

MDF Bonder - aerosol activator

Hazard Alert Code: HIGH

Chemwatch Material Safety Data Sheet
Issue Date: 14-Jul-2013
A317LP

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Version No:3.1.1.1
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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

MDF Bonder - aerosol activator

PROPER SHIPPING NAME

AEROSOLS

PRODUCT USE

Application is by spray atomisation from a hand held aerosol pack.
Used according to manufacturer's directions.

SUPPLIER

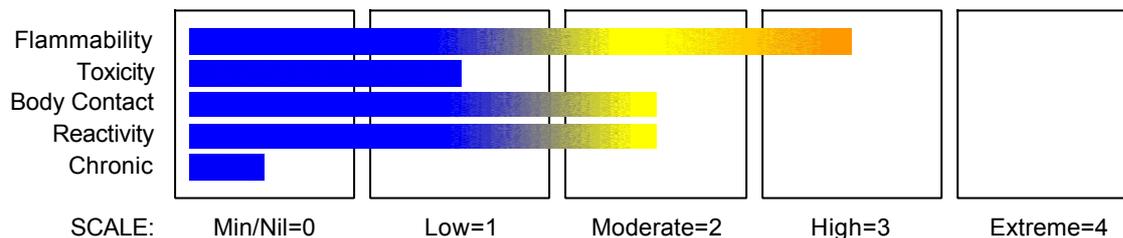
Company: GSB Chemical Co. Pty Ltd
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Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

CHEMWATCH HAZARD RATINGS



RISK

- Extremely flammable.
- Irritating to skin.

SAFETY

- Keep away from sources of ignition. No smoking.
- Do not breathe gas/fumes/vapour/spray.

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Section 2 - HAZARDS IDENTIFICATION

- Risk of explosion if heated under confinement.
 - Very toxic to aquatic organisms, may cause long- term adverse effects in the aquatic environment.
 - Vapours may cause drowsiness and dizziness.
 - Inhalation, skin contact and/or ingestion may produce health damage*.
 - Cumulative effects may result following exposure*.
 - May produce discomfort of the eyes and respiratory tract*.
 - Repeated exposure potentially causes skin dryness and cracking*.
- * (limited evidence).
- Avoid contact with skin.
 - Avoid contact with eyes.
 - Wear suitable gloves.
 - Wear eye/face protection.
 - Use only in well ventilated areas.
 - Keep container in a well ventilated place.
 - Do not empty into drains.
 - To clean the floor and all objects contaminated by this material, use water and detergent.
 - Keep container tightly closed.
 - This material and its container must be disposed of in a safe way.
 - In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
 - If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).
 - Use appropriate container to avoid environmental contamination.
 - Avoid release to the environment. Refer to special instructions/Safety data sheets.
 - This material and its container must be disposed of as hazardous waste.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
heptane	142-82-5	30-60
N, N- dimethyl- p- toluidine	99-97-8	<0.5
propane	74-98-6	10-35
butane	106-97-8.	20-40

Section 4 - FIRST AID MEASURES

SWALLOWED

- Avoid giving milk or oils.
- Avoid giving alcohol.
- Not considered a normal route of entry.

EYE

- If aerosols come in contact with the eyes:

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Section 4 - FIRST AID MEASURES

- Immediately hold the eyelids apart and flush the eye continuously for at least 15 minutes 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.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If solids or aerosol mists are deposited upon the skin:
 - Flush skin and hair with running water (and soap if available).
 - Remove any adhering solids with industrial skin cleansing cream.
 - DO NOT use solvents.
 - Seek medical attention in the event of irritation.

INHALED

- If aerosols, fumes or combustion products are inhaled:
 - Remove to fresh air.
 - 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.
 - If breathing is shallow or has stopped, ensure clear airway and apply resuscitation, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
 - Transport to hospital, or doctor.

NOTES TO PHYSICIAN

For acute or short term repeated exposures to petroleum distillates or related hydrocarbons:

- Primary threat to life, from pure petroleum distillate ingestion and/or inhalation, is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO₂ 50 mm Hg) should be intubated.
- Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
- A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax.
- Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
- Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients. [Ellenhorn and Barceloux: Medical Toxicology].

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- SMALL FIRE:
 - Water spray, dry chemical or CO₂
- LARGE FIRE:
 - Water spray or fog.

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Section 5 - FIRE FIGHTING MEASURES

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- 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.
- 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.
- Equipment should be thoroughly decontaminated after use.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 100 metres in all directions.

FIRE/EXPLOSION HAZARD

- Liquid and vapour are highly flammable.
- Severe fire hazard when exposed to heat or flame.
- Vapour forms an explosive mixture with air.
- Severe explosion hazard, in the form of vapour, when exposed to flame or spark.
- Vapour may travel a considerable distance to source of ignition.
- Heating may cause expansion or decomposition with violent container rupture.
- Aerosol cans may explode on exposure to naked flames.
- Rupturing containers may rocket and scatter burning materials.
- Hazards may not be restricted to pressure effects.
- May emit acrid, poisonous or corrosive fumes.
- On combustion, may emit toxic fumes of carbon monoxide (CO).

Combustion products include: carbon monoxide (CO), carbon dioxide (CO₂), other pyrolysis products typical of burning organic material.

Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions. May emit clouds of acrid smoke.

FIRE INCOMPATIBILITY

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

HAZCHEM

2YE

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Wear protective clothing, impervious gloves and safety glasses.
- Shut off all possible sources of ignition and increase ventilation.
- Wipe up.
- If safe, damaged cans should be placed in a container outdoors, away from all ignition sources, until pressure has dissipated.
- Undamaged cans should be gathered and stowed safely.

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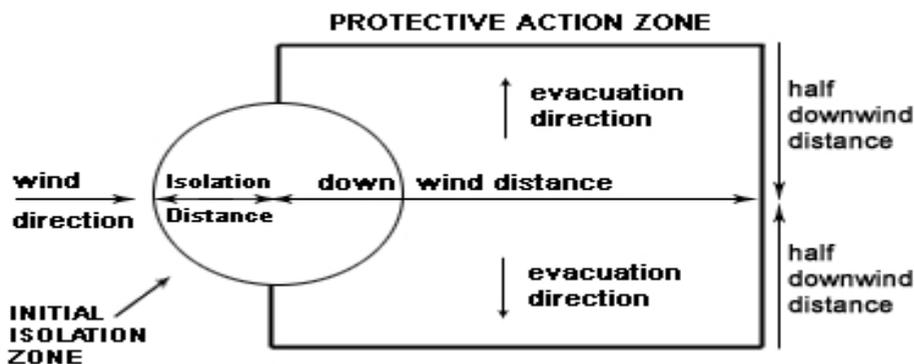
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Section 6 - ACCIDENTAL RELEASE MEASURES

MAJOR SPILLS

- Remove leaking cylinders to a safe place if possible.
- Release pressure under safe, controlled conditions by opening the valve.
- DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapour.
- Absorb or cover spill with sand, earth, inert materials or vermiculite.
- If safe, damaged cans should be placed in a container outdoors, away from ignition sources, until pressure has dissipated.
- Undamaged cans should be gathered and stowed safely.
- Collect residues and seal in labelled drums for disposal.

PROTECTIVE ACTIONS FOR SPILL



From IERG (Canada/Australia)

Isolation Distance	-
Downwind Protection Distance	8 metres
IERG Number	49

FOOTNOTES

1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.

2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.

3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.

4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a

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Section 6 - ACCIDENTAL RELEASE MEASURES

small cylinder are also considered "small spills".

LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.

5 Guide 126 is taken from the US DOT emergency response guide book.

6 IERG information is derived from CANUTEC - Transport Canada.

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 exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- DO NOT incinerate or puncture aerosol cans.
- DO NOT spray directly on humans, exposed food or food utensils.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

- Aerosol dispenser.
- Check that containers are clearly labelled.

STORAGE INCOMPATIBILITY

- Avoid reaction with oxidising agents.
strong acids.
strong alkalis.

STORAGE REQUIREMENTS

- Keep dry to avoid corrosion of cans. Corrosion may result in container perforation and internal pressure may eject contents of can.
- Store in original containers in approved flammable liquid storage area.
- DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
- No smoking, naked lights, heat or ignition sources.
- Keep containers securely sealed. Contents under pressure.
- Store away from incompatible materials.
- Store in a cool, dry, well ventilated area.
- Avoid storage at temperatures higher than 40 deg C.
- Store in an upright position.
- Protect containers against physical damage.
- Check regularly for spills and leaks.

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Section 7 - HANDLING AND STORAGE

- Observe manufacturer's storage and handling recommendations contained within this MSDS.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: 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

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	TWA F/CC	Notes
Australia Exposure Standards	heptane (Heptane (n- Heptane))	400		500	2050				
Australia Exposure Standards	butane (Butane)	800							

The following materials had no OELs on our records

- N, N- dimethyl- p- toluidine: CAS:99- 97- 8
- propane: CAS:74- 98- 6

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m ³)	Revised IDLH Value (ppm)
heptane	3074	750
propane	3789	2,100 [LEL]

NOTES

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

MATERIAL DATA

BUTANE:

MDF BONDER - AEROSOL ACTIVATOR:

For butane:

Odour Threshold Value: 2591 ppm (recognition)

Butane in common with other homologues in the straight chain saturated aliphatic hydrocarbon series is not characterised by its toxicity but by its narcosis-inducing effects at high concentrations. The TLV is based on analogy with pentane by comparing their lower explosive limits in air. It is concluded that this limit will protect workers against the significant risk of drowsiness and other narcotic effects.

Odour Safety Factor(OSF)

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

OSF=0.22 (n-BUTANE).

HEPTANE:

MDF BONDER - AEROSOL ACTIVATOR:

for heptane (all isomers)

The TLV-TWA is protective against narcotic and irritant effects which are greater than those of pentane or n-hexane but less than those of octane. The TLV-TWA applies to all isomers.

Inhalation by humans of 1000 ppm for 6 minutes produced slight dizziness. Higher concentrations for shorter periods produce marked vertigo, incoordination and hilarity. Signs of central nervous system depression occur in the absence of mucous membrane irritation. Brief exposures to high levels (5000 ppm for 4 minutes) produce nausea, loss of appetite and a "gasoline-like" taste in the mouth that persists for many hours after exposure ceases.

MDF BONDER - AEROSOL ACTIVATOR:

PROPANE:

For propane

Odour Safety Factor(OSF)

OSF=0.16 (PROPANE).

N,N-DIMETHYL-P-TOLUIDINE:

Exposure must be kept to an absolute minimum to protect the worker against the significant risk of haematuria and methaemoglobinaemia caused by exposure

The recommendation for TLV-TWA for p-toluidine has been derived by analogy with o- and m-toluidine and with aniline all of which exhibit a similar toxicity profile. The limit is thought to protect the worker against the significant risk of haematuria and methaemoglobinaemia caused by exposure. OSHA concluded that, based on quantitative risk assessment of p-toluidine carcinogenic activity in mouse liver, workers exposed to p-toluidine, were at a significant risk of developing hepatomas. The OSHA assessment of theoretical risk predicts that 1.2% to 1.9% of workers would develop cancer when exposed for a working lifetime.

No exposure limits set by NOHSC or ACGIH.

PERSONAL PROTECTION



EYE

■ No special equipment for minor exposure i.e. when handling small quantities.

OTHERWISE: For potentially moderate or heavy exposures:

- Safety glasses with side shields.

- NOTE: Contact lenses pose a special hazard; soft lenses may absorb irritants and ALL lenses concentrate them.

HANDS/FEET

- Neoprene rubber gloves.

- No special equipment needed when handling small quantities.

- OTHERWISE:

- For potentially moderate exposures:

- Wear general protective gloves, eg. light weight rubber gloves.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

- For potentially heavy exposures:
- Wear chemical protective gloves, eg. PVC. and safety footwear.

OTHER

- No special equipment needed when handling small quantities.

OTHERWISE:

- Overalls.
- Skin cleansing cream.
- Eyewash unit.
- Do not spray on hot surfaces.
- The clothing worn by process operators insulated from earth may develop static charges far higher (up to 100 times) than the minimum ignition energies for various flammable gas-air mixtures. This holds true for a wide range of clothing materials including cotton.
- Avoid dangerous levels of charge by ensuring a low resistivity of the surface material worn outermost.

BREThERICK: Handbook of Reactive Chemical Hazards.

RESPIRATOR

- Type AX Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)
- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

- CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear. 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. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
- Employers may need to use multiple types of controls to prevent employee overexposure.

General exhaust is adequate under normal conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection.

Provide adequate ventilation in warehouse or closed storage areas.

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Supplied as an aerosol pack. Contents under PRESSURE. Contains highly flammable hydrocarbon propellant. Clear liquid. not miscible with water.

PHYSICAL PROPERTIES

Liquid.
Gas.
Does not mix with water.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (°C)	Not Available	Viscosity	Not Available
Boiling Range (°C)	Not Available	Solubility in water (g/L)	Immiscible
Flash Point (°C)	- 40C	pH (1% solution)	Not Applicable
Decomposition Temp (°C)	Not Available	pH (as supplied)	Not Applicable
Autoignition Temp (°C)	>410	Vapour Pressure (kPa)	275 @25C
Upper Explosive Limit (%)	9.5	Specific Gravity (water=1)	Not Available
Lower Explosive Limit (%)	1.8	Relative Vapour Density (air=1)	>1
Volatile Component (%vol)	Not Available	Evaporation Rate	Not Available

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Elevated temperatures.
- Presence of open flame.
- Product is considered stable.
- Hazardous polymerisation will not occur.
- Presence of heat source.
- Presence of an ignition source.

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

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.

Not normally a hazard due to physical form of product.

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

Considered an unlikely route of entry in commercial/industrial environments. The liquid may produce gastrointestinal discomfort and may be harmful if swallowed. Ingestion may result in nausea, pain and vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.

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Section 11 - TOXICOLOGICAL INFORMATION

EYE

■ There is some evidence to suggest that this material can cause eye irritation and damage in some persons. Not considered to be a risk because of the extreme volatility of the gas.

SKIN

■ Skin contact with the material may be harmful; systemic effects may result following absorption.

This material can cause inflammation of the skin on contact in some persons.

The material may accentuate any pre-existing dermatitis condition.

Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.

Spray mist may produce discomfort.

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

INHALED

■ Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.

Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.

There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

Inhalation of toxic gases may cause:

- Central Nervous System effects including depression, headache, confusion, dizziness, stupor, coma and seizures;
- respiratory: acute lung swellings, shortness of breath, wheezing, rapid breathing, other symptoms and respiratory arrest;
- heart: collapse, irregular heartbeats and cardiac arrest;
- gastrointestinal: irritation, ulcers, nausea and vomiting (may be bloody), and abdominal pain.

Inhalation hazard is increased at higher temperatures.

Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be fatal.

Inhalation, by humans, of 1000 ppm heptane for 6 minutes was associated with slight dizziness; inhalation of higher concentrations for shorter periods, resulted in marked vertigo, incoordination, and hilarity. Signs of central nervous system (CNS) involvement occurred in the absence of noticeable mucous membrane irritation and were noticed promptly on entering such atmospheres.

Concentrations of 10,000-15,000 ppm, heptane produced narcosis on mice within 30-50 minutes. Exposure at higher concentrations (15,000-20,000 ppm) for 30-60 minutes caused convulsions and death in mice; inhalation of 48,000 ppm produced respiratory arrest in three of four head-exposed mice within 3 minutes. Brief exposure (4 minutes) to high levels (5000 ppm) produced nausea, loss of appetite and a "gasoline-taste" that persisted for several hours post-exposure.

Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas.

The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.

WARNING: Intentional misuse by concentrating/inhaling contents may be lethal.

Exposure to hydrocarbons may result in irregularity of heart beat. Symptoms of moderate poisoning may include dizziness, headache, nausea. Serious poisoning can result in decreased respiratory function, this may lead to unconsciousness and death. C4 hydrocarbons are especially dangerous to the nervous system. Inhalation of petroleum gases (partly due to olefin impurities) can induce sleep. Serious cases can result in cyanosis due to reduced oxygen concentration and hence asphyxiation, with symptoms of fast breathing, mental dullness, inco-ordination, poor judgment, nausea and vomiting; leading to unconsciousness and death.

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Section 11 - TOXICOLOGICAL INFORMATION

CHRONIC HEALTH EFFECTS

■ Principal route of occupational exposure to the gas is by inhalation.

Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes. [PATTYS].

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.

Substance accumulation, in the human body, is likely and may cause some concern following repeated or long-term occupational exposure.

TOXICITY AND IRRITATION

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

MDF BONDER - AEROSOL ACTIVATOR:

■ Not available. Refer to individual constituents.

HEPTANE:

TOXICITY

Inhalation (human) TCl_o:1000 ppm/6m

IRRITATION

Nil Reported

N,N-DIMETHYL-P-TOLUIDINE:

TOXICITY

Intraperitoneal (mouse) LD₅₀:212 mg/kg

IRRITATION

Nil Reported

PROPANE:

■ No significant acute toxicological data identified in literature search.

BUTANE:

TOXICITY

Inhalation (rat) LC₅₀:658000 mg/m³/4h

IRRITATION

Nil Reported

Section 12 - ECOLOGICAL INFORMATION

N,N-DIMETHYL-P-TOLUIDINE:

PROPANE:

BUTANE:

HEPTANE:

DO NOT discharge into sewer or waterways.

N,N-DIMETHYL-P-TOLUIDINE:

HEPTANE:

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

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Section 12 - ECOLOGICAL INFORMATION

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

HEPTANE:

Marine Pollutant	Yes
Fish LC50 (96hr.) (mg/l):	4924
log Kow (Sangster 1997):	4.66
BOD5:	1.92
COD:	0.06

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

For n-Heptane: Log Kow: 4.66; Koc: 2400-8100; Half-life (hr) Air: 52.8; Half-life (hr) Surface Water: 2.9-312;

Henry's atm m³ /mol: 2.06; BOD 5 (if unstated): 1.92; COD: 0.06; BCF: 340-2000; Log BCF: 2.53-3.31.

Atmospheric Fate: Breakdown of n-heptane by sunlight is not expected to be an important fate process. If released to the atmosphere, n-heptane is expected to exist entirely in the vapor phase, in ambient air.

Reactions hydroxyl radicals in the atmosphere have been shown to be important. Night-time reactions with nitrate radicals may contribute to the atmospheric transformation of n-heptane, especially in urban environments. n-Heptane is not expected to be susceptible to direct breakdown by sunlight

Terrestrial Fate: n-Heptane is expected to be broken down by biological processes in the soil; however, evaporation and adsorption from soil are expected to be a more important fate processes. n-Heptane will be slightly mobile to immobile in soil.

Aquatic Fate: Breakdown of n-heptane by water is not expected to be an important fate process.

Biological breakdown may occur in water; however, evaporation is expected to be a more important fate process. The evaporation half-life for the substance from a model river is 2.9 hours and from a model pond is 13 days. In aquatic systems, n-heptane may partition from the water column to organic matter in sediments and suspended solids.

Ecotoxicity: Concentration of the substance in aquatic life may be important in aquatic environments. The substance is moderately toxic to goldfish; however n-heptane has low toxicity to golden orfe, western mosquitofish, Daphnia magna water fleas, and snail. The substance is toxic to opossum shrimp.

N,N-DIMETHYL-P-TOLUIDINE:

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

For Arylamines (Aromatic Amines):

Aquatic Fate - Arylamines, particularly aromatic amines, irreversibly bind with humic substances present in most natural waters. The estimated half-life of aromatic amines in water is approximately 100 days.

Ecotoxicity: Anilines, benzidines and toluidines are of environmental concern. Anilines and benzidines are both acutely toxic and toxic depending on the specific aquatic species (except algae). Toluidines represent a similar concern, It has been speculated that aqueous solutions of aromatic amines can be oxidized by organic radicals. The estimated half-life of aromatic amines in water is approximately 100 days.

PROPANE:

log Kow (Sangster 1997):	2.36
For Propane: Koc 460. log Kow 2.36.	

Henry's Law constant of 7.07x10⁻¹ atm-cu m/mole, derived from its vapour pressure, 7150 mm Hg, and water solubility, 62.4 mg/L. Estimated BCF: 13.1.

Terrestrial Fate: Propane is expected to have moderate mobility in soil. Volatilization from moist soil surfaces is expected to be an important fate process. Volatilization from dry soil surfaces is based vapor pressure. Biodegradation may be an important fate process in soil and sediment.

Aquatic Fate: Propane is expected to adsorb to suspended solids and sediment. Volatilization from water surfaces is expected and half-lives for a model river and model lake are estimated to be 41 minutes and 2.6 days, respectively. Biodegradation may not be an important fate process in water.

Ecotoxicity: The potential for bioconcentration in aquatic organisms is low.

Atmospheric Fate: Propane is expected to exist solely as a gas in the ambient atmosphere. Gas-phase propane is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 14 days and is not expected to be susceptible to direct photolysis by

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Section 12 - ECOLOGICAL INFORMATION

sunlight.

BUTANE:

log Kow (Sangster 1997): 2.89

For Butane (Synonym: n-Butane): Log Kow: 2.89; Koc: 450-900; Henry's Law Constant: 0.95 atm-cu m/mole, Vapor Pressure: 1820 mm Hg; BCF: 1.9.

Atmospheric Fate: Butane is expected to exist only as a gas in the ambient atmosphere. Gas-phase n-butane is degraded in the atmosphere by reaction with hydroxyl radicals; the half-life for this reaction in air is estimated to be 6.3 days, (@ 25 C). Butane is not expected to absorb UV light and probably will probably not be broken down directly by sunlight in the atmosphere. Nighttime reactions with radical species and nitrogen oxides may contribute to the atmospheric transformation of butane.

Terrestrial Fate: Butane is expected to have low mobility in soil. Evaporation from dry soil surfaces is expected to be the main fate process. This substance is expected to be biologically degraded in soil.

Aquatic Fate: Butane may adsorb to suspended solids and sediment and is expected to occur from water surfaces with an estimated half-life for a model river of 2.2 hours and 3 days, from a model lake. Biological breakdown in water is expected to occur with complete breakdown estimated to be 34 days to 2-butanone and 2-butanol, (observed in studies). Breakdown by water and by sunlight in water are not expected to be important fate processes.

Ecotoxicity: The substance is expected to moderately accumulate in aquatic organisms. Butane is moderately toxic to fish, and Daphnia water fleas.

Marine Pollutant Yes

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
heptane	HIGH	No Data Available	HIGH	MED
N, N- dimethyl- p- toluidine	HIGH	No Data Available	LOW	MED
propane	LOW	No Data Available	LOW	HIGH
butane	LOW	No Data Available	LOW	HIGH

Section 13 - DISPOSAL CONSIDERATIONS

- 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.
- Consult State Land Waste Management Authority for disposal.
- Discharge contents of damaged aerosol cans at an approved site.
- Allow small quantities to evaporate.
- DO NOT incinerate or puncture aerosol cans.
- Bury residues and emptied aerosol cans at an approved site.

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Section 14 - TRANSPORTATION INFORMATION



Labels Required: FLAMMABLE GAS

HAZCHEM:
 2YE (ADG7)

ADG7:

Class or Division	2.1	Subsidiary Risk1:	None
UN No.:	1950	Packing Group:	None
Special Provision:	63 190 277 327	Limited Quantity:	See SP 277
Portable Tanks & Bulk Containers - Instruction:	None	Portable Tanks & Bulk Containers - Special Provision:	None
Packagings & IBCs - Packing Instruction:	P003 LP02	Packagings & IBCs - Special Packing Provision:	PP17 PP87 L2
Name and Description: AEROSOLS			

Air Transport IATA:

ICAO/IATA Class	2.1	ICAO/IATA Subrisk:	None
UN/ID Number:	1950	Packing Group:	-
Special provisions:	A145A167A802		
Cargo Only			
Packing Instructions:	203	Maximum Qty/Pack:	150 kg
Passenger and Cargo		Passenger and Cargo	
Packing Instructions:	203	Maximum Qty/Pack:	75 kg
Passenger and Cargo Limited Quantity		Passenger and Cargo Limited Quantity	
Packing Instructions:	Y203	Maximum Qty/Pack:	30 kg G

Shipping name:AEROSOLS

Maritime Transport IMDG:

IMDG Class	2.1	IMDG Subrisk:	None
UN Number:	1950	Packing Group:	None
EMS Number:	F-D,S-U	Special provisions:	63 190 277 327 344 959
Limited Quantities:	SP277	Marine Pollutant:	Yes
Shipping name:AEROSOLS			

Section 15 - REGULATORY INFORMATION

Indications of Danger:

- F+ Extremely flammable
- N Dangerous for the environment

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Section 15 - REGULATORY INFORMATION

Xi Irritant

POISONS SCHEDULE

None

REGULATIONS

MDF Bonder - aerosol activator (CAS:) is found on the following regulatory lists;

"Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO Provisional Categorization of Liquid Substances - List 2: Pollutant only mixtures containing at least 99% by weight of components already assessed by IMO", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Numbering System for Food Additives", "OECD List of High Production Volume (HPV) Chemicals"

Regulations for ingredients

heptane (CAS: 142-82-5, 31394-54-4) is found on the following regulatory lists;

"Australia Exposure Standards", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia Inventory of Chemical Substances (AICS)", "FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "IMO Provisional Categorization of Liquid Substances - List 2: Pollutant only mixtures containing at least 99% by weight of components already assessed by IMO", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information"

N, N-dimethyl-p-toluidine (CAS: 99-97-8) is found on the following regulatory lists;

"Australia - Victoria Occupational Health and Safety Regulations - Schedule 9: Materials at Major Hazard Facilities (And Their Threshold Quantity) Table 2", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution - Norway", "Sigma-AldrichTransport Information"

propane (CAS: 74-98-6) is found on the following regulatory lists;

"Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Numbering System for Food Additives", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information"

butane (CAS: 106-97-8) is found on the following regulatory lists;

"Acros Transport Information", "Australia Exposure Standards", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)",

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"Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Numbering System for Food Additives", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-Aldrich Transport Information"

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
heptane	142-82-5, 31394-54-4

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/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. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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This is the end of the MSDS.