



# SAFETY DATA SHEET

Preparation Date 12-Aug-2013

Revision Date 12-Aug-2013

Revision Number 1

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

### Product Identifier

Product Name **4,4'- METHYLENE DIANILINE**

### Other means of identification

Product Code 3602800  
CAS Number 101-77-9  
Formula C13H14N2  
Synonyms Benzamine, 4,4'- ,Methylenebis- ; 4,4'-Methylene Dianiline  
UN-No UN2651

### Recommended use of the chemical and restrictions on use

Recommended Use Coatings  
Uses advised against Repeated contact with food. Avoid prolonged contact with eyes, skin, and clothing.

### Details of the supplier of the safety data sheet

Supplier Address ACETO CORPORATION  
4 Tri Harbor Court  
Port Washington, NY 11050-4661  
Phone: (516) 627-6000  
Fax: (516) 627-6093  
Email: aceto@aceto.com

### Emergency Telephone Number(s)

ChemTrec: 1-800-424-9300  
Outside of the United States: 1-703-527-3887

## 2. HAZARDS IDENTIFICATION

### Classification

Acute Toxicity - Oral	Category 4
Acute Toxicity - Dermal	Category 2
Serious eye damage/eye irritation	Category 2A
Respiratory Sensitization	Category 1A
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1B

Specific target organ toxicity (single exposure)	Category 1
Specific target organ toxicity (repeated exposure)	Category 2

**Label elements****Emergency Overview****Signal Word****DANGER****Hazard statements**

Harmful if swallowed  
 Fatal in contact with skin  
 Causes serious eye irritation  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 May cause an allergic skin reaction  
 Suspected of causing genetic defects  
 May cause cancer  
 Causes damage to organs  
 May cause damage to organs through prolonged or repeated exposure

**Appearance**

Orange Crystalline

**Physical State**

Solid

**Odor**

Rotten egg-like

**Precautionary Statements - Prevention**

Obtain special instructions before use  
 Do not handle until all safety precautions have been read and understood  
 Use personal protective equipment as required  
 Wash face, hands and any exposed skin thoroughly after handling  
 Do not eat, drink or smoke when using this product  
 Do not get in eyes, on skin, or on clothing  
 In case of inadequate ventilation wear respiratory protection  
 Contaminated work clothing should not be allowed out of the workplace  
 Do not breathe dust/fume/gas/mist/vapors/spray  
 Wear protective gloves/protective clothing/eye protection/face protection

**Precautionary Statements - Response**

IF exposed: Call a POISON CENTER or doctor/physician  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 If eye irritation persists: Get medical advice/attention  
 Immediately call a POISON CENTER or doctor/physician  
 IF ON SKIN: Gently wash with plenty of soap and water  
 Remove/Take off immediately all contaminated clothing  
 Wash contaminated clothing before reuse  
 If skin irritation or rash occurs: Get medical advice/attention  
 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing  
 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician  
 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell  
 Rinse mouth

**Precautionary Statements - Storage**

Store locked up

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

None known

**Other Information**

- Toxic to aquatic life with long lasting effects
- Toxic to aquatic life

**3. COMPOSITION/INFORMATION ON INGREDIENTS****Synonyms** Benzamine, 4,4'- ,Methylenebis- ; 4,4'-Methylene Dianiline**Formula** C13H14N2

Chemical Name	CAS-No	Weight %	North American Hazard Indicator
4,4'- Diaminodiphenyl Methane	101-77-9	100	0.1 ppm TWA Supplement 7 [1987]; Monograph 39 [1986]

**4. FIRST AID MEASURES****First Aid Measures**

- General Advice** Show this safety data sheet to the doctor in attendance.
- Eye Contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.
- Skin Contact** Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. Call a physician immediately.
- Inhalation** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician or Poison Control Centre immediately.
- Ingestion** Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Centre immediately.
- Protection of First-aiders** Use personal protective equipment. Avoid contact with skin, eyes and clothing.

**Most important symptoms and effects, both acute and delayed****Main Symptoms** No information available.**Indication of any immediate medical attention and special treatment needed****Notes to Physician** Treat symptomatically.**5. FIRE-FIGHTING MEASURES**

**Suitable Extinguishing Media**

Carbon dioxide (CO2). Dry powder. Foam.

**Unsuitable Extinguishing Media**

No information available.

**Hazardous Combustion Products**

Thermal decomposition or combustion may produce hazardous gases and/or materials.

**Explosion Data****Sensitivity to mechanical impact** Not available.**Sensitivity to static discharge** Not available.**Specific Hazards Arising from the Chemical**

Keep product and empty container away from heat and sources of ignition.

**Protective Equipment and Precautions for Firefighters**

In the event of fire, wear self contained breathing apparatus.

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, protective equipment and emergency procedures****Personal Precautions**

Evacuate personnel to safe areas. Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Wear disposable coveralls and discard after use. In case of insufficient ventilation, wear suitable respiratory equipment.

**Environmental Precautions**

Local authorities should be advised if significant spillages cannot be contained. Do not flush into surface water or sanitary sewer system. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment.

**Methods and material for containment and cleaning up****Methods for Cleaning up**

Evacuate personnel to safe areas. Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Clean contaminated surface thoroughly.

**7. HANDLING AND STORAGE****Precautions for Safe Handling****Handling**

Use only in an area equipped with a safety shower. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation. Use only in well-ventilated areas. Do not breathe vapors/dust. Avoid contact with skin, eyes and clothing. Avoid repeated exposure.

**Conditions for safe storage, including any incompatibilities****Storage**

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labelled containers. Protect from light.

**Incompatible Materials**

Oxidizing agents. Acids.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Exposure Guidelines**

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
4,4'- Diaminodiphenyl Methane 101-77-9	0.1 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	-	-

**Appropriate engineering controls**

**Engineering Controls** Ensure adequate ventilation, especially in confined areas.

**Individual protection measures, such as personal protective equipment**

- Eye/face Protection** Tightly fitting safety goggles.
- Skin and body protection** Wear protective gloves and protective clothing.
- Respiratory Protection** In case of insufficient ventilation, wear suitable respiratory equipment.

**General Hygiene Considerations** General industrial hygiene practice. When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

**Appearance** Orange Crystalline  
**Physical State** Solid  
**Odor** Rotten egg-like  
**Odor Threshold** No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	10	
Melting/freezing point	86 °C	Literary Reference
Boiling Point/Range	398 - °C	
Flash Point	230 °C	Closed cup
Evaporation Rate		
Flammability (solid, gas)		<b>Flammability Limits in Air</b> <b>upper flammability limit</b> <b>lower flammability limit</b> Not available <b>Vapor Pressure</b> 0.06 hPa @ 20°C <b>Vapor Density</b> 6.8 g/l <b>Specific Gravity</b> 1.07 kg/L <b>Water Solubility</b> <0.1 g/100mL @ 19°C <b>Solubility in other solvents</b> No information available <b>Partition coefficient: n-octanol/water</b> Not available <b>Autoignition temp (°C)</b> No data available <b>Decomposition temperature</b> No data available <b>Viscosity, kinematic</b> No information available <b>Viscosity, dynamic</b> Not available
Estimated		
<b>Explosive Properties</b>	No information available	
<b>Oxidizing Properties</b>	No information available	

**Other Information**

<b>Softening Point</b>	No information available
<b>Molecular Weight</b>	198.27
<b>VOC Content</b>	No information available
<b>Density</b>	No information available
<b>Bulk Density</b>	No information available

**10. STABILITY AND REACTIVITY**

<b>Reactivity</b>	Not applicable.
<b>Chemical Stability</b>	Stable under recommended storage conditions
<b>Conditions to Avoid</b>	Heat, flames and sparks. Protect from light.
<b>Incompatible Materials</b>	Oxidizing agents. Acids.
<b>Hazardous Decomposition Products</b>	Carbon monoxide Carbon dioxide (CO <sub>2</sub> ) Nitrogen oxides (NO <sub>x</sub> )
<b>Possibility of Hazardous Reactions</b>	None under normal processing

**11. TOXICOLOGICAL INFORMATION**

**Product Information** To the best of our knowledge, the complete toxicological properties have not been thoroughly investigated.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
4,4'- Diaminodiphenyl Methane 101-77-9	= 335 mg/kg ( Rat )	= 200 mg/kg ( Rabbit ) = 750 mg/kg ( Rat )	> 0.85 mg/L ( Rat ) 4 h

**Information on likely routes of exposure**

<b>Eyes</b>	Irritating to eyes. Avoid contact with eyes.
<b>Skin</b>	Toxic in contact with skin. Harmful: danger of serious damage to health by prolonged exposure in contact with skin. Irritating to skin. May cause sensitization by skin contact. May cause dermatitis. Avoid contact with skin.
<b>Inhalation</b>	Toxic by inhalation. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Irritating to mucous membranes. Irritating to respiratory system. Avoid breathing dust.
<b>Ingestion</b>	Toxic if swallowed. Harmful: danger of serious damage to health by prolonged exposure if swallowed. May cause irritation of the digestive tract. Do not ingest.

**Information on toxicological effects**

**Symptoms** No information available.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Carcinogenicity** May cause cancer. California Proposition 65 - Carcinogens List. OSHA - Specifically Regulated Carcinogens (29 CFR 1910.1050) Cancer suspect agent, Liver toxin. The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA

4,4'- Diaminodiphenyl Methane 101-77-9	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans	Supplement 7 [1987]; Monograph 39 [1986]	Reasonably Anticipated To Be A Human Carcinogen	Present
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<b>Eye damage/irritation</b>	No information available.
<b>Skin Corrosion/Irritation</b>	No information available.
<b>Sensitization</b>	May cause sensitization by skin contact.
<b>Reproductive Effects</b>	No information available.
<b>Mutagenic Effects</b>	Possible risks of irreversible effects. May cause heritable genetic damage.
<b>Developmental Effects</b>	No information available.
<b>STOT - single exposure</b>	No information available.
<b>STOT - Repeated Exposure</b>	No information available.
<b>Chronic Toxicity</b>	Avoid repeated exposure. Possible risks of irreversible effects. Possible mutagen. May cause heritable genetic damage. May cause cancer. California Proposition 65 Carcinogens List. OSHA Regulated Substances - see 29CFR 1910.1050. Target Organ Effects.
<b>Target Organ Effects</b>	Eyes, Liver, Central Vascular System (CVS), Spleen, Kidney, Blood, Bladder.
<b>Aspiration Hazard</b>	No information available.

#### Numerical measures of toxicity - Product Information

##### Acute Toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral)	335 mg/kg
ATEmix (dermal)	200 mg/kg

## 12. ECOLOGICAL INFORMATION

This product contains a chemical which is listed as a marine pollutant according to DOT.

#### Ecotoxicity

There is no known ecological information for this product.

0 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Freshwater Algae Data	Freshwater Fish Species Data	Microtox Data	Water Flea Data
4,4'- Diaminodiphenyl Methane 101-77-9	= 21 mg/L EC50		= 5.99 mg/L EC50 Photobacterium phosphoreum 5 min = 6.57 mg/L EC50 Photobacterium phosphoreum 15 min = 6.57 mg/L EC50 Photobacterium phosphoreum 30 min = 6.6 mg/L EC50 Photobacterium phosphoreum 1 h	

<b>Persistence / Degradability</b>	No information available.
<b>Bioaccumulation / Accumulation</b>	No information available.
<b>Mobility in Soil</b>	No information available.

Chemical Name	log Pow =
4,4'- Diaminodiphenyl Methane 101-77-9	1.46 at 25 °C

### 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

<b>Waste Disposal Method</b>	Contact waste disposal services. Dispose of in accordance with local regulations.
<b>Contaminated Packaging</b>	Dispose of in accordance with local regulations. Empty containers should be taken for local recycling, recovery or waste disposal.

### 14. TRANSPORT INFORMATION

#### DOT

<b>UN-No</b>	UN2651
<b>Proper Shipping Name</b>	4,4`-Diaminodiphenyl methane
<b>Hazard Class</b>	6.1
<b>Packing Group</b>	III
<b>Reportable Quantity (RQ)</b>	4,4`-Methylenedianiline, RQ kg = 4.54
<b>Marine Pollutant</b>	This product contains a chemical which is listed as a marine pollutant according to DOT.
<b>Description</b>	UN2651,4,4`-Diaminodiphenyl methane ,6.1,PG III,RQ,Marine Pollutant
<b>Emergency Response Guide Number</b>	153

#### TDG

<b>UN-No</b>	UN2651
<b>Proper Shipping Name</b>	4,4`-Diaminodiphenylmethane
<b>Hazard Class</b>	6.1
<b>Packing Group</b>	III
<b>Marine Pollutant</b>	This product contains a chemical which is listed as a marine pollutant according to TDG.
<b>Description</b>	UN2651,4,4`-Diaminodiphenyl methane ,6.1,PG III,RQ,Marine Pollutant

#### MEX

<b>UN-No</b>	UN2651
<b>Hazard Class</b>	6.1
<b>Packing Group</b>	III
<b>Description</b>	UN2651, 4,4`-Diaminodiphenylmethane,6.1,III, Marine Pollutant, RQ

#### ICAO

<b>UN-No</b>	UN2651
<b>Proper Shipping Name</b>	4,4`-Diaminodiphenylmethane
<b>Hazard Class</b>	6.1
<b>Packing Group</b>	III



<b>Description</b>	UN2651,4,4`-Diaminodiphenylmethane,6.1,PG III, Marine Pollutant, RQ
<b>IATA</b>	
<b>UN-No</b>	UN2651
<b>Hazard Class</b>	6.1
<b>Packing Group</b>	III
<b>Description</b>	UN2651,4,4`-Diaminodiphenylmethane,6.1,PG III
<b>IMDG/IMO</b>	
<b>UN-No</b>	UN2651
<b>Hazard Class</b>	6.1
<b>Packing Group</b>	III
<b>EmS No.</b>	F-A, S-A
<b>Marine Pollutant</b>	This product contains a chemical which is listed as a marine pollutant according to IMDG/IMO
<b>Description</b>	UN2651, 4,4`-Diaminodiphenylmethane,6.1,PG III, Marine Pollutant
<b>RID</b>	
<b>UN-No</b>	UN2651
<b>Hazard Class</b>	6.1
<b>Packing Group</b>	III
<b>Classification Code</b>	T2
<b>Description</b>	UN2651 4,4`-Diaminodiphenylmethane,6.1,III,RID
<b>ADR/RID-Labels</b>	6.1
<b>ADR</b>	
<b>UN-No</b>	UN2651
<b>Proper Shipping Name</b>	4,4`-Diaminodiphenylmethane
<b>Hazard Class</b>	6.1
<b>Packing Group</b>	III
<b>Classification Code</b>	T2
<b>Description</b>	UN2651 4,4`-Diaminodiphenylmethane,6.1,III,ADR
<b>ADR/RID-Labels</b>	6.1
<b>ADN</b>	
<b>Proper Shipping Name</b>	4,4`-Diaminodiphenylmethane
<b>Hazard Class</b>	6.1
<b>Packing Group</b>	III
<b>Classification Code</b>	T2
<b>Description</b>	UN2651 4,4`-Diaminodiphenylmethane,6.1,III
<b>Hazard Labels</b>	6.1
<b>Limited Quantity</b>	3 kg

## 15. REGULATORY INFORMATION

### *International Inventories*

<b>U.S.A. (TSCA)</b>	Complies
<b>Canada (DSL)</b>	Complies
<b>EU (EINECS)</b>	Complies
<b>EU (ELINCS)</b>	Does not Comply
<b>Japan (ENCS)</b>	Complies
<b>China</b>	Complies
<b>Korea (KECL)</b>	Complies
<b>Philippines (PICCS)</b>	Complies
<b>Australia (AICS)</b>	Complies

Chemical Name	U.S.A. (TSCA)	Canada (DSL)	EU (EINECS)	EU (ELINCS)
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4,4'- Diaminodiphenyl Methane	Present	Present	Present	-	
<b>Chemical Name</b>	<b>Japan (ENCS)</b>	<b>China</b>	<b>Korea (KECL)</b>	<b>Philippines (PICCS)</b>	<b>Australia (AICS)</b>
4,4'- Diaminodiphenyl Methane	Present (4)-40	Present	Present	Present	Present

### Federal Regulations

#### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Component	SARA 313 - Threshold Values
4,4'- Diaminodiphenyl Methane 101-77-9 ( 100 )	0.1 % de minimis concentration

#### SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

#### Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product contains the following HAPs:

Chemical Name	HAPS data
4,4'- Diaminodiphenyl Methane	Present (listed under 4,4-Methylenedianiline)

#### CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

#### CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical Name	CERCLA/SARA Hazardous Substances	CERCLA/SARA RQ	RQ
4,4'- Diaminodiphenyl Methane 101-77-9	10 lb final RQ; 4.54 kg final RQ		10 lb final RQ; 4.54 kg final RQ

### State Regulations

**California Proposition 65**

This product contains the following Proposition 65 chemicals:

Chemical Name	CAS-No	Category	Type
4,4'- Diaminodiphenyl Methane	101-77-9	carcinogen, initial date 1/1/88	carcinogen, initial date 1/1/88

**State Right-to-Know**

This product does not contain any State Right-to-Know chemicals.

Chemical Name	New Jersey	Massachusetts	Illinois	Rhode Island	Pennsylvania
4,4'- Diaminodiphenyl Methane 101-77-9	sn 1256	Carcinogen; Extraordinarily hazardous	Present	Toxic (skin)	Environmental hazard

**U.S. EPA Label Information**

**EPA Pesticide Registration Number** Not applicable

*Canada*

**WHMIS Statement**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

## 16. OTHER INFORMATION

**NFPA**

Health 2

Flammability 1

Instability 0

Physical Hazard 0



**Preparation Date** 12-Aug-2013

**Revision Date** 12-Aug-2013

**Revision Summary**

Not available

**Disclaimer**

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**End of MSDS**