

Risk and Hazard Assessment
Coca Cola PET Preform/Closure Manufacturing Plant
Rousell Road, Eastern Creek NSW

Report Number 30-2615-RHA-01

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Goodman Limited
Level 10
60 Castlereagh St
Sydney NSW 2000

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Risk and Hazard Assessment

Coca Cola PET Preform/Closure Manufacturing Plant

Rousell Road, Eastern Creek NSW

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DOCUMENT CONTROL

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30-2615-RHA-01	Revision 1	16 September 2010	David Bembrick	Nathan Redfern	Nathan Redfern
30-2615-RHA-01	Revision 0	15 September 2010	David Bembrick	Nathan Redfern	Nathan Redfern

EXECUTIVE SUMMARY

CCA proposes to build a PET Preform and Closure manufacturing plant located within the existing CCA Distribution Centre located at Rousell Road, Eastern Creek NSW. The facility will require approximately 7,500m² of space (expanding up to 10,000m²) including technical rooms, production lines and associated storage and staging of finished product.

The manufacturing process involves converting Polyethylene Terphthalate (PET) and High Density Polyethylene (HDPE) Resin Pellets into Preforms and Closures respectively.

This study evaluates potential hazards imposed by the proposed operation of the site on the surrounding environment and communities and makes recommendations on the relevant prevention/protection strategies necessary to minimise the impact and risk of human fatalities, property damage and environmental pollution. The study also investigates hazards and risks from existing land uses within the vicinity of the site.

The following incidents were identified and examined in the hazard analysis:

- Spill in Minor Chemical Storage Area
- Spill in the Ink Storage Area; and
- Fire involving spilled materials.

It is the conclusion of this Hazard Analysis that the proposed development meets all relevant safety requirements stipulated by the NSW Department of Planning and hence would not be considered to be an offensive or hazardous development.

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1 INTRODUCTION

Coca-Cola Amatil (CCA) proposes to build a PET Preform and Closure manufacturing plant located within the existing CCA Distribution Centre located at Rousell Road, Eastern Creek NSW.

This document presents a Risk and Hazard Assessment prepared in accordance with the Multi-Level Risk Assessment Guidelines stipulated in conducting such analysis. This assessment has been carried out in accordance with the Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (HIPAP 6) as stipulated by the NSW Department of Planning in conducting such studies.

This study evaluates potential hazards imposed by the proposed operation of the site on the surrounding environment and communities and makes recommendations on the relevant prevention/protection strategies necessary to minimise the impact and risk of human fatalities, property damage and environmental pollution. The study also investigates hazards and risks from existing land uses within the vicinity of the site.

2 OVERVIEW OF THE PROPOSED DEVELOPMENT

2.1 Proposed Development

CCA proposes to build a PET Preform and Closure manufacturing plant located within the existing CCA Distribution Centre located at Rousell Road, Eastern Creek NSW. The facility will require approximately 7,500m² of space (expanding up to 10,000m²) including technical rooms, production lines and associated storage and staging of finished product.

The manufacturing process involves converting Polyethylene Terphthalate (PET) and High Density Polyethylene (HDPE) Resin Pellets into Preforms and Closures respectively. The process includes the following steps:

1. Resin Delivery and Storage – PET and HDPE Resin Pellets arrive on-site in shipping containers and are loaded into a rotary valve up to the top of resin silos to be stored ready for use. Each delivery has a weight of 25 tonnes and the unloading process takes approximately one hour per shipping container.
2. Resin Blending – PET Resin Pellets are transferred via vacuum pipe work from the bottom of the silos into the Blending Room for blending with small amounts of recycled resin. The blended PET Resin is transferred by vacuum pipe work to the Resin Dryers in the Dryer Room.
3. Resin Drying – PET Resin Pellets are loaded into the Resin Dryers located in the Dryer Room and heated up to 170°C for 4-6 hours.
4. Injection Moulding – PET Resin Pellets are fed from the Resin Dryer into the Preform Injection Moulding Machine where the pellets are melted with heat and pressure into molten PET, which is injected into a steel mould to produce PET preforms and then packed into bins. HDPE Resin Pellets are fed from the storage silos to the Closure Injection Machine where the pellets are melted with heat and pressure into molten HDPE, which is injected into a steel mould to produce HDPE Closures and then packed into bins.
5. Warehousing – Preforms and Closures are transferred by conveyor into the warehouse and then stacked up to five bins high for storage.
6. Despatch – Preforms and Closures are transferred to the despatch area for transfer to Blowfill Bottling Operations in Australia, New Zealand, Papua New Guinea and Fiji as required.
7. Packaging Deliveries – empty bins are shipped back from Blowfill Bottling Operations to the Injection Moulding Plant.

A site plan is shown in Figure 1.

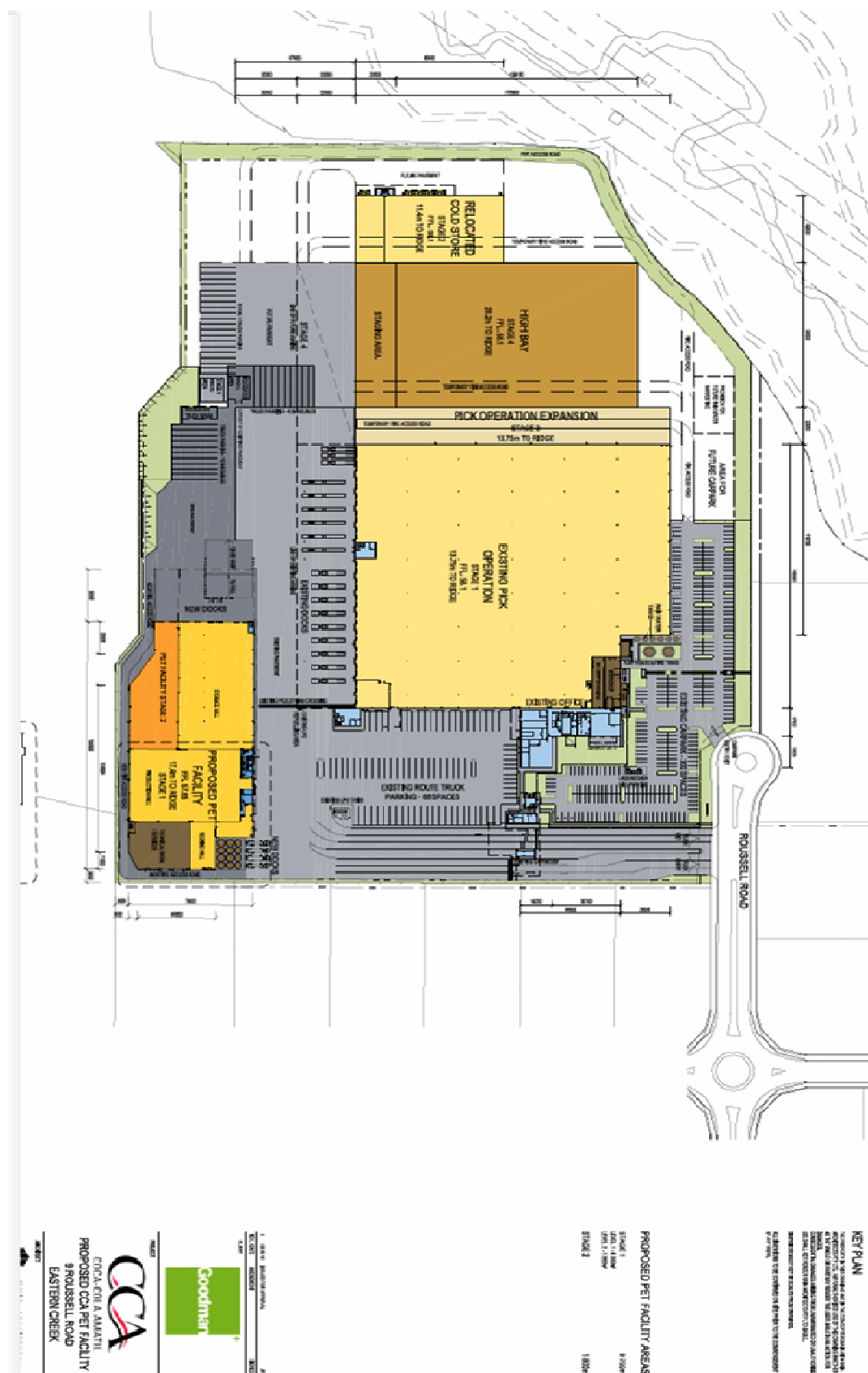


Figure 1 – Site Plan

2.2 Site Location

The site is located at Rousell Road, Eastern Creek NSW, refer to Figure 2.

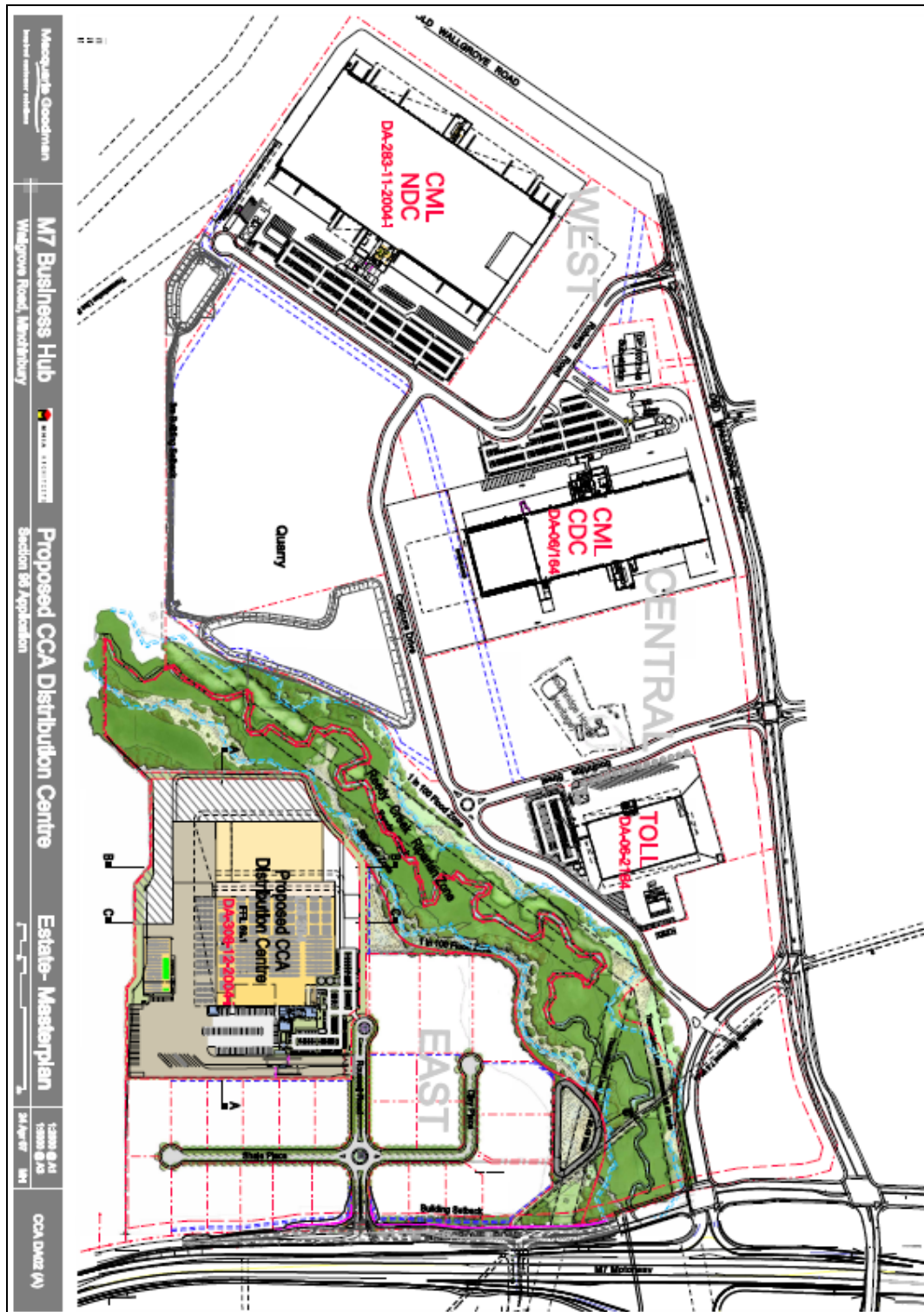


Figure 2 – Estate Masterplan

2.3 Surrounding Land Use

The proposed CCA injection moulding plant is contained within Zone 6 of the M7 Business Hub.

The residential suburb of Erskine Park is located west of the site. The M4 and M7 Motorway are to the north and east of the site respectively with the residential suburb of Minchinbury to the immediate north of the M4.

Sydney West Substation, further industrial areas and scattered residential properties are located to the south of the site. The nearest residence is approximately 500 metres to the south of the site.

The nearest residents located in Erskine Park to the west, Minchinbury to the north and residences off Burley Road, Horsley Park to the south.

2.4 Nearest Natural Waterway

The nearest natural waterway, Reedy Creek, is located approximately 50 m from the western site boundary.

2.5 Proposed Hours of Operation

The processes are continuous therefore the proposed hours of operation of the site would be 24 hours a day, 7 days a week.

2.6 Site Access

The site is accessed via a driveway from Rousell Road.

2.7 Vehicular Movements

The following vehicles movements would be required by the operation of the Injection Moulding Plant:

- Pan Trucks for Deliveries to Northmead (NSW) – 6 trucks per day
- B-Doubles for interstate deliveries – 10 trucks per day
- 40' Shipping Containers for overseas deliveries – 8-10 deliveries per week
- 20' Shipping Containers for bulk PET and HDPE Resin Deliveries – 7 deliveries per day
- Small trucks for chemicals, spare parts and miscellaneous items – 1-2 deliveries per day

2.8 Dangerous Goods Management

Small amounts of cleaning agents, solvents, greases will be required, these materials would be stored in dangerous goods storage cabinets and the total volume would not exceed 200L.

A sealed mechanically ventilated Ink Storage Room will be built for the storage of UV Inks used in the printing of closures. The inks are high viscosity and low flash point products. The Ink Storage Room would be designed in accordance with AS1940-2004 *The storage and handling of flammable and combustible liquids*. The total volume of inks stored would not exceed 200L.

The bulk PET and HDPE resins as well as the finished Preforms and Closures are not considered as dangerous goods. Hydraulic Oil, which would also not be considered a dangerous good would also be stored and handled on-site.

The Material Safety Data Sheets (MSDSs) of the chemicals to be used in the proposed development are included as Appendix A

3 HAZARD IDENTIFICATION

A Preliminary Hazard Analysis (PHA) is not required based on the document *Applying SEPP33*. An environmental hazard analysis has been undertaken that examines environmental aspects and safeguard measures that will be needed to reduce the risk of environmental harm to a negligible level. Hazard identification charts have been prepared. These charts identify possible events that could occur which could result in a pollution incident and risk to the environment.

3.1 Hazard Identification Charts

Hazard Identification Charts have been prepared for the following operating scenarios that are relevant to the proposed development:

- Resin Delivery and Storage
- Resin Blending
- Resin Drying
- Injection Moulding
- Warehousing
- Despatch
- Packaging Deliveries
- Minor Chemical Storage
- Ink Storage
- Off-site (external)

Each chart consists of four columns:

Column 1 - Functional/operation area

The area of the Site involved with the potential event is listed, e.g. Resin Delivery and Storage.

Column 2 - Possible initiating event

The individual events that are considered to be likely or realistic are then listed. Where the possible consequences are similar the events are listed together, each one individually numbered.

Column 3 - Possible consequences

The outcomes of an event if it occurred are listed, eg. Release of vapour finds a source of ignition and causes a flash fire or BLEVE.

Column 4 - Prevention/protection measures

The measures designed into the functional/operation area and the Site are listed. These measures may include for example safeguards, design features, management methods and/or operator training.

Table 1 – Hazard Identification Word Diagram

Functional/Operational Area	Possible Event	Initiating	Possible Consequences	Prevention/Protection Measures
Resin Delivery and Storage Resin Blending Resin Drying Warehousing Despatch Packaging Deliveries	Spill of PET or HDPE Pellets Release of molten PET or HDPE Spill of Hydraulic Oil (non-dangerous good) Chemical spill Spark from ignition source Electrical fault Fire from adjacent site/area Vandalism		Watercourse pollution via drainage Employee exposure to molten material causing burns Employee exposure to oil or chemicals Ignition of combustible material (eg. cardboard) Localised Fire Possible Escalation to other areas of the site Pollution via fire fighting water Fire spreading to adjoining properties	Management procedures ensure spills are cleaned using spill kit, shovel or industrial vacuum Spill guards fitted to all stormwater drains to prevent off-site pollution Employees provided with appropriate PPE including dust coats, face shields and heat gloves when operating machines Sprinkler system and fire extinguishers installed to contain fires Management procedures to ensure no accumulation of combustible material Site Security Emergency preparedness and evacuation procedures First aid and fire wardens on-site
Minor Chemical Storage	Spark from ignition source Electrical fault Fire from adjacent site/area Vandalism Chemical spill Spill of flammable or combustible liquid		Employee exposure to chemicals Ignition of combustible material (eg. cardboard) Spilled material forms a vapour. Vapour impacts on personal health and safety. Material finds an ignition source resulting in a fire Localised Fire Possible Escalation to other areas of the site Pollution via fire fighting water Watercourse pollution via drainage Fire spreading to adjoining properties	Management procedures ensure spills are cleaned using spill kit Management procedures to ensure no accumulation of combustible material Storage cabinets designed in accordance with Australian Standards Employees provided with appropriate PPE including dust coats, face shields and heat gloves when handling chemicals No smoking/ignition sources in the vicinity of flammable or combustible liquid storage or use Sprinkler system and fire extinguishers installed to contain fires Site Security Emergency preparedness and evacuation procedures Site spill containment to prevent off-site pollution First aid and fire wardens on-site

Functional/Operational Area	Possible Event	Initiating	Possible Consequences	Prevention/Protection Measures
Ink Storage	Spark from source Electrical fault Fire from adjacent site/area Vandalism Chemical spill Spill of flammable or combustible liquid	ignition	Employee exposure to ink Ignition of combustible material (eg. cardboard) Spilled material forms a vapour. Vapour impacts on personal health and safety. Material finds an ignition source resulting in a fire Localised Fire Possible Escalation to other areas of the site Pollution via fire fighting water Watercourse pollution via drainage Fire spreading to adjoining properties	Management procedures ensure spills are cleaned using spill kit Containers sealed when not in use Management procedures to ensure no accumulation of combustible material All storage of flammable and combustible liquids in accordance with Australian Standards Employees provided with appropriate PPE including dust coats, face shields and heat gloves when handling inks No smoking/ignition sources in the vicinity of flammable or combustible liquid storage or use Sprinkler system and fire extinguishers installed to contain fires Site Security Emergency preparedness and evacuation procedures First aid and fire wardens on-site
Off-site (External)	Chemical spill at nearby facility Fire or explosion at nearby facility		Ignition of combustible material (eg. cardboard) Spilled material forms a vapour. Vapour impacts on personal health and safety. Material finds an ignition source resulting in a fire Localised Fire Possible Escalation to other areas of the site Pollution via fire fighting water Watercourse pollution via drainage	Management procedures to ensure no accumulation of combustible material All storage of flammable and combustible liquids in accordance with Australian Standards Sprinkler system and fire extinguishers installed to contain fires Site Security Emergency preparedness and evacuation procedures Site spill containment to prevent off-site pollution First aid and fire wardens on-site

3.2 Hazardous Incidents Identified For Further Discussion

Following a review of the Hazard Identification Charts in Section 3.1, a series of potentially hazardous events or scenarios were considered to require a comprehensive qualitative analysis. Each event or scenario shall be discussed in detail and the need for a further quantitative analysis considered.

The following were identified and examined.

- Spill in Minor Chemical Storage Area
- Spill in the Ink Storage Area; and
- Fire involving spilled materials.

3.3 Spillage in the Minor Chemical Storage Area

Only minor quantities of dangerous goods would be handled and stored for regular cleaning and maintenance tasks. Any dangerous goods would be stored in accordance with relevant Australian Standards. In the event a spill of material did occur the spill would be immediately cleaned up and the source identified.

Hence, considering the safeguards in place, environmental contamination due to a spill on site is considered unlikely and is not considered further.

3.4 Spillage in the Ink Storage Area

The Ink Storage Area would be designed in accordance with relevant Australian Standards. In the event a spill of material did occur the spill would be immediately cleaned up and the source identified.

Hence, considering the safeguards in place, environmental contamination due to a spill on site is considered unlikely and is not considered further.

3.5 Fire

A fire in a chemical storage area is considered an unlikely event. A strict control of ignition sources would operate in these areas, including a hot work permit system. No smoking would be permitted in the vicinity of the chemical storage.

Management practices would ensure accumulation of combustible materials, such as packaging and pallets do not accumulate within the production or storage areas.

Hence, considering the safeguards in place, a fire on site is considered unlikely and is not considered further.

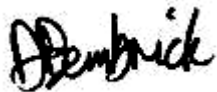
3.6 Concluding Remarks

It is considered that the operations of the proposed development with the safeguards as stipulated would not cause significant off site risks. The development and associated activities are not considered to be a hazardous development.

4 CONCLUSION

The Hazard Analysis has found that the operation of the proposed would not cause any risk, significant or minor, to the community. Furthermore, the site's proposed operations are not an offensive or hazardous industry based on applying the NSW Department of Planning guidelines.

It is the conclusion of this Hazard Analysis that the proposed development meets all relevant safety requirements stipulated by the NSW Department of Planning and hence would not be considered to be an offensive or hazardous development.



David Bembrick *BE (Chem) (Hons.) MIEAust*

Senior Consultant

5 CLOSURE

This report has been prepared by Heggies Pty Ltd with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Goodman Limited; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from Heggies.

Heggies disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

Material Safety Data Sheets

The following MSDSs of products to be used in the proposed development are attached:

- 1 Polyethylene Terphthalate (PET)
- 2 High Density Polyethylene (HDPE)
- 3 Printing Ink
- 4 Hydraulic Oil (Shell Tellus Oil 46)

1

INDORAMA POLYMERS PUBLIC COMPANY LIMITED
MATERIAL SAFETY DATA SHEET

PRODUCT NAME : RAMAPET N1, RAMAPET N2, RAMAPET N3, RAMAPET N1S, RAMAPET S1, RAMAPET S2,
RAMAPET S3 , RAMAPET S4, RAMAPET H1, RAMAPET R1

SECTION I	NAME
PRODUCT :	RAMAPET
CHEMICAL NAME :	POLYETHYLENE TEREPHTHALATE (PET)
CHEMICAL FAMILY :	COPOLYMER RESIN
CHEMICAL FORMULA :	(C ₁₀ H ₈ O ₄) _n
PRODUCT CODE :	N1, N2, N3, N1S, S1, S2, S3, S4, H1, R1
MANUFACTURER :	INDORAMA
	PHONE NUMBER : +66 2 681 6661
SECTION II	TOXICOLOGICAL INFORMATION
SPECIFIC TOXICITY TESTS HAVE NOT BEEN CONDUCTED ON THIS PRODUCT. OUR HAZARD EVALUATION IS BASED ON INFORMATION FROM SIMILAR PRODUCTS, THE INGREDIENTS, TECHNICAL LITERATURE, AND/OR PROFESSIONAL EXPERIENCE.	
NO COMPONENT OF THIS PRODUCT PRESENT AT LEVELS GREATER THAN 0.1% IS IDENTIFIED AS CARCINOGEN BY THE U.S. NATIONAL TOXICOLOGY PROGRAM, THE U.S. OCCUPATIONAL SAFETY AND HEALTH ACT, OR THE INTERNATIONAL AGENCY ON RESEARCH ON CANCER (IARC).	
SECTION III	HEALTH INFORMATION
THE HEALTH EFFECTS BELOW ARE BASED UPON COMPONENT HEALTH EFFECTS CONSISTENT WITH REQUIREMENTS UNDER OSHA HAZARD COMMUNICATION (29 CFR 1910.1200).	
EYE CONTACT :	PRODUCT FINES CAN CAUSE MECHANICAL IRRITATION.
SKIN CONTACT :	PRODUCT IS UNLIKELY TO CAUSE IRRITATION.
INHALATION :	PRODUCT FINES MAY CAUSE MECHANICAL IRRITATION.
INGESTION :	PRODUCT IS PRACTICALLY NON - TOXIC.
SIGNS AND SYMPTOMS :	IRRITATION AS NOTED ABOVE.
AGGRAVATED MEDICAL CONDITIONS :	PRE EXISTING EYE AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO PRODUCT FINES.
SECTION IV	EMERGENCY AND FIRST AID PROCEDURES
EYE CONTACT :	FLUSH EYES WITH WATER IF IRRITATION OCCURS . IF MOLTEN MATERIAL CONTACTS WITH EYE, IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES AND GET MEDICAL ATTENTION IMMEDIATELY.
SKIN CONTACT :	IF CONTACT WITH MOLTEN PRODUCT OCCURS , TREAT AS FOR THERMAL BURN .
INHALATION :	NOT ORDINARILY REQUIRED
INGESTION :	NOT ORDINARILY REQUIRED
NOTE TO PHYSICIAN :	BURNS SHOULD BE TREATED AS THERMAL BURNS. THE MATERIAL WILL COME OFF AS HEALING OCCURS, THEREFORE, IMMEDIATE REMOVAL FROM SKIN IS NOT NECESSARY.

INDORAMA POLYMERS PUBLIC COMPANY LIMITED
MATERIAL SAFETY DATA SHEET

PRODUCT NAME : RAMAPET N1, RAMAPET N2, RAMAPET N3, RAMAPET N1S, RAMAPET S1, RAMAPET S2, RAMAPET S3, RAMAPET S4, RAMAPET H1, RAMAPET R1

SECTION V PHYSICAL DATA	
BOILING POINT :	NOT APPLICABLE
SPECIFIC GRAVITY(H ₂ O=1) :	1.3 - 1.5
VAPOR PRESSURE :	NOT APPLICABLE
MELTING POINT (°C) :	245 - 265
SOLUBILITY (IN WATER) :	INSOLUBLE
VAPOR DENSITY (AIR=1) :	NOT APPLICABLE
EVAPORATION RATE :	NOT APPLICABLE
PHYSICAL FORM :	SOLID
ODOR :	ODORLESS
COLOR :	VARIES WITH FORMATION
SECTION VI FIRE AND EXPLOSION HAZARD	
FLASH POINT & METHOD :	NOT APPLICABLE
FLAMMABLE LIMITS / % VOLUME IN AIR :	LOWER : NOT APPLICABLE UPPER : NOT APPLICABLE
EXTINGUISHING MEDIA :	USE WATER FOG , FOAM , DRY CHEMICAL , OR CO2
SPECIAL FIRE FIGHTING PROCEDURE AND PRECAUTIONS :	MATERIAL WILL NOT BURN UNLESS PREHEATED. DO NOT ENTER CONFINED FIRE SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS), INCLUDING A POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER.
UNUSUAL FIRE AND EXPLOSION HAZARD :	HIGH DUST CONCENTRATIONS HAVE A POTENTIAL FOR COMBUSTION OR EXPLOSION. TREAT AS A SOLID THAT CAN BURN. MOLDED PARTS GENERALLY BURN SLOWLY WITH A LOW SMOKE DENSITY AND FLAMING DRIPS. UNDER CERTAIN CONDITIONS CAN BURN WITH A HIGH SMOKE DENSITY.
EXPOSURE LIMITS :	PERMISSIBLE EXPOSURE LIMIT (PEL) AND THRESHOLD LIMIT VALUE (TLV)- NOT ESTABLISHED, HOWEVER , VENTILATION ADEQUATE TO MAINTAIN LESS DUST CONCENTRATION (~10 AIR CHANGES / HOUR) SHOULD BE MAINTAINED.
SECTION VII REACTIVITY	
STABILITY :	STABLE
HAZARDOUS POLYMERIZATION :	WILL NOT OCCUR.
CONDITIONS AND MATERIAL TO AVOID :	STRONG OXIDIZING AGENTS.
HAZARDOUS DECOMPOSITION PRODUCTS :	AT PROCESSING TEMPERATURE, SOME DEGREE OF THERMAL DEGRADATION WILL OCCUR , ALTHOUGH HIGHLY DEPENDENT ON THE TEMPERATURE AND ENVIRONMENTAL CONDITIONS, A VARIETY OF DECOMPOSITION PRODUCTS MAY BE PRESENT RANGING FROM SIMPLE HYDROCARBONS TO TOXIC / IRRITATION GASES.

INDORAMA POLYMERS PUBLIC COMPANY LIMITED
MATERIAL SAFETY DATA SHEET

PRODUCT NAME : RAMAPET N1, RAMAPET N2, RAMAPET N3, RAMAPET N1S, RAMAPET S1, RAMAPET S2,
RAMAPET S3 , RAMAPET S4, RAMAPET H1, RAMAPET R1

SECTION VIII EMPLOYEE PROTECTION	
RESPIRATORY PROTECTION :	NOT ORDINARILY REQUIRED.
PROTECTIVE CLOTHING	NOT ORDINARILY REQUIRED.
ADDITIONAL PROTECTIVE MEASURES :	ADEQUATE VENTILATION AND / OR ENGINEERING CONTROL'S ARE REQUIRED WHEN PRODUCT IS HEATED IN PROCESSING.
SECTION IX ENVIRONMENTAL PROTECTION	
SPILL OR LEAK PROCEDURES :	SHOVEL AND SWEEP UP OR USE INDUSTRIAL VACUUM CLEANER , AVOID GENERATING DUST CLOUDS . PUT INTO CONTAINERS FOR RECLAIMING OR DISPOSAL.
SECTION X SPECIAL PRECAUTIONS	
TREAT AS A SOLID THAT CAN BURN . STORE AWAY OXIDIZING MATERIALS, IN A COOL, DRY PLACE WITH ADEQUATE VENTILATION. BOND AND GROUND TRANSFER EQUIPMENT.	
AVOID VAPORS FROM HEATED PRODUCTS. ADEQUATE VENTILATION AND / OR ENGINEERING CONTROLS MUST BE EMPLOYED IN HIGH TEMPERATURE PROCESSING TO PREVENT EXPOSURE TO POTENTIALLY TOXIC/IRRITATING FUMES.	
SECTION XI TRANSPORTATION INFORMATION	
DOT (USA) STATUS :	NOT REGULATED.
CANADIAN TRANSPORTATION OF DANGEROUS GOODS	NOT REGULATED.
EUROPEAN ROAD/RAIL (ADR/RID)	NOT REGULATED.
AIR : ICAO (INTERNATIONAL CIVIL AVIATION ORGANIZATION)	NOT REGULATED.
SEA : IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)	NOT REGULATED.
SECTION XII HANDLING AND STORAGE	
HANDLING:	AVOID EXTREME CONDITIONS OF HEAT AND HUMIDITY. AVOID BUILD UP OF STATIC ELECTRICITY. PELLET HANDLING EQUIPMENT SHOULD BE GROUNDED TO PREVENT BUILDUP OF ELECTROSTATIC CHARGE. USE WITH ADEQUATE VENTILATION. AVOID DUST ACCUMULATION.
STORAGE:	KEEP CONTAINER CLOSED. PELLETS ON THE FLOOR MAY BE SLIPPERY AND CAUSE FALLS. STORE IN BOXES IN ACCORDANCE WITH GOOD MATERIALS-HANDLING PRACTICES.

INDORAMA POLYMERS PUBLIC COMPANY LIMITED
MATERIAL SAFETY DATA SHEET

PRODUCT NAME : RAMAPET N1, RAMAPET N2, RAMAPET N3, RAMAPET N1S, RAMAPET S1, RAMAPET S2,
RAMAPET S3 , RAMAPET S4, RAMAPET H1, RAMAPET R1

SECTION XIII	OTHER REGULATION CONTROLS
THE COMPONENTS OF THIS PRODUCT ARE LISTED ON THE IPA / TSCA INVENTORY OF CHEMICAL SUBSTANCES	
PROTECTION OF STRATOSPHERIC OZONE (PURSUANT TO SECTION 611 OF THE CLEAN AIR ACT AMENDMENTS OF 1990) : PER 40 CFR PART 82, THIS PRODUCT DOES NOT CONTAIN NOR WAS IT DIRECTLY MANUFACTURED WITH ANY CLASS I OR CLASS II OZONE DEPLETING SUBSTANCES.	
CALIFORNIA PROPOSITION 65 (SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986) : MATERIAL(S) KNOWN TO THE STATE TO CAUSE CANCER OR MATERIAL(S) KNOWN TO THE STATE TO CAUSE ADVERSE REPRODUCTIVE EFFECTS : NONE	
THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE MSDS REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200.	
SECTION XIV	OTHER INFORMATION
FOR OTHER INFORMATION, CALL INDORAMA OPERATOR AT +66 2 6616661	

☐ THE INFORMATION CONTAINED HEREIN IS BASED ON CURRENT KNOWLEDGE AND EXPERIENCE; NO RESPONSIBILITY IS ACCEPTED THAT THE INFORMATION IS SUFFICIENT OR CORRECT IN ALL CASES.

☐ USERS SHOULD CONSIDER THESE DATA ONLY AS SUPPLEMENT TO OTHER INFORMATION GATHERED BY THEM. THEY MUST MAKE INDEPENDENT DETERMINATIONS OF SUITABILITY AND COMPLETENESS OF INFORMATION FROM ALL SOURCES TO ASSURE PROPER USE AND DISPOSAL OF THESE MATERIALS FOR THE SAFETY AND HEALTH OF EMPLOYEES AND CUSTOMERS AND THE PROTECTION OF THE ENVIRONMENT. IT IS THE USERS OBLIGATION TO COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS.

☐ NO STATEMENT MADE IN THIS DATA SHEET SHALL BE CONSTRUCTED AS A PERMISSION OR RECOMMENDATION FOR THE USE ANY PRODUCT IN A MANNER THAT MIGHT INFRINGE EXISTING PATENTS. NO WARRANTY IS MADE EITHER EXPRESS OR IMPLIED.

DATE REVISED : MARCH 2005

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PTT Chemical Public Company Limited

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Chomphon, Chatuchak, Bangkok 10900, Thailand
Tel. +66 (0) 2265 8400 Fax. +66 (0) 2265 8500

MATERIAL SAFETY DATA SHEET

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product: InnoPlus HDPE (All grades except HDPE compound)
Chemical Name and Synonyms: High Density Polyethylene
CAS No.: 9002-88-4
Formula: $(CH_2-CH_2)_n$
Company Identification/Supplier:
- PTT Chemical Public Company Limited
14 I-1 Road, Tambon Map Ta Phut, Amphoe
Mueang Rayong, Rayong 21150, Thailand
- Bangkok Polyethylene Public Company Limited
Maptaphut Industrial Estate 4-110 Rd.,
Maptaphut, Muang, Rayong 21150 Thailand
Emergency Telephone No: +66(0)-3892-1191

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	AMOUNT
Polyethylene	9002-88-4	< 100% weight
Additive	Various	< 3% weight

NOTE:

This product is not considered a hazardous material at temperatures below the melting point as determined in Section 9.

SECTION 3 – HAZARDS IDENTIFICATION

PHYSICAL/CHEMICAL HAZARDS:

This product has been evaluated and does not require any hazard warning on the label under established regulatory criteria. High dust concentrations have a potential for combustion or explosion.

HUMAN HEALTH HAZARDS:

Not classified as dangerous. Handling and/or processing of this material may generate dust which may cause mechanical irritation of the eyes, skin, nose and throat.

ENVIRONMENTAL HAZARDS:

Not classified as dangerous.



EFFECTS AND SYMPTOMS:**Eyes**

No significant irritation expected other than possible mechanical irritation. Heated material can cause thermal burns. When heated to decomposition it emits acid smoke and irritating fumes.

Skin

No significant irritation expected other than possible mechanical irritation. Heated material can cause thermal burns.

Inhalation

Dust: Exposure to airborne concentrations well above the recommended exposure limits may cause irritation of the nose, throat, and lungs.

Vapor: If heated to more than 300°C, the product may form vapors or fumes which could cause irritation of the respiratory tract, coughing, and shortness of breath.

Ingestion

No significant health hazards identified.

SECTION 4 – FIRST AID MEASURES**EYE CONTACT**

Flush eyes with running water immediately while holding the eyelids open. Remove contact lens, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get medical attention.

SKIN CONTACT

Molten resin: If molten material comes in contact with the skin, cool under ice water or running stream of water. Do not attempt to remove the material from the skin. Remove could result in severe tissue damage. Get medical attention.

INGESTION

If swallowed, do not induce vomiting. Give a person a glass of water or milk to drink and get immediate medical attention. Never give anything by mouth to an unconscious person.

INHALATION

Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.

SECTION 5 – FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING AGENTS: Water haze, Foam, Chemical powder.

FOR SAFETY REASONS UNSUITABILITY EXTINGUISHING AGENTS: Water jet.

SPECIAL HAZARDS:

Caused by the material, its product of combustion or resulting gases: In case of fire it can release: Water (H₂O), Carbon dioxide (CO₂), and when lacking oxygen (O₂), Carbon monoxide (CO). The products of the burning are dangerous.

PROTECTIVE EQUIPMENT:

Use a mask with universal filler. Use self-contained breathing apparatus within confined rooms.

SECTION 6 – ACCIDENTAL RELEASE MEASURE

PROTECTIVE MEASURES: Eliminate all sources of ignition in vicinity of spilled material. Wear appropriate personal protective equipment when cleaning up spills.

SPILL MANAGEMENT: Avoid creating dust clouds. Shovel, sweep up or use industrial vacuum cleaner to pick up. Place in container for proper disposal. Reduce airborne dust and prevent scattering by moistening with water. Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. If heated material is spilled, allow it to cool before proceeding with disposal method.

SECTION 7 – HANDLING AND STORAGE

INFORMATION FOR SAFE HANDLING:

No special requirements necessary, if handled at room temperature.

Avoid spilling the product, as this might cause falls.

Potential toxic/irritating fumes may be evolved from heated material.

Provide appropriate ventilation for such processing conditions.

Take precautionary measures against explosion risks, as all types of polymers may develop dust during transporting or grinding of granules.

REQUIREMENTS TO BE MET BY STOREROOMS AND CONTAINERS:

Take precautionary measures to prevent the formation of static electricity.

Do not smoke.

Ground equipment electrically.

INFORMATION ABOUT STORAGE IN ONE COMMON STORAGE FACILITY:

Not required.

FURTHER INFORMATION ABOUT STORAGE CONDITIONS:

Protect from heat and direct sunlight.

Store under dry conditions.

SPECIFIC APPLICATIONS:

For safe stacking follow the storage recommendations specific for this product.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Use in a well-ventilated area. If handling results in dust generation, special ventilation may be needed to ensure that dust exposure does not exceed the OSHA PEL for nuisance dust. If heated material generates vapor or fumes, use process enclosures, local exhaust ventilation, or other engineering controls to control exposure.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory system

Product processing, heat sealing of film or operations involving the use of wires or blades heated above 300°C may produce dust, vapor or fumes. To minimize risk of overexposure to dust, vapor or fumes it is recommended that a local exhaust system is placed above the equipment, and that the working area is properly ventilated.

If ventilation is inadequate, use certified respirator that will protect against dust/mist.

Skin and body

Hot material: Wear heat-resistant protective gloves, clothing and face shield able to withstand the temperature of the molten product.

Cold material: None required; however, use of gloves is good industrial practice.

Hand

Hot material: Wear heat-resistant protective gloves able to withstand the temperature of the molten product. Cold material: None required; however, use of gloves is good industrial practice.

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 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.

Eyes

Safety glasses with side shields. Use dust goggles if high dust concentration is generated.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Pellets.
ODOR:	Slight waxy odor.
COLOR:	Translucent to white.
FREEZING POINT:	Not Applicable.
MELTING POINT:	125 – 135 °C
BOILING POINT:	Not Applicable.
FLASH POINT:	Not Applicable.
DENSITY:	0.945 – 0.970 g/cm ³
SPECIFIC GRAVITY:	Not Applicable.
AUTOIGNITION TEMPERATURE:	350°C
EXPLOSIVE PROPERTIES	High dust concentrations have a potential for combustion or explosion
PERCENT VOLATILE:	Not Applicable.
VAPOR PRESSURE:	Not Applicable.
WATER SOLUBILITY:	Insoluble.

SECTION 10 – STABILITY AND REACTIVITY**CHEMICAL STABILITY:**

This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

CONDITIONS TO AVOID: Not Applicable.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:

Low molecular weight hydrocarbon, carbon dioxide, carbon monoxide, unidentified organic compounds.

SECTION 11 – TOXICOLOGICAL INFORMATION

PRIMARY IRRITANT EFFECT:

ON THE SKIN: No irritant effect.

ON THE EYES: No irritant effect.

SENSITIZATION: No sensitizing effect known.

ADDITIONAL TOXICOLOGICAL INFORMATION:

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

SECTION 12 – ECOLOGICAL INFORMATION

MOBILITY AND BIOACCUMULATION POTENTIAL:

Floats on water. There is no bioaccumulation.

OTHER INFORMATION:

This product is not biodegradable.

GENERAL NOTES:

The product is not toxic, small particles can have physical effects on water and Soil organisms.

SECTION 13 – DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATION/WASTE INFORMATION:

Recycle to process, if possible. Avoid contact of spilled material and runoff with soil and surface waterways. Consult an environmental professional to determine if local, regional or national regulations would classify spilled or contaminated materials as hazardous waste.

Use only approved transporters, recyclers, treatment, storage or disposal facilities.

Dispose of in accordance with all applicable local and national regulations.

SECTION 14 – TRANSPORT INFORMATION

TRANSPORT/ADDITIONAL INFORMATION:

According to national and international guidelines, which regulate the road-, rail-, air- and sea-transport, this product is classified as not dangerous.

SECTION 15 – REGULATION INFORMATION

U.S. Federal Regulations;	US INVENTORY (TSCA)	: In compliance.
Inventories;	AUSTRALIAN INVENTORY (AICS)	: In compliance.
	CANADA INVENTORY (DSL)	: In compliance.
	CHINA INVENTORY (IECS)	: In compliance.
	EC INVENTORY (EINECS)	: In compliance.
	JAPAN INVENTORY (ENCS)	: In compliance.
	KOREA INVENTORY (ECL)	: In compliance.

SECTION 16 – OTHER INFORMATION

Date of issue:	Feb-2008
Prepare by:	Technical Support, Polymer VC, PTT Chemical PLC.
NOTICE:	This Material Data Sheet has been based upon data considered to be accurate at the time of its preparation. Despite our efforts, it may not be up to date or applicable to the circumstances of any particular case. We take no responsibility for inappropriate use, processing and handling by purchasers and users of the product.

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Material Safety Data Sheet

according to the Regulation 1907/2006/EC (Annex II)

Product Name: RDF-SERIE
Date: 26.09.2008

Revision date: 26.09.2008

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

Product Name and Code: RDF-SERIE

Use of the substance/preparation

Printing ink/
-lacquer

Name of the company: Tampoprint AG

Lingwiesenstr. 1
D-70825 Korntal-Münchingen

Phone: ++49.7150.928 0
Fax: ++49.7150.928 400
E-Mail: info@tampoprint.de
Internet: www.tampoprint.de

Emergency call: ++49.7150.928.0 (8.00 - 16.00h)

2. HAZARDS IDENTIFICATION

Danger classification

10 Flammable.
67 Vapours may cause drowsiness and dizziness.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical family

Solvent containing pigment dispersion
on resin basis

Substances presenting a health or environmental hazard

EINECS-No.	Names	Symb.	Conc.
CAS-No.	R-phrases		
215-535-7	xylylene, mixture of isomers	Xn	2,5 - 10
1330-20-7	10-20/21-38		
203-631-1	cyclohexanone	Xn	2,5 - 10
108-94-1	10-20		
204-658-1	n-butyl acetate		2,5 - 10
123-86-4	10-66-67		
259-370-9	propylene glycol monoethyl acetate		25 - 50
54839-24-6	10-67		

See full text of phrases under chapter 16.

4. FIRST AID MEASURES

General

In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Inhalation

Remove to fresh air, keep patient warm and at rest, if breathing is irregular or stopped, administer artificial respiration. Give nothing by mouth. If unconscious place in recovery position and seek medical advice.

Eye contact

Remove contact lenses, irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart and seek medical advice.

Skin contact

Remove contaminated clothing. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do **not** use solvents

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Product Name: RDF-SERIE
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or thinners.

Ingestion

If accidentally swallowed obtain immediate medical attention. Keep at rest. Do **not** induce vomiting.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Recommended: alcohol resistant foam, CO₂, powders, waterspray.

Not to be used: waterjet.

Recommendations

Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard. Appropriate breathing apparatus may be required. Cool closed containers exposed to fire with water. Do not allow run-off from fire fighting to enter drains or water courses.

6. ACCIDENTAL RELEASE MEASURES

Exclude sources of ignition and ventilate the area. Avoid breathing vapours. Refer to protective measures listed in sections 7 and 8.

Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13). Do not allow to enter drains or watercourses. Clean preferably with a detergent; avoid use of solvents. If the product contaminates lakes, rivers or sewages, inform appropriate authorities in accordance with local regulations.

7. HANDLING AND STORAGE

Handling

Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. In addition, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Electrical equipment should be protected to the appropriate standard. Preparation may charge electrostatically: always use earthing leads when transferring from one container to another. Operators should wear antistatic footwear and clothing and floors should be of the conducting type. Keep container tightly closed. Isolate from sources of heat, sparks and open flame. No sparking tools should be used.

Avoid skin and eye contact. Avoid inhalation of dust, particulates and spray mist arising from the application of this preparation. Smoking, eating and drinking should be prohibited in application area. For personal protection see Section 8. Never use pressure to empty; container is not a pressure vessel. Always keep in containers of same material as the original one. Comply with the health and safety at work laws.

Storage

Although the storage and use of this product is not subject to specific statutory requirements, observation of the principles of the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations as appropriate will be seen as good industrial practice in meeting the general duties of the Health and Safety at Work Act. Observe label precautions. Store between 5 and 40 °C in a dry, well ventilated place away from sources of heat and direct sunlight. Keep away from sources of ignition. Keep away from oxidizing agents, from strongly alkaline and strongly acid materials. No smoking. Prevent unauthorized access. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL, suitable respiratory protection must be worn.

Exposure Limits

Occupational exposure limit for :

EINECS-No. CAS-No.	Names	STEL	LTEL
215-535-7 1330-20-7	xylene, mixture of isomers	662 150	441 mg/m3 100 ppm
203-631-1 108-94-1	cyclohexanone	408 100	102 mg/m3 25 ppm
204-658-1 123-86-4	n-butyl acetate	966 200	724 mg/m3 150 ppm

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Personal Protection

Respiratory protection

If workers are exposed to concentrations above the exposure limit they must use appropriate, certified respirators.

Hand protection

For prolonged or repeated handling, use butyl rubber gloves. Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred.

Eye protection

Use safety eyewear designed to protect against splash of liquids.

Skin protection

Personnel should wear anti-static clothings made of natural fibre or of high temperature resistant synthetic fiber.

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

appearance: pasteous

color: as labeled

odour: typical

Important health, safety and environmental information

Flash point: 25 °C DIN 53213

Ignition temperature: 325 °C

Lower explosion limit: 1,0 Vol.%

Upper explosion limit: 9,8 Vol.%

Vapour pressure at 20°C: 13,00 mbar

Specific gravity at 20°C: 1,06 g/cm³

Water solubility: not soluble

Viscosity at 20°C: > 90 s 4 mm DIN 53211

Solvent-separation test: < 3 % ADR/RID

Percent volatile by weight: 53 %

10. STABILITY AND REACTIVITY

Stable under recommended storage and handling conditions (See section 7).

When exposed to high temperatures may produce hazardous decomposition products such as carbon monoxide and dioxide, smoke, oxides of nitrogen etc. Keep away from oxidising agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.

11. TOXICOLOGICAL INFORMATION

There are no data available on the preparation itself. The preparation has been assessed following the conventional methods of the Dangerous Preparations Directive 1999/45/EC and classified for toxicological hazards accordingly. See Chapter 3 and 15 for details.

Exposure to component solvents vapours concentration in excess of the stated occupational exposure limit may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on kidney, liver and central nervous system. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Solvents may cause some of the above effects by absorption through the skin. Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in non-allergic contact dermatitis and absorption through the skin. The liquid splashed in the eyes may cause irritation and reversible damage.

12. ECOLOGICAL INFORMATION

The product should not be allowed to enter drains or water courses

The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and is not classified as dangerous for the environment.

13. DISPOSAL CONSIDERATIONS

Do not allow into drains or water courses. Wastes and emptied containers should be deposited according to the official rules.

Code of waste Waste Designation

080312 waste ink containing dangerous substances

14. TRANSPORT INFORMATION

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according to the Regulation 1907/2006/EC (Annex II)

Product Name: RDF-SERIE
Date: 26.09.2008
Revision date: 26.09.2008

Transport only in accordance with ADR for road, RID for rail, IMDG for sea and ICAO/IATA for air transport.

ADR/RID Class: KEINE GÜTER DER KLASSE 3
in containers > 450 l: class 3, item 31c
Tremcard: 3
UN-No: 1210
Transport document name: Printing ink, flammable
Packing group: III
IMDG Class: n.a.
Tremcard: n.a.
EmS: n.a.
UN-No: n.a.
Proper shipping name: Transport in accordance with the provisions
of paragraph 2.3.2.5 of the IMDG Code.
Packing group: n.a.
IMDG > 30 L: 3
Tremcard: 3
EmS: F-E, S-D
UN-No: 1210
Proper shipping name: PRINTING INK

Packing group: III
Marine pollutant: n.a.
ICAO/IATA-Class: 3
UN-No: 1210
Proper shipping name: Printing ink, flammable
Packing group: III

15. REGULATORY INFORMATION

In accordance with requirements of the Classification Packaging and Labelling of Dangerous Preparations Regulations (1999/45/EC). The product is labelled as follows:

Danger classification

Contains

n.a.

R-phrases

10 Flammable.
67 Vapours may cause drowsiness and dizziness.

S-phrases

51 Use only in well-ventilated areas.

Special provisions concerning the labelling of preparations

n.a.

Information of VOC-properties

VOC (g/l) DIN ISO 11890: 566,919
VOC (g/l) ASTM D-3960-1: 566,919

16. OTHER INFORMATION

Full text of R-phrases with no. appearing in section 3

10 Flammable.
20/21 Harmful by inhalation and in contact with skin.
38 Irritating to skin.
20 Harmful by inhalation.
66 Repeated exposure may cause skin dryness or cracking.
67 Vapours may cause drowsiness and dizziness.

The information of this SDS is based on the present state of our knowledge and on current EU and national laws. The product is not to be used for other purposes than those specified under section 1 without first obtaining written handling instruction. It is always the responsibility of the user to take all necessary steps in order to fulfil the demand laid down in the local rules and legislation. The information in this SDS is meant as a description of the safety requirements of our product; it is not to be considered as a guarantee of the products' properties.

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Product Name: RDF-SERIE
Date: 26.09.2008
Revision date: 26.09.2008

Explanation: NA, n.a. = not known

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Material Safety Data Sheet

Shell TELLUS OIL 46
MSDS# 402287L
Version 3.0
Effective Date 07/03/2008
According to OSHA Hazard Communication Standard, 29 CFR
1910.1200

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name : Shell TELLUS OIL 46
Uses : Hydraulic oil

Manufacturer/Supplier : SOPUS Products
PO Box 4427
Houston, TX 77210-4427
USA

MSDS Request : 877-276-7285

Emergency Telephone Number
Spill Information : 877-242-7400
Health Information : 877-504-9351

2. COMPOSITION/INFORMATION ON INGREDIENTS

Highly refined mineral oils and additives.
The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

3. HAZARDS IDENTIFICATION

Emergency Overview	
Appearance and Odour	: Brown. Liquid. Slight hydrocarbon.
Health Hazards	: High-pressure injection under the skin may cause serious damage including local necrosis.
Safety Hazards	: Not classified as flammable but will burn.
Environmental Hazards	: Not classified as dangerous for the environment.
Health Hazards	: Not expected to be a health hazard when used under normal conditions.
Health Hazards Inhalation	: Under normal conditions of use, this is not expected to be a primary route of exposure.
Skin Contact	: Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
Eye Contact	: May cause slight irritation to eyes.
Ingestion	: Low toxicity if swallowed.
Other Information	: High-pressure injection under the skin may cause serious damage including local necrosis. Used oil may contain harmful impurities.
Signs and Symptoms	: Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Local necrosis is evidenced by delayed onset of pain and tissue damage a few hours following injection. Ingestion may result in nausea, vomiting and/or diarrhoea.

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Aggravated Medical Condition	: Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Skin.
Environmental Hazards	: Not classified as dangerous for the environment.
Additional Information	: Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

4. FIRST AID MEASURES

General Information	: Not expected to be a health hazard when used under normal conditions.
Inhalation	: No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
Skin Contact	: Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop. Obtain medical attention even in the absence of apparent wounds.
Eye Contact	: Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
Ingestion	: In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
Advice to Physician	: Treat symptomatically. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy, to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point	: Typical 218 °C / 424 °F (PMCC / ASTM D93)
Upper / lower Flammability or Explosion limits	: Typical 1 - 10 %(V)(based on mineral oil)
Auto ignition temperature	: > 320 °C / 608 °F
Specific Hazards	: Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.

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- Suitable Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable Extinguishing Media** : Do not use water in a jet.
- Protective Equipment for Firefighters** : Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe all relevant local and international regulations.

- Protective measures** : Avoid contact with skin and eyes. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
- Clean Up Methods** : Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
- Additional Advice** : Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

- General Precautions** : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
- Handling** : Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
- Storage** : Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Storage Temperature: 0 - 50 °C / 32 - 122 °F
- Recommended Materials** : For containers or container linings, use mild steel or high density polyethylene.
- Unsuitable Materials** : PVC.
- Additional Information** : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Occupational Exposure Limits**

Material	Source	Type	ppm	mg/m3	Notation
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Oil mist, mineral	ACGIH	TWA(Mist.)		5 mg/m3	
Oil mist, mineral	ACGIH	STEL(Mist.)		10 mg/m3	

- Exposure Controls** : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.
- Personal Protective Equipment** : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
- Respiratory Protection** : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)].
- Hand Protection** : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
- Eye Protection** : Wear safety glasses or full face shield if splashes are likely to occur.
- Protective Clothing** : Skin protection not ordinarily required beyond standard issue work clothes.
- Monitoring Methods** : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
- Environmental Exposure Controls** : Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Brown. Liquid.
Odour	: Slight hydrocarbon.
pH	: Not applicable.
Initial Boiling Point and Boiling Range	: > 280 °C / 536 °F estimated value(s)
Pour point	: Typical -30 °C / -22 °F
Flash point	: Typical 218 °C / 424 °F (PMCC / ASTM D93)
Upper / lower Flammability or Explosion limits	: Typical 1 - 10 %(V) (based on mineral oil)
Auto-ignition temperature	: > 320 °C / 608 °F
Vapour pressure	: < 0.5 Pa at 20 °C / 68 °F (estimated value(s))
Density	: Typical 879 kg/m3 at 15 °C / 59 °F
Water solubility	: Negligible.
n-octanol/water partition coefficient (log Pow)	: > 6 (based on information on similar products)
Kinematic viscosity	: Typical 46 mm2/s at 40 °C / 104 °F
Vapour density (air=1)	: > 1 (estimated value(s))
Evaporation rate (nBuAc=1)	: Data not available

10. STABILITY AND REACTIVITY

Stability	: Stable.
Conditions to Avoid	: Extremes of temperature and direct sunlight.
Materials to Avoid	: Strong oxidising agents.
Hazardous Decomposition Products	: Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	: Information given is based on data on the components and the toxicology of similar products.
Acute Oral Toxicity	: Expected to be of low toxicity: LD50 > 5000 mg/kg , Rat
Acute Dermal Toxicity	: Expected to be of low toxicity: LD50 > 5000 mg/kg , Rabbit
Acute Inhalation Toxicity	: Not considered to be an inhalation hazard under normal conditions of use.
Skin Irritation	: Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
Eye Irritation	: Expected to be slightly irritating.
Respiratory Irritation	: Inhalation of vapours or mists may cause irritation.
Sensitisation	: Not expected to be a skin sensitiser.
Repeated Dose Toxicity	: Not expected to be a hazard.
Mutagenicity	: Not considered a mutagenic hazard.
Carcinogenicity	: Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC). Other components are not known to be associated with carcinogenic effects.

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- Reproductive and Developmental Toxicity** : Not expected to be a hazard.
- Additional Information** : Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible. High pressure injection of product into the skin may lead to local necrosis if the product is not surgically removed.

12. ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

- Acute Toxicity** : Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.
- Mobility** : Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.
- Persistence/degradability** : Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
- Bioaccumulation** : Contains components with the potential to bioaccumulate.
- Other Adverse Effects** : Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

13. DISPOSAL CONSIDERATIONS

- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
- Container Disposal** : Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
- Local Legislation** : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

Material Safety Data Sheet**US Department of Transportation Classification (49CFR)**

This material is not subject to DOT regulations under 49 CFR Parts 171-180.

IMDG

This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)

This material is not classified as dangerous under IATA regulations.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status**Notification Status**

EINECS	All components listed or polymer exempt.
TSCA	All components listed.
DSL	All components listed.

SARA Hazard Categories (311/312)

No SARA 311/312 Hazards.

State Regulatory Status**California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)**

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

16. OTHER INFORMATION

NFPA Rating (Health, Fire, Reactivity)	: 0, 1, 0
MSDS Version Number	: 3.0
MSDS Effective Date	: 07/03/2008
MSDS Revisions	: A vertical bar () in the left margin indicates an amendment from the previous version.
MSDS Regulation	: The content and format of this MSDS is in accordance with the

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- MSDS Distribution** : OSHA Hazard Communication Standard, 29 CFR 1910.1200.
The information in this document should be made available to all who may handle the product.
- Disclaimer** : The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.