

## 4,4'-BIS(DIMETHYL AMINO PHENYL) METHANE

GHS Safety Data Sheet

Version No:4.1.1.1

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### Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT NAME

4,4'-BIS(DIMETHYL AMINO PHENYL) METHANE

#### OTHER NAMES

C17-H22-N2, (CH3)2NC6H4C6H4N(CH3)2, "aniline, 4, 4'-methylenebis(N, N-dimethyl-", "benzeneamine, 4, 4'-methylenebis(N, N-dimethyl-", "p, p'-bis(dimethylamino)diphenylmethane", "4, 4'-bis(dimethylamino)diphenylmethane", bis(p-dimethylaminophenyl)methane, bis(4-(dimethylamino)phenyl)methane, "bis(p-(N, N-dimethylamino)phenyl)methane", "bis(4-(N, N-dimethylamino)phenyl)methane", "p, p'-bis(N, N-dimethylaminophenyl)methane", "p, p-dimethylaminodiphenylmethane", "diphenylmethane tetramethyldiamino-", "methane base", "methane, bis(p-(dimethylamino)phenyl)-", "methylene base", "4, 4'-methylenebis(N, N-dimethylaniline)", "4, 4'-methylenebis(N, N-dimethylbenzeneamine)", "Michler's Base", "Michler's Hydride", NCI-CO1990, "Reduced Michler's Ketone", tetra-base, "p, p-tetramethyldiaminodiphenylmethane", "N, N, N', N'-tetramethyl-p, p'-diaminodiphenylmethane", "N, N, N', N'-tetramethyl-4, 4'-diaminodiphenylmethane", "lead reagent", "Baze Michlerova", "Arnold's Base"

#### PROPER SHIPPING NAME

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(contains 4,4'-methylenebis-N,N-dimethylaniline)

#### PRODUCT USE

Dye intermediate. In the form of the hydrochloride used as a reagent for lead.  
Intermediate

#### SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V.Ind.Estate,

248, Worli Road,

Mumbai- 400030, India

www.sdfine.com

Telephone: 91- 22 24959898/99

Fax: 91- 22 2493 7232

Email: technical@sdfine.com

### Section 2 - HAZARDS IDENTIFICATION

#### GHS Classification

Carcinogen Category 1B

Chronic Aquatic Hazard Category 1



#### EMERGENCY OVERVIEW

#### HAZARD

DANGER

Determined by using GHS criteria

H350 May cause cancer.

H410 Very toxic to aquatic life with long lasting effects.

#### PRECAUTIONARY STATEMENTS

##### Prevention

| Code | Phrase |
|------|--------|
|------|--------|

continued...

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## Section 2 - HAZARDS IDENTIFICATION

|                      |                                                                           |
|----------------------|---------------------------------------------------------------------------|
| P201                 | Obtain special instructions before use.                                   |
| P202                 | Do not handle until all safety precautions have been read and understood. |
| P273                 | Avoid release to the environment.                                         |
| P281                 | Use personal protective equipment as required.                            |
| <b>Response Code</b> | <b>Phrase</b>                                                             |
| P308+P313            | IF exposed or concerned: Get medical advice/attention.                    |
| P391                 | Collect spillage.                                                         |
| <b>Storage Code</b>  | <b>Phrase</b>                                                             |
| P405                 | Store locked up.                                                          |
| <b>Disposal Code</b> | <b>Phrase</b>                                                             |
| P501                 | Dispose of contents/container to ...                                      |

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| NAME                                        | CAS RN   | %   |
|---------------------------------------------|----------|-----|
| 4, 4' - methylenebis- N, N- dimethylaniline | 101-61-1 | >98 |

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- 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.

### 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.
- Seek medical attention without delay; 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 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.

### NOTES TO PHYSICIAN

- 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.

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**Section 5 - FIRE FIGHTING MEASURES**

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**EXTINGUISHING MEDIA**

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

**FIRE FIGHTING**

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use water delivered as a fine spray to control fire and cool adjacent area.

**FIRE/EXPLOSION HAZARD**

- Combustible solid which burns but propagates flame with difficulty; it is estimated that most organic dusts are combustible (circa 70%) - according to the circumstances under which the combustion process occurs, such materials may cause fires and / or dust explosions.
- Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions).
- 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 (420 micron or less) may burn rapidly and fiercely if ignited - particles exceeding this limit will generally not form flammable dust clouds; once initiated, however, larger particles up to 1400 microns diameter will contribute to the propagation of an explosion.
- In the same way as gases and vapours, dusts in the form of a cloud are only ignitable over a range of concentrations; in principle, the concepts of lower explosive limit (LEL) and upper explosive limit (UEL) are applicable to dust clouds but only the LEL is of practical use; - this is because of the inherent difficulty of achieving homogeneous dust clouds at high temperatures (for dusts the LEL is often called the "Minimum Explosible Concentration", MEC).

Combustion products include: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), 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.

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**Section 6 - ACCIDENTAL RELEASE MEASURES**

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**MINOR SPILLS**

- Clean up waste regularly and abnormal spills immediately.
- Avoid breathing dust and contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.

Environmental hazard - contain spillage.

**MAJOR SPILLS**

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by all means available, spillage from entering drains or water courses.

Environmental hazard - contain spillage.

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

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**Section 7 - HANDLING AND STORAGE**

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**PROCEDURE FOR HANDLING**

- 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.
- Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions)

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## Section 7 - HANDLING AND STORAGE

- Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame.
- Establish good housekeeping practices.
- Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.

### SUITABLE CONTAINER

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

### STORAGE INCOMPATIBILITY

- Many arylamines (aromatic amines such as aniline, N-ethylaniline, o-toluidine, xylidine etc. and their mixtures) are hypergolic (ignite spontaneously) with red fuming nitric acid. When the amines are dissolved in triethylamine, ignition occurs at -60 deg. C. or less.
- Various metal oxides and their salts may promote ignition of amine-red fuming nitric acid systems. Soluble materials such as copper(I) oxide, ammonium metavanadate are effective; insoluble materials such as copper(II) oxide, iron(II) oxide, potassium dichromate are also effective.
- Avoid oxidising agents, acids, acid chlorides, acid anhydrides, chloroformates.

### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry area protected from environmental extremes.
- Store away from incompatible materials and foodstuff containers.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

The following materials had no OELs on our records

- 4, 4' - methylenebis- N, N- dimethylaniline:

CAS:101- 61- 1

### MATERIAL DATA

4,4'-METHYLENEBIS-N,N-DIMETHYLANILINE:

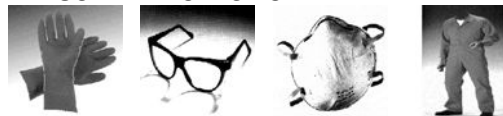
■ It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace. At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience).

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

■ NOTE N: The classification as a carcinogen need not apply if the full refining history is known and it can be shown that the substance from which it is produced is not a carcinogen. This note applies only to certain complex oil-derived substances in Annex I.

European Union (EU) List of Dangerous Substances (Annex I) - up to the 29th ATP.

### PERSONAL PROTECTION



#### EYE

- Safety glasses with side shields
- 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], [AS/NZS 1336 or national equivalent].

#### HANDS/FEET

■ The selection of the suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:.

continued...

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber.

**OTHER**

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.

**ENGINEERING CONTROLS**

■ Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE**

powder

**PHYSICAL PROPERTIES**

Does not mix with water.

|                           |               |                                 |                |
|---------------------------|---------------|---------------------------------|----------------|
| State                     | DIVIDED SOLID | Molecular Weight                | 254.38         |
| Melting Range (°C)        | 88- 89        | Viscosity                       | Not Applicable |
| Boiling Range (°C)        | 390           | Solubility in water (g/L)       | Immiscible     |
| Flash Point (°C)          | 178           | pH (1% solution)                | Not applicable |
| Decomposition Temp (°C)   | Not Available | pH (as supplied)                |                |
| Autoignition Temp (°C)    | Not available | Vapour Pressure (kPa)           | Negligible     |
| Upper Explosive Limit (%) | Not available | Specific Gravity (water=1)      | Not available  |
| Lower Explosive Limit (%) | Not available | Relative Vapour Density (air=1) | Not applicable |
| Volatile Component (%vol) | Negligible    | Evaporation Rate                | Not applicable |

## 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

**Health hazard summary table:**

|                                   |                |
|-----------------------------------|----------------|
| Acute toxicity                    | Not applicable |
| Skin corrosion/irritation         | Not applicable |
| Serious eye damage/irritation     | Not applicable |
| Respiratory or skin sensitization | Not applicable |
| Germ cell mutagenicity            | Not applicable |
| Carcinogenicity                   | Carc. 1B       |
| Reproductive toxicity             | Not applicable |
| STOT- single exposure             | Not applicable |
| STOT- repeated exposure           | Not applicable |
| Aspiration hazard                 | Not applicable |

**POTENTIAL HEALTH EFFECTS**

**ACUTE HEALTH EFFECTS****SWALLOWED**

- Accidental ingestion of the material may be damaging 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).

**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.

**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.
- Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

**INHALED**

- 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.
  - Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.
  - 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.
- If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.

**CHRONIC HEALTH EFFECTS**

- There is ample evidence that this material can be regarded as being able to cause cancer in humans based on experiments and other information. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Based on experience with similar materials, there is a possibility that exposure to the material may reduce fertility in humans at levels which do not cause other toxic effects. 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. Prime symptom is breathlessness; lung shadows show on X-ray. Most arylamines are very toxic to the blood cell-forming system, and they produce methaemoglobinaemia in humans. High doses congest the spleen and then cause formation of sarcomas (a type of malignant tumour). Single ring aromatic amines have relatively weak cancer-causing properties, and in animal testing are only harmful in large doses. The polycyclic aromatic amines show a wide range of cancer-causing activity, partly dependent on the position where benzene rings are substituted and the nature of the substituent. Most monocyclic arylamines cause deposition of iron-containing proteins in tissues and organs. They cause genetic toxicity and acute toxic effects, but it is not clear whether this is influenced by iron release during the formation of methaemoglobin or red blood cell turnover and the stress associated with these processes. In any case, toxic tissue changes and scarring occur before the development of tumours in the spleen, liver and kidneys. 4,4'-dihydroxyphenyl oxide may have effects similar to female sex hormones. Oral administration of the substance has induced liver cell and thyroid follicular cell carcinomas in mice and rats. It has been suggested that the enlarged follicles and hyperplastic and neoplastic lesions of the thyroid gland results from insufficient thyroid hormone and subsequent stimulation by the pituitary thyrotropic hormone. [Murthy ASK, Toxicology Letters, 6, pp 391-397, 1980] Follicular cell carcinomas appear to be dose-dependent. Female mice (but not males) developed statistically significant hepatocellular (liver) carcinomas when the substance was introduced in the diet. [National Cancer Institute Technical Report Series No. 186, 1979] Absorption of the substance into the body may lead to the development of methaemoglobin which in sufficient quantities may lead to cyanosis. Effects may be delayed for more than 4 hours.

**TOXICITY AND IRRITATION**

No data for this material.

**CARCINOGEN**

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## Section 11 - TOXICOLOGICAL INFORMATION

|                                             |                                                                                             |       |    |                                 |
|---------------------------------------------|---------------------------------------------------------------------------------------------|-------|----|---------------------------------|
| 4, 4' - methylenebis- N, N- dimethylaniline | International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs | Group | 2B | Possibly carcinogenic to humans |
|---------------------------------------------|---------------------------------------------------------------------------------------------|-------|----|---------------------------------|

## Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
This material and its container must be disposed of as hazardous waste.  
Avoid release to the environment.  
Refer to special instructions/ safety data sheets.

### Ecotoxicity

| Ingredient                                  | Persistence: Water/Soil | Persistence: Air | Bioaccumulation | Mobility |
|---------------------------------------------|-------------------------|------------------|-----------------|----------|
| 4, 4' - methylenebis- N, N- dimethylaniline | MED                     | LOW              | LOW             | LOW      |

## 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.
- A Hierarchy of Controls seems to be common - the user should investigate:
- Reduction.
  - 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 land-fill specifically licenced to accept chemical and / or pharmaceutical wastes 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: MISCELLANEOUS

### HAZCHEM:

2Z

Land Transport UNDG:

|                                                                                                                       |      |                   |      |
|-----------------------------------------------------------------------------------------------------------------------|------|-------------------|------|
| Class or division:                                                                                                    | 9    | Subsidiary risk:  | None |
| UN No.:                                                                                                               | 3077 | UN packing group: | III  |
| Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.<br>(contains 4,4'-methylenebis-N,N-dimethylaniline) |      |                   |      |

continued...

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## Section 14 - TRANSPORTATION INFORMATION

### Air Transport IATA:

|                     |      |                    |      |
|---------------------|------|--------------------|------|
| ICAO/IATA Class:    | 9    | ICAO/IATA Subrisk: | None |
| UN/ID Number:       | 3077 | Packing Group:     | III  |
| Special provisions: | A97  |                    |      |

Shipping name:ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(contains 4,4'-methylenebis-N,N-dimethylaniline)

### Maritime Transport IMDG:

|                     |            |                     |         |
|---------------------|------------|---------------------|---------|
| IMDG Class:         | 9          | IMDG Subrisk:       | None    |
| UN Number:          | 3077       | Packing Group:      | III     |
| EMS Number:         | F- A, S- F | Special provisions: | 274 335 |
| Limited Quantities: | 5 kg       | Marine Pollutant:   | Yes     |

Shipping name:ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(contains 4,4'-methylenebis-N,N-dimethylaniline)

## Section 15 - REGULATORY INFORMATION

### REGULATIONS

**4,4'-methylenebis-N,N-dimethylaniline (CAS: 101-61-1) is found on the following regulatory lists;**

"FisherTransport Information", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs",  
"International Chemical Secretariat (ChemSec) SIN List (\*Substitute It Now!)", "Sigma-AldrichTransport Information"

## Section 16 - OTHER INFORMATION

■ Classification of the preparation and its individual components has drawn on official and authoritative sources using available literature references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

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: 25-Jan-2018