



EPOXIES • RESINS • GLUES • FILLERS

MATERIAL SAFETY DATA SHEET RESORCINOL GLUE BASE

Effective Date : June 2017

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Norski Holdings urges the customer receiving this Material Safety Data Sheet to study it carefully to become aware of hazards, if any, of the product involved. In the interests of safety, you should, (1) notify your employees, agents, and contractors, of the information on this sheet; (2) furnish a copy to each of your customers for the product; (3) request your customers to inform their employees and customers as well.

I. Identification

SUPPLIER:

Norski Holdings Ltd
10 Northpoint Street, Pimmerton 5247
Tel (04) 233 6184

PRODUCT NAME: Norski Resorcinol Glue Base

PROPER SHIPPING NAME: Flammable Liquid, Toxic, N.O.S. (contains methanol)

RECOMMENDED USE: Wood laminating and fingerjointing.

II. Hazard Classification

NEW ZEALAND: Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001.

HSNO CLASSIFICATIONS:

Category 4 – Acute Toxicity (Oral)
Category 2A – Eye Irritation
Category 3 – Flammable Liquid
Category 2 – Germ Cell Mutagen
Category 1 – Organ Damage Single Exposure
Category 2 – Reproductive Toxicity
Category 2 – Skin corrosion/Irritation

HAZARD STATEMENT CODES:

DANGER – gazetted by ERMANZ
3.1C – Flammable liquid and vapour
6.1D – Harmful if swallowed
6.3A – Causes skin irritation
6.4A – Causes serious eye irritation
6.6B – Suspected of causing genetic defects
6.8B – Suspected of damaging fertility
6.9A – Causes damage to organs by skin contact.
9.3C – Harmful to terrestrial vertebrates

PRECAUTIONARY STATEMENT(S):

Prevention

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat/sparks/open flames/hot surfaces – no smoking.
- Keep container tightly closed.
- Ground/bond container and receiving equipment.

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- Use explosion-proof electrical/ventilating/lighting equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Do not breathe dust/fume/gas/mist/vapours/spray.
- Wash thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Use personal protective equipment as required.

Response

- If swallowed, call a Poison Centre or doctor/physician if you feel unwell.
- If on skin or hair, remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
- If in eyes, rinse cautiously with water for several minutes, remove contact lenses if present and easy to do. Continue rinsing. If exposed, call a Poison Centre or doctor/physician.
- If exposed or concerned, get medical advice/attention. Rinse mouth.
- If eye irritation persists, get medical advice/attention.

Storage

- Store in a well-ventilated place. Keep cool.
- Store locked up.

III. Composition/Information on Ingredients

Name	CAS	%
Methanol	67-56-1	<20
Phenol	108-95-2	<5.0

Other ingredients non-hazardous or below cut-off levels.
Manufacturer has supplied full ingredient information for CHEMWATCH assessment.

IV. First Aid Measures

SWALLOWED:

- If swallowed, refer for medical attention where possible without delay. For advice contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- In the meantime, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
- If medical attention is not available on the worksite or surroundings, send the patient to a hospital together with a copy of the MSDS.

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- Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
 - Induce vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. NOTE : Wear a protective glove when inducing vomiting by mechanical means.

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 skin or hair contact occurs:

- Immediately flush body and clothes with large amounts of water, using safety shower if available. Quickly remove all contaminated clothing, including footwear.
- Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. Transport to hospital, or doctor.

INHALED:

If fumes or combustion products are inhaled, remove from the contaminated area:

- Lay patient down. Keep warm and rested.
- Protheses 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.
- Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema. Corrosive substances may cause lung damage (eg 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 semiprecumbent 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.

NOTES TO PHYSICIAN:

For acute and short-term repeated exposures to methanol:

- Toxicity results from accumulation of formaldehyde/formic acid.
- Clinical signs are usually limited to CNS, eyes and GI tract Severe metabolic acidosis may produce dyspnea and profound systemic effects which may become intractable. All symptomatic patients should have arterial pH measured. Evaluate airway, breathing and circulation.
- Stabilise obtunded patients by giving naloxone, glucose and thiamine.
- Decontaminate with Ipecac or lavage for patients presenting two hours post-ingestion. Charcoal does not absorb well; the usefulness of cathartic is not established.
- Forced diuresis is not effective' haemodialysis is recommended where peak methanol levels exceed 50 mg/dL (this correlates with serum bicarbonate levels below 18 mEq/L).
- Ethanol, maintained at levels between 100 and 150 mg/dL, inhibits formation of toxic metabolites and may be indicated when peak methanol levels exceed 20 mg/dL. An intravenous solution of ethanol in D5W is optimal.
- Folate, as leucovorin, may increase the oxidative removal of formic acid. 4-methylpyrazole may be an effective adjunct in the

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treatment. 8. Phenytoin may be preferable to diazepam for controlling seizure (Ellenhorn Barceloux: Medical Toxicology).

BIOLOGICAL EXPOSURE INDEX – BEI

Determinant	Index	Sampling Time	Comment
Methanol in urine	15mg/l	End of shift	B, NS
Formic acid in urine	80 mg/gm creatinine	Before the shift at end of work week	B, NS

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

NS : Non-specific determinant – observed following 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.

EMERGENCY: 0800 POISON (764 766)

V. Fire-fighting Measures

SUITABLE EXTINGUISHING MEDIA:

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

FIRE FIGHTING:

- Alert the Fire Brigade and tell them location and nature of hazard.
 - May be violently or explosively reactive.
 - Wear full body protective clothing with breathing apparatus.
 - Prevent, by any means available, spillage from entering drains or water course.
 - Consider evacuation (or protect in place).
 - Fight fire from a safe distance, with adequate cover.
 - If safe, switch off electrical equipment until vapour fire hazard removed.
 - Use water delivered as a fine spray to control fire and cool adjacent area.
 - Avoid spraying water onto liquid pools
 - 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.
 - When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 1000 metres in all directions.

FIRE/EXPLOSION HAZARD:

- Liquid and vapour are highly flammable.
 - Severe fire hazard when exposed to heat, flame and/or oxidisers.
 - Vapour may travel a considerable distance to source of ignition.
 - Heating may cause expansion or decomposition leading to violent rupture of containers.
 - On combustion, may emit toxic fumes of carbon monoxide (CO), carbon dioxide (CO₂), formaldehyde, other pyrolysis products typical of burning organic material.
 - Other decomposition products include:

FIRE INCOMPATIBILITY:

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

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PERSONAL PROTECTIVE EQUIPMENT:

- Breathing apparatus.
- Chemical splash suit.

VI. Accidental Release Measures

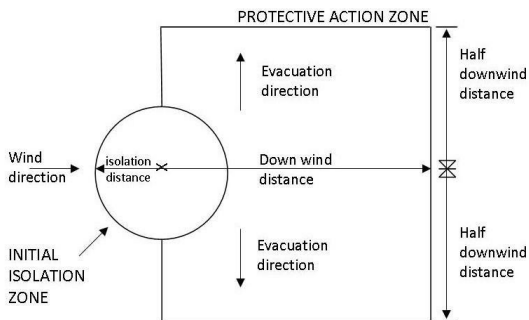
MINOR SPILLS:

- 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 small quantities with vermiculite or other absorbent material.
 - Wipe up.
 - Collect residues in a flammable waste container.

MAJOR SPILLS:

- Clear area of personnel and move upwind.
 - Alert Fire Brigade and tell them location and nature of hazard.
 - May be violently or explosively reactive.
 - Wear full body protective clothing with breathing apparatus.
 - Prevent, by any means available, spillage from entering drains or water course.
 - Consider evacuation (or protect in place).
 - No smoking, naked lights or ignition sources.
 - Increase ventilation.
 - Stop leak if safe to do so.
 - Water spray or fog may be used to disperse vapour. ○
- Contain or absorb spill with sand, earth or vermiculite.
 - Use only spark-free shovels and explosion proof equipment.
 - Collect recoverable product into labelled containers for recycling.
 - 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.
 - If contamination of drains or waterways occurs, advise emergency services.

PROTECTIVE ACTIONS FOR SPILL:



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From IERG (Canada/Australia)	
Isolation Distance	50 metres
Downwind Protection Distance	300 metres
IERG Number	16

FOOTNOTES

1. PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
2. PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
3. INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.
4. SMALL SPILLS involve a leaking package of 200 litres or less, such as a drum (jerry can or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".
LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.
5. Guide 131 is taken from the US DOT emergency response guide book.
6. IERG information is derived from CANUTEC – Transport Canada.

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

VII. 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.
 - Avoid smoking, naked lights, heat or ignition sources.
 - When handling, DO NOT eat, drink or smoke.
 - Vapour may ignite on pumping or pouring due to static electricity.
 - DO NOT use plastic buckets.
 - Earth and secure metal containers when dispensing or pouring product.
 - Use spark-free tools when handling
 - Avoid contact with incompatible materials.
 - Keep containers securely sealed.
 - Avoid physical damage to containers.
 - Always wash hands with soap and water after handling.
 - Work clothes should be laundered separately.
 - Use good occupational work practice.
 - Observe manufacturer's storing and handling recommendations.
 - Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.
 - Containers, even those that have been empties, may contain explosive vapours.

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- Do NOT cut, drill, grind, weld or perform similar operations on or near containers.

SUITABLE CONTAINER:

- Packing as supplied by manufacturer.
 - Plastic containers may only be used if approved for flammable liquid.
 - Check that containers are clearly labelled and free from leaks.
 - For low viscosity materials (i) Drums and jerry cans must be of the non-removable head type. (ii) 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).
 - For manufactured product having a viscosity of at least 250 cSt. (23 deg. C).
 - Manufactured product that requires stirring before use and having a viscosity of at least 20 cSt. (25 deg. C)
 - (i) Removable head packaging:
 - (ii) Cans with friction closures and
 - (iii) Low pressure tubes and cartridges may be used.
 - 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 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.

STORAGE INCOMPATIBILITY:

- Avoid reaction with oxidising agents.

STORAGE REQUIREMENTS:

- Store in original containers in approved flame-proof area.
 - No smoking, naked lights, heat or ignition sources.
 - DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
 - Keep containers securely sealed.
 - Store away from incompatible materials in a cool, dry well ventilated area.
 - Protect containers against physical damage and check regularly for leaks.
 - Observe manufacturer's storing and handling recommendations.

VIII. Exposure Controls/Personal Protection

EXPOSURE CONTROLS / PERSONAL PROTECTION:

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Notes
New Zealand Workplace Exposure Standards (WES)	methanol (Methyl alcohol)	200	262	250	328	skin, bio
New Zealand Workplace Exposure Standards (WES)	phenol (Phenol)	5	19			skin

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m ³)	Revised IDLH Value (ppm)
methanol		6,000
phenol		250 (Unch)

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MATERIAL DATA

SYLVIC R15 – not available.

METHANOL

- For methanol:
Odour Threshold Value – 4.2-5960 ppm (detection), 53.0-8940 ppm (recognition)
NOTE : Detector tubes for methanol, measuring in excess of 50 ppm, are commercially available.

Exposure at or below the recommended TLV-TWA is thought to substantially reduce the significant risk of headache, blurred vision and other ocular and systemic effects.

Odour Safety Factor (OSF)
OSF=2 (METHANOL)

PHENOL

- Odour Threshold Value for phenol: 0.060 ppm (detection)
NOTE : Detector tubes for phenol, measuring in excess of 1ppm, are commercial available.
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 at or below 5.2ppm phenol have experienced no ill-effects. Because phenol as a vapour, liquid or solid can penetrate the skin causing systemic effect, a skin notation is considered necessary. Although ACGIH has not recommended a STEL it is felt that ACGIH excursion limits (25 ppm limited to a total duration of 30 minutes with brief excursions limited to no more than 25 ppm) and NIOSH Ceiling values are sufficiently similar so as to provide the same margin of safety.
Odour Safety Fact (OSF)
OSF=25 (PHENOL)

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**
 - 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. Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:
 - Frequency and duration of contact
 - Chemical resistance of glove material
 - Glove thickness and
 - Dexterity
 - Select gloves tested to a relevant standard (eg Europe EN 374, US F739)
 - When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
 - When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
 - Contaminated gloves should be replaced.
- Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a

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non-perfumed moisturiser is recommended.

- **Other**
 - Overalls
 - PVC apron
 - PVC protective suit may be required if exposure severe
 - Eyewash unit
 - Ensure there is ready access to a safety shower
- **Respirator**
 - The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.
- **Engineering Controls**
 - For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant.

IX. Physical and Chemical Properties

APPEARANCE: Red-brown flammable liquid with phenolic odour, mixes with water.

PHYSICAL: Liquid, mixes with water, toxic or noxious vapours/gas.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (°C)	Not applicable	Viscosity	350-1000 cSt@25°C
Boiling Range (°C)	89	Solubility in water (g/L)	Miscible
Flash Point (°C)	23	pH (1% solution)	Not available
Decomposition Temp (°C)	Not available	pH (as supplied)	7.5 – 8.5
Autoignition Temp (°C)	Not available	Vapour Pressure (kPa)	Not available
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	1.150-1.175
Lower Explosive Limit (%)	Not available	Relative Vapour Density (air=1)	>1.0
Volatile Component (%vol)	45	Evaporation Rate	Not available

Material	Value
METHANOL:	
Log Kow	- 0.82 - - 0.66

X. Chemical Stability and Reactivity Information

CONDITIONS CONTRIBUTING TO STABILITY:

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

For incompatible materials – refer to Section 7 – Handling and Storage

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XI. Toxicological Information

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. The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion. Strong evidence exists that this substance may cause irreversible mutations (though not lethal) even following a single exposure. There is some evidence to suggest that this material can cause, if swallowed once, very serious, irreversible damage or organs.

EYE: The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating. If applied to the eyes, this material causes severe eye damage.

SKIN: Skin contact with the material may produce toxic effects; systemic effects may result following absorption. The material can produce chemical burns following direct contact with the skin. There is strong evidence to suggest that this material, on a single contact with skin, can cause serious, irreversible damage of organs. Entry into the bloodstream, 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: If inhaled, this material can irritate the throat and lungs of some persons. Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects. Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo. Minor but regular methanol exposures may affect the central nervous system, optic nerves and retinae. Symptoms may be delayed, with headache, fatigue, nausea, blurring of vision and double vision. Continued or severe exposures may cause damage to optic nerves, which may become severe with permanent visual impairment even blindness resulting.

WARNING: Methanol is only slowly eliminated from the body and should be regarded as a cumulative poison which cannot be made non-harmful (CCINFO).

There is strong evidence to suggest that this material, on a single contact with skin, can cause serious, irreversible damage of organs. There is some evidence to suggest that this material can cause, if swallowed once, very serious, irreversible damage of organs.

CHRONIC HEALTH EFFECTS: 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. Laboratory (in vitro) and animal studies show, exposure to the material may result in a possible risk of irreversible effects, with the possibility of producing mutation. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Long-term exposure to methanol vapour, at concentrations exceeding 3000 ppm, may produce cumulative effects characterised by gastrointestinal disturbances (nausea, vomiting), headache, ringing in the ears, insomnia, trembling, unsteady gait, vertigo, conjunctivitis and clouded or double vision. Liver and/or kidney injury may also result. Some individuals show severe eye damage following prolonged exposure to 800 ppm of the vapour. There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment. Minor but regular methanol exposures may affect the central nervous system, optic nerves and retinae. Symptoms may be delayed, with headache, fatigue, nausea, blurring of vision and double vision. Continued or severe exposures may cause damage to optic nerves, which may become severe with permanent visual impairment even blindness resulting.

WARNING: Methanol is only slowly eliminated from the body and should be regarded as a cumulative poison which cannot be made non-harmful (CCINFO).

TOXICITY AND IRRITATION: Unless otherwise specified data extracted from RTECS – Register of Toxic Effects of Chemical Substances. SYLVIC R15: Not available. Refer to individual constituents.

METHANOL:

Oral (human) LDLo: 143 mg/kg

Oral (man) LDLo: 6422 mg/kg

Oral (man) TDLo: 3429 mg/kg

Oral (rat) LD50: 5628 mg/kg

Inhalation (human) TCLo: 86000 mg/m³

Inhalation (human) TCLo: 300 ppm

Inhalation (rat) LC50: 64000 ppm/4h

Skin (rabbit): 20 mg/24 h- Moderate

Eye (rabbit): 40 mg- Moderate

Eye (rabbit): 100 mg/24h- Moderate

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Dermal (rabbit) LD50: 15800 mg/kg

The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

PHENOL:

Oral (rat) LD50: 317 mg/kg

Skin (rabbit) 500 mg/24hr – SEVERE

Oral (human) LDLo: 140 mg/kg

Skin (rabbit): 500 mg Open – SEVERE

Inhalation (rat) LC50: 316 mg/m³

Eye (rabbit): 5 mg – SEVERE

Dermal (rabbit) LD50: 850 mg/kg

Eye (rabbit): 100mg rinse – Mild

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

The material may cause severe skin irritation after prolonged or repeated exposure and may product on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. 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 or irritating substance (often particular in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. The substance is classified by IARC as Group 3: NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

CARCINOGEN

Phenol	International Agency for Research on Cancer (IARC) – Agents Reviewed by the IARC Monographs	Group	3
SKIN			
Methanol	New Zealand Workplace Exposure Standards (WES) – Skin	Notes	Skin
	New Zealand Workplace Exposure Standards (WES) – Skin	Notes	Skin

XII. Ecological Information

PHENOL:

METHANOL:

DO NOT discharge into sewer or waterways.

Methanol

For Methanol:

Log Kow: -0.082- -0.66

Half-life (hr) air: 427

Half-life (hr) H2O surface water: 5.3-64

Henry's atm m3 /mol: 1.35E-04

BOD 5 0.76-1.12

COD: 1.05-1.50, 99%

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EPOXIES • RESINS • GLUES • FILLERS
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ThOD: 1.5

BCF: 0.2-10

Environmental Fate:

ERRESTRIAL FATE: An estimated Koc value of 1 indicates that methanol is expected to have very high mobility in soil. Volatilisation of methanol from moist soil surfaces is expected to be an important fate process given a Henry's Law constant of 4.55×10^{-6} atm-cu m/mole. The potential for volatilisation of methanol from dry soil surfaces may exist based upon a vapour pressure of 127mm Hg. Biodegradation is expected to be an important fate process for methanol based on half-lives of 1 and 3.2 days measured in a sandy silt loam and sandy loam from Texas and Mississippi, respectively.

AQUATIC FATE: The estimated Koc indicates that methanol is not expected to adsorb to suspended solids and sediment. Volatilisation from water surfaces is expected based upon a Henry's Law constant. Using this Henry's Law constant estimated volatilisation half-lives for a model river and model lake are 3 and 35 days, respectively. A BCF of less than 10 measured in fish, suggests bioconcentration in aquatic organisms is low. Hydrolysis and photolysis in sunlit surface waters is not expected to be an important environmental fate process for methanol since this compound lacks functional groups that hydrolyse or absorb light under environmentally relevant conditions. Methanol has been shown to undergo rapid biodegradation in a variety of screening studies using sewage seed and activated sludge inoculum, which suggests that biodegradation will occur in aquatic environments.

ATMOSPHERIC FATE: According to a model of gas/particle partitioning of semivolatile organic compounds in the atmosphere and vapour pressure, methanol is expected to exist solely as a vapour in the ambient atmosphere. Vapour-phase methanol is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals (SRC); the half-life for this reaction in air is estimated to be 17 days, calculated from its rate constant of 9.4×10^{-13} cu cm/molecule-sec at 25 deg C.

Ecotoxicity: Fish LC50 (96 h) fathead minnow (*Pimephales promelus*) 29000 mg/l; rainbow trout (*Oncorhynchus mykiss*) 19000 mg/l; bluegill (*Lepomis macrochirus*) 15400 mg/l

Fish LC50 (7 d): guppy 10860 mg/l (14 d): 11.5 mg/l
(semistatic) *Daphnia pulex* LC50 (18 h): 19500 mg/l

Brine shrimp (*Artemia salina*) LC50 24 h): 1101.46-1578.84 mg/l
(static) Brown shrimp (*Crangon crangon*) LC50 (96 h): 1340 mg/l
(semistatic) Mussel (*Mytilus edulis*) LC50 (96 h): 15900 mg/l

Marine bacterium (*Photobacterium phosphoreum*) LC50 (4 h) 7690 mg/l
Protozoa (*Tetrahymena pyriformis*) LC50 (48 h) 18756 mg/l.

Phenol: Harmful to aquatic organisms.

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 low 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. Phenol is released into the air and discharged into water from both manufacturing and use. Based on its high water solubility and the fact that it has been detected in rain water, some phenol may wash out of the atmosphere; however, it is probable that only limited amounts wash out because of the short atmospheric half-life of phenol. During the day, when photochemically produced hydroxyl radical concentrations are highest in the atmosphere, very little atmospheric transport of phenol is likely to occur.

In water, neither volatilisation nor sorption to sediments and suspended particulates are expected to be important transport mechanisms. Phenol is not expected to bioconcentrate significantly in aquatic organisms. Reported log bioconcentration factors (BCF) in fish for phenol include 0.28 for goldfish and 1.3 for golden orfe.

The pKa of phenol is 10, indicating that phenol will primarily exist as the protonated acid at environmental pH values. In alkaline soils and water, phenol will partially exist as an anion, which can affect its fate and transport processes.

Although it has been shown that plants readily uptake phenol, bioaccumulation does not take place due to a high rate of respiratory decomposition of phenol to CO₂.

The gas-phase reaction of phenol with photochemically produced hydroxyl radicals is probably a major removal mechanism in the atmosphere. An estimated half-life for phenol for this reaction is 0.61 days.

The reaction of phenol with nitrate radicals during the night may constitute a significant removal process. This is based on a rate constant of 3.8×10^{-12} cm³/molecule second for this reaction, corresponding to a half-life of 15 minutes at an atmospheric concentration of 2×10^8

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nitrate radicals per cm³. Phenol does not absorb light in the region of 290-330 nm, therefore it should not photodegrade directly in the atmosphere.

Although phenol does not absorb light at wavelengths >290, phenols react rapidly to sunlit natural water via an indirect reaction with photochemically produced hydroxyl radicals and peroxy radicals; typical half-lives for hydroxyl and peroxy radical reactions are on the order of 100 and 19.2 hours of sunlight, respectively. These reactions require dissolves natural organic materials that function as photosensitisers. The estimated half-life for the reaction of phenol with photochemically produced singlet oxygen in sunlit surface waters contaminated by humic substances in 83 days.

Phenol is readily biodegradable in natural water, provided the concentration is not high enough to cause significant inhibition through microbial toxicity. The degradation of phenol is somewhat slower in salt water. Rapid degradation of phenol also has been reported in various sewage and water treatment processes.

Removal in aerobic activated sludge reactors is frequently >90% with a retention time of 8 hours.

Phenol biodegrades in soil under both aerobic and anaerobic soil conditions. The half-life of phenol in soil is generally <5 days, but acidic soils and some surface soils may have half-lives of up to 23 days.

Mineralisation in an alkaline, para-brown soil under aerobic conditions was 45.5, 48 and 65% after 3, 7 and 70 days, respectively. Half-lives for degradation of low concentrations of phenol in two silt loam soils were 2.70 and 3.51 hours. Plants have been shown to be capable of metabolising phenol readily. While degradation is slower under anaerobic conditions, evidence presented in the literature suggests that phenol can be rapidly and virtually completely degraded in soil under both aerobic and anaerobic conditions.

The material is classified as an ecotoxin* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l.

* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1

Compilers Guide for the Preparation of International Chemical Safety Cards: 1993 Commission of the European Communities. Koc: 39-148

Half-life (hr) air: 0.25-16

Half-life (hr) H₂O surface water: 19-

100 Henry's atm m³/mol: 3.97E-07

BOD 5 if unstated:

1.68 COD 2.28-237

ThOD: 2.26-2.40

BCF: 1.9-277

Nitrif. inhib: 50% inhib at 9mg/L

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
Methanol	LOW		LOW	HIGH
Phenol	LOW	LOW	LOW	MED

XIII. Disposal Considerations

Containers may still present a chemical hazard/danger when empty.

Return to supplier for reuse/recycling if possible.

Otherwise:

If container cannot be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.

Where possible, retain label warnings and MSDS and observe all notices pertaining to the product.

Legalisation 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.

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A Hierarchy of Controls seems to be common – the user should

- investigate: Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning or process equipment to enter drains. It may be necessary to collect all wash water for treatment before disposal.

In all cases, disposal to sewer may be subject to local laws and regulations and these should be considered first. Where in doubt contact the responsible authority.

XIV. Transport Information

Labels Required: FLAMMABLE LIQUID, TOXIC

HAZCHEM: *3W Use alcohol resistant foam.

Land Transport UNDG:

Class or division:	3	Subsidiary risk:	6.1
UN No:	1992	UN packing group:	III
Shipping Name: FLAMMABLE LIQUID, TOXIC, N.O.S. (contains methanol)			

Air Transport IATA:

ICAO/IATA Class:	3	ICAO/IATA Subrisk:	6.1
UN/ID Number:	1992	Packing Group:	III
Special provisions:	A3		

Shipping Name: FLAMMABLE LIQUID, TOXIC, N.O.S. (CONTAINS METHANOL)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: IMDG

XV. Regulatory Information

REGULATIONS FOR INGREDIENTS

Methanol (CAS: 67-56-1) is found on the following regulatory lists:

“GESAMP/EHS Composite List – GESAMP Hazard Profiles”, “IMO IBC Code Chapter 17: Summary of minimum requirements”, “IMO MARPOL 73/78 (Annex II) – List of Other Liquid Substances”, “International Council of Chemical Associations (ICCA) – High Production Volume List”, “New Zealand Hazardous Substances and New Organisms (HSNO) Act – Chemicals (single components)”, “New Zealand Hazardous Substances and New Organisms (HSNO) Act – Classification of Chemicals”, “New Zealand Hazardous Substances and New Organisms (HSNO) Act – Classification of Chemicals – Classification Data”, “New Zealand Hazardous Substances and New Organisms (HSNO) Act – Dangerous Goods”, “New Zealand Workplace Exposure Standards (WES)”, “OECD Representative List of High Production Volume (HPV) Chemicals”

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Phenol (CAS: 108-95-2) is found on the following regulatory lists:

“GESAMP/EHS Composite List – GESAMP Hazard Profiles”, “IMO IBC Chapter 17: Summary of minimum requirements”, “IMO MARPOL 73/78 (Annex II) – List of Noxious Liquid Substances Carried in Bulk”, “New Zealand Hazardous Substances and New Organisms (HSNO) Act – Chemicals (single components)”, “New Zealand Hazardous Substances and New Organisms (HSNO) Act – Classification of Chemicals”, “New Zealand Hazardous Substances and New Organisms (HSNO) Act – Classification of Chemicals – Classification Data”, “New Zealand Hazardous Substances and New Organisms (HSNO) Ltd – Scheduled Toxic Substances”, “New Zealand Hazardous Substances and New Organisms (HSNO) Act – Veterinary Medicines”, “New Zealand Workplace Exposure Standards (WES)”, OECD Representative List of High Production Volume (HPV) Chemicals”.

No data for SYLVIC R15 (CW: 6123-26)

XVI. Other Information

REPRODUCTIVE HEALTH GUIDELINES:

- Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for reproduction no-observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA’s procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.

Ingredient	ORG	UF	Endpoint	CR	Adeq TLV
Methanol	262 mg/m3	NA	NA	NA	Yes
Phenol	3.6 mg/m3	100	D	NA	-

- These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time-weighted average unless specified otherwise.

CR = Cancer Risk/10000; UF – Uncertainty factor

TLV believed to be adequate to protect reproductive health; LOD: Limit of detection

Toxic endpoints have also been identified as:

D = Developmental; R = Reproductive; TC = Transplacental carcinogen
Jankovic J., Drake F.: A Screening Method for Occupational Reproductive
American Industrial Hygiene Association Journal 57: 641-649 (1996)

- 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 (M)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.

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