Appendix E – Water Management Plan



Method Statement

(Including Risk Assessment)

#### Introduction

WaterMonster (WM) is a mass distribution system for potable water, predominantly used where large volume quick dispense complimentary water is needed at sporting events and large gatherings.

#### Aims

The aim of this document is to demonstrate the company's dedication of maintaining high standards of hygiene congruent with national guidelines. This document's framework draws references from the following publications:

- NSW Guidelines for Water Carters, NSW Health, NSW Food Authority, 2012
- Australian Drinking Water Guidelines Version 6
- New South Wales Food handling Guide
- NSW Health Private water supply Guidelines 2008 The Guidelines are for any business or facility that supplies drinking water from an independent water supply (i.e. not town water).



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#### Pre-event planning (and site visit if necessary)

- Water volume. With guidance from the client, WM will draw up a proposal for the amount of water required. This is based on: the number of participants, type of event (running vs obstacles), climate (ambient temperate and sun hours), number of stations (affects WM response time to damaged tank), number of spectators (if required to offer event support too).
- Station locations. WM to discuss station locations with the following in mind:
  - Shaded areas are preferred as these keep the water cooler and reduce the amount of ambient light within which the storage tanks sit. Both these factors affect the rate of residual chlorine consumption.
  - Access is required by vehicles to install and service the tanks. Surfaces must be suitable to allow this.
  - Sabotage, either malicious or juvenile is a possibility and any proposed site should be risk assessed with this in mind. If necessary the area should be secured with fencing and/or security following assessment.
  - Post event any remaining water will be discharged to the ground (provided that residual chlorine levels are less that the recommended 1mg/L). The suitability of the area should be assessed to ensure that this will not be nuisance or cause a negative environmental impact.

#### Event Build, Live and Break-down

- In advance of filling, the station should be laid out with the following considerations in mind:
  - Firm ground is ideal for placement of the tanks as when full they weigh 500kg. The stand has been designed to sink into the ground by 2" which allows the weight to be borne by a large concentric ring on the stand. This adds to stability when on soft ground.
  - Level ground is preferred for stability of the tanks and operatives will seek to use the most flat area.
  - Tanks will be spray disinfected and left for a suitable and sufficient period before filling.
- Filling Immediately prior to filling, tanks, taps and access points are re-disinfected with a concentrated chlorine solution. The spray method (rather than immersion method) is employed as all parts have direct access when spraying. Surfaces, lids and seals are then rinsed with fresh potable water immediately before filling. Tanks are filled until overflowing, visually inspected and then immediately covered with lids. Locking pins and numbered (or coloured) cable tie seals are applied to the lid. This information is recorded in the operation log. Immediately after filling free chlorine readings are taken to ensure that no further unintended chlorination has taken place via contamination from residual disinfecting spray.
- Chlorine Levels As per NSW guidelines a residual of 0.2 to 0.5 mg/L free chlorine must be maintained in the water supply at all times. This is regularly monitored and recorded. These records are available for the Council's Environmental Health Officers to inspect. In the interest of safety and



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reducing the burden placed upon the residual chlorine supplied in the water from source all contact surfaces are thoroughly disinfected prior to use.

#### Live Days - Opening

- All units are inspected for signs of tampering prior to the event going live with particular attention being paid to the security seals and taps.
- Flags, if being used, are then erected along with any other ancillary infrastructures such as cup tables and bins.
- Taps are spray disinfected again and rinsed.
- A sample is taken and free chlorine level assessed.

#### Live Days - Event Time

• At event specific intervals, levels are monitored and re-filled from bladders if required. In addition units are re-inspected for any defects or for signs of tampering or contamination.

#### Live Days - Close (multiday events)

- Check levels and re-fill if necessary, clean, disinfect and rinse taps. Re-seal and note seal numbers prior to leaving site.
- A sample is taken and free chlorine level assessed.
- Flags should be removed and stowed away overnight.

#### Live Days - Close and Pack Down (single day or end of multiday events)

- Jet-wash outside of tanks to remove all dirt.
- Clean and disinfect taps with chlorine concentrate solution.
- Spray disinfect inside of tanks, lids, hoses and all other associated equipment. Rinse and dry all thoroughly prior to storage.
- Compound detergents and other such cleaning products are **not** used as these may lead to degradation of the materials. Also tests cannot be performed insitu and in a short time frame to ensure no contamination from residual cleaning product.

## **Method Statement**

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#### **Cleaning Methods**

- Tanks "spray method" with chlorine solution and wipe dry with paper and/or clean microfibre.
- Lids "spray method" with chlorine solution and wipe dry with paper and/or clean microfibre.
- Hoses rigids; immersed in concentrated chlorine solution for suitable and sufficient period as per ADWG6. Layflats; filled with strong chlorinated water to ensure all over contact with internal surfaces.
- Pump Housings filled with chlorine solution to cover all water contact areas for suitable and sufficient period.
- Bladders filled with chlorine solution for suitable and sufficient period to cover all water contact areas and as per supplier instructions.
- As per NSW Guidelines for Water Carters logs are kept of all cleaning with contact times being in excess of 30 minutes at a concentration of 5mg/I. Equipment should be dried and then sealed. Before use tanks should be rinsed and tested for residual chlorine.



#### Off site responsibilities

- Equipment, when not in use, will be stored in a cool, dry, dark and dust free environment. This environment serves to keep equipment clean and does not encourage biological growth.
- Prior to being returned to storage equipment will be inspected for signs of abrasion (in water contact areas) and general damage to other items.
- Before leaving the storage unit for site equipment will be checked for abrasions, damage and signs
  of biological growth (shown by visual growths, discolouring and/or unpleasant smells).
- The equipment will have a finite lifetime which will depend on the level or usage and the care taken while in transit. WM will inspect the equipment at every event with a view to retiring items which are damaged or do not appear to be in good condition.



## Method Statement

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#### **Record Keeping**



As per ADWG6 records will be kept from source to consumer. This will be in the form of an
operational log as shown below.

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#### **Risk Assessment**

This Risk Assessment is written in table format and in most cases should illustrate the reduction in risk that we believe is gained by incorporating the company's operational policies. These policies have been built on guidance from a number of sources. These include:

- Governmental guidelines for the domestic water industry from the UK
- Australia Drinking Water Guidelines 6 (ADWG6).
- Regional guidelines for provision of food and food hygiene.
- Guidelines for food businesses at temporary events, NSW Government Food Authority.
- The BS8551:2011 British guidelines for temporary water provision at event sites

## **Method Statement**

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 Three years of in-house operational know how built up from experience of supplying many events around the world in differing climates.

The Risk Assessment is a dynamic document and will continue to be updated to reflect experience in the field and technological advances which can be used to further reduce risk. Below is shown a risk table as demonstrated by the ADWG6.

Level	Descriptor	Example description	on		the long of the	Contraction and					
A	Almost certain	Is expected to occur in	most circumstance	es		and the second					
В	Likely	Will probably occur in	most circumstance	es							
с	Possible	Might occur or should	occur at some tim	e		1.000					
D	Unlikely	Could occur at some ti	me								
E	Rare	May occur only in exce	ptional circumstan	ices							
l	Insignificant	Insignificant impact, littl	e disruption to no	rmal operation, low inc	rease in normal ope	eration costs					
Table	3.2 Qualitative	e measures of conseque	ence or impact	and the second	Carl and						
1	Insignificant	nt Insignificant impact, little disruption to normal operation, low increase in normal operation costs									
2	Minor	Minor impact for small	population, some n	nanageable operation dis	ruption, some incre	ase in operating costs					
3	Moderate	Minor impact for large costs increased, increased	population, signific ed monitoring	ant modification to nor	mal operation but i	manageable, operation					
4	Major	Major impact for small population, systems significantly compromised and abnormal operation if at all, high level of monitoring required									
5	Catastrophic	Major impact for large	population, comple	ete failure of systems		Sa da al					
Table	a 3.3 Qualitativ	e risk analysis matrix: k	evel of risk								
Likelil	nood	Consequences									
1		I Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic					
A (almo	ost certain)	Moderate	High	Very high	Very high						
Contraction of the second s											



Shown below is an alternative but very similar method used for giving numerical quantification to specific risks. For the purposes of this document a risk rating has been used to determine the level of control measure required. The Risk rating is calculated by taking the **Likelihood** of a particular hazard occurring and multiplying it by the **Severity** of the potential outcome of that particular hazard.

X	Likelihood				ally they
Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15

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## Method Statement

(Including Risk Assessment)



#### Likelihood Measures

- 1 Unlikely
- 2 Possible
- 3 Likely
- 4 Very likely

2 – Injury or damage to property

Severity Measures

- 3 Injury (under 3 days); serious damage to property
- 4 Serious Injury (over 3 days)

1 - Minor injury or damage

5 - Constant

- 5 Death
- Risks with a rating of 15 (red) or more are considered to need immediate remedial action or an alternative method of provision in that area.
- Risks with a rating of 8 to 12 (yellow) require constant monitoring and review.
- Risks with a rating below 8 (green) will be occasionally monitored.



# **Method Statement**

HAZARD	WHO AT RISK	WHAT MIGHT HAPPEN	R	AT	ING	CURRENT CONTROLS	FURTHER PRECAUTIONS	RESPONSIBLE
Backfilling of municipal water source	Municipal Water Source	Excessive demand elsewhere in the state supply system can lead flows in water pipes acting in reverse and drawing contaminated water into the state system.	1	5	5	Only source water from appropriate officially trained water cartage companies.	Carters to use official non return valves.	Water carter
Filling with water contaminated either with pathogens or unwanted material.	Consumers	Upstream contamination of water off site prior to arrival on site and filling of WM tanks	2	5	10	Potable water will only be sourced from reputable quality assured water haulage companies. These companies will be subject to governmental operating guidelines to ensure water quality is maintained.	MW shall insist that chosen supplier has the appropriate paperwork completed as per the NSW Guidelines for Water Carters. Trucks will display Water Authority approval stickers.	Water carter
Tainting caused by contact with synthetic material during storage or transfer.	Consumers	Unsuitable storage and transfer vessels can taint the water either with colour or taste or both. Tainted water, although not always hazardous to health, is unpleasant to consume.	1	2	2	Use "food grade" vessels at all stages to ensure water quality is maintained. Reduce exposure time of water to any noon food grade items.	Use "approved" vessels if local guidelines give details. Source locally manufactured vessels as they will be made to conform to national quality standards.	WM

## Method Statement

Contamination by sabotage	Consumers	A 3 <sup>rd</sup> party may choose to contaminate the stored water.	1	5	5	WM to use lids and locking pins with security numbered cable ties. WM staff to check for sign of tampering.	Event organiser to provide security and/or fencing should this be deemed appropriate based on the location.	WM and Client
Contamination by airborne pathogens	Consumers	Pathogens entering water from contact with the air.	5	4	20	Ensure contact between air and water kept to a minimum by immediate use of tank lids and hose dust caps prior to filling.	Site away from sources of airborne pathogens, like animal herds.	WM and Client
Contamination by airborne chemical pollutants		Airborne pollutants from local activities can taint water. For example toilets, diesel generators, waste facilities	2	4	8	Ensure contact between air and water kept to a minimum by immediate use of tank lids and hose dust caps prior to filling.	Work with client to site away from threats.	WM and Client
Contamination by animals	Consumers	Animals, carrying disease, contacting water or introduction of faecal matter.	2	4	8	Use of lids and dust caps on all tanks and hoses. Visual inspection by WM staff.	Siting of tanks away from areas which see or have seen high animal traffic.	WM and Client
Contamination by photosyntheti c pathogens	Consumers	The growth of pathogens can be accelerated in well lit conditions.	5	4	20	All storage vessel materials to be dark in colour to block / absorb light. If transfer vessels (hoses) are transparent they should be drained (and if possible dried / sanitized) as soon as transfer is complete.	Siting of storage vessels in areas which are shaded or if necessary shade netting installed as a second line of defence against light.	WM and Client

# **Method Statement**

Contamination by biofilm	Consumers	Biological matter adhered to surfaces in contact with water can spread into the water	4	4	16	Ensure contact surfaces are clean and abrasion free before contact with water.	Vessels to be stored dry when not in use.	WM
Contamination of vessels from other applications		Residues from vessels being used for other purposed could lead to contamination.	1	5	5	Ensure equipment marked "Drinking water only" and not used for other purposes.	Keep vessels away from similar items used for other purposes.	WM
Contamination from operational staff	Consumers	Germs can be transferred from operational staff carrying out their duties. Also from staff who are carrying illness.	2	3	6	Staff to ensure high level of personal hygiene while working. Hands and finger nails clean. Clothing clean. Rings removed. Gloves and disinfectants used if any cuts on hands. Long hair tied back. Clean clothing worn.	Ensure staff briefed and understand the working practices they are obligated to uphold. Staff should not be suffering from a cold, sore throat etc. If staff have been ill for more than two days in the previous week they will not be engaged on the current event.	WM
Unacceptably low residual chlorine concentration	Consumers	Concentration will inevitably decline over time which reduces the ability of the water to kill any pathogens introduced to it.	3	5	15	Monitor and record residual free chlorine to ensure it is between 0.2mg/L and 0.5mg/L. Store water on site for as short a period as possible by filling as late as possible. Ensure exposure to air kept to a minimum.	Keep water temperature as low as possible by arranging with organiser to keep stations away from sunlight.	WM

# Method Statement

Unacceptably high chlorine concentration leading to unpleasant taste	Consumers	Residual chlorine from disinfecting / washing equipment can increase the concentration in otherwise acceptable stored water.	3	4	12	WM to check chlorine levels and record results in operational log at start of event live days. Acceptable levels are between 0.2mg/L and 0.5mg/L.	Ensure adequate staff training to be able to recognise unacceptably high levels.	WM
Pollution of groundwater	Local environment	Water containing high concentrations of chlorine can be harmful to the local environment	1	3	3	Ensure super chlorinated water used for disinfecting is diluted to an acceptable level before being discharged. Levels must be less than 1mg/L as NSW guidelines.	2	WM
Localised flooding	Area immediately around tanks	Left over water is discharged to the ground following post event cleaning of tanks. This can cause localised flooding.	1	4	4	Ensure that water is discharged in a sensible manner and that no thoroughfares or housing with be affected.	Work with organiser to ensure sites suitable for water discharge. Transfer water to another location if necessary.	WM and Client
Delivery vehicle damage or over turning	Vehicle owners and all site traffic	Taking vehicles on unsuitable terrain can lead to accidents	2	5	10	Keep to the most suitable terrain possible.	Site stations in locations with good access or within hose reach of good access.	WM and Client
Vehicle track damage to ground	Land owner	Vehicle access is needed in order to operate. Damage can be done by vehicle to soft ground.	4	2	8	Keep to firm ground as much as possible. If multiple access across soft ground required make multiple tracks to avoid rutting. Check weight limits of bridges and cattle grids.	Site stations in locations with good access or within hose reach of good access.	WM and Client

# Method Statement

Pump fuel fire	Everyone	Although diesel is preferred on event sites WM pumps are petrol powered. It was deemed that maintaining water quality through use of a cleaner fuel was of higher importance.	1	5	5	Pumps are rarely used and only for a few minutes at a time, so fuel tanks are kept low. Pumps kept away from sources of ignition. Pumps fitted with fuel cut off taps.	Staff given adequate training in use of the pumps and how to re- fuel. Fuel is stored out of the sun in approved storage containers only.	WM
Chlorine Burn	WM staff cleaning tanks and consumers	Chlorine tablets (and resulting liquid) used for sanitizing are harmful to the skin if in contact at too high a concentration	2	4	8	Chlorine tablets to be kept in their clearly marked childproof containers. All items to be thoroughly rinsed with fresh water following disinfection. Staff to use appropriate PPE (glasses and gloves).	WM to ensure staff training given on appropriate use and disposal of the high concentration chlorine solution.	WM
Collapse of tank	Everyone	A full tank weighs 500kgs and could cause injury if it were to crush a person.	1	5	5	Tanks to be set up on ground which is suitably flat and firm.	WM staff to inspect stand integrity as part of regular inspection and maintenance.	WM

# Method Statement

(Including Risk Assessment)

#### Appendix

- 1) Disinfection Tablet Instructions and Safety Documentation
- 2) Tank Material Information
- 3) Bladder Material Information

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# **Method Statement**

(Including Risk Assessment)

CH	EMA	DE
QUALITY ASSURANCE M	ANUAL - Issue No. 2	DATE: 28.03.1995
PRODUCT SPECIFICATIO (Expand Sections as neces	N - APPLICATION & USE sary with further sheets)	Appendix 3
PRODUCT NAME:	СНЕМТАВ	
PRODUCT CODE No:	P067	
THIS ISSUE No./DATE:	002/15.05.1997	
ISSUE No. of Product Spec	ification - Formulation & Manufacture to	which this document refers: 001
GENERAL DESCRIPTION	White tablet with characteristic bleach	h odour.
USE FOR WHICH PRODU when dissolved in 5 litres of disinfectant use.	CT IS INTENDED: Chlorine release ta f water, to give a solution containing 200	blets, designed for each tablet Oppm available Chlorine for
SPECIAL EQUIPMENT RE	QUIRED: None.	
METHOD AND CONDITION available Chlorine, dissolve accelerated by the use of w tablets can be dissolved, ea	NS OF USE: To obtain 5 litres of disint one tablet in 5 litres of clean water. Di arm water and stirring. If a more conce ach one providing 200ppm of available (	fectant containing 200ppm of ssolution of the tablet can be entrated solution is required, more Chlorine.
METHOD OF CONTROL: by a suitable analytical met	If used in water cooling systems, the k hod for determination of available Chlor	evel of Chlorine can be controlled ine in water.
Compiled by: B. PIPE Verified & Issued by: B. W.	NORMAN	
	Cilimane Industrial Estate Natte Lana Billi	nochurst West Sussey BH14 GE7

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## Method Statement



# **Method Statement**

(Including Risk Assessment)

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DRODUCT NAME	CHENTAR				
APPLICATION	Disinfectant				
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	sds@chemaid	le oo uk	201		
2 MAZARLS IDENTIFI					
Hamful I sealowed initiating the aquatic environment, CLASSIFICATION	to eyes and respirator Xn;R22, XI;R3	y system. Very 1 6/37, N.R.SO/53.	cole to aquatic on	paniana, may-	cause long-term adverse effects in
3 COMPOSITION/INFO	ORMATION ON ING	REDIENTS	Store Welst		
Name		EC No.	CAS-No.	Content	Classification
ADIPIC ACID		204-673-3	124049	10-30%	X0;R36
TROCLOSENE BOOIUM		220-767-7	2893-78-9	30-60%	0;R8 Xh;R22 X;R36/37 R31 N;R50/53
The Full Text for all R-Phrase	s are Displayed in Sed	tion 16			
4 FIRST-AID MEASUR	ES				
INHALATION Wove the exposed person to 5 properly trained personnel me INGESTION DO NOT INDUCE VOMITING from source of exposure. Drin BKIN CONTACT Bkin Initiation to not anticipated scap and water. Get medical EYE CONTACT Make sure to remove any cont Continue to trives for at least 1	reah air at once. Got n y assist effected person I NEVER MAKE AN U k plently of water. Got twhen used normally, attention if initiation per tect lenses from the ey fact lenses from the ey	nedical attention in by administeri INCONSCIOUS medical attentio in the event of it raists after wash es before theing al attention prom	Provide lest, w g oxygen. PERSON VOMIT n immediately! P ritation: Remove ing. p. Promptly wash gdy if symptisms.	armith and final OR DRINK RL contaminated o contaminated o court after was	h air. When breathing is difficult, UIDSI Remove victim immediately andh and Reah air. slothing. Wash skin thoroughly with by of water while itting the eye lide.
5 FIRE-FIGHTING ME	ASURES	San In		, Same	and the second second second second
EXTINGUISHING MEDIA					
This product is not flammable, estinguishers containing amm SPECIAL FIRE FIGHTING PR	Fire can be extinguist onlum compounds IOCEDURES	ed using: Wate	r spray, dry powr	ter or carbon d	loxise. Do not use dry fire
NOTE: Use air-supplied resplic	ators to protect agains	t gases/fumes.	Dike and collect e	adinguishing w	ater.
INUSUAL FIRE & EXPLOSIC Fire causes formation of toxic	gases. Descomposes	above 250 oC v	with misease of chi	ortne and other	foxic fumes.
SPECIFIC HAZARDS					
By fire, toxic gases may be fo chloride (HCI). Hydrogen cyar	rmed (COx, NOx). Fir ride (HCN).	e or high temper	atures create: Vi	wy toxic gases	vapours/furnes of Chlorine. Hydrogen

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## Method Statement

PROTECTIVE MEASURES IN FIRE Self contained breathing opparatus at 6 ACCIDENTAL RELEASE M PERSONAL PRECAUTIONS Wear protective circling as described data sheet. Use protective given, go	Id full protective clothing must be worn in case of fire.
Self contained breathing apparatus at 6 ACCIDENTAL RELEASE M PERSIONAL PRECAUTIONS Wear protective clothing as described data sheet. Use protective gloves, go	In the protective clothing must be worn in case of fire.
6 ACCIDENTAL RELEASE M PERSONAL PRECAUTIONS Wear protective clothing as described sets sheet. Use protective given, go	
PERSONAL PRECAUTIONS Wear protective disthing as described data sheet. Use protective gloves, go	EASURES
Wear protective cicthing as described sets sheet. Use protective gloves, go	
ENVIRONMENTAL PRECAUTIONS	In Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety ggles and suitable protective dothing. Ensure suitable personal protection (including respiratory in a confined area.
tot relevant considering the small am agreement with the local authorities. SPILL CLEAN UP METHODS	curits used. The product should not be dumped in nature but collected and delivered according to
Collect in containers and seal secure corn as possible in a suitably labelled Containers with collected spillage mut temp material.	y. Ensume that waste and contaminated materials are collected and removed from the work area as contrainer. Avoid generation and spreading of duat. Flash with plenty of water to clean splilage area, it be property labelled with contect contents and hazard symbol. To not drose drums containing wet or
7 HANDLING AND STORAGE	
SAGE PRECAUTIONS	
wold spilling, skin and eye contact, spen flame. Do not set, drink or amo repourshipnay and contact with skin a worlight. Follow instructions and ensu	Do not handle broken parkages without protective equipment. Keep away from heat, sparks and ke when using the product. Observe good industrial hygiene practices. Avoid inhalation of nd eyes. Provide good vertilation. Container must be kept tightly closed. Protect against direct re correct dilution of this product before use.
STORAGE PRECAUTIONS Store in tightly closed ortginal contain	er in a dry, cool and well-vertilated place. Keep in priginal container,
	IBROUAL BOOTENTION
e Exposone contribuar	ENGLINE PROTECTION
ENGINEERING MEASURES	
No specific ventilation requirements n	oted, except this product must not be used in a confined space without good ventilation.
RESPIRATORY EQUIPMENT	
to specific moormandation made. It	ut respiratory protection may still be required under exceptional sitsumstances when excessive air
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contamination exists. HAND PROTECTION For prolonged or repeated skin contai	it use sufficiele protective gloves.
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ontamination exists. HAND PROTECTION For prolonged or repeated skin contain EVE PROTECTION If fisk of splashing, wear safety gogd OTHER PROTECTION Wear appropriate cictiving to prevent i	ct use sufficiele protective gloves. Ins or face shield. Iny possibility of liquid contact and repeated or prolonged vapour contact.
contamination exists. HAND PROTECTION For protonged or repeated skin conta EYE PROTECTION If fick of splashing, wear safety gogd DTHER PROTECTION Wear appropriate clothing to prevent HYGIENE MEASURES DO NOT SMOKE IN WORK AREAL V any clothing that becomes contamina reveal divide of skin. Whon whon div	of use suitable protective gloves. Ins or face shield. Why possibility of liquid contact and repeated or prolonged vapour contact. Wash at the end of each work shift and before eating, smoking and using the toilet. Promptly remove Ind. Wash promptly with soap & water if skin becomes contaminated. Use appropriate skin cream to mot eat, drivk or smoke.
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contamination exists. HAND PROTECTION For protocopies or repeated skin contain EVE PROTECTION If risk of splashing, wear safety gogd OTHER PROTECTION Wear appropriate clothing to prevent of HYGIERE MEASURES DO NOT SMOKE IN WORK AREAL V any clothing that becomes contamina prevent drying of skin. When using do 9 PHYSICAL AND CHEMICA APPEARANCE	It use suitable protective gloves. Ins or face shield. any possibility of liquid contact and repeated or prolonged vapour contact. Nash at the end of each work shift and before eating, sending and using the toilet. Promptly remove het. Wash promptly with scap & water if skin becomes contaminated. Use appropriate skin cream to not eat, drink or smoke. L PROPERTIES White fat beveiled tablet
ordamination exists. HAND PROTECTION For protonged or repeated skin contain EVE PROTECTION If risk of splashing, wear safety gogd OTHER PROTECTION Wear appropriate clothing to prevent of HYGIENE MEASURES DO NOT SMOKE IN WORK AREA: Many clothing that becomes containing prevent drying of skin. When using do 9 PHYSICAL AND CHEMICA APPEARANCE DODUR	t use suitable protective gloves. Ins or face shield. any possibility of liquid contact and repeated or prolonged vapour contact. Nash at the end of each work shift and before eating, sending and using the toilet. Promptly remove het. Wash promptly with scap & water if skin becomes contaminated. Use appropriate skin oream to not eat, drink or smoke. L PROPERTIES White flat bevelled tablet Characteristic Chickree.
sontamination exists. HAND PROTECTION For protonged or repeated skin contain EVE PROTECTION If risk of splashing, wear safety gogd OTHER PROTECTION Wear appropriate clothing to prevent of HYGIERE MEASURES DO NOT SMOKE IN WORK AREA: M Mary clothing that becomes containing prevent drying of skin. When using do 9 PHYSICAL AND CHEMICA APPEARANCE DODUR SOLUBILITY	t use suitable protective gloves. les or face shiekt. any possibility of liquid contact and repeated or prolonged vapour contact. Nash at the end of each work shift and before eating, sending and using the toilet. Promptly remove ted. Wash promptly with scap & water if skin becomes contaminated. Use appropriate skin cream to not eat, drink or smoke. L PROPERTIES White flat bevelled tablet Characteristic Chiorine. Boluble in water.
ontamination exists. HAND PROTECTION For protonged or repeated skin contain EVE PROTECTION If risk of splashing, wear safety gogd DTHER PROTECTION Wear appropriate duthing to prevent of HYGIERE MEASURES DO NOT SMOKE IN WORK AREA: 1 May clobing that becomes containing prevent drying of skin. When using do 9 PHYSICAL AND CHEMICA APPEARANCE DOOLR DOLUBILITY H-VALUE, DILUTED BOLUTION	t use suitable protective gloves. Ies or face shiekt. Ies or face shiekt. Interpretation of each work shift and repeated or prolonged vapour contact. Nash at the end of each work shift and before eating, sending and using the toilet. Promptly remove ted. Wash promptly with scap & water if skin becomes contaminated. Use appropriate skin cream to include at, drink or smoke. L PROPERTIES White fat bevelled tablet Characteristic Chiorine. Boluble in water. 46 approx 1 DECOMPOSITION TEMPERATURE 240
Contamination exists. HAND PROTECTION For protocoged or repeated skin contain EVE PROTECTION Trids of splashing, wear safety gogd DTHER PROTECTION Near appropriate clothing to prevent of HYGIERE MEASURES DO NOT SMOKE IN WORK AREA: N Wry clothing that becomes contamina prevent drying of skin. When using do 9 PHYSICAL AND CHEMICA SPPEARANCE DOOUR NOLUBILITY H-VALUE, DILUTED SOLUTION	t use suitable protective gloves. Ies or face shield. Ies or face shield. Interpretation of each work shift and repeated or prolonged vapour contact. Nash at the end of each work shift and before eating, smoking and using the toilet. Promptly remove ted. Weah promptly with scap & water if skin becomes contaminated. Use appropriate skin cream to include the or smoke.  L PROPERTIES  White fat bevelled tablet Characteristic Chiorine. Boluble In water.  46 approx 1  DECOMPOSITION TEMPERATURE 240  (*C)

## **Method Statement**

		CHEMTAB	
10 STABILITY AND READ	TIVITY		
STABILITY	State States		amplitude the
Stable under normal temperature	conditions.		
CONDITIONS TO AVOID			
Avoid contact with acids and cold educing agents. AATERIALS TO AVOID	sing substances. Avoid exp	osure to high temperatures or direct suri	ight. Avoid contact with shong
Remmable/combustible material substances, acids and alkalis, di HAZARDOUS DECOMPOSITION Rire creates. Hydrogen chloride (	Organic materials, oils, gr amp or sightly wel condition ( PRODUCTS HCI), Hydrogen cyanide (HI	ease, sawdust, reducing agents, nitrogr s ( NaDOC may generate nitrogen triction CN). By fire, toxic pases (OC, CO2, NC	en-containing compounds, oxidizing (de which is explosive) (x) may be formed.
11 TOXICOLOGICAL INF	ORMATION		
TOXUC DOBE 1 - LD 50	992 mg/kg (pral-mouse	•	
TOXOCOLOGICAL INFORMATIO	N		
lexicological information for the a	cove Ingredient NaDCC		
NHALATION			
tamful: danger of serious dama;	pe to health by prolonged and	posure through inhalation.	
NGESTION		The second second	
famful if swalkwod.			
SKIN CONTACT	hen used normally.		
EVE CONTACT			
ritating to eyes.			
ROUTE OF ENTRY			
nhalation. Ingestion, Skin and/o	r eye contact.		
12 ECOLOGICAL INFORM	MATION		
EC 50, 48 Hrs, DAPHNIA, mgt	<1 mg NaDCC		
DEGRADABILITY			
The product is expected to be blo	degradable.		
13 DISPOSAL CONSIDER	RATIONS	and the second second	the second second second
DISPOSAL METHODS	successions with local suffici	The same discounting	
Noticité of Managers (noticitée et	accordance with local alanto	r ty rodarderidenta.	
14 TRANSPORT INFORM	ATION		
IK POAD CLASS			
POOPER SHIDDING NAME	ENVIRONMENTALLY		0.8
TOUT EN ONIT THU NAME	Product transported in	United Quartities, Product may be trans	ported by road in a multimodal loomery
The second se	without any marking or	labeling (UN3077) under the ferms of the	e section 1.5.1 of ADR (Multilateral
CHU INANDIUNI NUI EN	the second se	out them when or to the signationes countil	an or othe agreement.
SEA TRANSPORT NOTES	Not Classified		
IEA TRANSPORT NOTES	Not Classified		
IEA TRANSPORT NOTES	Not Classified Not Classified 3077	UK ROAD PACK OR	1. S.

## Method Statement

		CHEMTAB		
ADR CLASS	Class 9: Minoellaneous	ADR PACK GROUP		
THE CONTRACTOR	dangerous substances and articles.	- and the second	-	
HAZARD No. (ADR)	90	ADR LABEL NO.	9	
HAZCHEM CODE	22	CEFIC TEC(R) NO.	90GM7-III	
RID CLASS NO.	9	RID PACK GROUP	88	
UN NO. SEA	3077	MDG CLASS	9	
IMDG PACK GR.	10	EMB	F.A. 8-F	
MFAG	See Guide	MARINE POLLUTANT	No.	
UN NO. AIR	3077	AIR CLASS	9	
AIR PACK GR.	111			
15 REGULATORY INF	ORMATION			
LABELLING	-	all with		
		(V		
		Y a		
		11		
	Hamild	and an		
		Wormmert		
CONTAINS	TROCLOBENE BODIUM			
RISK PHRASES				
	R22 Hamil	ul if swallowed.		
	R36/37 Initiat	ng to eyes and respiratory system.		
	R50/53 Very t	oxic to aquatic organisms, may cause	long-term adverse effects in the aque	
	enstro	nemert.		
SAFETY PHRASES				
	S25 Avoid	contact with eyes.		
	826 in cas	e of contact with eyes, rinse immedia	bely with plenty of water and seek med	
	advio			
	851 Use o	rey in well-vertilated areas.		
	857 Use a	ppropriate containment to avoid enviro	onmental contamination.	
	860 This r	saterial and its container must be disp	osed of as hazardous waste.	
	561 Avoid	release to the environment. Refer to a	special instructions/safety data sheets.	
UK REGULATORY REFEREN	CES			
Chemicals (Hazard Informatio	n & Packaging) Regulations.			
EU DIRECTIVES				
Dangerous Preparations Direc December 2006 concerning th Chemicals Agency, amending No 1486/94 as well as Council Induzing amendments. STATUTORY INSTITUTED AFENTS	the 1999/45/EC. Regulation (EC) N e Registration, Evaluation, Authori Directive 1999/45/EC and repealin Directive 76/769/EEC and Commis	o 1907/2005 of the European Parliam sation and Restriction of Chemicals (R g Council Regulation (EEC) No 79393 sion Directives 91/155/EEC, 93/67/EE	ent and of the Council of 18 (EACH), establishing a European 3 and Commission Regulation (EC) EC, 93/105/EC and 2000/21/EC,	
Chemicals (Hazant Information	h and Packading) Regulations			
ADDOUGD CODE OF DEAL	TICE			
Classification and Labelling of	Bubstances and Preparations Danc	erous for Supply.		
CURDANCE NOTES				
Workplace Exposure Limbs Fi	H40, CHIP for everyone HROMOR			
NATIONAL RECULATIONS	and an an an and and and			
The Chemicals (Hazant Inform	ution and Packading for Supply St	culations 2002, No. 1680 Windoniana	Exposure Limits 2005 (EH40)	
Regulation (EC) No 1907/2004 Evaluation, Authorisation and 1959/45/EC and research Co.	6 of the European Parliament and of Restriction of Chamicals (REACH), uncil Regulation (EEC) No 793/93 a Directives 91/155/EEC, 93/67/EEC	the Council of 18 December 2006 ox extabilishing a European Chemicals A nd Commission Regulation (EC) No 1- 99/105/EC and 2000/21/EC, Includi	neerring the Registration, Agency, amending Directive 488/94 as well as Council Directive ing amendments.	
76/769/EEC and Commission				
76/769/EEC and Commission 16 OTHER INFORMAT	NON			
76/769/EEC and Commission 16 OTHER INFORMAT	28/07/2004			

## **Method Statement**

(Including Risk Assessment)

REVISION DATE 28/07/2	008	
	CHEMTAB	
REV. NO./REPL. SOB GE	NERATED 1	
RISK PHRASES IN FULL		
R22	Hamful If evaluated.	
R31	Contact with acids Remates toxic gas.	
R36	Initiating to eyes.	
R36/37	irritating to eyes and respiratory system.	
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the equatic environment.	
RB	Contact with combustible material may cause fire.	

DISCLAIMER

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Buch information is, to the test of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the subability of such information for his own particular use.

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## **Method Statement**

ExonMobil Chemical

(Including Risk Assessment)

#### ExxonMobil™ LLDPE LL 8460 Series Linear Low Density Polyethylene Resin

Product Description LL \$450 is a linear low density hexene copolymer designed to offer excellent ESCR and toughness. This resin is ideally suited to applications that require the optimum balance of processability, stiffness and low temperature toughness.

General					
Availability 1	Latin America		North America	<ul> <li>South America</li> </ul>	
AddEve	<ul> <li>LL 8460.29: Long Term UV-15 - Stabilizer: Yes</li> </ul>		LLP5460.29: Long Term UV-15 Stabilizer: Yes		
Applications	Agricutural Tanks     Chemical Storage Tanks		Large Size Playground Equipment Pallets	Potable Water Tanks     Septic Tanks	
Revision Date	<ul> <li>July 2011</li> </ul>				
Recin Properties	Typical Value	(English)	Typical Value	(81)	Test Based On
Density	0.938	g/cm <sup>a</sup>	0.938	g/cm <sup>4</sup>	ASTM D4883
Melt index (190°C/2.16 kg)	3.3	g/10 min	3.3	g/10 min	ASTM D1238
Thermal	Typical Value	(English)	Typical Value	(\$1)	Test Based On
Defection Temperature Under Load (DTUL) at 66psi - Unannealed					ASTM D648
-	144	*F	62	°C	
Deflection Temperature Under Load (DTUL) at 254psi - Unannealed					ASTM D648
-	102	*F	39	°C	
Melting Temperature	261	۰F	127	°C	ASTM D3418
Molded Properties	Typical Value	(English)	Typical Value	(\$8)	Test Based On
Tensile Strength at Yield					ASTM D638
2.0 Inimin (51 mm/min)	2600	psi	18	MPa	
Elongation at Yield (2.0 inimin (51 mm/min))	20	96	20	76	ASTM D638
Flexural Modulus - 1% Secant	110000	psi	770	MPa	ASTM 07908
Environmental Stress-Crack Resistance					ASTM D1593A
10% Igepal, FS0	150	tr	150	hr	
100% igepal, FS0	> 1000	hr	> 1000	hr	
Impaot	Typical Value	(English)	Typical Value	(81)	Test Based On
Impact Strength					ARM
-40"F (-40"C), 0.125 in (3.18 mm)	70	1:1D	95	J	
40"F (-40"C), 0.250 in (6.35 mm)	190	10	258	J	

All physical properties were measured on 3 mm, rotomolded samples unless a different value is shown, except for EBCR, which was measured on compression molded samples. Tensile testing was conducted at a crosshead speed of 50 mm/min. The tensile strength reported refers to the maximum stress reached during the test. Test procedures may be modified to accommodate operating conditions or facility limitations.

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## **Method Statement**

(Including Risk Assessment)

ExxonMobil Chemical ExxonMobil™ LLDPE LL 8460 Series Linear Low Density Polyethylene Resin Legal State Contact your Exit nical Customer Service Representative for potential food contact application compliance (e.g. FDA, EU, elitchi Che This product is not intended for use in medical applications and should not be used in any such applications Notes Product may not be available in one or more countries in the identified Availability regions. Please contact your Sales Representative for complete Country Availability. For additional technical, sales and order assistance: Wondwide and the Americas Exxon/Mobil Chemical Company 13501 Katy Freeway Houston, TX 77079-1356 Europe, Middle East and Africa Asia Pacific Asia Pacific Extronitobil Chemical Asia Pacific 1 HarbourFront Place #05-00 HarbourFront Tower One Singapore 099633 +86-21-24173999 Exxon/Mobil Chemical Europe Hermesiaan 2 1831 Machelen, Belgium 420-239-016-274 USA 1-291-870-6050

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