

POLYVINYL ALCOHOL

GHS Safety Data Sheet

Version No:2.0

Page 1 of 13

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

POLYVINYL ALCOHOL

OTHER NAMES

(C₂H₄O)_n, "CAS RN 54626-91-4", PVA, PVAI, PVS, PVOH, "PVA alcohol", "vinyl alcohol polymer", "acetic acid, ethenyl ester, , polymer with ethanol", "ethanol homopolymer", "hydrolysed PVA", "Alcotex 88/05, ", 88/10, Gohsenol, Ivalon, "Alkotex Kuralon Vp", Resistoflex, PVAcohol, Alvyl, "Aracet APV", "Kurare Poval 1700", 120, Rhodoviol, PVAIc., Poval, "Cipoviol W72", "Kurare Pva 205", Solvar, "Sumitex H 10", Covol, Elvanol, EP160, Lemol, "Vibatex S", "Vinacol Mh", "EP 160", "Galvatol 1-60", "Galvatol 1-60", Mowiol, Vinalak, Vinarol, Vinarole, GL, GLO5, Polydesis, "Vinavilol 2-98", "Vinavilol 2-98", Vinnarol, "GH 20", GM14, "Polysizer 173", Polyvinol, Polyviol, Vinol, "Vinol Unisize", "Vinyon Film 2000", "Sigma Aldrich P8136"

PRODUCT USE

To produce solvent resistant gloves, and laminated with other plastic films.
 Films and coatings resistant to gasoline. Water soluble films and packaging.
 Used in preparation of polyvinyl acetal; production of plastic materials, foils, hoses, fibres; textile sizes, mould release and parting agents..
 Also used in printing inks for plastics and glass, pharmaceutical finishing, cosmetics, laminating adhesives, cements and mortars.
 Used as emulsifying agent, thickener and stabiliser.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,

248, WORLI,

MUMBAI- 400030.INDIA.

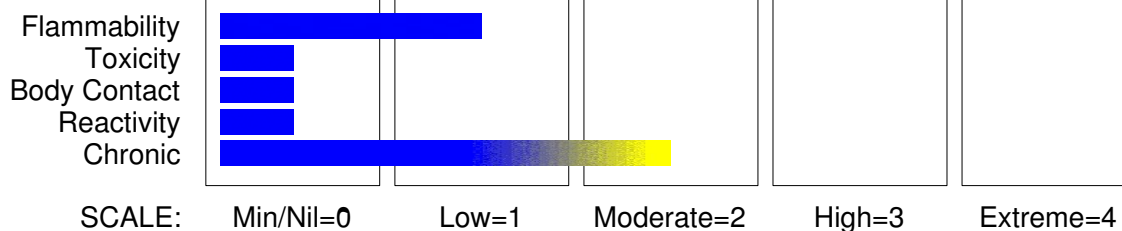
technical@sdfine.com

Telephone: 91- 22- 24959898

Telephone: 91- 22- 24959899

Fax: 91- 22- 24937232

HAZARD RATINGS



continued...

POLYVINYL ALCOHOL

GHS Safety Data Sheet

Version No:2.0

Page 2 of 13

Section 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARD

Not hazardous
No hazards determined by using GHS criteria

PRECAUTIONARY STATEMENTS

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
polyvinyl alcohol	9002-89-5	>95
residuals as sodium acetate, anhydrous	127-09-3	<3
volatiles as methanol	67-56-1	<1.8
methyl acetate	79-20-9	<1

Section 4 - FIRST AID MEASURES

SWALLOWED

For advice, contact a Poisons Information Centre or a doctor.

- 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:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:

- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear passage of breathing.
- If irritation or discomfort persists seek medical attention.

continued...

POLYVINYL ALCOHOL

GHS Safety Data Sheet

Version No:2.0

Page 3 of 13

Section 4 - FIRST AID MEASURES

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Water spray or fog.

- Alcohol stable foam.

Dry chemical powder.

Carbon dioxide.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

- Wear breathing apparatus plus protective gloves for fire only.

- 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.

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

FIRE/EXPLOSION HAZARD

Combustible.

Not considered to be a significant fire risk.

Decomposition may produce toxic fumes of: carbon dioxide (CO₂) and other pyrolysis products typical of burning organic material.

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.

FIRE INCOMPATIBILITY

Avoid contamination with strong oxidising agents as ignition may result.

- Solid which exhibits difficult combustion or is difficult to ignite.

- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.

- Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.

- Build-up of electrostatic charge 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.

- All movable parts coming in contact with this material should have a speed of less than 1-metre/sec.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

Clean up all spills immediately.

Avoid contact with skin and eyes.

Use dry clean up procedures and avoid generating dust.

Place spilled material in clean, dry, sealable, labelled container.

continued...

Section 6 - ACCIDENTAL RELEASE MEASURES

MAJOR SPILLS

Alert Fire Brigade and tell them location and nature of hazard.

Clear area of personnel.

- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.

Shut off all possible sources of ignition and increase ventilation.

Use dry clean up procedures and avoid generating dust.

Collect and seal in labelled drums for disposal.

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:

polyvinyl alcohol 500 mg/m³

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

polyvinyl alcohol 500 mg/m³

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

polyvinyl alcohol 125 mg/m³

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

polyvinyl alcohol 40 mg/m³

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+) >= 0.1% Toxic (T) >= 3.0%

R50 >= 0.25% Corrosive (C) >= 5.0%

R51 >= 2.5%

else >= 10%

where percentage is percentage of ingredient found in the mixture

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.

- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.

continued...

POLYVINYL ALCOHOL

GHS Safety Data Sheet

Version No:2.0

Page 5 of 13

Section 7 - HANDLING AND STORAGE

- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.

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.

Delivery may be in bulk by special vehicle.

STORAGE INCOMPATIBILITY

Keep dry . Avoid storage with oxidisers.

STORAGE REQUIREMENTS

Store in a cool, dry place.

Store in a well-ventilated area.

Store away from oxidising materials.

Keep dry.

Keep containers securely sealed.

Protect containers against physical damage.

Check regularly for spills and leaks.

Polyvinyl alcohol contains minor amounts of methanol and methyl acetate which diffuse from the powder over time. Under certain conditions of heat and confinement, vapour headspaces of trucks, railcars, bins or silos could exceed the lower explosive limits of those diffused vapours and produce an explosion given an ignition source. The energy required for ignition of a flammable vapour is much less than that of a flammable dust.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- polyvinyl alcohol: CAS:9002- 89- 5 CAS:25213- 24- 5 CAS:54626- 91- 4 CAS:75923- 48- 7 CAS:153569- 70- 1 CAS:82428- 08- 8 CAS:147827- 36- 9 CAS:106442- 33- 5 CAS:152987- 51- 4 CAS:53241- 16- 0 CAS:58740- 50- 4 CAS:155421- 52- 6 CAS:860310- 93- 6 CAS:9050- 53- 7 CAS:551960- 18- 0 CAS:9066- 05- 1 CAS:73298- 53- 0 CAS:9014- 14- 6 CAS:98002- 48- 3 CAS:875587- 23- 8 CAS:25038- 51- 1 CAS:61584- 38- 1 CAS:353276- 42- 3 CAS:151439- 02- 0 CAS:162261- 31- 6 CAS:172452- 03- 8 CAS:39320- 29- 1 CAS:372077- 13- 9
- sodium acetate, anhydrous: CAS:127- 09- 3 CAS:325477- 99- 4
- methanol: CAS:58456- 46- 5 CAS:67- 56- 1 CAS:19710- 56- 6 CAS:7263- 60- 7 CAS:6853- 31- 2 CAS:79825- 55- 1 CAS:253142- 14- 2 CAS:54841- 71- 3
- methyl acetate: CAS:79- 20- 9

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
methanol		6, 000
methyl acetate		3, 100 [LEL]

continued...

POLYVINYL ALCOHOL

GHS Safety Data Sheet

Version No:2.0

Page 6 of 13

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

NOTES

Values marked LEL indicate that the IDLH was based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.

ODOUR SAFETY FACTOR (OSF)

OSF=2 (METHANOL)

Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.

Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.

The Odour Safety Factor (OSF) is defined as:

OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm

Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

MATERIAL DATA

INGREDIENT DATA

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.

METHYL ACETATE:

Odour Threshold Value: 182 ppm (detection), 297 ppm (recognition)

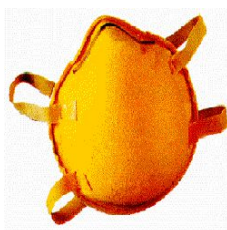
Methyl acetate is metabolised to methanol in a manner proportional to the exposure level and the TLV-TWA is analagous to that proposed for methanol.

The TLV-TWA is thought to be protective against narcosis, eye and skin irritation and pulmonary irritation.

PERSONAL PROTECTION

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION



EYE

- Safety glasses with side shields; or as required,
- Chemical goggles.
- 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 general protective gloves: i.e. Disposable polythene gloves or Cotton gloves or Light weight rubber gloves, with Barrier cream preferably Safety footwear.

OTHER

- Overalls.
- Eyewash unit.

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

None required when handling small quantities.

OTHERWISE:.

- 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;

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

(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, 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).

Air Speed:

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

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.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

White / cream-coloured powder, no odour. Insoluble in many organic solvents. However, soluble in water, phenol, acetic acid. High impermeability to gases. Forms films by evaporation from water solution. Grades available with different degree of polymerisation and percent hydrolysis. Molecular weights vary from low viscosity (MW:25000-35000) to super high viscosity (MW:250000-300000); and percentage of hydrolysis varies. As molecular weight decreases, solubility in water increases at any degree of hydrolysis.

Fully, Super or moderately hydrolysed grades are covered by CAS RN 9002-89-5 and intermediate or partially hydrolysed by CAS RN 25213-24-5.

Most Denka Poval grades normally have less than 5% of volatiles (including

POLYVINYL ALCOHOL

GHS Safety Data Sheet

Version No:2.0

Page 9 of 13

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

free methanol and methyl acetate residuals, both of which are highly flammable with LEL's of 6% and 3.1% respectively).
Being produced by hydrolysis of polyvinyl acetate polymer, a vinyl alcohol monomer does not exist.

PHYSICAL PROPERTIES

Solid.
Does not mix with water.
Sinks in water.

Molecular Weight: Not available
Melting Range (°C): decomp. @ 200
Solubility in water (g/L): Partly miscible
pH (1% solution): 5- 7 (4%)
Volatile Component (%vol): <5%
Relative Vapour Density (air=1): Not available
Lower Explosive Limit (%): 0.87g/m3
Autoignition Temp (°C): Not available
State: Divided solid

Boiling Range (°C): Not available.
Specific Gravity (water=1): 1.26- 1.31
pH (as supplied): Not applicable
Vapour Pressure (kPa): Not available.
Evaporation Rate: Non Volatile
Flash Point (°C): 79 O.C.
Upper Explosive Limit (%): Not limited
Decomposition Temp (°C): 200

log Kow : -4.22
log Kow: -0.82- -0.66
log Kow (Sangster 1997): 0.18

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable under normal handling conditions.
- Prolonged exposure to heat.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Although ingestion is not thought to produce harmful effects (as classified under EC Directives), the material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.
Considered an unlikely route of entry in commercial/industrial environments.

EYE

Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

continued...

Section 11 - TOXICOLOGICAL INFORMATION

SKIN

The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

INHALED

The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

CHRONIC HEALTH EFFECTS

On the basis, primarily, of animal experiments, concern has been expressed by at least one classification body that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.

Considered to be non toxic.

Principal routes of exposure are usually by skin contact with the material and inhalation of generated dust.

As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

Subcutaneous injection of polyvinyl alcohol (PVA) (molecular weights 37000-185000, 1 ml of 5% PVA in physiological saline) into female rats for 28 days produced elevated blood pressure in some rats from each treatment group. The polymer with a molecular weight of 133000 was associated with widespread cardiovascular lesions, severe polydipsia, severe glomerulonephritis, and enlargement of the heart, kidney, liver and spleen. The polymer with a molecular weight of 185000 was associated with renal glomerular swelling and enlargement of the heart, kidney, liver and spleen. The polymer with a molecular weight of 37000 was not associated with lesions. It was concluded that the pathologic effects of subcutaneous injection of PVA in rats, particularly in the kidney and in the production of necrotic syndrome, were dependent on molecular weight rather than chemical structure. Intravascularly injected PVA foam spheres for elective embolisation of vascular malformations resulted in inflammation and necrosis of the blood vessels in which they were lodged. Foamed PVA has been used in reconstructive surgery for many years for conditions such as rectal collapse and repair of large hernias without reported toxic effects.

Subcutaneously implanted PVA sponges in rats have been associated with the appearance of local sarcoma in some studies but not in others. In one study, it was reported that implantation of 2 mm thick sponge produced substantially more sarcoma than a 5 mm thick sponge. This suggested that physical form and thickness of the PVA implant may be more important in carcinogenicity just as molecular weight is thought to be important in the toxicity of PVA. No neoplasms were noted at the site of subcutaneous implantation of PVA powder. Implantation of PVA sponges as a breast prosthesis has been associated with fibrosis. Biopsy of a PVA foam sponge implanted 20-years earlier for rectal prolapse showed extensive fibrosis around the implant.

In a 2-year study there was no evidence of carcinogenic activity of PVA (molecular weight approximately 24000) in female mice administered 20 µl of a 25% solution intravaginally. There were no neoplasms or neoplastic lesions considered related to treatment with polyvinyl alcohol.

continued...

POLYVINYL ALCOHOL

GHS Safety Data Sheet

Version No:2.0

Page 11 of 13

Section 11 - TOXICOLOGICAL INFORMATION

National Toxicology Program: Technical Report Series No. 474 May 1998

TOXICITY AND IRRITATION

TOXICITY

Oral (rat) LD50: >20, 000mg/kg

Oral (rat) LD50: >10000 mg/kg [Monsanto]

Dermal (rabbit)LD50:>7940 mg/kg[Monsanto]

The substance has been investigated as a Tumorigen.

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.

IRRITATION

Nil Reported

SODIUM ACETATE, ANHYDROUS:

TOXICITY

Oral (rat) LD50: 3530 mg/kg

IRRITATION

Skin (rabbit): 550 mg/24h - Mild

Eye (rabbit): 10 mg - Mild

METHANOL:

TOXICITY

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

Dermal (rabbit) LD50: 15800 mg/kg

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

IRRITATION

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

Eye (rabbit): 40 mg- Moderate

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

METHYL ACETATE:

TOXICITY

Inhalation (human) TCLo: 15000 mg/m³

Inhalation (rat) LCLo: 32000 ppm/4h

IRRITATION

Skin (rabbit): 500 mg/24h - Mild

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

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

Section 12 - ECOLOGICAL INFORMATION

COD: 1800 mg Oxygen/g product

BOD5: 0-5% ; BOD30: 100%

Biodegradability: >90% (Zahn-Wellens Test)

Ecotoxicology

Fish LC50 (96 h):Bluegill sunfish, *Lepomis macrochirus* >10,000 mg/l

Fathead minnow >40000g/l

Daphnia magna LC50 (96 h): >8300 g/l

Refer to data for ingredients, which follows:

SODIUM ACETATE, ANHYDROUS:

log Kow : -4.22

Toxicity Fish: LC50(48)14.7-50mg/L

Bioaccumulation: sig,algae-v sig

Nitrif. inhib.: some

METHANOL:

DO NOT discharge into sewer or waterways.

continued...

POLYVINYL ALCOHOL

GHS Safety Data Sheet

Version No:2.0

Page 12 of 13

Section 12 - ECOLOGICAL INFORMATION

log Kow: -0.82- -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 if unstated: 0.76-1.12
COD: 1.05-1.50,99%
ThOD: 1.5
BCF: 0.2-10
Toxicity Fish: LC50(96): 11-15mg/L
TLm(48Hr): 8000mg/L (trout)
Toxicity Arthropoda: NOEL 10 g/L/48Hr (Daphnia) [ICI]

METHYL ACETATE:

log Kow (Sangster 1997): 0.18
log Pow (Verschuereen 1983): 0.18

log Kow: 0.18
Koc: 4.8-29.8
Half-life (hr) air: 24-2256
Half-life (hr) H₂O surface water: 9.1
Henry's atm m³ /mol: 1.15E-04
BOD 5 if unstated: 26%
BCF: 0.57-0.81
Toxicity Fish: LD50(48)200mg/L
Degradation Biological: by soil microflora 8 days

Section 13 - DISPOSAL CONSIDERATIONS

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

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN, IATA,
IMDG

Section 15 - REGULATORY INFORMATION

REGULATIONS

polyvinyl alcohol (CAS: 9002-89-5) is found on the following regulatory lists;
International Agency for Research on Cancer (IARC) Carcinogens
OECD Representative List of High Production Volume (HPV) Chemicals

No data available for polyvinyl alcohol as CAS: 25213-24-5, CAS: 54626-91-4, CAS: 75923-48-7, CAS: 153569-70-1, CAS: 82428-08-8, CAS: 147827-36-9, CAS: 106442-33-5, CAS: 152987-51-4, CAS: 53241-16-0, CAS: 58740-50-4, CAS: 155421-52-6, CAS: 860310-93-6, CAS: 9050-53-7, CAS: 551960-18-0, CAS: 9066-05-1, CAS: 73298-53-0, CAS: 9014-14-6, CAS: 98002-48-3,

continued...

POLYVINYL ALCOHOL

GHS Safety Data Sheet

Version No:2.0

Page 13 of 13

Section 15 - REGULATORY INFORMATION

CAS: 875587-23-8, CAS: 25038-51-1, CAS: 61584-38-1, CAS: 353276-42-3, CAS: 151439-02-0, CAS: 162261-31-6, CAS: 172452-03-8, CAS: 39320-29-1, CAS: 372077-13-9.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
polyvinyl alcohol	9002- 89- 5, 25213 - 24- 5, 54626- 91- 4, 75923- 48- 7, 153569- 70- 1, 82428- 08- 8, 147827- 36- 9, 106442- 33- 5, 152987- 51- 4, 53241- 16- 0, 58740- 50- 4, 155421- 52- 6, 860310- 93- 6, 9050- 53- 7, 551960- 18 - 0, 9066- 05- 1, 73298- 53- 0, 9014- 14- 6, 98002- 48- 3, 875587- 23- 8, 25038- 51- 1, 61584 - 38- 1, 353276- 42- 3, 151439- 02- 0, 162261- 31- 6, 172452- 03- 8, 39320- 29- 1, 372077- 13- 9
sodium acetate, anhydrous	127- 09- 3, 325477 - 99- 4
methanol	58456- 46- 5, 67- 56 - 1, 19710- 56- 6, 7263- 60- 7, 6853- 31- 2, 79825- 55- 1, 253142- 14- 2, 54841- 71- 3

REPRODUCTIVE HEALTH GUIDELINES

Ingredient	ORG	UF	Endpoi nt	CR	Adeq TLV
methanol	262 mg/m3	NA	NA	NA	Yes

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).

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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