

# PARAFORMALDEHYDE

GHS Safety Data Sheet

Version No:5

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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

PARAFORMALDEHYDE

### OTHER NAMES

(CH<sub>2</sub>O)<sub>n</sub>, polyoxymethylene, paraform, formagene, Aldacide, metaformaldehyde, "formaldehyde dry solid", "polymerised formaldehyde"

### PROPER SHIPPING NAME

PARAFORMALDEHYDE

### PRODUCT USE

Used in fungicides, bactericides and disinfectants. High volume use chemical; for the manufacture of synthetic resins, adhesives and plastics. Active ingredient of contraceptive creams.

### SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,  
248, WORLI,  
MUMBAI- 400030.INDIA.

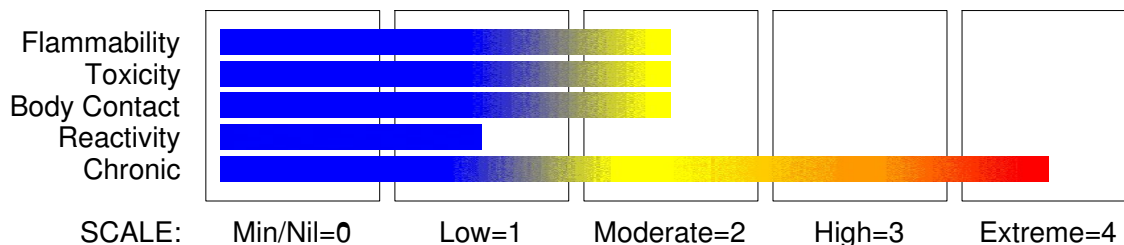
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

### HAZARD RATINGS



## Section 2 - HAZARDS IDENTIFICATION

### GHS Classification

Acute Toxicity (Inhalation) Category 4

Acute Toxicity (Oral) Category 4

Carcinogen Category 1A

Eye Irritation Category 2A

continued...

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## Section 2 - HAZARDS IDENTIFICATION

Flammable Solid Category 2  
Respiratory Irritation Category 3  
Skin Corrosion/Irritation Category 2  
Skin Sensitizer Category 1



## EMERGENCY OVERVIEW

### HAZARD

DANGER

Determined by using GHS criteria:

H335 H228 H332 H302 H315 H319 H317 H350

May cause respiratory irritation

Flammable solid

Harmful if inhaled

Harmful if swallowed

Causes skin irritation

Causes serious eye irritation

May cause allergic skin reaction

May cause CANCER

### PRECAUTIONARY STATEMENTS

#### Prevention

Avoid breathing dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Use only outdoors or in a well ventilated area.

Do not handle until all safety precautions have been read and understood.

Use personal protective equipment as required.

Contaminated clothing should not be allowed out of the workplace.

Obtain special instructions before use.

Do not eat, drink or smoke when using this product.

Wash hands thoroughly after handling.

Ground/bond container and receiving equipment.

Keep away from heat/sparks/open flame - No smoking.

Wear protective gloves and eye/face protection.

Use explosion-proof electrical/ventilating/lighting/equipment

#### Response

If eye irritation persists, get medical advice/attention.

Wear eye/face protection.

If skin irritation occurs, seek medical advice/attention.

If exposed or concerned: Get medical attention advice.

Specific treatment: refer to Label or MSDS.

If skin irritation or rash occurs, seek medical advice/attention.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Wash/Decontaminate removed clothing before reuse.

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

IF ON SKIN: Gently wash with plenty of soap and water.

Call a POISON CENTER or doctor/physician if you feel unwell.

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## Section 2 - HAZARDS IDENTIFICATION

Remove/Take off immediately all contaminated clothing  
Wash contaminated clothing before reuse.

### Storage

Store locked up.

### Disposal

Dispose of contents and container in accordance with relevant legislation.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| NAME                                 | CAS RN     | %   |
|--------------------------------------|------------|-----|
| paraformaldehyde                     | 30525-89-4 | >90 |
| water/moisture produces formaldehyde | 50-00-0    |     |

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- Rinse mouth out with plenty of water.
- 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.
- Seek medical advice.

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

### INHALED

- 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.

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## Section 4 - FIRST AID MEASURES

### NOTES TO PHYSICIAN

For acute or short-term repeated exposures to formaldehyde:

#### INGESTION:

- Patients present early with severe corrosion of the gastro-intestinal tract and systemic effects.
- Inflammation and ulceration may progress to strictures.
- Severe acidosis results from rapid conversion of formaldehyde to formic acid. Coma, hypotension, renal failure and apnoea complicate ingestion.
- Decontaminate by dilution with milk or water containing ammonium acetate; vomiting should be induced. Follow with gastric lavage using a weak ammonia solution (converts formaldehyde to relatively inert pentamethylenetetramine)
- Gastric lavage is warranted only in first 15 minutes following ingestion.

#### SKIN:

- Formaldehyde can combine with epidermal protein to produce a hapten-protein couple capable of sensitising T-lymphocytes. Subsequent exposures cause a type IV hypersensitivity reaction (i.e allergic contact dermatitis). [Ellenhorn & Barceloux: Medical Toxicology].

## Section 5 - FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

Water spray or fog.

- Alcohol stable foam.

Dry chemical powder.

### FIRE FIGHTING

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 courses.

Use water delivered as a fine spray to control the fire and cool adjacent area.

DO NOT approach containers suspected to be hot.

If safe to do so, remove containers from path of fire.

Equipment should be thoroughly decontaminated after use.

### FIRE/EXPLOSION HAZARD

Flammable solid.

Avoid creating dust - may present dust explosion hazard. Dry dust can be electrostatically charged by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport. Build-up of electrostatic charge may be prevented by grounding. Dangerous hazard when exposed to heat, flame and oxidisers.

Decomposes on heating and produces acrid and toxic fumes of: highly discomforting formaldehyde, carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>).

### FIRE INCOMPATIBILITY

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

Avoid creating dust - may present dust explosion hazard. Dry dust can be electrostatically charged by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport. Build-up of electrostatic charge may be prevented by grounding.

### Personal Protective Equipment

Breathing apparatus.

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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### EMERGENCY PROCEDURES

#### MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable labelled container for waste disposal.

#### MAJOR SPILLS

DO NOT touch the spill material . Restrict access to area.  
Alert Fire Brigade and tell them location and nature of hazard.  
Clear area of personnel and move upwind.  
Shut off all possible sources of ignition and increase ventilation.

- 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 and water courses.

No smoking or naked lights within area.  
Use dry clean up procedures and avoid generating dust.  
Collect recoverable product into labelled containers for recycling.  
Collect, using a spark-free shovel, and seal in labelled drums for disposal.

- Cover residues with sodium metabisulfite.
- Mix in a small amount of water.
- Scoop up and wash to sewer with a large amount of water.

After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.

### EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

paraformaldehyde      100 mg/m<sup>3</sup>

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

paraformaldehyde      75 mg/m<sup>3</sup>

other than mild, transient adverse effects without perceiving a clearly defined odour is:

paraformaldehyde      12.5 mg/m<sup>3</sup>

The threshold concentration below which most people will experience no appreciable risk of health effects:

paraformaldehyde      4 mg/m<sup>3</sup>

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

|                 |               |               |              |
|-----------------|---------------|---------------|--------------|
| Very Toxic (T+) | $\geq 0.1\%$  | Toxic (T)     | $\geq 3.0\%$ |
| R50             | $\geq 0.25\%$ | Corrosive (C) | $\geq 5.0\%$ |
| R51             | $\geq 2.5\%$  |               |              |
| else            | $\geq 10\%$   |               |              |

where percentage is percentage of ingredient found in the mixture

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## Section 6 - ACCIDENTAL RELEASE MEASURES

### SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific precautions

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

Avoid generating and breathing dust.

DO NOT handle directly. Wear gloves and use scoop / tongs / tools.

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

### SUITABLE CONTAINER

Multi-ply paper bag with sealed plastic liner or heavy gauge plastic bag.

NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse. Check that all containers are clearly labelled and free from leaks. Packing as recommended by manufacturer.

### STORAGE INCOMPATIBILITY

Avoid storage with oxidisers.

Avoid contamination of water, foodstuffs, feed or seed.

### STORAGE REQUIREMENTS

Rotate all stock to prevent ageing. Use on FIFO (First In-First Out) basis.

Keep dry. Store below 38 deg. C.

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

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

The following materials had no OELs on our records

• paraformaldehyde:

CAS:30525- 89- 4 CAS:53026- 80- 5

### EMERGENCY EXPOSURE LIMITS

Material  
formaldehyde

Revised IDLH Value (mg/m3)

Revised IDLH Value (ppm)  
20

### MATERIAL DATA

No exposure limits set by NOHSC or ACGIH.

### INGREDIENT DATA

FORMALDEHYDE:

Odour Threshold Value: 0.98 ppm (recognition)

NOTE: Detector tubes for formaldehyde, measuring in excess of 0.2 ppm are available commercially.

Formaldehyde vapour exposure:

Primary irritation is dependent on duration of exposure and individual susceptibility.

The following are typical symptoms encountered at various exposure levels.

0.1 ppm - Lower level of mucous eye, nose and throat irritation

0.8 ppm - Typical threshold of perception

1-2 ppm - Typical threshold of irritation

2-3 ppm - Irritation of eyes, nose and throat

4-5 ppm - Increased irritation, tearing, headache, pungent odour

10-20 ppm - Profuse tearing, severe burning, coughing

50 ppm - Serious bronchial and alveolar damage

100 ppm - Formaldehyde induced chemical pneumonia and death

Despite the intent of the TLV Ceiling recommendation it is believed that

0.3 ppm will not protect that portion of the workforce (up to 20%) reported

to be responsive to low ambient concentrations. Because of the dose-related

carcinogenic activity for rat and mouse inhalation of formaldehyde, the

report of macromolecular adducts in the upper and lower respiratory

tracts of nonhuman primates following inhalation of formaldehyde, the human

case reports of upper respiratory tract malignant melanoma associated with

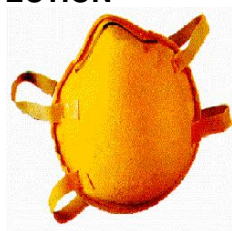
formaldehyde inhalation and the suggestive epidemiologic data on human

cancer risk, the TLV Committee recommends that workplace formaldehyde air

concentrations be reduced to the lowest possible levels that can be

achieved using engineering controls.

### PERSONAL PROTECTION



### EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.

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# PARAFORMALDEHYDE

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

· 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 gloves with barrier cream  
Wear safety footwear.

### OTHER

Overalls.

· Ensure that there is ready access to eye wash unit.  
Ensure there is ready access to an emergency shower.

### RESPIRATOR

| Protection Factor | Half- Face Respirator | Full- Face Respirator | Powered Air Respirator |
|-------------------|-----------------------|-----------------------|------------------------|
| 10 x ES           | P1 Air- line*         | - -                   | PAPR- P1 -             |
| 50 x ES           | Air- line**           | P2                    | PAPR- P2               |
| 100 x ES          | -                     | P3                    | -                      |
|                   |                       | Air- line*            | -                      |
| 100+ x ES         | -                     | Air- line**           | PAPR- P3               |

\* - Negative pressure demand \*\* - Continuous flow.

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

### ENGINEERING CONTROLS

Use in a well-ventilated area.

· Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.  
· Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.  
· If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:  
(a): particle dust respirators, if necessary, combined with an absorption cartridge;  
(b): filter respirators with absorption cartridge or canister of the right type;  
(c): fresh-air hoods or masks  
· Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.  
· Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to efficiently remove the contaminant.

Type of Contaminant:  
direct spray, spray painting in shallow booths,

Air Speed:  
1- 2.5 m/s (200- 500 f/min.)

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)  
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

1: Room air currents minimal or favourable to capture

2: Contaminants of low toxicity or of nuisance value only

3: Intermittent, low production.

4: Large hood or large air mass in motion

Upper end of the range

1: Disturbing room air currents

2: Contaminants of high toxicity

3: High production, heavy use

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 4-10 m/s (800-2000 f/min) for extraction of crusher dusts generated 2 metres 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. In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

White crystalline flammable powder or flakes; slowly soluble in cold water.

Has a strong pungent and irritating odour of formaldehyde.

More readily soluble in hot water with evolution of formaldehyde.

Insoluble in alcohol and ether. Soluble in alkali hydroxide solutions.

Higher polymers are insoluble in water.

### PHYSICAL PROPERTIES

Solid.

Molecular Weight: Variable

Melting Range (°C): 120- 170 (decomp)

Solubility in water (g/L): Reacts

pH (1% solution): Not available.

Volatile Component (%vol): Not available.

Relative Vapour Density (air=1): 1.03

Lower Explosive Limit (%): 7.0

Autoignition Temp (°C): 300

State: Divided solid

Boiling Range (°C): 150 sublimes

Specific Gravity (water=1): 1.46

pH (as supplied): Not applicable

Vapour Pressure (kPa): 0.13 @ 30 C.

Evaporation Rate: Not available

Flash Point (°C): 71

Upper Explosive Limit (%): 73.0

Decomposition Temp (°C): 150 (sublimes)

Viscosity: Not available

log Kow (Prager 1995):

0.35

log Kow (Sangster 1997):

0.35

log Kow: 0-0.35

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## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

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### CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of incompatible materials.

Presence of heat source and ignition source.

Product is considered stable and hazardous polymerisation will not occur.

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## Section 11 - TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

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.

Ingestion may result in nausea, abdominal irritation, pain and vomiting.

##### EYE

Evidence exists, or practical experience predicts, that the material may cause severe eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Eye contact may cause significant inflammation with pain. Corneal injury may occur; permanent impairment of vision may result unless treatment is prompt and adequate. Repeated or prolonged exposure to irritants may cause inflammation characterised by a temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

##### SKIN

Evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.

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.

Regular skin contact may cause brown discolouration with tanning effect, hardening of skin, with cracking and possible dermatitis following.

Bare unprotected skin should not be exposed to this material.

The material may accentuate any pre-existing dermatitis condition.

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## Section 11 - TOXICOLOGICAL INFORMATION

### INHALED

Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.

### CHRONIC HEALTH EFFECTS

On the basis of epidemiological data, the material is regarded as carcinogenic to humans. There is sufficient data to establish a causal association between human exposure to the material and the development of cancer.

Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.

Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.

Sensitisation may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities.

Sensitisation reactions may appear suddenly after repeated symptom free exposures.

The dust from the material is highly irritating even destructive to tissues of the mucous membranes and upper respiratory tract.

Paraformaldehyde solid and solutions, when heated evolve formaldehyde gas.

When administered by inhalation, formaldehyde induced squamous cell carcinomas of the nasal cavity in rats of both sexes. Although excess occurrence of a number of cancers has been reported, the evidence for a possible involvement of formaldehyde is strongest for nasal and nasopharyngeal cancer. The occurrence of these cancers showed an exposure-response gradient in more than one study, but the numbers of exposed cases were often small and some studies did not show excesses. In humans formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx and nasal passages.

### TOXICITY AND IRRITATION

#### TOXICITY

Oral (rat) LD50: 800 mg/kg

Oral (rat) LD50: 592 mg/kg\*

Inhalation (rat) LC50: 1070 mg/m<sup>3</sup>/4h \*[Orica]

#### IRRITATION

Skin (rabbit): 500 mg/24h SEVERE

Eye (rabbit): 100 mg SEVERE

#### FORMALDEHYDE:

##### TOXICITY

Oral (woman) LDLo: 108 mg/kg

Oral (man) TDLo: 643 mg/kg

Oral (rat) LD50: 100 mg/kg

Inhalation (man) TCLO: 0.3 mg/m<sup>3</sup>

Inhalation (rat) LC50: 203 mg/m<sup>3</sup>

Dermal (rabbit) LD50: 270 mg/kg

##### IRRITATION

Skin (human): 0.15 mg/3d- I Mild

Skin (rabbit): 2 mg/24H SEVERE

Eye (human): 4 ppm/5m

Eye (rabbit): 0.75 mg/24H SEVERE

**WARNING:** This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS.

Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

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## Section 12 - ECOLOGICAL INFORMATION

Fish LC50 (96hr.) (mg/l): 32

No data for paraformaldehyde.

Refer to data for ingredients, which follows:

### FORMALDEHYDE:

|                                                                      |          |
|----------------------------------------------------------------------|----------|
| Hazardous Air Pollutant:                                             | Yes      |
| Fish LC50 (96hr.) (mg/l):                                            | 96- 7200 |
| Daphnia magna EC50 (48hr.) (mg/l):                                   | 2        |
| Algae IC50 (72hr.) (mg/l):                                           | 0.39- 14 |
| log Kow (Prager 1995):                                               | 0.35     |
| log Kow (Sangster 1997):                                             | 0.35     |
| log Pow (Verschueren 1983):                                          | 0        |
| BOD5:                                                                | 60%      |
| BOD20:                                                               | 1.228    |
| COD:                                                                 | 100%     |
| ThOD:                                                                | 1.068    |
| Half- life Soil - High (hours):                                      | 168      |
| Half- life Soil - Low (hours):                                       | 24       |
| Half- life Air - High (hours):                                       | 6        |
| Half- life Air - Low (hours):                                        | 1.25     |
| 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 biodegradation - Removal secondary treatment - High (hours): | 99%      |
| Aqueous biodegradation - Removal secondary treatment - Low (hours):  | 57%      |
| Aqueous photolysis half- life - High (hours):                        | 6        |
| Aqueous photolysis half- life - Low (hours):                         | 1.25     |
| Photooxidation half- life water - High (hours):                      | 1.90E+05 |
| Photooxidation half- life water - Low (hours):                       | 4813     |
| Photooxidation half- life air - High (hours):                        | 71.3     |
| Photooxidation half- life air - Low (hours):                         | 7.13     |

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

Compiler's Guide for the Preparation of International Chemical Safety Cards: 1993

Commission of the European Communities.

log Kow: 0-0.35

Half-life (hr) air: 19-50

Henry's atm m<sup>3</sup> /mol: 3.27E-07

BOD 5 if unstated: 0-1.1,60%

COD: 1.06,100%

ThOD: 1.068

Formaldehyde is ubiquitous in the environment as a contaminant of smoke and as photochemical smog.

In the atmosphere, formaldehyde both photolyses and reacts with reactive free radicals (primarily hydroxyl radicals); half-lives in the sunlit tropospheres are 1.25 to 6 hours

continued...

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## Section 12 - ECOLOGICAL INFORMATION

for photolysis, and 7.13-71.3 hours for reaction with hydroxyl radicals).

Reaction with nitrate radicals, insignificant during the day, may be an important removal process at night. Due to its solubility, formaldehyde will efficiently transfer to rain and surface water; one model predicts dry deposition and wet removal half-lives of 19 and 50 hours, respectively.

In water, formaldehyde will biodegrade to low concentrations within days; adsorption to sediment and volatilisation are not expected to be significant routes.

In soil, aqueous solutions of formaldehyde leach through the soil; at high concentrations adsorption to clay minerals may occur. Although biodegradable under both aerobic and anaerobic conditions the fate of formaldehyde in soil is unclear.

It does not bioconcentrate in the food chain.

Drinking Water Standards:

hydrocarbon total: 10 ug/l (UK max.)

pesticide: 0.1 ug/l (UK max.)

formaldehyde: 900 ug/l (WHO guideline)

Air Quality Standards:

<0.1 mg/m<sup>3</sup> as a 30 min. average, indoor air, non-industrial buildings (WHO guideline).

## Section 13 - DISPOSAL CONSIDERATIONS

- Cover residues with sodium metabisulfite.
  - Mix in a small amount of water.
  - Scoop up and wash to sewer with a large amount of water.
- or Recycle wherever possible. Consult manufacturer for recycling options.  
Consult State Land Waste Management Authority for disposal.  
Bury or incinerate residue at an approved site.  
Recycle containers if possible, or dispose of in an authorised landfill.  
For small amounts

## Section 14 - TRANSPORTATION INFORMATION



Labels Required: FLAMMABLE SOLID  
HAZCHEM: 1[Z]

### UNDG:

Dangerous Goods Class: 4.1  
UN Number: 2213  
Shipping Name: PARAFORMALDEHYDE

Subrisk: None  
Packing Group: III

### Air Transport IATA:

ICAO/IATA Class: 4.1  
UN/ID Number: 2213  
ERG Code: 3L  
Shipping name: PARAFORMALDEHYDE

ICAO/IATA Subrisk: None  
Packing Group: III

continued...

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## Section 14 - TRANSPORTATION INFORMATION

### Maritime Transport IMDG:

|                                |            |                |      |
|--------------------------------|------------|----------------|------|
| IMDG Class:                    | 4.1        | IMDG Subrisk:  | None |
| UN Number:                     | 2213       | Packing Group: | III  |
| EMS Number:                    | F- A, S- G |                |      |
| Shipping name:PARAFORMALDEHYDE |            |                |      |

## Section 15 - REGULATORY INFORMATION

### REGULATIONS

paraformaldehyde (CAS: 30525-89-4) is found on the following regulatory lists;  
OECD Representative List of High Production Volume (HPV) Chemicals

No data available for paraformaldehyde as CAS: 53026-80-5.

## Section 16 - OTHER INFORMATION

### INGREDIENTS WITH MULTIPLE CAS NUMBERS

|                  |                                                                                             |
|------------------|---------------------------------------------------------------------------------------------|
| Ingredient Name  | CAS                                                                                         |
| paraformaldehyde | 30525- 89- 4, 53026- 80- 5                                                                  |
| formaldehyde     | 8013- 13- 6, 8006- 07- 3, 28349- 70- 4, 85458- 16- 8, 112068- 71- 0, 8005- 38- 7, 50- 00- 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.

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