

REPORT

STATE ENVIRONMENTAL PLANNING POLICY (SEPP) 33 RISK SCREENING

TIMBER PANEL MANUFACTURING FACILITY

OBERON, NSW

BORG MANUFACTURING

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Title: State Environmental Planning Policy (SEPP) 33 Risk Screening Timber Panel Manufacturing Facility Oberon, NSW	QA verified: A. Campanilla
	Date: 12-May-2016

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ABBREVIATIONS

ADG	Australian Dangerous Goods
DA	Development Application
DG	Dangerous Goods
DPE	(NSW) Department of Planning and Environment
EIS	Environmental Impact Statement
EPL	Environmental Protection License
HIPAP	Hazardous Industry Planning Advisory Paper
IBC	Intermediate Bulk Container
LPG	Liquefied Petroleum Gas
MDF	Medium Density Fibreboard
MHF	Major Hazard Facility
NSW	New South Wales
OHS	Occupational Health and Safety
PG	Packing Group
PHA	Preliminary Hazard Analysis
SDS	Safety Data Sheet
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environment Planning Policy

1. INTRODUCTION

1.1. Background

Borg Manufacturing (Borg) produces a range of Medium Density Fibreboard (MDF) products at a timber manufacturing and processing facility located at Oberon, NSW. The Borg Panels MDF site is located on Lot 26 DP 1200697 and the Woodchem Australia site is located on adjacent Lot 22 DP 1017457. The MDF and Woodchem facilities are separate entities on different titles. Woodchem is a Major Hazard Facility (MHF) that manufactures and supplies chemicals to Borg and other customers.

Borg proposes to expand existing operations by constructing a reconstituted panel processing facility as follows:

- Construction of a new particle board manufacturing facility.
- Expansion of existing MDF and laminating operations.

In April 2015 Borg submitted a request for Secretaries Environmental Assessment Requirements (DA Number SSD 7016) for the expansion of the site, inclusive of modifications to the Woodchem facility, (referred to as the 'proposed expansion') under the *Environmental Planning and Assessment Act 1979* through an Environmental Impact Statement (EIS).

The Secretary's Environmental Assessment Requirements (SEARs, issued 28/05/15) attached to the application includes the following statements:

1. A requirement to undertake a preliminary risk screening completed in accordance with the State Environmental Planning Policy No. 33 (SEPP 33) – Hazardous and Offensive Development Application Guidelines, Ref. 1.
2. Work Cover NSW requires the applicant to justify the rationale for not considering the total area in the proposal as a MHF.

Borg has engaged Sherpa Consulting Pty Ltd (Sherpa) to assist in addressing the two SEARs. It is noted that the SEARs are interdependent as a decision to treat the site as a single MHF will influence the materials that are considered in the SEPP33 assessment. Hence the steps require item 2 (above) to be addressed first to form the basis for item 1.

The purpose of this review is to determine:

- whether the entire area covered in the proposal should be considered as an MHF
- Whether the proposed expansion of the Borg facility would be considered to be '*potentially hazardous industry*' in the context of SEPP 33 and whether a Preliminary Hazard Analysis (PHA) is required to be included in the EIS.

In support of the assessment, Sherpa undertook a site visit on 19 February 2016 to gather data and review the site.

1.2. SEPP 33 applicability

SEPP 33 links the permissibility of an industrial development to its offsite safety and environmental risks. Developments that involve storage, handling or processing materials which, in the absence of locational, technical or operational controls, may create an offsite risk or offence to people, property or the environment are defined by SEPP 33 as '*potentially hazardous industry*' or '*potentially offensive industry*'.

Development proposals that are classified as 'potentially hazardous' industry must undergo a PHA to determine the risk to people, property and the environment. If the residual risk exceeds the acceptability criteria (as defined in NSW Hazardous Industry Planning Advisory Paper (HIPAP) no. 4), the development is a 'hazardous industry' and may not be permissible within NSW.

Developments that have the potential to emit contaminants to the environment and which require an Environmental Protection License (EPL) are 'potentially offensive'. Borg already operates with an EPL and as such the site is already considered potentially offensive which is acceptable given the controls imposed by the EPL.

An assessment of any changes to the EPL as a result of the development is outside the scope of this study.

1.3. Exclusions and limitations

The following exclusions apply:

- Assessment of low level/continuous emissions or whether the development is '*potentially offensive*' under SEPP 33. The focus of the study is hazardous incidents with a potential acute impact.

2. PROCESS DESCRIPTION

The proposed expansion involves constructing a new facility to manufacture particle board and expand existing MDF and laminating operations. The expansion will be located on the south west corner of the site and be integrated into the overall process.

A site layout showing the existing facility and the location of new plant equipment for the proposed expansion is shown in Figure 2.1.

Particle board manufacturing typically involves:

- Processing virgin wood and residual wood waste from sawmills, and
- Recycling and processing appropriately used wood to create suitable sized particles. These are then processed to form particle board.

A description for the particle board manufacturing process is provided below:

Reduction of timber to chips: Round wood lumber is brought to site from external locations and the timber is processed through a debarker and chipper in a timber yard. The chipper is to reduce the timber to a consistent particle size. Recycled boards and reclaimed timber are also introduced at this stage. Once the chips have been produced, the product is screened to ensure consistency in size and any foreign ferrous contaminants are removed using magnets. The chips are stored in the chip reclaimers.

Sizing to macro sized particles: These chips are then moved through (via belts and conveyors) to a silo prior to being further reduced to optimum macro sized particles using knife ring flakers. These particles are stored in additional silos prior to being fed into a drier.

Drying of particles: Saw dust is introduced to the particles at this stage. The dry saw dust and wet wood particles are dried in a rotating drum drier. Any small particles generated during the drying process which are smaller than required size are removed using cyclone extractors. Surplus air generated (not required for the drying process) is cleaned using a wet electrostatic precipitator prior to being released to the atmosphere as clean air. Once dried and processed in this manner, the particles are removed and stored in a third silo.

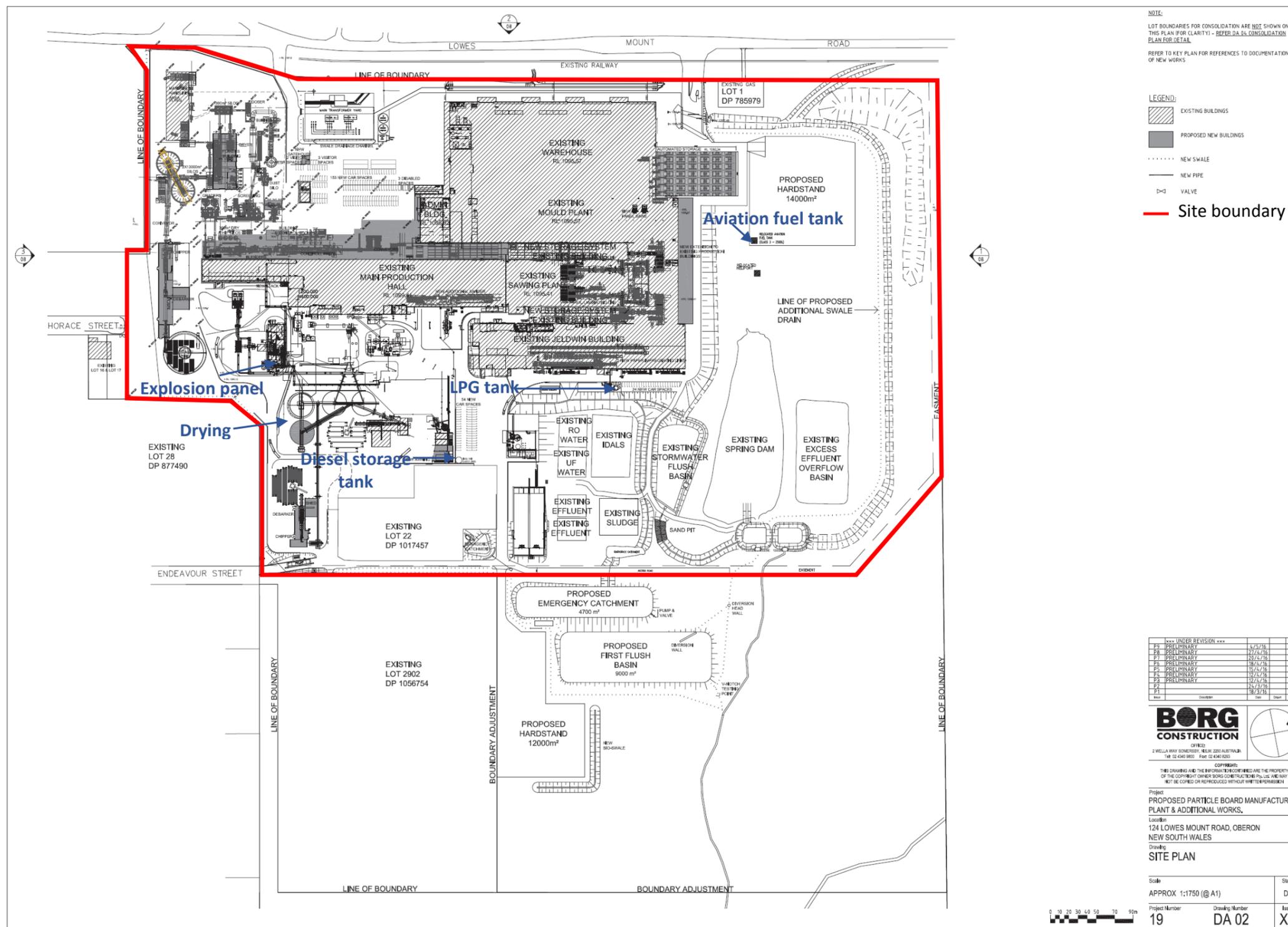
Screening and blending: After drying, appropriate sized particles are sent to storage, whilst oversize particles are sent to a grinding mill to reduce them to an appropriate size. The particles are blended with glue and additives (usually a blend of urea formaldehyde and paraffin wax, and a catalyst to accelerate the reaction) in a specially designed ring blender.

Mat formation and pressing: After blending, the resinated particles are sent to the appropriate mat forming stations. The forming stations are designed to ensure an even distribution of particles across both the width and the thickness of the board. The mat is then weighed and adjusted electronically to ensure that the finished product has a consistent density.

The forming line then transports the layered mat in a continuous format to the press, while simultaneously measuring moisture and removing any remaining ferrous material. The forming line is able to reject and recycle the mat before pressing if the specified product parameters are not of a suitable standard. Any rejected material is reused on site. The press then applies the specified heat and pressure required to cure and consolidate the board in order to meet or exceed the relevant Australian Standards. This process is remotely controlled from the press control room.

Cutting, cooling and curing of pressed boards: The pressed board is then cut square, checked to ensure it meets the required standards, cooled and stored in an automated storage system. Once cooled and cured, the boards are removed from storage and processed through the sander to ensure they meet final standards.

Figure 2.1: Site layout



3. MAJOR HAZARD FACILITY CONSIDERATIONS

3.1. Background

In 2010 the Borg Group purchased the MDF plant and Woodchem facilities from Carter Holt Harvey. The Borg Manufacturing facility (Borg) and the Woodchem Australia facility are located on two separate sites sharing a common driveway created by the way of a registered access easement (See Figure 2.1).

Borg Panels and Woodchem Australia are located within the wider Oberon Timber Complex (OTC) which includes a number of facilities owned by Carter Holt Harvey Ltd, Boral and the Borg Group.

Woodchem is a Major Hazard Facility (MHF), license number 10012-01 granted on the 21st March 2016. Woodchem Australia continues to operate as an independent facility with some corporate support services supplied as required.

3.2. Objective

The objective of this section is to determine if the Borg MDF and Woodchem Australia facilities should be considered as a single operating entity.

The conclusion of the assessment will determine the scope of the materials to be considered in the SEPP 33 review.

3.3. Development Application

The initial proposed expansion list included Lot 22 DP 1017454 (Woodchem). The lot was included on request from the department to provide a complete picture of the site and to facilitate an administrative tidy up to combine all the lots under a single DA.

However, the work to be undertaken under the DA will not impact the Woodchem lot (Lot 22, DP 1017454) and there are no proposed physical changes at Woodchem site as a result of the submission.

On this basis, Borg is proposing to submit a DA to exclude Lot 22 1017454 (Woodchem) from the proposed expansion.

3.4. Ownership

The NSW Work Health and Safety Regulation 2011 (WHS regulations) places duties on the *operator* of a MHF to notify and subsequently to submit a safety case for the MHF.

In the context of the two sites and the definition of an operator in the WHS regulation, the two companies share a common parent company but are separate businesses and operating entities.

Designating the parent company as having management and control across both facilities does not reflect how the sites are organised and operated on a local level nor does it quantify the overall operational safety of the Woodchem Facility.

3.5. Business Activities

Woodchem is a chemical processing facility that receives raw materials which are transformed into finished products using reactive chemistry. The finished products are supplied via a pipeline to Borg for immediate use, and in packages or bulk to other customers.

Dangerous Goods (DG) manufactured or stored at Woodchem are not transferred to Borg and are not stored at Borg.

Borg and Woodchem are independently licensed by the Environmental Protection Authority.

Each facility can operate in the absence of the other. With the exception of some shared corporate services, there is no linkage of business activity.

3.6. Change of overall risk profile

Requiring the sites to operate as a single MHF would result in no change in the overall risk profile as:

- The safety management system at Woodchem was developed in the context of the site being an MHF with a requirement to manage the risks associated with Schedule 15 materials and reactive chemistry.
- The Borg safety management system was developed in the context of managing occupational health and safety risks associated with operating machinery.
- There are no Schedule 15 materials stored at more than 10% of the Schedule 15 threshold at Borg hence the Borg facility itself would not be an MHF. The proposed expansion does not affect this, i.e. there will still be no Schedule 15 materials > 10% threshold.
- Based on the review of the Woodchem safety report and the site visit undertaken, Sherpa recommends revising the Woodchem safety report to clearly demarcate Borg as a separate and independent site from Woodchem; and addressing areas that were identified at Borg with the potential to escalate to involve Schedule 15 materials at Woodchem as external incidents in the safety report.
- On the basis the safety report revision recommendations are resolved; there are no credible incidents at Borg Panels with the potential to result in an incident involving Schedule 15 materials at Woodchem.

3.7. Conclusion

The sites operate as two independent businesses and operating entities and hence the dangerous goods considered in the SEPP 33 review of the Borg development are limited to those present at the Borg facility and covered under the DA for the Borg development.

The key points are:

- The sites are operated by separate companies.
- The sites undertake different activities.
- The DA for the Borg expansion recognises that Woodchem is an MHF and states that any changes at Woodchem will be managed under a separate process.

4. SEPP 33 ASSESSMENT

4.1. Methodology

The screening process published in the NSW Department of Planning and Environment (DPE) guideline *Hazardous & Offensive Development Application Guidelines – Applying SEPP 33 (January 2011)* was used to establish whether the development is ‘*potentially hazardous*’ or not.

SEPP 33 defines ‘*potentially hazardous*’ as follows:

‘Potentially hazardous industry’ means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:

(a) to human health, life or property; or

(b) to the biophysical environment, and:

Includes a hazardous industry and a hazardous storage establishment.

To determine whether a proposed development is ‘*potentially hazardous*’, the screening in SEPP 33 considers the type and quantity of hazardous materials stored on the site, the distance of the storage area to the nearest site boundary and the expected number of transport movements.

‘Hazardous materials’ are defined within the *Applying SEPP33* guideline as substances that fall within the classification of the Australian Dangerous Goods (ADG) Code.

4.2. Dangerous goods (DG)

4.2.1. Types and quantities of DG

A list of the expected types and quantities of materials to be stored or handled at the proposed development (including existing Borg operations, together with the relevant SEPP33 screening threshold, is presented in Table 4.1.

In addition to materials that are categorized as DGs, Applying SEPP 33 guidelines require ‘consideration of hazards arising from factors other than the presence of DGs that are not covered in the risk screening method. Additional hazards are assessed in Section 4.4.

4.2.2. Storage arrangements

A site layout showing the location of DG within the proposed facility is shown in Figure 2.1.

Diesel, aviation fuel and Liquefied Petroleum Gas (LPG) are stored in above ground tanks. Class 9 Environmentally hazardous substances are stored above ground in the

warehouse area. Hot oil (heated to 275°C, above flash point) is stored in an above ground tank. The proposed expansion requires relocation of DGs on site but does not result in an increase in the storage of DGs at the Borg facility.

4.3. Transport

A list of the expected types and quantities of hazardous materials transport movements to and from the site together with the relevant SEPP 33 screening threshold is presented in Table 4.2.

Table 4.1 SEPP 33 hazardous material storage screening summary

Material	Storage ID	Storage type	UN No.	DG class ^(a)	Sub-class	Approximate quantity stored on site		SEPP 33 threshold storage (Table 1 in Ref. 2 – what changes with development?)	Threshold exceeded?
						m ³	tonnes ^(a)		
Diesel	DF 1	Above ground tank	00C1	Combustible C1	-	32	27.2	Diesel is not stored with other flammable materials, hence it is not considered to be potentially hazardous based on SEPP 33. The adjacent Woodchem tank farm contains Class 3 and Class 8 materials (e.g. formalin, formaldehydes). However this is located in a separate bunded area. As diesel is not located in the same area as flammable materials, the SEPP 33 threshold is not applicable. See Note b.	Not applicable. See Note b.
Fuel, Aviation, Turbine Engine	JET 1	Above ground tank	1863	3 PG I	-	2.5	2.0	Based on Figure 8 in Ref. 1, the screening distance is approximately 2.2 m and 3 m from sensitive land uses (including residential) and all other land uses (e.g. commercial or industrial) respectively.	The separation distance between the proposed DG storage to the site boundary is approximately 140 m. Not potentially hazardous.
Petroleum Gases, Liquefied	LPG 1	Above ground tank	1075	2.1	-	6.0	3.1	Based on Table 3 in Ref.2, screening threshold is 10 tonne or 16 m ³ (if stored above ground).	Total Class 2.1 (LPG) storage does not exceed the SEPP33 threshold. Not potentially hazardous.
Hot Oil	-	Above ground tank	-	Combustible C1 heated above flash point – treat as Class 3	-	250	200	Treated as a Class 3, assuming the worst case of a packing group 1. Based on Figure 8 in Ref.2, the screening distance is approximately 12 m and 20 m from sensitive land uses (including residential) and all other land uses (e.g. commercial or industrial) respectively.	The separation distance between the DG storage to the site boundary is approximately 200 m. Not potentially hazardous.
Environmentally hazardous substance (liquid N.O.S.)	VA 1	Warehouse	3082	9 PG III	-	1.0	-	No threshold identified based on SEPP 33, Ref.2. Class 9 PG III is not classified as potentially hazardous material as per SEPP 33.	Not applicable.

Notes:

(a) Details such as DG Class and density (to calculate mass in tonnes) were obtained from the materials' Safety Datasheets (SDS). SDS is provided in APPENDIX A.

(b) Based on Ref. 1, if combustible liquids of class C1 are present on site and are stored in a separate bund or within a storage area where there are no flammable materials stored, then they are not considered to be potentially hazardous.

(c) Whilst other hazardous materials are stored onsite (Ref. 3), these materials are not listed in the DG notification (Ref. 4) and are stored in small quantities only.

Table 4.2: SEPP 33 hazardous material transport screening summary

Material	Traffic generation		Approx. annual delivery (m ³)	DG class	Sub-class	Comments	SEPP 33 threshold vehicle movements (Table 2 in Ref. 1)		Threshold exceeded?
	Annually	Peak monthly					Annually	Peak Weekly	
Diesel	36	3	283	Combustible C1	-	Delivery by road. No threshold identified based on SEPP 33, Ref. 1.	See comment.		Not applicable.
Fuel, Aviation, Turbine Engine	12	1	11.7	3 PG I	-	Delivery by road.	>500	>30	No
Petroleum Gases, Liquefied	2 (estimated)	-	2.0	2.1	-	Delivery by road. It should be noted that the annual delivery of LPG is on the decline.	>500	>30	No
Environmentally hazardous substance (liquid N.O.S.)	48 (estimated)	4		9 PG III	-	Delivery by road. One delivery (comprising three IBCs) per week.	>1000	>60	No

4.4. Other hazards

Additional hazards to be considered include:

- Dust explosion hazards.
- Hazardous processing conditions (e.g. high temperatures and pressures).
- Reactions/incompatibilities between materials.

The drying stage of the particle board manufacturing process involves the introduction of dry saw dust into wet wood particles where the mixture is dried in a rotating drum drier. Saw dust while not a DG is combustible and can potentially result in dust explosions in the presence of high dust concentration within the explosive range and an ignition source.

Explosion panels are included in the design of the drying and dust extraction systems. Typically dust explosions cause localized damage to the facility. The dust handling areas are located to the south of the site with explosion panels orientated to the east (away from the site boundary).

The particle board manufacturing process involves an exothermic blending reaction and pressures of up to 30 bar during the blending and pressing stages. The processing conditions are expected to result in occupational health and safety (OHS) issues only and are not considered to be hazardous with the potential to cause significant offsite impacts.

Other hazardous materials stored onsite that are not specifically included in the SEPP 33 screening thresholds were reviewed for reactions/material incompatibility. These materials are stored in small quantities and no hazards with the potential to cause significant offsite impacts were identified.

Non-DG hazards are managed through the design of the system and the layout. The development will not alter the offsite risk profile associated with non-DG hazards.

5. CONCLUSION

5.1. MHF Considerations and Inclusion of Woodchem in the DA

Borg Panels and Woodchem operate as two independent businesses and operating entities and hence the dangerous goods considered in the SEPP 33 review of the Borg development are limited to those present at the Borg facility.

The key points are:

- The sites are operated by separate companies.
- The sites undertake different activities.
- The DA for the Borg expansion does not impact Woodchem (Lot 22 DP 1017454). It recognises that Woodchem is an MHF and states that any changes at Woodchem will be managed under a separate process.

5.2. SEPP 33

The main findings of this SEPP 33 assessment (Section 4.2 and Section 4.4) are summarised below:

- A total of approximately 2 tonnes of Class 3 PG I material (i.e. aviation fuel) will be stored on the site at a distance of approximately 65 m from the site boundary. This is below the SEPP33 separation distance threshold level for 2 tonnes of Class 3 PG I materials.
- A total of approximately 3.1 tonnes of Class 2.1 material (i.e. LPG) will be stored on the site. This is below the SEPP 33 threshold level of 10 tonnes for Class 2.1 materials.
- A total of approximately 27.2 tonnes of combustible material (i.e. diesel) will be stored on the site. Diesel is not stored with other flammable materials, and hence is not considered to be potentially hazardous under SEPP 33.
- A total of approximately 200 tonnes of hot oil will be stored on the site at a distance of approximately 200 m from the site boundary. This is below the SEPP 33 separation distance threshold level (treating hot oil a DG Class 3, and worst case of Packing Group 1).
- A total of approximately 1 tonne of Class 9 PG III material (i.e. environmentally hazardous substance, liquid N.O.S.) will stored on the site. There is no threshold identified in SEPP 33 for Class 9 materials.
- The operational weekly vehicle movements for hazardous materials are well below the SEPP 33 transport screening threshold levels.

- The process is undertaken in a controlled manner with dust extraction, automatic explosion and fire suppression and certified pressure venting devices. The site is unlikely to generate a dust explosion causing significant offsite impacts.

Based on these findings:

- The development (accounting for both existing and expansion proposal) is not considered 'potentially hazardous' within the meaning of SEPP 33 and a PHA is not required.
- The development is not considered 'potentially hazardous' within the meaning of SEPP 33 with respect to transportation, and a route evaluation study is not required.
- The existing site EPL should be reviewed to determine if any updates are required as a result of the expansion.

Any proposed changes associated with Woodchem will be covered under a separate approvals process taking into account the fact Woodchem is an MHF.

APPENDIX A. SAFETY DATA SHEETS

Material Safety Data Sheet

Page: 1 of 6

Infosafe No.	SG1E5	Issue Date : April 2006	ISSUED by BPAUST
Product Name :	Jet A-1		

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	Jet A-1
Company Name	BP Australia Pty Ltd (ABN 53 004 085 616)
Address	Melbourne Central, 360 Elizabeth Street, Melbourne, Victoria 3000 Australia
Emergency Tel.	24hr 1800 638 556
Telephone/Fax Number	Tel: 61 3 9268 4111 Fax: (03) 9268-3321
Recommended Use	Aviation turbine fuel
Other Information	BP Technical Helpline: 1300 139 700 (local call)

MSDS website www.msds.bp.com.au/

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from us.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.

2. HAZARDS IDENTIFICATION

Hazard Classification	HAZARDOUS SUBSTANCE. DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	R10 Flammable. R38 Irritating to skin. R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R65 Harmful: may cause lung damage if swallowed.
Safety Phrase(s)	S2 Keep out of reach of children. S23 Do not breathe gas/fumes/vapour/spray S24 Avoid contact with skin. S61 Avoid release to the environment. Refer to special instructions/safety data sheet. S62 If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.
Other Information	Flammable liquid. As the material has a low flash point, any spillage should be considered a potential fire hazard. Spray applications increase the fire, and possible explosion, hazard. Use in hot climates further increases this hazard. This product may be aspirated on swallowing. Product may be irritating to the skin.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Information on Composition	A complex combination of hydrocarbons produced by the distillation of crude oil. It consists of hydrocarbons having carbon numbers predominantly in the
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Material Safety Data Sheet

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Infosafe No.	SG1E5	Issue Date : April 2006	ISSUED by BPAUST
Product Name :	Jet A-1		

range C9 through C16.
Kerosine, petroleum 8008-20-6 100 %

4. FIRST AID MEASURES

Inhalation	Remove the source of contamination or move the victim to fresh air. Ensure airways are clear and have qualified person give oxygen through a face mask if breathing is difficult. Apply artificial respiration if not breathing. Seek immediate medical attention.
Ingestion	DO NOT INDUCE VOMITING. Wash out mouth with water and give plenty of water to drink. Where vomiting occurs naturally have victim place head below hip level in order to reduce risk of aspiration. Seek immediate medical attention.
Skin	Wash skin thoroughly with soap and water as soon as reasonably practicable. Remove heavily contaminated clothing and wash underlying skin. If irritation occurs seek medical advice.
Eye	If contact with the eye(s) occur, wash with copious amounts of water for approximately 15 minutes holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. In all cases of eye contamination it is a sensible precaution to seek medical advice.
First Aid Facilities	Eye wash and normal washroom facilities.
Advice to Doctor	Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

5. FIRE FIGHTING MEASURES

Fire Fighting Measures	For major fires, call the Fire Brigade immediately. Ensure an escape path is always available from any fire. There is a risk of flashback if sparks or hot surfaces ignite vapour. In case of fire, use foam, dry chemical, carbon dioxide, vaporising liquid or water delivered as a fine spray. DO NOT USE water jets. Fires in confined spaces should be dealt with by trained personnel wearing approved breathing apparatus. Water may be used to cool nearby heat exposed areas/objects/packages. Avoid spraying directly into storage containers because of the danger of boil-over.
Hazards from Combustion Products	Toxic fumes may be evolved on burning or exposure to heat.
Hazchem Code	See Stability and Reactivity, Section 10 of this MATERIAL SAFETY DATA Sheet. 3[Y]

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures	Any spillage should be regarded as a potential fire risk. In the event of spillage, remove all sources of ignition and ensure good ventilation. Wear protective equipment. (See Exposure Controls/Personal Protection, Section 8 of this MATERIAL SAFETY DATA SHEET for details) Contain and recover liquid using sand or other suitable inert absorbent material. It is advised that stocks of suitable absorbent material should be held in quantities sufficient to deal with any spillage which may be reasonably anticipated. Spilled material may make surfaces slippery. Clean up spilled material immediately. Recovery of large spillages should be effected by specialist personnel. Protect drains from potential spills to minimise contamination. Do not wash product into drainage system. Vapour is heavier than air and may travel to remote sources of ignition (eg. along drainage systems, in basements, etc.). If spillage has occurred in a confined space, ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry. In the case of spillage on water, prevent the spread of product by the use of suitable barrier equipment. Recover product from the surface. Protect environmentally sensitive areas and water supplies.
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Material Safety Data Sheet

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Infosafe No.	SG1E5	Issue Date : April 2006	ISSUED by BPAUST
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Product Name : **Jet A-1**

In case of spillage at sea, approved dispersants may be used where authorised by the appropriate regulatory authority. In the event of spillages, contact the appropriate authorities. Regular surveillance on the location of the spillage should be maintained.

7. HANDLING AND STORAGE

Precautions for Safe Handling Ensure good ventilation and avoid, as far as reasonably practicable, the inhalation and contact with vapours, mists or fumes which may be generated during use. If such vapour, mists or fumes are generated, their concentration in the workplace air should be controlled to the lowest reasonably practicable level.

Avoid contact with eyes. If splashing is likely to occur wear a full face visor or chemical goggles as appropriate.

Avoid skin contact. Good working practices, high standards of personal hygiene and plant cleanliness must be maintained at all times.

Do not siphon product by mouth. Keep out of reach of children.

Whilst using, do not eat, drink or smoke. Wash hands thoroughly after contact.

Use disposable cloths and discard when soiled. Do not put soiled cloths into pockets.

Conditions for Safe Storage Take all necessary precautions against accidental spillage into soil or water. Store and dispense only in well ventilated areas away from heat and sources of ignition.

Store and use only in equipment/containers designed for use with the product. Containers must be properly labelled and kept closed when not in use.

Do not remove warning labels from containers. Empty packages may retain residual product; retain hazard warning labels on empty packages as a guide to their safe handling, storage and disposal.

Do not enter storage tanks without breathing apparatus unless the tank has been well ventilated and the tank atmosphere has been shown to contain

hydrocarbon vapour concentrations below 1% of the lower flammability limit and an oxygen concentration of at least 20% by volume.

Always have sufficient personnel standing by outside the tank with appropriate breathing apparatus and equipment to effect a quick rescue.

Other Information Fire Prevention

Light hydrocarbon vapours can build up in the headspace of tanks. These can cause flammability/explosion hazards, even at temperatures below the normal flash point.

Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electricity discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Hoses should be electrically continuous.

Ensure equipment used is properly earthed or bonded to the tank structure.

Will present a flammability hazard if heated above the flash point but bulk liquids at normal storage temperatures present a low fire hazard.

If fuel contacts hot surfaces, or leaks from high pressure fuel pipes, the vapour and/or mists generated will create a flammability or explosion hazard.

Product soaked rags, paper or material used to absorb spillages, represent a fire hazard and should not be allowed to accumulate. Dispose of safely after use. Empty containers represent a fire hazard as they may contain remaining flammable residues and vapour.

Do not weld, heat or drill the container. Do not introduce an ignition source. Heating may cause an explosion.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards Ensure good ventilation. Avoid, as far as reasonably practicable, inhalation of vapour, mists or fumes generated during use.

If vapour, mists or fumes are generated, their concentration in the workplace air should be controlled to the lowest reasonably practicable level.

Biological Limit Values No biological limit allocated.

Respiratory Protection If engineering controls are not effective in controlling airborne exposure then respiratory protective equipment should be used suitable for protecting against airborne contaminants. Final choice of appropriate breathing protection is dependent upon actual airborne concentrations and the type of breathing protection required will vary according to individual circumstances.

Material Safety Data Sheet

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Product Name :	Jet A-1		

	Expert advice may be required to make this decision. Reference should be made to Australian/New Zealand Standards AS/NZS 1715, Selection, Use and maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices.
Eye Protection	Safety glasses with side shields, goggles or full-face shield as appropriate recommended. Final choice of appropriate eye/face protection will vary according to individual circumstances ie. methods of handling or engineering controls and according to risk assessments undertaken. Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.
Hand Protection	Wear gloves of impervious material. Final choice of appropriate gloves will vary according to individual circumstances ie. methods of handling or according to risk assessments undertaken. Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Pale yellow / straw coloured mobile liquid
Odour	Mild
Melting Point	Not available
Boiling Point	150 - 280°C Test Method: ASTM D 86
Solubility in Water	Insoluble
pH Value	Not applicable
Vapour Pressure	< 0.3 kPa @ 38°C Test Method: ASTM D 323
Vapour Density (Air=1)	Not available
Density	0.80 kg/L @ 15°C Test Method: ASTM D 1298
Flash Point	> 38°C (PMC) Test Method: ASTM D 93
Flammability	FLAMMABLE. This product should be stored and used in a well ventilated area away from naked flames, sparks and other sources of ignition. Electrically link and ground metal containers for transfers of the product to prevent accumulation of static electricity. Keep the container tightly closed.
Auto-Ignition Temperature	380°C
Flammable Limits - Lower	0.7%
Flammable Limits - Upper	5.0%

10. STABILITY AND REACTIVITY

Chemical Stability	Products of this type are stable and unlikely to react in a hazardous manner under normal conditions of use. This material is flammable.
Conditions to Avoid	Heat, flames and other ignition sources.
Incompatible Materials	Avoid contact with strong oxidising agents.
Hazardous Decomposition Products	Thermal decomposition can produce a variety of compounds, the precise nature of which will depend on the decomposition conditions. Incomplete combustion/thermal decomposition will generate smoke, carbon dioxide and hazardous gases, which will include carbon monoxide.
Hazardous Polymerization	Hazardous polymerisation reactions will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicology Information	No component of this product at levels greater than or equal to 0.1% is identified as a carcinogen by ACGIH, the International Agency for Research on Cancer (IARC), the European Commission (EC), or the National Occupational Health and Safety Commission (Australia).
Inhalation	May cause irritation to eyes, nose and throat due to exposure to high concentrations of vapour, mists or fumes.

Material Safety Data Sheet

Infosafe No.	SG1E5	Issue Date : April 2006	ISSUED by BPAUST
Product Name :	Jet A-1		

Ingestion	Harmful: may cause lung damage if swallowed. Ingestion of this product will irritate the gastric tract causing nausea and vomiting. Aspiration into the lungs may result in chemical pneumonitis.
Skin	Likely to cause skin irritation.
Eye	Unlikely to cause more than transient stinging or redness if accidental eye contact occurs.
Chronic Effects	<p>Middle distillate: From skin-painting studies of petroleum distillates of similar composition and distillate range, it has been shown that these types of materials often possess weak carcinogenic activity in laboratory animals. In these tests, the material is painted on the shaved backs of mice twice a week for their lifetime. The material is not washed off between applications. Therefore, there may be a potential risk of skin cancer from prolonged or repeated skin contact with this product in the absence of good personal hygiene. This particular product has not been tested for carcinogenic activity, but we have chosen to be cautious in light of the findings with other distillate streams.</p> <p>Occasional skin contact with this product is not expected to have serious effects, but good personal hygiene should be practiced and repeated skin contact avoided. This product can also be expected to produce skin irritation upon prolonged or repeated skin contact. Personal hygiene measures taken to prevent skin irritation are expected to be adequate to prevent risk of skin cancer.</p>

12. ECOLOGICAL INFORMATION

Persistence / Degradability	This product is inherently biodegradable.
Mobility	Spillages may penetrate the soil causing ground water contamination.
Bioaccumulative Potential	This product is not expected to bioaccumulate through food chains in the environment.
Environ. Protection	Prevent this material entering waterways, drains and sewers.
Acute Toxicity - Other Organisms	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

13. DISPOSAL CONSIDERATIONS

Disposal Considerations	Dispose of via an authorised person/licensed waste disposal contractor in accordance with local regulations, or if approved, allowed to degrade in situ. Incineration may be carried out under controlled conditions provided that local regulations for emissions are met. Dispose of product and container carefully and responsibly. Do not dispose of near ponds, ditches, down drains or onto soil. Empty packages may contain some remaining product. Hazard warning labels are a guide to the safe handling of empty packages and should not be removed.
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14. TRANSPORT INFORMATION

Transport Information	ADG - FUEL, AVIATION, TURBINE ENGINE, UN 1863, Class 3 - Flammable Liquid , Packaging Group III, 3[Y]. IMDG - KEROSENE , UN 1223, Class 3.3 - Flammable Liquid, Packaging Group III. IATA/ICAO - FUEL, AVIATION, TURBINE ENGINE, UN 1863, Class 3 - Flammable Liquid, Packaging Group III.
U.N. Number	1863
Proper Shipping Name	FUEL, AVIATION TURBINE ENGINE
DG Class	3
Hazchem Code	3[Y]
Packaging Method	3.8.3RT1
Packing Group	III
EPG Number	3A1
IERG Number	14

Material Safety Data Sheet

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Infosafe No.	SG1E5	Issue Date : April 2006	ISSUED by BPAUST
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Product Name : **Jet A-1**

15. REGULATORY INFORMATION

Regulatory Information	Fuels are exempt from the Standard Uniform Schedule for Drugs and Poisons, except when packed in containers having a capacity of 20 litres or less. Classified as a Scheduled 5 (S5) Poison using the criteria in the Standard Uniform Schedule for Drugs and Poisons when used for other applications rather than as a fuel.
Poisons Schedule	S5
Hazard Category	Harmful, Irritant, Dangerous for the environment

16. OTHER INFORMATION

Date of preparation or last revision of MSDS	MSDS Review: March 2006 Supersedes: March 2001
Other Information	Compiled by: Health, Safety, Environment and Security Division, ...End Of MSDS...



Safety Data Sheet (SDS)

LPG364

Commercial Propane

1 PRODUCT AND COMPANY DETAILS	
Product Name	Commercial Propane
Other Names	Propane, LPG, LP Gas, Liquefied Petroleum Gas
Use	As fuel in domestic, commercial, industrial and automotive applications.
Company	Origin Energy LPG Limited Australia Square 264 - 278 George Street Sydney NSW 2000
General Enquiries	133 LPG (133 574) Technical Information Telephone 07 3867 0362 Technical Information Fax 07 3867 0278
Emergency Telephone 1800 808 526 all hours	

LPG364

Released on 22 July 2015 - Version 9

LPG-BUS-HSE-IST-0007

Once printed, this is an uncontrolled document
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LPG - SDS - Commercial Propane

2 HAZARDS IDENTIFICATION

Commercial Propane as supplied by Origin contains less than 0.1% of 1,3 Butadiene and is not classified as hazardous according to criteria of Safe Work Australia. Commercial Propane is classified as a Dangerous Good by the Australian Dangerous Goods Code.

UN number 1978	Hazchem Code 2YE
Dangerous Goods Class 2.1	Emergency Guide EPG 2A2
Flammable (F)	R12 – Extremely flammable

S9, 16 Keep container in a well ventilated place away from sources of ignition – No Smoking

Smell: People with poor or no sense of smell should be made aware of the risk in the event of a gas leak.

3 COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical Entity	CAS Number	Proportion
Propane	[74-98-6]	25-99%
Propene	[115-07-1]	0-60%
Butane	[106-97-8]	0-7.5%
Butene	[106-98-9]	0-2%
Ethyl Mercaptan (Odorant)	[75-08-1]	25mg/kg
Alternative Names: Propane LP Gas, LPG or Liquefied Petroleum Gas	UN Number: 1978 1075	

NOTICE - Origin believes that information given herein is accurate and reliable at the date of compilation, and conforms to the guidelines of Safe Work Australia for the preparation of SDS, but no warranty, express or implied, is made. While the SDS provides adequate information for most users, an SDS is not a substitute for expert advice on development of engineering and safe handling practices.

LPG - SDS - Commercial Propane

4 FIRST AID	
Swallowed	Due to the high volatility of the product, this is not likely to occur.
Eyes	Hold eyes open and continuously wash with clean water while seeking urgent medical attention. Eye wash bottles containing sterile water or normal saline solution should be kept readily available.
Skin	Immediately wash affected areas with plenty of water at room temperature to overcome frostbite. Do not use iced water. Warm up gently. In hot conditions, cover with damp sheet to prevent too rapid heating up of affected area. Seek urgent medical attention.
Inhaled	<p>Move patient to fresh air and allow to rest. If patient is unconscious and breathing, place them in the coma position, check airway and observe. If patient is not breathing, clear airway and apply mouth to mouth resuscitation.</p> <p>If patient is not breathing and does not have a pulse, commence cardio pulmonary resuscitation. Seek urgent medical attention.</p>
Advice to doctor	Treat symptomatically.
5 FIRE FIGHTING MEASURES	
Fire/explosion hazard	<p>Evacuate area, remove ignition sources.</p> <p>Cut off gas supply if safe to do so - do not endanger life.</p> <p>DO NOT EXTINGUISH FIRE - allow gas to burn out.</p> <p>Use water to keep vessel(s) cool.</p> <p>Note: If ignition has occurred and water is not available, the tank metal may weaken from the heat and may result in an explosion.</p> <p>The area should be evacuated immediately.</p> <p>From a safe location, notify emergency services.</p> <p>Hazchem Code 2YE</p>
Combustion products	<p>Carbon dioxide, water vapour, traces of carbon monoxide and nitrogen oxides.</p> <p>Fumes, smoke, carbon monoxide and aldehydes can be formed during incomplete combustion.</p>

LPG - SDS - Commercial Propane

	Fire fighters may need self contained breathing apparatus.
6 ACCIDENTAL RELEASE MEASURES	
Spills and disposal (Contact Origin if disposal of material is required)	<p>Any release of Commercial Propane to the atmosphere poses a risk of fire or explosion.</p> <p>Move people away and upwind from spill.</p> <p>Shut off supply of gas if it is safe to do so.</p> <p>Eliminate sources of ignition e.g. power supply, matches, non-intrinsically safe communication equipment.</p> <p>Ventilate area.</p> <p>Remove leaking cylinder to open air.</p> <p>Avoid breathing vapour and contact with liquid or vapour.</p> <p>Disperse vapour with water spray.</p> <p>Note: Vapour is heavier than air and will settle at the lowest point e.g. ditches, drains and water courses.</p>
7 HANDLING AND STORAGE	
<p>Store in approved areas as defined by current issue of AS1596.</p> <p>Comply with the current issue of the Australian Code for the Transportation of Dangerous Goods by Road and Rail, and with the relevant Dangerous Goods Legislation in each State or Territory.</p> <p>Store containers in an upright position (even when empty); keep away from heat sources; do not drop; keep valves closed when not in use.</p> <p>Ensure dust and rain caps are fitted at all times.</p> <p>Store away from oxidising substances e.g. pool chlorine.</p> <p>Store in well ventilated area.</p>	
8 EXPOSURE CONTROLS AND PERSONAL PROTECTION	
<p>Propane is an asphyxiant – Safe Work Australia Exposure Standard</p> <p>Propylene is an asphyxiate – Safe Work Australia Exposure Standard</p>	

LPG - SDS - Commercial Propane

Butane – ES-TWA 800ppm TWA 1900mg/m ³	
Engineering Controls	
Ignition sources	<p>No Smoking. No Flames.</p> <p>Follow procedures to avoid static discharges.</p> <p>Use only intrinsically safe communication equipment (e.g. mobile phones and pagers).</p> <p>Use non-spark generating tools and flameproof (intrinsically safe) equipment.</p>
Ventilation	<p>Maintain adequate ventilation.</p> <p>LPG appliances can be hazardous when used in a poorly ventilated room.</p>
Usage	<p>In applications other than as a forklift cylinder, all cylinders should be used in the upright position.</p> <p>Use only equipment approved for LPG installations and install in accordance with AS1596 and AS5601.</p>
Personal Protection	
<p>Thermally insulated gloves and either goggles or close fitting protective glasses with side visors are recommended when handling liquid LPG.</p> <p>Long sleeved shirts and long trousers made from natural materials should be worn when handling.</p> <p>If personnel are required to work in areas where the concentration of LPG may be above the exposure standard respiratory protection should be used. This should be a supplied air facemask or self contained breathing apparatus complying with ASJ715 and AS1716.</p>	
9 PHYSICAL AND CHEMICAL PROPERTIES	
Physical Description/Properties	
Appearance	<p>Colourless, odourless gas supplied in compressed liquid form in a pressure container.</p> <p>A strong and distinctive odour is added to assist in the early detection of even minor leaks.</p>
Boiling Point = - 42°C	Flash Point = -104°C
Vapour Pressure (at 40°C) = 1530	Flammability Limits = 2.4% to 9.6% in air (v/v)

LPG - SDS - Commercial Propane

kPa Max	
Solubility in Water (at 20°C) <200ppm	Auto ignition Temperature = 494°C to 549°C
Specific Gravity Liquid = 0.51 (water = 1)	Specific Gravity Gas = 1.52 (air = 1)
10 STABILITY AND REACTIVITY	
<p>Stable under normal ambient conditions of storage and use. Avoid heat sources. Can react violently with oxidising agents - chlorine, pool chlorine or nitric acid.</p>	
11 TOXICOLOGICAL INFORMATION	
Health Effects from Acute Exposure	
Swallowed	Due to high volatility of product, this is not likely to occur.
Eyes	Liquid will cause severe damage. Vapour will cause irritation.
Skin	Vapourising liquid or liquid contact can result in cold contact burns.
Inhaled	May cause light-headedness, dizziness and drowsiness. Excessive exposure may cause unconsciousness or even death, due to asphyxiation (refers to vapour not liquid).
Health Effects from Chronic Exposure	
No chronic systemic effects reported from industrial exposures.	
Carcinogenicity	No known effect
Mutagenicity	No known effect
Teratogenicity	No known effect
12 ECOLOGICAL INFORMATION	
<p>Liquid propane will vapourise rapidly when released to atmosphere. Commercial Propane consists of hydrocarbons that photo chemically decompose under atmospheric conditions.</p>	

LPG - SDS - Commercial Propane

13 DISPOSAL CONSIDERATIONS

Contact Origin if disposal of LPG is required.

LPG cylinders should be returned to the owning organisation stamped on the cylinder when no longer required.

Small customer owned cylinders should be made safe at a Gas Cylinder Test Station before disposal. Check with local Council re acceptance for disposal to landfill.

Also see Section 16.

14 TRANSPORT INFORMATION

Transport information	UN number UN 1978	Shipping name Propane
	Class 2.1	Hazchem Code 2YE
	Cylinders must be secured in an upright position for transport.	
	Transport in accordance with the requirements of ADG Code and the Load Restraint Guide.	
Alternative Names: LP Gas, LPG or Liquefied Petroleum Gas	UN Number: 1075	

15 REGULATORY INFORMATION

Poisons schedule number – none allocated.

LPG is a prescribed Dangerous Good and its storage and handling is covered by various pieces of legislation in all States.

The installation of LPG equipment must be performed only by appropriately licensed or authorised persons.

16 OTHER INFORMATION

'Empty' container warning	'Empty' containers retain residue (liquid and/or vapour) and can be dangerous. Do not attempt to clean since residue is difficult to remove. Do not pressurise, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks and
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LPG - SDS - Commercial Propane

	<p>other sources of ignition. They may explode and cause injury or death.</p> <p>All containers should be returned to the supplier.</p> <p>Privately owned containers no longer required, should be disposed of in an environmentally safe manner, and in accordance with Government regulations.</p> <p>Seek expert advice if repairs or modifications to installation are required.</p>
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Authorised by:	Group Manager Operational Integrity	
Telephone SDS enquiries only:	(07) 3867 0362	
Telephone all other enquiries:	133 LPG (133 574)	

Material Safety Data Sheet

LOW SULFUR DIESEL

Infosafe No. JAC5D **Issue Date** April 2005 **Status** ISSUED by CALTEX

Classified as hazardous according to criteria of NOHSC

COMPANY DETAILS

Company Name CALTEX AUSTRALIA LIMITED
Address MLC BUILDING 19 - 29 Martin Place SYDNEY NSW 2000
Tel/Fax Tel: (02) 9250 5000 Fax: (02) 9250 5742
Other Information The most recent MSDS for this product can be obtained from the Caltex Australia website - 'www.caltex.com.au'.

IDENTIFICATION

Product Name LOW SULFUR DIESEL
Proper Shipping Name None Allocated

Other Names **Name** LOW SULFUR DIESEL UNMARKED
AUTOMOTIVE DIESEL FUEL
DIESEL
DIESEL FUEL UNMARKED
Product Code

UN Number None Allocated
DG Class None Allocated
Packing Group None Allocated
Hazchem Code None Allocated
Poisons Schedule S5
Product Use Fuel, mould oil.

Physical Data

Appearance Light brown oil, with a slight characteristic odour.
Boiling Point 200 - 400°C
Vapour Pressure < 1 mmHg
Specific

Gravity	0.85
Flash Point	80°C (PMCC)
Flamm. Limit	
LEL	Not available.
Flamm. Limit	
UEL	Not available.
Solubility in Water	Insoluble.

Other Properties

Autoignition Temp.	350°C
Vapour Density	>1 (cf Air = 1)
pH Value	Not Applicable
Viscosity	3.0 cSt @ 40°C
Stability	Stable under normal conditions of storage and handling.
Materials to Avoid	Strong oxidising agents.

Ingredients

Information on

Composition Mixture of diesel fuel, additives and no more than 500ppm sulfur.

Ingredients	Name	CAS	Proportion
	Diesel Fuel	68334-30-5	60-100 %
	Ingredients determined not to be hazardous		
		Not required	(Balance)

HEALTH HAZARD INFORMATION

Health Effects

Acute - Swallowed	Harmful, may cause lung damage if swallowed. Ingestion of this product will irritate the gastric tract causing nausea and vomiting. Aspiration into the lungs may result in chemical pneumonitis.
Acute - Eye	May cause irritation in contact with the eyes, which can result in redness, stinging and tearing.
Acute - Skin	May cause irritation to the skin that may result in redness, itchiness and swelling. Repeated or prolonged contact may dry and defat the skin, resulting in skin irritation and possibly lead to dermatitis.
Acute - Inhaled	Mists and vapours generated may cause irritation of the upper respiratory tract. Inhalation of high concentration may lead to headache, dizziness, nausea, vomiting, drowsiness or narcosis.

Hazards Identification

Classified as Hazardous according to the criteria of the NOHSC.
Not classified as dangerous goods according to the ADG Code.

Risk Phrase:

R40(3) Possible risk of irreversible effects.

Safety Phrase:

S16 Keep away from sources of ignition - No smoking.

S2 Keep out of reach of children.

S23 Do not breathe gas/fumes/vapour/spray

S24/25 Avoid contact with skin and eyes.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Chronic

Possible risk of irreversible effect. Prolonged or repeated skin contact may cause skin irritation leading to dermatitis. Repeated or prolonged inhalation of high vapour concentrations can cause drowsiness and lead to narcosis or death.

First Aid

Swallowed

DO NOT induce vomiting. Give nothing by mouth to an unconscious person. Seek IMMEDIATE medical attention.

Eye

If contact with the eye(s) occur, wash with copious amounts of water, holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. If irritation develops, seek medical attention.

Skin

Remove contaminated clothing and wash before re-use. Wash thoroughly with soap and water. If irritation develops, seek medical attention.

Inhaled

Remove the source of contamination or move the victim to fresh air. Ensure airways are clear and have qualified person give oxygen through a facemask if breathing is difficult. If irritation develops, seek medical attention.

First Aid

Facilities

Eye wash and normal washroom facilities.

Other

Information

For advice, contact a Poisons Information Centre (Phone eg Australia 131 126; New Zealand 0800 764 766) or a doctor (at once).

Advice to Doctor

Advice to

Doctor

Treat symptomatically. For further advice, contact the Poisons Information Centre.

Other Health Hazard Information

PRECAUTIONS FOR USE

Other

Exposure Info.

No value assigned for this specific material by the National Occupational Health and Safety Commission (NOHSC). However, Caltex recommends a daily 8 hour TWA Exposure Standards of 100 ppm of total hydrocarbons.

Eng. Controls

Provide sufficient ventilation to keep airborne levels below the exposure limit. Where vapours or mists are generated and exposure standards are exceeded, the use of respiratory protection, or a local exhaust ventilation system is recommended.

Personal Protection

Respirator

**Type (AS
1716)**

Avoid breathing of vapours/mists. Where ventilation is inadequate and vapours/mists are generated, the use of an approved respirator with filter complying with AS/NZS 1715 and AS/NZS 1716 is recommended; however final choice of appropriate breathing protection is dependant upon actual airborne concentrations and the type of breathing protection required will vary according to

individual circumstances. Expert advice may be required to make this decision. Reference should be made to Australian Standards AS/NZS 1715- Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716- Respiratory Protective Devices.

Eye Protection If possibility of eye contact exists safety glasses with face shield should be worn as described in Australian Standard AS/NZS 1337- Eye Protectors for Industrial Applications.

Glove Type Impervious PVC or rubber gloves should be worn to minimise skin contact.
Clothing Any routine contact with this material should require the use of protective clothing such as an apron made of neoprene, nitrile, or n-butyl rubber suitable for the application.

Footwear Safety boots with non-slip soles as required.

Other Information Biological Limit Values: No biological limit allocated.

Flammability

Fire Hazards Classified as a Class 1- Combustible liquid. Avoid all sources of ignitions, heat or sparks. May emit toxic fumes under fire conditions.

SAFE HANDLING INFORMATION

Storage and Transport

Storage Precautions Classified as combustible liquid for storage and handling purposes. Store in a cool, dry, well-ventilated area, out of direct sunlight. Keep containers closed when not in use and securely sealed and protected against physical damage. Inspect regularly for deficiencies such as damage or leaks. Avoid sparks, flames and other ignition sources. Store away from incompatible materials. For information on the design of the storeroom reference should be made to Australian Standard AS1940 - The storage and handling of flammable and combustible liquids. Reference should also be made to all Local, State and Federal regulations.

Transport Not classified as Dangerous Good according to Australian Code for the Transport of Dangerous Goods by Road and Rail (6th Edition).

Handling Repeated or prolonged contact with this material should be avoided in order to lessen the possibility of skin disorders. It is essential that all who come into contact with this material, maintain high standards of personal hygiene i.e. washing hands prior to eating, drinking, smoking or going to the toilet. Build-up of mist in the working atmosphere must be prevented. Ensure ventilation is adequate. Prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Keep containers closed when not in use.

Proper Shipping Name None Allocated

Spills and Disposal

Accidental Release Measures Remove all sources of ignition. Increase ventilation. Evacuate all unnecessary personnel. Wear full protective equipment including air supplied respirator, and clothing to minimise exposure. If possible contain the spill. Place inert absorbent material such as vermiculite, sand onto spillage. Use clean non-sparking tools to collect the material and place into a suitable labelled container. Prevent contamination of groundwater or surface water. If large quantities of this material

enter the waterways contact the Environmental Protection Authority, or your local Waste Management Authority.

Disposal Considerations Dispose of waste according to federal, E.P.A, State and local regulations. Assure conformity with all applicable regulations.

Fire/Explosion Hazard

Fire/Explos. Hazard Combustible liquid. Avoid all sources of ignition, heat and open flame. May emit toxic fumes under fire conditions. Fire-exposed containers may rupture/explode.

Hazardous Combustion Products Oxides of carbon.

Fire Fighting Precautions Self-contained breathing apparatus (S.C.B.A) and full protective clothing should be worn to reduce the risk from exposure to combustion products and oxygen deficiency.

Extinguishing Media Use carbon dioxide, dry chemical or foam. DO NOT use water spray directly on the fire as this may spread the fire. Water or foam may cause frothing. Use water spray to cool fire exposed containers.

Hazchem Code None Allocated

OTHER INFORMATION

Toxicology Middle distillates have caused skin cancer in laboratory animals following lifetime application to the skin. Brief or intermittent skin contact is not expected to cause adverse effects if it is washed thoroughly. Avoid prolonged or repeated contact or breathing of vapour or mist.
U.S. NIOSH has recommend whole diesel exhaust be regarded as a potential occupational carcinogen, based on findings of carcinogenic response in laboratory animals exposed to whole diesel exhaust. The excess risk has not been estimated. Avoid exposure to diesel.
NOTE: Exhaust from fuel oils and gas oils may present similar exposure potential and should also be avoided.

This product has been classed as a Carcinogen Category 3 Substance- R40 Possible risk of irreversible effects. That is, substances which cause concern for humans owing to possible carcinogenic effects but in respect of which the available information is not adequate for making a satisfactory assessment.
A substance is included in Category 3 if there is some evidence from appropriate animal studies that human exposure can result in the development of cancer, but this evidence is insufficient to place the substance in Category 2.

Environment Protection Risk Statement Prevent the material from entering the environment. This substance may present environmental risks common to oil spills.

Safety Statement R65 Harmful: may cause lung damage if swallowed.
R40(3) Possible risk of irreversible effects.
S2 Keep out of reach of children.
S16 Keep away from sources of ignition - No smoking.
S23 Do not breathe gas/fumes/vapour/spray
S24/25 Avoid contact with skin and eyes.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Pkg. & Labelling Labelling requirements of the Standard for Uniform Scheduling of Drugs and Poisons do not apply to a poison that is packed and sold solely for industrial, laboratory or manufacturing purposes; however is labelled in accordance with the National Occupational Health and Safety Commission's 'National Code of Practice

for the Labelling of Workplace Substances'.

Hazard Category	Harmful
Ecotoxicity	Not available
Persistence / Degradability	Not available
Mobility	Not available
SDS History	MSDS Review: March 2005 MSDS Superseded: November 2002

CONTACT POINT

Contact	CHEMICAL EMERGENCIES: 1 800 033 111 TECHNICAL ADVICE: 1300 364 169 Health & Safety Advisor Tel: (02) 9695 3607 or (02) 9250 5900 PLEASE NOTE that although every care has been taken in compiling the above information, it is solely reliant upon data available to us at the date hereof. We believe the data to be correct, however for the reason just stated we are not in a position to warrant its accuracy. With that in mind and given that the full range of possibilities and conditions under which the information may be applied simply cannot be anticipated, YOU ARE CAUTIONED to make your own determinations as to the veracity and the suitability of the information to the particular circumstances that apply, or may apply, to you from time to time. Consistent with that approach it is recommended that where you have a particular purpose which would necessitate a reliance on information of the nature herein you obtain your own independent expert advice particularly structured to the relevant purpose. If this material is printed, circulated, distributed or copied in any manner, it is not to be modified without prior written permission, and further, it is to include the wording of the above disclaimer.
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End of MSDS



1. Identification of the substance/preparation and company/undertaking

Product name	Perfecto HT 12
SDS no.	453226
Use of the substance/mixture	Heat transfer fluid. For specific application advice see appropriate Technical Data Sheet or consult our company representative.
Supplier	Castrol India Ltd., Technopolis Knowledge Park Office, P. O. Box No. 19411 Mahakali Caves Road Chakala, Andheri (E) Mumbai - 400 093 India Telephone Number: +91 22 6698 4100 Fax Number: +91 22 66984543
EMERGENCY TELEPHONE NUMBER	Toll free: 000800 100 7479 (for use in India only - 24 hours) Carechem Singapore: +65 3158 1198 (24 hours)
E-mail address	MSDSadvice@bp.com

2. Hazards identification

This substance is not classified as dangerous according to Directive 67/548/EEC as amended and adapted.

Additional hazards Contact with hot product may cause burns.

See sections 11 and 12 for more detailed information on health effects and symptoms and environmental hazards.

3. Composition/information on ingredients

Highly refined base oil (IP 346 DMSO extract < 3%).

This product does not contain any hazardous ingredients at or above regulated thresholds.

4. First-aid measures

Eye contact	Cold product - Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain medical advice if any pain or redness develops or persists. Hot product - Flood with water to dissipate heat. In the event of any product remaining, do not try to remove it other than by continued irrigation with water. Obtain medical attention immediately.
Skin contact	Cold Product - Wash contaminated skin with soap and water. Remove contaminated clothing and wash underlying skin as soon as reasonably practicable. Hot Product - Flood skin with cold water to dissipate heat, cover with clean cotton or gauze, obtain medical advice immediately.
Inhalation	If inhaled, remove to fresh air. Get medical attention if symptoms appear.
Ingestion	Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
Notes to physician	Treatment should in general be symptomatic and directed to relieving any effects.

5. Fire-fighting measures

Extinguishing media	
Suitable	In case of fire, use foam, dry chemical or carbon dioxide extinguisher or spray.
Not suitable	Do not use water jet.
Hazardous decomposition products	Decomposition products may include the following materials: carbon dioxide carbon monoxide
Unusual fire/explosion hazards	In a fire or if heated, a pressure increase will occur and the container may burst. Oil soaked lagging may spontaneously ignite and should be replaced by fresh lagging as soon as possible. During use heat transfer oils may be thermally degraded leading to the formation of volatile hydrocarbons with flash points considerably lower than the original product. It is therefore essential that the system is not drained while hot unless an inert gas system is used to displace flammable gaseous residues. Adequate ventilation is essential during draining operations as hot oil will fume. The temperature at which spent product is drained is a compromise between the need to have the oil sufficiently hot to facilitate drainage, the need to avoid fuming and the dangers of fire from degraded oil with a low flash point. It is recommended therefore that spent oil is drained at a temperature of less than

100°C. During system filling and venting, care should be taken to ensure that hot oil is not pumped through the expansion tank. A failure to prevent this could, under certain conditions, lead to the creation of a flammable atmosphere in the expansion tank. As the expansion tank is being filled it is essential that the gases and vapours formed should be free to vent to an open atmosphere where they can quickly disperse. Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Special fire-fighting procedures

No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.

Protection of fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

6. Accidental release measures

Personal precautions - For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Floors may be slippery; use care to avoid falling. Put on appropriate personal protective equipment.

Personal precautions - For emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Large spill

Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor.

Small spill

Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Reference to other sections

See Section 1 for emergency contact information.
See Section 5 for firefighting measures.
See Section 8 for information on appropriate personal protective equipment.
See Section 12 for environmental precautions.
See Section 13 for additional waste treatment information.

7. Handling and storage

Handling - Protective measures

Put on appropriate personal protective equipment.

Handling - Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Storage

Store and use only in equipment/containers designed for use with this product. Keep away from heat and direct sunlight. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10).

Not suitable

Prolonged exposure to elevated temperature

8. Exposure controls/personal protection

Ingredient name

Occupational exposure limits

ACGIH TLVs

Base oil - unspecified

ACGIH (United States).

TWA: 5 mg/m³ 8 hour(s). Form: Mineral oil, mist

For information and guidance, the ACGIH values are included. For further information on these please consult your supplier.

Whilst specific OELs for certain components may be shown in this section, other components may be present in any mist, vapour or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Exposure controls

Occupational exposure controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits.

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.

Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.

The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

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Respiratory protection

Respiratory protective equipment is not normally required where there is adequate natural or local exhaust ventilation to control exposure.
In case of insufficient ventilation, wear suitable respiratory equipment.
Respiratory protective equipment must be checked to ensure it fits correctly each time it is worn.
Provided an air-filtering/air-purifying respirator is suitable, a filter for particulates can be used. Use filter type P or comparable standard.
Air-filtering respirators, also called air-purifying respirators, will not be adequate under conditions of oxygen deficiency (i.e. low oxygen concentration), and would not be considered suitable where airborne concentrations of chemicals with a significant hazard are present. In these cases air-supplied breathing apparatus will be required.
A combination filter for particles, organic gases and vapours (boiling point >65°C) may be required if mist or fume is present as well as vapour. Use filter type AP or comparable standard.
Approved air-supplied breathing apparatus must be worn where there is a risk of exceeding the exposure limit of carbon monoxide
Approved air-supplied breathing apparatus must be worn where there is a risk of exposure to hazardous combustion and thermal decomposition products.
Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Hand protection

Wear protective gloves if prolonged or repeated contact is likely.
Cold material: Wear chemical resistant gloves. Recommended: nitrile gloves.
Hot material: to prevent thermal burns wear heat resistant and impervious gauntlets/gloves.
The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Eye protection

Cold material: wear safety glasses with side shields.
Hot material: to prevent thermal burns wear a helmet, full face visor and heat resistant neck flap / apron.

Skin and body

Use of protective clothing is good industrial practice.
Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.

Thermal hazards

Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required. Wear impervious and heat resistant coveralls covering the full body and limbs.

Personal protective equipment (Pictograms)



9 . Physical and chemical properties

General information

Appearance

Physical state	Liquid.
Colour	Yellow.
Odour	Mild

Important health, safety and environmental information

Flash point	Closed cup: 245°C (473°F) [Pensky-Martens.]
Viscosity	Kinematic: 100 to 120 mm ² /s (100 to 120 cSt) at 40°C Kinematic: 11 mm ² /s (11 cSt) at 100°C
Pour point	-9 °C
Density	887 kg/m ³ (0.887 g/cm ³) at 15°C
Solubility	insoluble in water.
Partition coefficient (LogKow)	>3

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10 . Stability and reactivity

Stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous polymerisation will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	No specific data.
Materials to avoid	Reactive or incompatible with the following materials: oxidising materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Acute toxicity

Effects and symptoms

Eyes	Will cause burns if hot material contacts eyes.
Skin	Will cause burns if hot material contacts skin.
Inhalation	Vapour inhalation under ambient conditions is not normally a problem due to low vapour pressure. Overexposure to the inhalation of airborne droplets or aerosols may cause irritation of the respiratory tract.
Ingestion	Ingestion of large quantities may cause nausea and diarrhoea.

12 . Ecological information

Persistence/degradability	Biodegradable
Mobility	Spillages may penetrate the soil causing ground water contamination.
Bioaccumulative potential	This product is not expected to bioaccumulate through food chains in the environment.
Environmental hazards	Not classified as dangerous.
Other ecological information	Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

13 . Disposal considerations

Disposal considerations / Waste information	The generation of waste should be avoided or minimised wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
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Unused product

Waste code	Waste designation
13 03 07*	mineral-based non-chlorinated insulating and heat transmission oils

However, deviation from the intended use and/or the presence of any potential contaminants may require an alternative waste disposal code to be assigned by the end user.

14 . Transport information

Not classified as hazardous for transport (ADR/RID, ADNR, IMDG, ICAO/IATA)

15 . Regulatory information

Classification and labelling have been performed according to EU directives 1999/45/EC and 67/548/EEC as amended and adapted.

Label requirements

Risk phrases	This product is not classified according to EU legislation.
Other regulations	
REACH Status	The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.
United States inventory (TSCA 8b)	All components are listed or exempted.
Australia inventory (AICS)	All components are listed or exempted.
Canada inventory	All components are listed or exempted.
China inventory (IECSC)	All components are listed or exempted.
Japan inventory (ENCS)	All components are listed or exempted.
Korea inventory (KECI)	All components are listed or exempted.

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16 . Other information

History

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Date of previous issue No previous validation.

Prepared by Product Stewardship

Notice to reader

✔ Indicates information that has changed from previously issued version.

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.

APPENDIX B. REFERENCES

- 1 Request for Secretary's Environmental Assessment Requirements, Timber Panel Processing Facility (7 April 2014)
- 2 NSW Government Planning: Hazardous and Offensive Development Application Guidelines – Applying SEPP 33 (January 2011).
3. Borg Manufacturing: On Site Chemical List including DG (January 2016).
4. NSW Government, Work Cover: Borg Panels Pty Ltd – Acknowledgement of Notification of Dangerous Goods on Premises (November 2014).