

2,4-DINITROPHENOL 97%

GHS Safety Data Sheet

Version No:4

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

2,4-DINITROPHENOL 97%

OTHER NAMES

C6-H4-N2-O5, dinitrophenol, "phenol, 2, 4-dinitro-", "phenol, 2, 4-dinitro-"

PROPER SHIPPING NAME

DINITROPHENOL, WETTED

PRODUCT USE

Laboratory indicator, reagent for potassium and ammonium ions, agricultural chemical; intermediate for photographic chemicals, dyes, timber preservatives, explosives.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,

MUMBAI- 400030.INDIA.

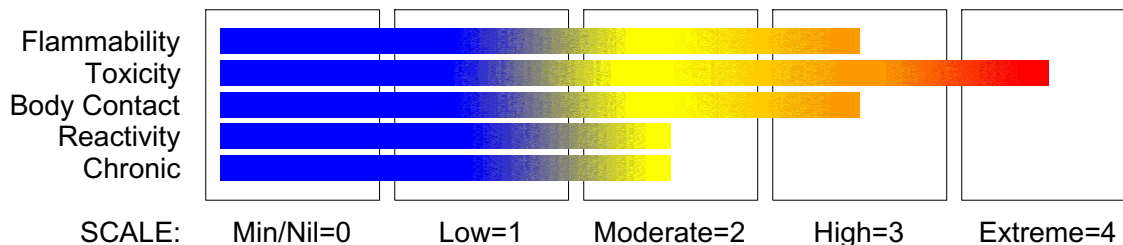
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Telephone: 91- 22- 24959898

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HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Aquatic Hazard Category 1

Acute Toxicity (Dermal) Category 3

Acute Toxicity (Inhalation) Category 3

Acute Toxicity (Oral) Category 2

Flammable Solid Category 1

Organ Damage Category 2

continued...

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Section 2 - HAZARDS IDENTIFICATION

Skin Sensitizer Category 1



EMERGENCY OVERVIEW

HAZARD

DANGER

Determined by using GHS criteria:

H228 H300 H311 H331 H317 H373 H400

Flammable solid

Solid desensitised explosives: high hazard

Fatal if swallowed

Toxic in contact with skin

Toxic if inhaled

May cause allergic skin reaction

May cause damage to organs through prolonged or repeated exposure.

Very toxic to aquatic life

PRECAUTIONARY STATEMENTS

Prevention

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting equipment

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

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

Use only outdoors or in a well-ventilated area.

Contaminated work clothing should not be allowed out of the workplace.

Avoid release to the environment.

Wear protective gloves/protective clothing/eye protection/face protection.

Response

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

IF ON SKIN: Wash with plenty of soap and water.

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

Call a POISON CENTER or doctor/physician.

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

Get medical advice/attention if you feel unwell.

Rinse mouth.

If skin irritation or rash occurs: Get medical advice/attention.

Remove/Take off immediately all contaminated clothing.

Wash contaminated clothing before reuse.

Collect spillage.

Storage

Store in a well-ventilated place. Keep container tightly closed.

Store locked up.

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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
2, 4- dinitrophenol	51-28-5	98
wetted with not less than 15% water		

Section 4 - FIRST AID MEASURES

SWALLOWED

- Give a slurry of activated charcoal in water to drink. NEVER GIVE AN UNCONSCIOUS PATIENT WATER TO DRINK.
 - At least 3 tablespoons in a glass of water should be given.
 - Although induction of vomiting may be recommended (IN CONSCIOUS PERSONS ONLY), such a first aid measure is dissuaded due to the risk of aspiration of stomach contents. (i) It is better to take the patient to a doctor who can decide on the necessity and method of emptying the stomach. (ii) Special circumstances may however exist; these include non-availability of charcoal and the ready availability of the doctor.
- NOTE: If vomiting is induced, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- NOTE: Wear protective gloves when inducing vomiting.
- REFER FOR MEDICAL ATTENTION WITHOUT DELAY.
 - In the mean time, 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. (ICSC20305/20307).

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:

- Quickly but gently, wipe material off skin with a dry, clean cloth.
- Immediately 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 contaminated area.
- Lay patient down. Keep warm and rested.
- Prosthesis 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.

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Section 4 - FIRST AID MEASURES

- Transport to hospital, or doctor, without delay.

NOTES TO PHYSICIAN

for dinitrophenols:

Marked fatigue, tremendous thirst, profuse sweating, flushing of the face are all characteristics of intoxication by dinitrophenol derivatives. These may be followed by restlessness, anxiety, excitement which may occasionally lead to convulsions. Rises in body temperature (proportional to dose) may result in severe hyperpyrexia. tachycardia, hyperpnoea, dyspnoea, cyanosis and muscle cramps characterise later symptomatology. Late complications include decreased urine output with albuminuria, casts, pigment, and sometimes blood cells due to toxic nephritis. Jaundice and liver tenderness also develop as a result of toxic hepatitis.

TREATMENT for dinitrophenol intoxications:

- Gastric lavage with large quantities of 5% sodium bicarbonate solution leaving 1-2 pints in the stomach.
- Saline cathartics e.g. 15-30 gm sodium or magnesium sulfate in water.
- Cold packs and alcohol sponges to reduce body temperature. Antipyretic drugs are ineffective here. Cold water enemas have been used. Intensive efforts to correct a dinitrophenol fever are justified. If it can be accomplished, mild hypothermia (rectal temperature between 33.5 and 36 deg. C) is desirable because dinitrophenol appears to lose its metabolic activity at reduced temperature. [DO NOT give atropine, aspirin, and other salicylates to control hyperthermia, as these agents appear likely to enhance the toxicity of phenolic substances. Aspirin also enhances the uncoupling of oxidative phosphorylation.]
- Fluids, orally or intravenously (e.g. glucose in saline, 1000 ml) to correct dehydration and acidosis.
- Because dinitrophenol is actively transported by the renal organic acid transport processes in some species, a trial of forced diuresis with alkalinisation of the urine is warranted.
- Oxygen therapy. Artificial ventilation is needed. [Administer oxygen by mask to minimise anoxia].
- Prophylactic measures in anticipation of kidney and liver insufficiency.

GOSSELIN, SMITH HODGE; Clinical Toxicology of Commercial Products 5th Ed.

Diazepam may be used, if necessary, for the treatment of convulsions, to reduce body heat and control agitation. Be prepared to counter respirator depression and hypotension which may occur following administration of anticonvulsants.

The material may induce methaemoglobinaemia following exposure.

- Initial attention should be directed at oxygen delivery and assisted ventilation if necessary. Hyperbaric oxygen has not demonstrated substantial benefits.
 - Hypotension should respond to Trendelenburg's position and intravenous fluids; otherwise dopamine may be needed.
 - Symptomatic patients with methaemoglobin levels over 30% should receive methylene blue. (Cyanosis, alone, is not an indication for treatment). The usual dose is 1-2 mg/kg of a 1% solution (10 mg/ml) IV over 50 minutes; repeat, using the same dose, if symptoms of hypoxia fail to subside within 1 hour.
 - Thorough cleansing of the entire contaminated area of the body, including the scalp and nails, is of utmost importance.
- BIOLOGICAL EXPOSURE INDEX - BEI These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comment
1. Methaemoglobin in blood	1.5% of haemoglobin	During or end of shift	B, NS, SQ

B: Background levels occur in specimens collected from subjects NOT exposed
NS: Non-specific determinant; also observed after exposure to other materials

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Section 4 - FIRST AID MEASURES

SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

For SMALL FIRES:

Dry chemical, CO₂, water spray or foam.

For LARGE FIRES:

Water-spray, fog or foam.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- 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.

FIRE/EXPLOSION HAZARD

- Flammable solid which burns and propagates flame easily, even when partly wetted with water.
 - Any source of ignition, i.e. friction, heat, sparks or flame, may cause fire or explosion.
 - May burn fiercely
 - May form explosive mixtures with air.
 - May REIGNITE after fire is extinguished.
 - Containers may explode on heating.
 - Solids may melt and flow when heated or involved in a fire.
 - Runoff may pollute waterways.
 - Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air. 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 be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport, thereby providing a source of ignition.
 - Decomposition products may be irritating, poisonous or corrosive.
- Combustion products include: carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x), other pyrolysis products typical of burning organic material.

FIRE INCOMPATIBILITY

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

Personal Protective Equipment

Gas tight chemical resistant suit.

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Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

- Remove all ignition sources.
- DO NOT touch or walk through spilled material.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Prevent dust cloud.
- With clean shovel (preferably non-sparking) place material into clean, dry container and cover loosely.
- Move containers from spill area.
- Control personal contact by using protective equipment.

MAJOR SPILLS

- Clear area of personnel and move upwind.
 - Alert Fire Brigade and tell them location and nature of hazard.
 - DO NOT touch or walk through spilled material.
 - Wear full protective clothing and breathing apparatus.
 - Prevent, by any means available, spillage from entering drains or water course.
 - No smoking, naked lights or ignition sources.
 - Increase ventilation.
 - Stop leak if safe to do so.
 - Contain or cover 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 with water and dike for later disposal; 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.
- Personal Protective Equipment advice is contained in Section 8 of the MSDS.**

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

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

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Section 7 - HANDLING AND STORAGE

safe working conditions are maintained.

Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.

- Do NOT cut, drill, grind or weld such containers
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

SUITABLE CONTAINER

For low viscosity materials and solids: Drums and jerricans must be of the non-removable head type. Where a can is to be used as an inner package, the can must have a screwed enclosure. For materials with a viscosity of at least 2680 cSt. (23 deg. C):

- Removable head packaging and
- cans with friction closures may be used. - Where combination packages are used, there must be sufficient inert absorbent material to absorb completely any leakage that may occur, unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic. All combination packages for Packing group I and II must contain cushioning material.

STORAGE INCOMPATIBILITY

- Phenols are incompatible with strong reducing substances such as hydrides, nitrides, alkali metals, and sulfides.
 - Avoid use of aluminium, copper and brass alloys in storage and process equipment.
 - Heat is generated by the acid-base reaction between phenols and bases.
 - Phenols are sulfonated very readily (for example, by concentrated sulfuric acid at room temperature), these reactions generate heat.
 - Phenols are nitrated very rapidly, even by dilute nitric acid.
 - Nitrated phenols often explode when heated. Many of them form metal salts that tend toward detonation by rather mild shock.
 - Avoid reaction with oxidising agents.
 - Nitroaromatic and in particular polynitroaromatic compounds may present a severe explosion risk if subjected to shock or heated rapidly and uncontrollably as in fire situations.
 - In addition, when such compounds are heated more moderately with caustic alkalis, even when water or organic solvents are present, there is also a risk of violent decomposition or explosion - several industrial accidents, which probably were due to such interactions, have occurred; this potential hazard often remains unacknowledged.
 - Aromatic nitro compounds range from slight to strong oxidizing agents. If mixed with reducing agents, including hydrides, sulfides and nitrides, they may begin a vigorous reaction that culminates in a detonation. The explosive tendencies of aromatic nitro compounds are increased by the presence of multiple nitro groups.
 - A range of exothermic decomposition energies for nitro compounds is given as 220-410 kJ/mol. The relationship between energy of decomposition and processing hazards has been the subject of discussion; it is suggested that values of energy released per unit of mass, rather than on a molar basis (J/g) be used in the assessment. For example, in "open vessel processes" (with man-hole size openings, in an industrial setting), substances with exothermic decomposition energies below 500 J/g are unlikely to present a danger, whilst those in "closed vessel processes" (opening is a safety valve or bursting disk) present some danger where the decomposition energy exceeds 150 J/g.
- BREThERICK: Handbook of Reactive Chemical Hazards, 4th Edition.

STORAGE REQUIREMENTS

FOR MINOR QUANTITIES:

- Store in an indoor fireproof cabinet or in a room of noncombustible construction.
- Provide adequate portable fire-extinguishers in or near the storage area.

FOR PACKAGE

- STORAGE:
- Store in original containers in approved flame-proof area.
 - No smoking, naked lights, heat or ignition sources.

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Section 7 - HANDLING AND STORAGE

- 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.
- Protect containers from exposure to weather and from direct sunlight unless: (a) the packages are of metal or plastic construction; (b) the packages are securely closed are not opened for any purpose while in the area where they are stored and (c) adequate precautions are taken to ensure that rain water, which might become contaminated by the dangerous goods, is collected and disposed of safely.
- Ensure proper stock-control measures are maintained to prevent prolonged storage of dangerous goods.
- Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific precautions

X: Must not be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- 2, 4- dinitrophenol:

CAS:51- 28- 5

MATERIAL DATA

It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace. At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum. NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

PERSONAL PROTECTION



EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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

NOTE:

- The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
 - Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.
- Suitability and durability of glove type is dependent on usage. Factors such as:
- frequency and duration of contact,
 - chemical resistance of glove material,
 - glove thickness and
 - dexterity,
- are important in the selection of gloves.
- Wear physical protective gloves, eg. leather.
 - Wear safety footwear.

OTHER

- Overalls.
- Eyewash unit.
- Barrier cream.
- Skin cleansing cream.

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

- 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

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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

Yellow crystals, slightly soluble in water.

Soluble in alcohol, ether, benzene and chloroform. May form extremely sensitive compounds with heavy metals or their salts.

WARNING: If dry or insufficiently wetted must be entered as a Class 1 EXPLOSIVE. UN 0076.

If in solution must still be classed as a Class 6.1 Poison.

Used as a laboratory reagent in low concentrations and small amounts as a pH indicator changes from 2.8-4.7 colourless to yellow. Environmental pollutant - concentration in water (human).

PHYSICAL PROPERTIES

Does not mix with water.

Sinks in water.

Toxic or noxious vapours/gas.

Molecular Weight: 184.12

Melting Range (°C): 114- 115

Solubility in water (g/L): Partly miscible

Boiling Range (°C): Not available.

Specific Gravity (water=1): 1.683

pH (as supplied): Not available

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

pH (1% solution): Not available.
Volatile Component (%vol): Not available.
Relative Vapour Density (air=1): Not Applicable
Lower Explosive Limit (%): Not available.
Autoignition Temp (°C): Not available.
State: Divided Solid

Vapour Pressure (kPa): Not available.
Evaporation Rate: Not available
Flash Point (°C): Not Available

Upper Explosive Limit (%): Not available.
Decomposition Temp (°C): Not Available
Viscosity: Not Applicable

Material
log Kow

Value
1.51- 1.54

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

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

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.

The substance and/or its metabolites may bind to haemoglobin inhibiting normal uptake of oxygen. This condition, known as "methaemoglobinemia", is a form of oxygen starvation (anoxia).

Symptoms include cyanosis (a bluish discolouration skin and mucous membranes) and breathing difficulties. Symptoms may not be evident until several hours after exposure.

At about 15% concentration of blood methaemoglobin there is observable cyanosis of the lips, nose and earlobes. Symptoms may be absent although euphoria, flushed face and headache are commonly experienced. At 25-40%, cyanosis is marked but little disability occurs other than that produced on physical exertion. At 40-60%, symptoms include weakness, dizziness, lightheadedness, increasingly severe headache, ataxia, rapid shallow respiration, drowsiness, nausea, vomiting, confusion, lethargy and stupor. Above 60% symptoms include dyspnea, respiratory depression, tachycardia or bradycardia, and convulsions. Levels exceeding 70% may be fatal.

Symptoms of poisoning by dinitrophenol derivatives include an almost immediate increase in oxygen consumption, body temperature, breathing rate and heart rate. As circulation and respiration do not increase at the same rate as oxygen demand, both anoxia and acidosis appear. Body fat is the main fuel for this extra demand. Direct effects on the cerebrum and lower brain centres, consisting of stimulation, followed by depression are also a feature of these poisonings. Later complications involve necrotising tubular injury of the kidneys which produces renal insufficiency, and toxic hepatitis. Symptoms of poisoning may appear up to two days following exposure muscle tremor and coma. Kidney and liver damage may result in oliguria, haematuria and jaundice.

Subacute poisoning as a result of repeated exposures may result in lassitude, headache and malaise. Patients receiving dinitrophenol derivatives report a disarming sense of well being, energy and drive. Workers exposed to harmful levels of these substances should be warned against overheating as toxic effects appear to exaggerated.

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Section 11 - TOXICOLOGICAL INFORMATION

EYE

Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in certain individuals.

SKIN

Skin contact with the material may produce toxic effects; systemic effects may result following absorption.

The material is not thought to be a skin irritant (as classified by EC Directives using animal models). Abrasive damage however, may result from prolonged exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

Open cuts, abraded or irritated skin should not be exposed to this material.

Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds 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.

Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation.

INHALED

Inhalation of dusts, generated by the material, during the course of normal handling, may produce toxic effects.

The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of dusts, or fumes, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.

CHRONIC HEALTH EFFECTS

Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems.

There exists limited evidence that shows that skin contact with the material is capable either of inducing a sensitisation reaction in a significant number of individuals, and/or of producing positive response in experimental animals.

Long term exposure to high dust concentrations may cause changes in lung function (i.e. pneumoconiosis) caused by particles less than 0.5 micron penetrating and remaining in the lung. A prime symptom is breathlessness. Lung shadows show on X-ray.

Congener substances such as 2,4-dinitrophenol were previously used to produce weight loss. Adverse effects of the treatment included skin eruption, peripheral neuritis, liver and kidney damage, granulocytopenia and, rarely, cataract formation. Repeated or prolonged contact may produce an allergic or irritant dermatitis. Chronic exposures may produce fatigue and weight loss. A yellow discolouration of the sclerae and urine may indicate adsorption of potentially harmful amounts of the substance.

TOXICITY AND IRRITATION

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

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 epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

continued...

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Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms.

This material and its container must be disposed of as hazardous waste.

Avoid release to the environment.

Refer to special instructions/ safety data sheets.

Section 13 - DISPOSAL CONSIDERATIONS

- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible.

Otherwise:

- If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
- Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

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. 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.
- Recycle wherever possible.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: Burial in a licenced land-fill or Incineration in a licenced apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 - TRANSPORTATION INFORMATION



Labels Required: FLAMMABLE SOLID, TOXIC
HAZCHEM: 1W (1)

continued...

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Section 14 - TRANSPORTATION INFORMATION

UNDG:

Dangerous Goods Class:	4.1	Subrisk:	6.1
UN Number:	1320	Packing Group:	I
Shipping Name: DINITROPHENOL, WETTED with not less than 15% water, by mass			

Air Transport IATA:

ICAO/IATA Class:	4.1	ICAO/IATA Subrisk:	6.1
UN/ID Number:	1320	Packing Group:	I
Special provisions:	A40		
Shipping Name: DINITROPHENOL, WETTED WITH 15% OR MORE WATER, BY WEIGHT			

Maritime Transport IMDG:

IMDG Class:	4.1	IMDG Subrisk:	6.1
UN Number:	1320	Packing Group:	I
EMS Number:	F- B, S- J	Special provisions:	28
Limited Quantities:	None	Marine Pollutant:	Yes
Shipping Name: DINITROPHENOL, WETTED with not less than 15% water, by mass			

Section 15 - REGULATORY INFORMATION

REGULATIONS

2,4-dinitrophenol (CAS: 51-28-5) is found on the following regulatory lists;
International Air Transport Association (IATA) Dangerous Goods Regulations
OECD Representative List of High Production Volume (HPV) Chemicals

Section 16 - OTHER INFORMATION

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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