SODIUM DITHIONITE

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

SODIUM DITHIONITE

OTHER NAMES

Na2S2O4, "Na2S2O4. 2H2O", H2O4S2.2Na, "sodium dithionite inhibited", "sodium hydrosulphite", "sodium sulfoxylate"

PROPER SHIPPING NAME

SODIUM DITHIONITE (SODIUM HYDROSULPHITE)

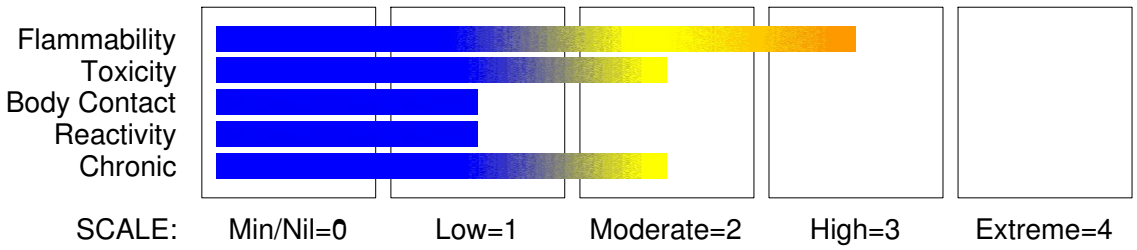
PRODUCT USE

Pulp and paper bleaching.
As reducing agent, particularly in dyeing with indigo and vat dyes.
Used as a bleach, for soap, straw; removing dyes from dyed fabric.
Part of a redox catalyst system for synthetic rubber production.
Oxygen scavenger in water treatment, reduction of metals in waste treatment.

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 (Oral) Category 4

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Pyrophoric Solid Category 1
Respiratory Sensitizer Category 1
Skin Sensitizer Category 1

EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H250 H302 H334 H317
Catches fire spontaneously if exposed to air
Harmful if swallowed
May cause allergic or asthmatic symptoms or breathing difficulties if inhaled
May cause allergic skin reaction

PRECAUTIONARY STATEMENTS

Prevention

Do not eat, drink or smoke when using this product.
Contaminated clothing should not be allowed out of the workplace.
In case of inadequate ventilation wear respiratory protection.
Wash hands thoroughly after handling.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Keep away from heat/sparks/open flame - No smoking.
Wear protective gloves and eye/face protection.
Do not allow contact with air.

Response

Wash contaminated clothing before reuse.
If skin irritation or rash occurs, seek medical advice/attention.
If experiencing respiratory symptoms call a POISON CENTER or doctor/physician.
IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing.
Specific treatment: refer to Label or MSDS.
Brush off loose particles from skin and immerse in cool water/wrap with wet bandages
IF ON SKIN: Gently wash with plenty of soap and water.

Storage

Store contents under liquid or gas specified by the manufacturer or MSDS.
Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
sodium dithionite	7775-14-6	>88
NOTE: Decomposes to produce		
sulfur dioxide	7446-09-5	

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commercial materials may contain		
sodium sulfite	7757-83-7	<5^
sodium carbonate	497-19-8	<5^
sodium sulfate	7757-82-6	<3^
sodium bisulfite	7631-90-5	<2^
sodium thiosulfate	7772-98-7	<0.3^
sodium hydrogen sulfate	7681-38-1	<0.1^

Section 4 - FIRST AID MEASURES

SWALLOWED

Rinse mouth out with plenty of water.
For advice, contact a Poisons Information Centre or a doctor.
· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
· For advice, contact a Poisons Information Centre or a doctor.
Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
· Induce vomiting with fingers down the back of the of the throat, ONLY IF CONSCIOUS.
· Lean patient forward or place on left side (head-down position if possible) to maintain open airway and prevent aspiration.
NOTE: Wear a protective glove when inducing vomiting by mechanical means.
· 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.

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 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, without delay.

NOTES TO PHYSICIAN

Treat symptomatically.

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Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
Do NOT use water other than in FLOODING quantities.
Dry sand. Dry chemical powder. or Carbon dioxide.

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.
Cool fire exposed containers with water spray from a protected location.
DO NOT approach containers suspected to be hot.
If safe to do so, remove containers from path of fire.

FIRE/EXPLOSION HAZARD
Liable to spontaneous heating. Combustible.
Dangerous hazard when exposed to heat, flame and oxidisers.
Solid in contact with water or moisture may generate sufficient heat to ignite combustible materials.
Emits toxic fumes if involved in fire.
Decomposes on heating and produces toxic fumes of: highly discomforting sulfur oxides (SOx) and caustic compounds.

FIRE INCOMPATIBILITY
Keep dry and Avoid contact with oxidising agents as ignition may result.
Contact with moisture or water may generate heat causing ignition.

Personal Protective Equipment
Gas tight chemical resistant suit.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS
Keep dry . Contact with water can cause heating and decomposition.
DO NOT touch the spill material Clean up all spills immediately.
Wear protective clothing, impervious gloves and safety glasses.
Remove all ignition sources.
Use dry clean up procedures and avoid generating dust.
Trowel up/scrape up.
Place in suitable containers for disposal.

MAJOR SPILLS
Keep dry . Contact with water can cause heating and decomposition.
Contact with water liberates toxic gases i.e. sulfur dioxide (SO_2).
Clear area of personnel and move upwind.
· 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.
Shut off all possible sources of ignition and increase ventilation.
No smoking or naked lights within area.
DO NOT touch the spill material . Avoid generating dust.

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Collect recoverable product into labelled containers for recycling.
Collect residues and seal in labelled drums for disposal.
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:
sodium dithionite 250 mg/m³

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:
sodium dithionite 50 mg/m³

other than mild, transient adverse effects without perceiving a clearly defined odour is:
sodium dithionite 30 mg/m³

The threshold concentration below which most people will experience no appreciable risk of health effects:
sodium dithionite 10 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

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. Keep dry.
Avoid contact with skin and eyes.
Wear personal protective equipment when handling.
Use in a well-ventilated area.
Keep containers securely sealed when not in use.
When handling, DO NOT eat, drink or smoke.
Wash hands with soap and water after handling.
Launder contaminated clothing before re-use.

SUITABLE CONTAINER

· Check that containers are clearly labelled.
Plastic container.
Plastic drum.

STORAGE INCOMPATIBILITY

Segregate from moisture and oxidizing substances.

STORAGE REQUIREMENTS

Keep dry . Store below 38 deg. C.
Observe manufacturer's storing and handling recommendations.
Store away from sources of heat or ignition / naked lights.

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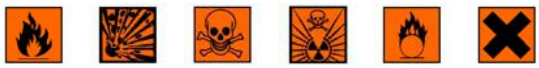
Store away from incompatible materials.
Store away from oxidising materials.
Store away from foodstuff containers.
Keep storage area free of debris, waste and combustibles.
Check regularly for spills and leaks.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X	X	+	X	X	+

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

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- sodium dithionite: CAS:7775- 14- 6
- sulfur dioxide: CAS:7446- 09- 5

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
sulfur dioxide		100 [Unch]

ODOUR SAFETY FACTOR (OSF)

OSF=1.8 (sodium dithionite)
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

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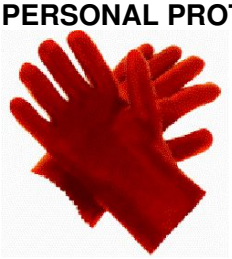
MATERIAL DATA

INGREDIENT DATA
SULFUR DIOXIDE:
NOTE: Detector tubes for sulfur dioxide, measuring in excess of 0.1 ppm, are commercially available.
Sulfur dioxide is termed a "mild" respiratory irritant.
Odour threshold (detection) is 0.5 ppm with irritation reported above 2 ppm; at 8-12 ppm eyes and nose are strongly irritated. 150 ppm is only tolerable for about a minute because of extreme irritation. At 500 ppm there is a sense of suffocation. Human bronchoconstriction occurs with inhalation at 5 ppm or more and the recommended TLV-TWA is thought to provide a reduction of significant risk of adverse respiratory effects such as coughing, increase in sputum production and bronchoconstriction.
The reported effects of SO2 in humans exposed to levels below 2 ppm, together with the potentiation of SO2 toxicity by soot and other particulates, has created the need for the current review by ACGIH.
A worker inhaling 4 ppm for 8 hours and doing light-work would absorb about 150 mg of SO2. By comparison, average dietary intake for a 70 kg man has been established at only 50 mg.

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
PVC gloves.
Neoprene gloves.
Nitrile gloves.

OTHER
PVC apron . · Overalls.
· Eyewash unit.
If large quantities are handled:

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RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	E P1 Air- line*	- -	E PAPR- P1 -
50 x ES	Air- line**	E P2	E PAPR- P2
100 x ES	-	E P3	-
		Air- line*	-
100+ x ES	-	Air- line**	E 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:	Air Speed:
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500 f/min.)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening

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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 or yellow grey crystalline solid. Slight characteristic odour.
Liable to heat and to ignite spontaneously in damp air or when wet and to evolve intensely irritating sulfur dioxide gas.
The dihydrate is less stable than anhydrous material
Solubility in cold water: = 18%.
Decomposes in hot water, releasing sulfur dioxide. Insoluble in alcohol.
Readily oxidises in air to acidic sodium bisulfite / sodium bisulfate.

PHYSICAL PROPERTIES

Solid.
Contact with water liberates toxic gas.
Contact with acids liberates toxic gas.

Molecular Weight: 174.13
Melting Range (°C): 52- 55 decomposes
Solubility in water (g/L): Miscible 18%
pH (1% solution): Not available
Volatile Component (%vol): Nil @ 38C
Relative Vapour Density (air=1): > 1 as SO2
Lower Explosive Limit (%): Not available
Autoignition Temp (°C): 130
State: Divided solid

Boiling Range (°C): 130 decomposes
Specific Gravity (water=1): 1.02
pH (as supplied): Not applicable
Vapour Pressure (kPa): Not applicable
Evaporation Rate: Not applicable
Flash Point (°C): Not applicable
Upper Explosive Limit (%): Not available
Decomposition Temp (°C): Not available
Viscosity: Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Contact with acids liberates toxic gas.

Section 11 - TOXICOLOGICAL INFORMATION

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.
Considered an unlikely route of entry in commercial/industrial environments.

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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 produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

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.
The material may accentuate any pre-existing skin condition.
Solution of material in moisture on the skin, or perspiration, may markedly increase skin corrosion and accelerate tissue destruction.
Bare unprotected skin should not be exposed to this material.

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.

CHRONIC HEALTH EFFECTS
Principal routes of exposure are usually by inhalation of generated dust and skin contact with the material.
Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.

TOXICITY AND IRRITATION
Not available. Refer to individual constituents.

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

TOXICITY	IRRITATION
Inhalation (rat) LC50: 2520 ppm/1h	Nil Reported
Inhalation (human) LCLo: 1000 ppm/10m	
Inhalation (human) TCLo: 3 ppm/5d	

400-500 ppm - immediately dangerous to life.
NOTE: Aggravates chronic pulmonary disease and increases the risk of acute and chronic respiratory disease - condition aggravated by smoking.

Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

SULFUR DIOXIDE:
Toxicity Fish: LC50(96)>12.5mg/L
Toxicity invertebrate: LC50(48)802-2241ppm

Section 13 - DISPOSAL CONSIDERATIONS

Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Clean-up Technique (Hach):- Cover with an inert material such as sand.
Carefully mist spill with bleach until saturated.
Working in a large container, cautiously add small portions of the spilled material to cold water with agitation. React the spilled material in

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bleach at a ratio of 25 ml of 5% sodium hypochlorite solution (household bleach) to 1 gram of sodium hydrosulfite. Filter to remove solids.
Flush reacted material to sewer with a large excess of water.
Decontaminate area of spill with a soap solution.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: SPONTANEOUSLY COMBUSTIBLE
HAZCHEM: 1YE

UNDG:

Dangerous Goods Class:	4.2	Subrisk:	None
UN Number:	1384	Packing Group:	II

Shipping Name:SODIUM DITHIONITE (SODIUM HYDROSULPHITE)

Air Transport IATA:

ICAO/IATA Class:	4.2	ICAO/IATA Subrisk:	None
UN/ID Number:	1384	Packing Group:	II
Special provisions:	None		

Shipping Name: SODIUM DITHIONITE

Maritime Transport IMDG:

IMDG Class:	4.2	IMDG Subrisk:	None
UN Number:	1384	Packing Group:	II
EMS Number:	F- A, S- J	Special provisions:	None

Shipping Name: SODIUM DITHIONITE (SODIUM HYDROSULPHITE)

Section 15 - REGULATORY INFORMATION

REGULATIONS

sodium dithionite (CAS: 7775-14-6) is found on the following regulatory lists;
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
sodium sulfite	7757- 83- 7, 10102- 15 - 5
sodium hydrogen sulfate	7681- 38- 1, 10034- 88 - 5

continued...

REPRODUCTIVE HEALTH GUIDELINES

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

Ingredient	ORG	UF	Endpoint	CR	Adeq TLV
sulfur dioxide	2.3 mg/m3	100	D	NA	-

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

CR = Cancer Risk/10000; UF = Uncertainty factor:

TLV believed to be adequate to protect reproductive health:

LOD: Limit of detection

Toxic endpoints have also been identified as:

D = Developmental; R = Reproductive; TC = Transplacental carcinogen

Jankovic J., Drake F.: A Screening Method for Occupational Reproductive American Industrial Hygiene Association Journal 57: 641-649 (1996).

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

Issue Date: 10-Aug-2017