGC
sorbent clay - particulate	2	shovel	shovel	R, I, P
wood fibre - particulate	3	shovel	shovel	R, W, P, DGC

LAND SPILL - MEDIUM

cross- linked polymer - particulate	1	blower	skiploader	R, W, SS
cross- linked polymer - pillow	2	throw	skiploader	R, DGC, RT
sorbent clay - particulate	3	blower	skiploader	R, I, P
polypropylene - particulate	3	blower	skiploader	R, SS, DGC
wood fiber - particulate	4	blower	skiploader	R, W, P, DGC
expanded moneral - particulate	4	blower	skiploader	R, I, W, P, DGC

Legend
DGC: Not effective where ground cover is dense
R; Not reusable
I: Not incinerable
P: Effectiveness reduced when rainy
RT:Not effective where terrain is rugged
SS: Not for use within environmentally sensitive sites
W: Effectiveness reduced when windy

Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control;
R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988.

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Neutralise/decontaminate residue.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.

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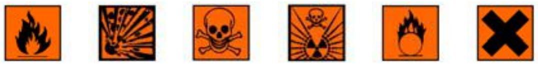
- If contamination of drains or waterways occurs, advise emergency services.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X X + X X +

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

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

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

DO NOT allow clothing wet with material to stay in contact with skin.

- 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.
- DO NOT allow material to contact humans, exposed food or food utensils.
- 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. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

- Lined metal can, lined metal pail/ can.
- Plastic pail.
- Polyliner drum.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids (between 15 C deg. and 40 deg C.):

- Removable head packaging;
- Cans with friction closures and
- low pressure tubes and cartridges

may be used.

continued...

-

Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages *.

-

In addition, where inner packagings are glass and contain liquids of packing group I and II there must be sufficient inert absorbent to absorb any spillage *.

-

* unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic.

All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.

STORAGE INCOMPATIBILITY

Avoid strong bases.

- Phenols are incompatible with strong reducing substances such as hydrides, nitrides, alkali metals, and sulfides.
- Avoid use of aluminium, copper and brass alloys in storage and process equipment.
- Heat is generated by the acid-base reaction between phenols and bases.
- Phenols are sulfonated very readily (for example, by concentrated sulfuric acid at room temperature), these reactions generate heat.
- Phenols are nitrated very rapidly, even by dilute nitric acid.
- Nitrated phenols often explode when heated. Many of them form metal salts that tend toward detonation by rather mild shock.

Avoid reaction with oxidising agents.

Segregate from strong alkalis, oleum, nitric acid and chlorosulfonic acid.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- 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 storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• cresols:	CAS:1319- 77- 3 CAS:8003- 33- 6 CAS:8027- 16- 5 CAS:8026- 94- 6 CAS:52037- 47- 5 CAS:116804- 25- 2 CAS:8006- 62- 0
• o- cresol:	CAS:95- 48- 7
• m- cresol:	CAS:108- 39- 4
• p- cresol:	CAS:106- 44- 5

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
cresols		250 [Unch]
o- cresol		250 [Unch]
m- cresol		250 [Unch]
p- cresol		250 [Unch]

continued...

ODOUR SAFETY FACTOR (OSF)

OSF=1.8E4 (m-CRESOL)

Exposed individuals are 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 A or B.

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

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MATERIAL DATA

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.

Concentrations of cresol in air as low as 5 ppm are easily recognised.

The recommended TLV-TWA takes account of the closely analogous to the toxic action of phenol

Systemic absorption by all routes may induce convulsions with damage to the lungs and central nervous system. Exposure at or below the recommended TLV-TWA is thought to protect the worker from respiratory, cardiovascular, hepatic, renal and neurological toxicity. Workers or volunteers exposed to phenol at or below 5.2 ppm have experienced no ill-effects. Because phenol as a vapour, liquid or solid can penetrate the skin causing systemic effects, a skin notation is considered necessary. Although ACGIH has not recommended a STEL it is felt that ACGIH excursion limits (15 ppm limited to a total duration of 30 minutes with brief excursions limited to no more than 25 ppm) and NIOSH Ceiling values (15 minutes at 15.6 ppm) are sufficiently similar so as to provide the same margin of safety.

INGREDIENT DATA

M-CRESOL:

O-CRESOL:

P-CRESOL:

continued...

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.

O-CRESOL:

Odour Threshold Value: Variously reported as 0.00068 ppm and 0.68 ppm.
Concentrations of cresol in air as low as 5 ppm are easily recognised.
The recommended TLV-TWA takes account of the closely analogous to the toxic action of phenol
Systemic absorption by all routes may induce convulsions with damage to the lungs and central nervous system. Exposure at or below the recommended TLV-TWA is thought to protect the worker from respiratory, cardiovascular, hepatic, renal and neurological toxicity. Workers or volunteers exposed to phenol at or below 5.2 ppm have experienced no ill-effects. Because phenol as a vapour, liquid or solid can penetrate the skin causing systemic effects, a skin notation is considered necessary. Although ACGIH has not recommended a STEL it is felt that ACGIH excursion limits (15 ppm limited to a total duration of 30 minutes with brief excursions limited to no more than 25 ppm) and NIOSH Ceiling values (15 minutes at 15.6 ppm) are sufficiently similar so as to provide the same margin of safety.

M-CRESOL:
Odour Threshold Value: 0.000050-0.0079 ppm (detection)
Concentrations of cresol in air as low as 5 ppm are easily recognised.

The recommended TLV-TWA takes account of the closely analogous to the toxic action of phenol
Systemic absorption by all routes may induce convulsions with damage to the lungs and central nervous system. Exposure at or below the recommended TLV-TWA is thought to protect the worker from respiratory, cardiovascular, hepatic, renal and neurological toxicity. Workers or volunteers exposed to phenol at or below 5.2 ppm have experienced no ill-effects. Because phenol as a vapour, liquid or solid can penetrate the skin causing systemic effects, a skin notation is considered necessary. Although ACGIH has not recommended a STEL it is felt that ACGIH excursion limits (15 ppm limited to a total duration of 30 minutes with brief excursions limited to no more than 25 ppm) and NIOSH Ceiling values (15 minutes at 15.6 ppm) are sufficiently similar so as to provide the same margin of safety.

P-CRESOL:

Odour Threshold Value: 0.00099 ppm (recognition)
Concentrations of cresol in air as low as 5 ppm are easily recognised.
The recommended TLV-TWA takes account of the closely analogous to the toxic action of phenol
Systemic absorption by all routes may induce convulsions with damage to the lungs and central nervous system. Exposure at or below the recommended TLV-TWA is thought to protect the worker from respiratory, cardiovascular, hepatic, renal and neurological toxicity. Workers or volunteers exposed to phenol at or below 5.2 ppm have experienced no ill-effects. Because phenol as a vapour, liquid or solid can penetrate the skin causing systemic effects, a skin notation is considered necessary. Although ACGIH has not

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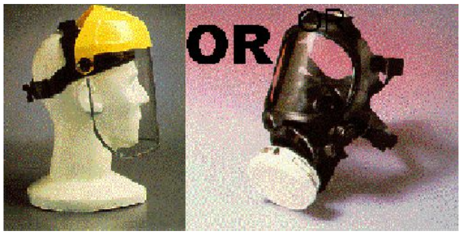
recommended a STEL it is felt that ACGIH excursion limits (15 ppm limited to a total duration of 30 minutes with brief excursions limited to no more than 25 ppm) and NIOSH Ceiling values (15 minutes at 15.6 ppm) are sufficiently similar so as to provide the same margin of safety.

PERSONAL PROTECTION



EYE

- Chemical goggles.
- Full face shield may be required for supplementary but never for primary protection of eyes
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens 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. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

Suitability and durability of glove type is dependent on usage. Factors such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity,

are important in the selection of gloves.
Wear chemical protective gloves, eg. PVC.
Wear safety footwear or safety gumboots, eg. Rubber.
When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.

OTHER

- Overalls.
- PVC Apron.
- PVC protective suit may be required if exposure severe.
- Eyewash unit.
- Ensure there is ready access to a safety shower.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult your

continued...

Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.
An approved self contained breathing apparatus (SCBA) may be required in some situations.
Provide adequate ventilation in warehouse or closed storage area. 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- 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- 10 m/s (500- 2000 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.

continued...

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Material is hygroscopic, absorbs moisture from surrounding air.
Colourless, yellow, pink or brown liquid (turns brown on exposure to air).
Crystals colourless to yellow.
Semi sweet tar-like or phenolic odour. The odour threshold is 5ppm.
Slightly soluble in water at 25 deg. C.
Soluble or miscible in alcohol, glycol, dilute alkalies, organic solvents, vegetable oils, ether, benzene and glycerol.

PHYSICAL PROPERTIES

Liquid.
Does not mix with water.
Sinks in water.
Corrosive.
Toxic or noxious vapours/gas.

Molecular Weight: 108.15
Melting Range (°C): 11 - 35
Solubility in water (g/L): Partly miscible
pH (1% solution): Not available
Volatile Component (%vol): Not available.
Relative Vapour Density (air=1): 3.72
Lower Explosive Limit (%): < or = 1.35%
Autoignition Temp (°C): 559
State: Liquid

Boiling Range (°C): 191 - 203
Specific Gravity (water=1): 1.03 - 1.05
pH (as supplied): 6.9
Vapour Pressure (kPa): <0.13 @ 38 Deg.
Evaporation Rate: Not available
Flash Point (°C): 81, 79 - 94.4
Upper Explosive Limit (%): Not available.
Decomposition Temp (°C): Not Available
Viscosity: Not Available

log Kow (Prager 1995): 1.95
log Kow (Sangster 1997): 1.98
log Kow: 1.95
log Kow (Sangster 1997): 1.98
log Kow: 1.96
log Kow (Prager 1995): 1.94
log Kow (Sangster 1997): 1.98
log Kow: 1.92-1.94

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

continued...

ACUTE HEALTH EFFECTS

SWALLOWED

Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.
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.
The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.
Some phenol derivatives may produce mild to severe damage within the gastrointestinal tract. Absorption may result in profuse perspiration, intense thirst, nausea, vomiting, diarrhoea, cyanosis (following the formation of methaemoglobin), hyperactivity, stupor, falling blood pressure, hypernea, abdominal pain, haemolysis, convulsions, coma and pulmonary oedema followed by pneumonia. Respiratory failure and kidney damage may follow.
Severe phenol ingestions cause hypotension, coma, ventricular dysrhythmias, seizures and white coagulative chemical burns.

Phenol does not uncouple oxidative phosphorylation like dinitrophenol and pentachlorophenol and thus does not cause a heat exhaustion-like syndrome. Phenolic groups with ortho and para positions free from substitution are reactive; this is because the ortho and para positions on the aromatic ring are highly activated by the phenolic hydroxyl group and are therefore readily substituted.

EYE

The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.
When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation.
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.

SKIN

Skin contact with the material may produce toxic effects; systemic effects may result following absorption.
Skin contact with the material may be harmful; systemic effects may result following absorption.
The material can produce chemical burns following direct contact with the skin.
Phenol and some of its derivatives may produce mild to severe skin irritation on repeated or prolonged contact, producing second and third degree chemical burns. Rapid cutaneous absorption may lead to systemic toxicity affecting the cardiovascular and central nervous system. Absorption through the skin may result in profuse perspiration, intense thirst, nausea, vomiting, diarrhoea, cyanosis (following the formation of methaemoglobin), hyperactivity, stupor, falling blood pressure, hyperpnoea, abdominal pain, haemolysis, convulsions, coma and pulmonary oedema followed by pneumonia. Respiratory failure and kidney damage may follow.
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.

INHALED

Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system in a substantial number of individuals following inhalation.

continued...

Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may produce serious damage to the health of the individual.
Pulmonary absorption may lead to systemic toxicity affecting the cardiovascular and central nervous system. Inhalation of phenol and some of its derivatives may produce profuse perspiration, intense thirst, nausea, vomiting, diarrhoea, cyanosis, hyperactivity, stupor, falling blood pressure, hyperpnoea, abdominal pain, haemolysis, convulsions, coma and pulmonary oedema with pneumonia. Respiratory failure and kidney damage may follow. Phenols may exhibit local anaesthetic properties and, in general, are central nervous system depressants at high concentrations. The dihydroxy derivatives act as simple phenols but their effects are largely limited to local irritation. Trihydroxy derivatives may reduce the oxygen content of blood at sufficient exposure levels. Methyl phenols (cresols) typically do not pose significant inhalation hazards due to relatively low vapour pressures and objectionable odours. Substituted phenols produce similar effects to phenol although such effects may only be evident at high levels of exposure.
Alkyl substitution tends to increase toxicity.
Inhalation of quantities of liquid mist may be extremely hazardous, even lethal due to spasm, extreme irritation of larynx and bronchi, chemical pneumonitis and pulmonary oedema.

CHRONIC HEALTH EFFECTS
Prolonged exposure to some derivatives of phenol may produce dermatitis, anorexia, weight loss, weakness, muscle aches and pain, liver damage, dark urine, ochronosis, skin eruptions, diarrhoea, nervous disorders with headache, salivation, fainting, increased skin and scleral pigmentation, vertigo and mental disorders. Liver and kidney damage may also ensue. Chronic phenol toxicity was first noted in medical personnel in the late 1800s when 5 and 10% phenol was used as a skin disinfectant. The term carbolic (phenol) marasmus was given to this syndrome.

Addition of structurally related phenolic compounds to the diet of Syrian golden hamsters induced forestomach hyperplasia and tumours. These compounds included 2(3)-tert-butyl-4 -methoxphenol (BHA) (CAS RN: 25013-16-5), 2-tert-butyl-4-methylphenol (TBMP) (29759-28-2) and p-tert-butylphenol (PTBP) (98-54-4); less active were catechol (154-23-4), p -methylphenol (331-39-5), methylhydroquinone (MHQ) (95-71-6) and pyrogallol (87-66-1), whilst no activity was seen with resorcinol (108-46-3), hydroquinone (123-31-9), propylparaben (94-13-3) and tert-butylhydroquinone (TBHQ) (1948-33-0).

In autoradiographic studies, intake of BHA, TBMP, catechol, PMOP, PTBP and MHQ resulted in a significant increase in the labelling index of the forestomach epithelium, whilst PMOP induced epithelial damage and pyloric regenerative hyperplasia. Catechol, CA and PYMP induced similar but less marked alterations. Both catechol and PMOP increased the labelling index in the glandular stomach. The urinary bladder was free from histo -pathological lesions, but propylparabene, catechol, TBHQ and MHQ increased the labelling index. The authors of this study concluded that long term administration of PTBP and TBMP may be carcinogenic for hamster forestomach and that both 1-hydroxy and tert-butyl substituents may play a role in the induction of forestomach tumours.
Hiros, M., et al: Carcinogenesis, Vol 7, pp 1285-1289; 1986.
Repeated or prolonged exposure to corrosives may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw.
Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue.
Gastrointestinal disturbances may also occur. Chronic exposures may result in dermatitis and/or conjunctivitis.
Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Symptoms of chronic poisoning are abundant production of saliva, vomiting, diarrhoea, loss of appetite, headache, dizziness, mental disturbances and

continued...

fainting. Contact dermatitis may also occur.
Workers exposed to cresol vapour for 1.5 to 3 years experienced headaches that were frequently accompanied by nausea and vomiting. Other symptoms included elevated blood pressure, signs of impaired kidney function,blood calcium imbalance and marked tremors.
Isomers of cresol are tumor promoters.

TOXICITY AND IRRITATION

TOXICITY	IRRITATION
Oral (man) TDLo: 177 mg/kg	Nil Reported
Oral (rat) LD50: 1454 mg/kg	
Dermal (rabbit) LD50: 2000 mg/kg	

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic 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.

O-CRESOL:

TOXICITY	IRRITATION
Oral (rat) LD50: 121 mg/kg None reported	
Dermal (rabbit) LD50: 890 mg/kg	

The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may produce severe 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) thickening of the epidermis.

Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.
Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic 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

continued...

is characterised by dyspnea, cough and mucus production.

M-CRESOL:

TOXICITY	IRRITATION
Oral (rat) LD50: 242 mg/kg	Skin (rabbit): 517 mg/24h SEVERE
Dermal (rabbit) LD50: 2050 mg/kg	Eye (rabbit): 103 mg SEVERE

The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may produce severe 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) thickening of the epidermis.

Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.
Mutation DNA inhibition human

P-CRESOL:

TOXICITY	IRRITATION
Oral (rat) LD50: 207 mg/kg	Skin (rabbit): 517 mg/24h SEVERE
Dermal (rabbit) LD50: 301 mg/kg	Eye (rabbit): 103 mg SEVERE

The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may produce severe 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) thickening of the epidermis.

Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.
Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic 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.

Section 12 - ECOLOGICAL INFORMATION

Half- life Soil - High (hours):	696
Half- life Soil - Low (hours):	1
Half- life Air - High (hours):	16
Half- life Air - Low (hours):	1.1
Half- life Surface water - High (hours):	696
Half- life Surface water - Low (hours):	1

continued...

Half- life Ground water - High (hours):	1176
Half- life Ground water - Low (hours):	2
Aqueous biodegradation - Aerobic - High (hours):	696
Aqueous biodegradation - Aerobic - Low (hours):	1
Aqueous biodegradation - Anaerobic - High (hours):	1176
Aqueous biodegradation - Anaerobic - Low (hours):	240
Aqueous biodegradation - Removal secondary treatment - High (hours):	99.00%
Photolysis maximum light absorption - High (nano- m):	282
Photolysis maximum light absorption - Low (nano- m):	238
Photooxidation half- life air - High (hours):	16
Photooxidation half- life air - Low (hours):	1.1

Environmental toxicity is a function of the n-octanol/ water partition coefficient (log Pow, log Kow). 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, ranging from low toxicity (LC50 values >100 mg/l) to highly toxic (LC50 values <1 mg/l) dependent on log Pow, molecular weight and substitutions on the aromatic ring. Dinitrophenols are more toxic than predicted from QSAR estimates. Hazard information for these groups is not generally available.
DO NOT discharge into sewer or waterways.
Refer to data for ingredients, which follows:

O-CRESOL:

Hazardous Air Pollutant:	Yes
Fish LC50 (96hr.) (mg/l):	18- 20.8
Algae IC50 (72hr.) (mg/l):	6.8- 33
BCF<100:	18
log Kow (Prager 1995):	1.95
log Kow (Sangster 1997):	1.98
Half- life Soil - High (hours):	168
Half- life Soil - Low (hours):	24
Half- life Air - High (hours):	16
Half- life Air - Low (hours):	1.6
Half- life Surface water - High (hours):	168
Half- life Surface water - Low (hours):	24
Half- life Ground water - High (hours):	336
Half- life Ground water - Low (hours):	48
Aqueous biodegradation - Aerobic - High (hours):	168
Aqueous biodegradation - Aerobic - Low (hours):	24
Aqueous biodegradation - Anaerobic - High (hours):	672
Aqueous biodegradation - Anaerobic - Low (hours):	96
Aqueous photolysis half- life - High (hours):	282
Aqueous photolysis half- life - Low (hours):	214
Photooxidation half- life water - High (hours):	3480
Photooxidation half- life water - Low (hours):	66
Photooxidation half- life air - High (hours):	16
Photooxidation half- life air - Low (hours):	1.6

Environmental toxicity is a function of the n-octanol/ water partition coefficient (log Pow, log Kow). 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, ranging from low toxicity (LC50 values >100 mg/l) to highly toxic (LC50 values <1 mg/l) dependent on log Pow, molecular weight and substitutions on the aromatic ring. Dinitrophenols are more toxic than predicted from QSAR estimates. Hazard information for these groups is not generally available.

continued...

DO NOT discharge into sewer or waterways.
log Kow: 1.95
Koc: 18-22
Half-life (hr) air: 9.6
Half-life (hr) H2O surface water: 48
Henry's atm m³ /mol: 1.60E-06
BOD 5 if unstated: 1.6-1.74,65%
COD: 2.38-2.39,92%
ThOD: 2.52
BCF: 18
Toxicity Fish: non tox at 5mg/L

M-CRESOL:

Hazardous Air Pollutant:	Yes
Fish LC50 (96hr.) (mg/l):	13.6- 25
Algae IC50 (72hr.) (mg/l):	13- 15
log Kow (Sangster 1997):	1.98
log Pow (Verschueren 1983):	1.96/2.01
Half- life Soil - High (hours):	696
Half- life Soil - Low (hours):	48
Half- life Air - High (hours):	11.3
Half- life Air - Low (hours):	1.1
Half- life Surface water - High (hours):	696
Half- life Surface water - Low (hours):	48
Half- life Ground water - High (hours):	1176
Half- life Ground water - Low (hours):	96
Aqueous biodegradation - Aerobic - High (hours):	696
Aqueous biodegradation - Aerobic - Low (hours):	48
Aqueous biodegradation - Anaerobic - High (hours):	1176
Aqueous biodegradation - Anaerobic - Low (hours):	360
Photooxidation half- life water - High (hours):	3480
Photooxidation half- life water - Low (hours):	66
Photooxidation half- life air - High (hours):	11.3
Photooxidation half- life air - Low (hours):	1.1

Environmental toxicity is a function of the n-octanol/ water partition coefficient (log Pow, log Kow). 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, ranging from low toxicity (LC50 values >100 mg/l) to highly toxic (LC50 values <1 mg/l) dependent on log Pow, molecular weight and substitutions on the aromatic ring. Dinitrophenols are more toxic than predicted from QSAR estimates. Hazard information for these groups is not generally available.
DO NOT discharge into sewer or waterways.
log Kow: 1.96
log Koc: 1.26-1.96
Half-life (hr) air: 0.1-8
Henry's atm m³ /mol: 8.70E-07
BOD 5 if unstated: 1.7-1.88,68%
COD: 2.4,100%
ThOD: 2.52
BCF: 20-4900
Toxicity Fish: LC50(24)15-50mg/L
Toxicity invertebrate: cell mult. inhib.17-33mg/L
Bioacculmulation: not sig
Nitrif. inhib.: 75% inhib at 11-16mg/L

continued...

Effects on algae and plankton: inhib dgrd.gluc. 50-600mg/L, cell mult inhib 6.8-
Degradation Biological: soil microflora -1 day,sig
processes Abiotic: Rxn OH*,slow photol,oxid

P-CRESOL:

Hazardous Air Pollutant:	Yes
Fish LC50 (96hr.) (mg/l):	19
Daphnia magna EC50 (48hr.) (mg/l):	12
Algae IC50 (72hr.) (mg/l):	6
Water solubility (g/l):	18
log Kow (Prager 1995):	1.94
log Kow (Sangster 1997):	1.98
log Pow (Verschueren 1983):	1.92/1.94
Half- life Soil - High (hours):	16
Half- life Soil - Low (hours):	1
Half- life Air - High (hours):	15
Half- life Air - Low (hours):	1.5
Half- life Surface water - High (hours):	16
Half- life Surface water - Low (hours):	1
Half- life Ground water - High (hours):	672
Half- life Ground water - Low (hours):	2
Aqueous biodegradation - Aerobic - High (hours):	16
Aqueous biodegradation - Aerobic - Low (hours):	1
Aqueous biodegradation - Anaerobic - High (hours):	672
Aqueous biodegradation - Anaerobic - Low (hours):	240
Aqueous biodegradation - Removal secondary treatment - High (hours):	99.40%
Photolysis maximum light absorption - High (nano- m):	279
Aqueous photolysis half- life - High (hours):	283
Photooxidation half- life water - High (hours):	11325
Photooxidation half- life water - Low (hours):	144
Photooxidation half- life air - High (hours):	15
Photooxidation half- life air - Low (hours):	1.5

Environmental toxicity is a function of the n-octanol/ water partition coefficient (log Pow, log Kow). 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, ranging from low toxicity (LC50 values >100 mg/l) to highly toxic (LC50 values <1 mg/l) dependent on log Pow, molecular weight and substitutions on the aromatic ring. Dinitrophenols are more toxic than predicted from QSAR estimates. Hazard information for these groups is not generally available.
DO NOT discharge into sewer or waterways.
log Kow: 1.92-1.94
Henry's atm m^3 /mol: 9.60E-07
BOD 5 if unstated: 1.4-1.76,81%
COD: 2.4
ThOD: 2.52
BCF: 18
Toxicity Fish: LC50(96)8.9-55.9mg/L
Toxicity invertebrate: cell mult. inhib.31-62mg/L
Bioacculmulation: not sig
Nitrif. inhib.: 75% inhib at 11.4mg/L
Anaerobic effects: no degrad
Effects on algae and plankton: cell mult. inhib. algae 13-15mg/L
Degradation Biological: sig
processes Abiotic: Rxn OH*,slow photol,oxid

continued...

Section 13 - DISPOSAL CONSIDERATIONS

· Recycle wherever possible.
· 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.
· Treat and neutralise at an approved treatment plant. Treatment should involve : Neutralisation followed by: Burial in a licenced land-fill or Incineration in a licenced apparatus
· Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.
· Containers may still present a chemical hazard/ danger when empty.
· Return to supplier for reuse/ recycling if possible.
Otherwise:
· 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.
· Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: TOXIC,CORROSIVE
HAZCHEM: 2X

UNDG:

Dangerous Goods Class:	6.1	Subrisk:	8
UN Number:	2076	Packing Group:	II

Shipping Name:CRESOLS, LIQUID

Air Transport IATA:

ICAO/IATA Class:	6.1	ICAO/IATA Subrisk:	8
UN/ID Number:	2076	Packing Group:	II
ERG Code:	6C		

Shipping name:CRESOLS, LIQUID

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	8
UN Number:	2076	Packing Group:	II
EMS Number:	F- A, S- B		

Shipping name:CRESOLS, LIQUID

continued...

Section 15 - REGULATORY INFORMATION

REGULATIONS

cresols (CAS: 1319-77-3) is found on the following regulatory lists;
International Council of Chemical Associations (ICCA) - High Production Volume List

No data available for cresols as CAS: 8003-33-6, CAS: 8027-16-5, CAS: 8026-94-6, CAS: 52037-47-5, CAS: 116804-25-2, CAS: 8006-62-0.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
cresols	1319- 77- 3, 8003- 33- 6, 8027 - 16- 5, 8026- 94- 6, 52037- 47- 5, 116804- 25- 2, 8006- 62- 0

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 17-Jun-2018