Product: Company: Bushman Repellent Personal Insect Repellent Juno Ltd Date Prepared: 29 September 2021

Replaces: 16 December 2016

Page 1 of 13

1 Identification

Product Name: Other Names:	Bushman Repellent Personal Insect Repellent Bushman Ultra Aerosol (BU60, BU130, BU225)
Chemical Name(s):	Diethyltoluamide (DEET), LPG and ethanol-
Recommended Uses:	Personal Insect Repellent
Supplier	
Name:	Juno Ltd.
Address:	68 Bond St West, Mordialloc, Vic. 3195, Australia
Phone Number:	+61 (0)3 9587 8514
Email:	info@junolabs.com.au
Emergency Telephone:	For ambulance, fire, police call: 000. For medical advice call: 13 11 26

Please ensure you refer to the limitations of this Safety Data Sheet as set out in Section 16 "Other Information."

2 Hazards Identification

The hazard information contained in this SDS is for non-consumers handling the product and its ingredients. Consumers should refer to the APVMA approved label on the container for advice in relation to use and handling of the product.

Aerosol (liquid under pressure): Classified as hazardous according to the criteria of the GHS as adopted in Australia. A Dangerous Good according to ADG 7.7

Poisons Schedule: Not Scheduled GHS Hazard Statement(s)

Aerosol	Category 1	H222 H229	Extremely flammable aerosol Pressurised container: May burst if heated
Eye irritation/corrosion	Category 2A	H319	Causes serious eye damage
Skin Corrosion irritation	Category 2	H315	Causes skin irritation



	SAFETY DA	TA SHEET
Product:	Bushman Repellent Personal Insect Repellent	Date Prepared: 29 September 2021
Company:	Juno Ltd	Replaces: 16 December 2016
		Page 2 of 13

Note: the following statements apply to non-consumers. Consumers should follow the product label for safety advice.

	Prevention:				
Precautionary statements	P210	Keep away from, heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.			
olatomonio	P211	Do not spray on an open flame or other ignition source.			
	P251	Do not pierce or burn, even after use			
	P264	Wash hands and face thoroughly after handling.			
	P280	Wear eye protection/face protection.			
	1 200				
	Response:				
	P321	Specific treatment: If poisoning occurs, contact a Doctor or Poisons Information Centre – Phone Australia 13 11 26.			
	P302 + P352	IF ON SKIN: Wash with plenty water			
	P305 + P351 + P3	338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.			
	P332 + P337 + P3	If skin or eye irritation persists: Get medical advice/attention.			
	P362 + P364	Take off contaminated clothing and wash it before reuse.			
	Storage:				

Storage: P410 + P412

Protect from sunlight. Do not expose to temperatures exceeding $50^{\circ}\mathrm{C}$

3 Composition / Ingredients

Identity (Other Names)	<u>CAS</u> <u>Number</u>	Proportion (w/w)
DEET (Diethyltoluamide)	134-62-3	40%
Ethanol	64-17-5	10 - 30%
Unodourised LPG (ELGAS)	68476-85-7	10 - 30%
Other proprietary ingredients not individually contributing to the hazard classification		<10%

	SAFETY DA	TA SHEET
Product:	Bushman Repellent Personal Insect Repellent	Date Prepared: 29 September 2021
Company:	Juno Ltd	Replaces: 16 December 2016

Page 3 of 13

4 First Aid Measures

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone 13 11 26.

First-Aid for handlers label directions	other than consumers. Consumers should follow
Swallowed:	Give water to drink Do NOT induce vomiting. Contact a doctor or Poisons Information Centre (Phone 13 11 26)
In Eye:	Wash continuously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek prompt medical attention.
On Skin:	Product is designed for application onto skin. If irritation develops stop using product. In manufacturing environment or handling bulk material : If large amounts on skin wash off with plenty of soap and water. If irritation develops and persists get medical attention.
Inhaled:	Remove to fresh air. If breathing difficulties are experienced, seek medical attention.
Advice to Doctor	Treat symptomatically
Symptoms caused by exposure	Irritating to the skin, eyes and mucous membranes.

5 Fire Fighting Measures

Based on ethanol and LPG

areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may	Extinguishing Media:	Foam, dry chemical, CO ₂ or water fog
Gases evolved in fire could include carbon monoxide, carbon dioxide and nitrous oxides.		 easily ignited by heat, sparks or flames. Vapours may form explosive mixtures with air. Vapours may travel to source of ignition and flash back. Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Gases evolved in fire could include carbon

Special protective equipment	Fight fire from maximum distance possible or
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SAFETY DA			TA SHEET	
Product:	Bushman Repellent Insect Repellent	Personal	Date Prepared: 29 September 2021	
Company:	Juno Ltd		Replaces: 16 December 2016	
			Page 4 of 13	
and precau firefighters		from protected area. Wear self-contained breathing apparatus and protective clothing.		
Hazchem C	ode:	•2YE assigned according to the rules and LPG content. ADG 7.7 has not issued a code		

6 Accidental Release Measures

Based on LPG content

Emergency Procedures: Avoid inhalation of vapour. Extinguish any sources of ignition. As an immediate precautionary measure, isolate spill or leak area for at least 50 meters in all directions. Do not puncture cans – move leaking cans to an open area and spray with water to dissipate the LPG vapour. Never leave or move a leaking cylinder into a confined space (building, shed or vehicle) as vapour will collect in the confined space, creating several hazards. See Section 7 for more detail. FIRE: If truck load is involved in a fire, ISOLATE for 800 meters in all directions; also, consider initial evacuation for 800 meters in all directions. (ERG, 2016). Sec section 8 for suitable protective equipment.

Environmental precautions: Do not allow material to enter waterways or sewer. If large quantities of this material enter the waterways contact the Environmental Protection Authority, or your local Waste Management Authority.

Methods and materials for containment and cleaning up of spill: The consumer product is packaged in small containers. Large spills are unlikely.

In case of **small spill**, Mop or wipe up and if necessary, spread an absorbent material such as soil, sand over the spilled product. **For large spills:** Cover with non-combustible absorbent material (e.g., sand, soil, vermiculite). Shovel material into clean, dry, labelled flammable waste containers and close lids. See Section 13 for disposal of the absorbent material at a landfill.

Recycle any unused portion of the material for its approved use or return it to the manufacturer or supplier. Ultimate disposal of the chemical must consider: the material's impact on air quality; potential migration in air, soil or water; effects on animal, aquatic and plant life; and conformance with environmental and public health regulations.

7 Handling and Storage

8 Precautions for Safe Handling:

Product is designed for application to the skin. Avoid contact with eyes and plastics. Do not intentionally concentrate or inhale. Keep away from sources of ignition - No smoking.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge. Use appropriate engineering controls: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate

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Product:	Bushman Repellent Personal
	Insect Repellent
Company:	Juno Ltd

Date Prepared: 29 September 2021

Replaces: 16 December 2016

Page 5 of 13

area). All equipment used when handling the product must be grounded. Do not touch or walk-through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements, or confined areas. A vaporsuppressing foam may be used to reduce vapours. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean, non-sparking tools to collect absorbed material. LARGE SPILL: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor but may not prevent ignition in closed spaces. (ERG, 2016)

Conditions for Safe Storage:

Store out of reach of children. Keep cool and away from flame.

9 Exposure Controls / Personal Protection

Occupational Exposure Limits: Exposure limits have been established by Safe Work Australia for some components of this product. This section is relevant to non-consumers. Consumers should follow the product label for personal protection advice.

Product Component Exposure Standards:

Substance	SWA (ppm)	TWA (mg/m ³)	STEL (ppm)	STEL mg/m ³)	Comments
LPG	800	1900			
Ethanol	1000	1880			

Based on ethanol and butane components

Engineering Controls:

Local exhaust and/or mechanical exhaust, fitted with flame and explosion proof electrical fittings recommended. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Personal Protective equipment for non-consumer use handling situations:

Eye and Face Protection:

Eye protection (face shield or chemical resistant goggles) should be worn where there is potential for product to be splashed onto face or into eyes. Note that DEET softens many plastics and face shields/goggles may be damaged if they come into contact with DEET.

Skin and Body Protection:

Consumer Product is intended for application to skin, hence, protection not required. **In the manufacturing environment** wear appropriate long-sleeved personal protective clothing to prevent skin contact. Chemical resistant gloves (butyl rubber) and footwear should be used when handling large quantities of the product.

SAFETY DATA SHEET Bushman Repellent Personal **Product:**

Insect Repellent Company: Juno Ltd

Date Prepared: 29 September 2021

Replaces: 16 December 2016

Page 6 of 13

Respiratory Protection:

Not normally required. Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose organic vapour respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

9 Physical and Chemical Properties

		,	
Product physical	Clear liquid	Product pH	5.5 – 6.5
state/colour			
Product odour	No distinctive odour	kinematic viscosity	Ethanol - 1.074 mPa.s at 25 °C
melting point/freezing point	Not applicable	Water solubility	Ethanol - Miscible LPG - 0.07cm3 / cm3
boiling point or initial boiling point and boiling range	Ethanol 78.2 °C Butane -0.5°C	partition coefficient: n- octanol/water (log value)	Not applicable
flammability	Highly flammable	vapour pressure	Ethanol -10 kPa at 29.2 °C; Propane 1530 kPa (max) Butane 520 kPa (max)
lower and upper explosion limit/flammability limit	Butane gas– lower flammable limit 1.9 %. Upper limit 8.6 % Propane gas - lower flammable limit 2.4 %. Upper limit 9.6 % Ethanol lower limit 3.8%. upper limit 19%	density and/or relative density (Water = 1):	Density (kg/m ³) Butane liquid 568 Butane gas 2.47 Propane liquid 510 Propane gas 1.86
flash point	Not applicable to Aerosols	relative vapour density (Air = 1):	No product data found
Auto-ignition temperature	Butane gas– 372 °C Propane gas – 450 °C Ethanol - 287 °C	particle characteristics	Not applicable
decomposition temperature	No data found		

Mainly based on LPG content (20% butane/80% propane)

10 Stability and Reactivity

Reactivity:

Highly flammable.

LPG reacts violently with oxidising agents. Incompatible with oxidising agents, acids, heat and ignition sources. ETHANOL reacts violently with acetyl chloride and acetyl bromide. Mixtures with concentrated sulfuric acid and strong hydrogen peroxide can cause explosions. Mixtures with concentrated hydrogen peroxide form powerful explosives. Reacts readily with hypochlorous acid and

SAFETY DATA SHEET						
Product:	Bushman Repellent Personal Insect Repellent	Date Prepared: 29 September 2021				
Company:	Juno Ltd	Replaces: 16 December 2016				
		Page 7 of 13				
with chlorine.						
Chemical Stability:						
Stable	under normal conditions.					

 Product:
 Bushman Repellent Personal

 Insect Repellent

 Company:
 Juno Ltd

Date Prepared: 29 September 2021

Replaces: 16 December 2016

Page 8 of 13

Possibility of hazardous reactions:

DEET: no hazardous reactions known.

LPG: Reacts violently with oxidising agents.

Ethanol: Explodes on contact with calcium hypochlorite Vapor may explode if ignited in an enclosed area. Containers may explode when heated or involved in a fire. Also explodes in contact with many other chemicals.

Conditions to Avoid:

Excessive heat, sparks and flame

Incompatible materials:

Oxidizers, strong acids and alkalis, alkali metals, alcohols, peroxides and polyols. Do not use natural rubber flexible hoses. Incompatible (potentially violently) with oxygen, halogens and metal halides.

Hazardous decomposition products:

Carbon and nitrogen oxides. Heating to decomposition produces acrid smoke and irritating fumes.

11 Toxicological Information

Acute Toxicity:

Oral:

Low toxicity. Product estimated Rat LD₅₀ > 2000 mg/kg

Inhalation:

Not a likely route of exposure from use according to label directions. Low toxicity expected. Could cause irritation.

DEET: Rat 4-hour $LC_{50} > 2.02 \text{ mg/L}$.

LPG: Not classified as toxic by inhalation.

Ethanol: Under normal conditions of use and handling, no inhalation hazard is present (rat 10-hour LC_{50} 20g/L). It may cause irritation to respiratory system if inhaling concentrated vapor of this liquid. Symptoms may include coughing, drowsiness, dizziness and tightness in chest.

Dermal:

Low toxicity. Estimated Rat LD₅₀ >2000 mg/kg

Skin Corrosion/Irritation:

May cause irritation in some people.

Eye Damage/Irritation:

Can cause eye irritation. Liquid or mists sprayed into the eye may cause severe irritation or damage to the eyes.

Sensitisation:

Based on available data not classified as causing skin or respiratory sensitisation.

Germ cell mutagenicity:

No effects observed in laboratory animal studies.

Product:	Bushman Repellent Personal		
	Insect Repellent		
Company:	Juno Ltd		

Date Prepared: 29 September 2021

Replaces: 16 December 2016

Page 9 of 13

Carcinogenicity:

Not classified as a carcinogen although IARC has classified ethanol as a carcinogen based on the effects caused by drinking alcoholic beverages. Occupational exposure is not known to result in carcinogenic effects.

Reproductive toxicity:

No evidence of reproduction and developmental toxicity in laboratory animals.

Specific Target Organ Toxicity:

No data are available for the product. Long term ingestion of ethanol may cause changes in liver, kidneys, gastrointestinal tract and heart muscle. LPG is an asphyxiant gas.

Aspiration Hazard:

Based on available data not classified as an aspiration hazard.

Information on possible routes of exposure: Inhalation and dermal.

Early onset symptoms related to exposure:

Ethanol: nausea, vomiting, CNS depression, acute respiratory failure. LPG: drowsiness, narcosis, asphyxia; liquid: frostbite. DEET: eye and mucous membrane irritation.

Delayed health effects from exposure:

Ethanol: Death and with chronic use, severe health problems, such as liver and brain damage.

Interactive Effects:

No information found.

12 Ecological Information

Ecotoxicity:

Ethanol: Lowest acute aquatic LC_{50} 34.9 g/L. No chronic data found. LPG: Not toxic to flora, fauna or soil organisms. Will not cause long term adverse effects in the environment and is not dangerous to the ozone layer. DEET: Lowest acute aquatic $LC_{50} = 75$ mg/L. Chronic NOEC = 7.6 mg/L.

Persistence and Degradability:

The active constituent (DEET) modelling suggests rapid to moderate degradation. DEET degraded in the atmosphere photochemically. Biodegradation in soil and water reached, 0% in 28 days,

Ethanol: rapidly degraded in anaerobic microcosms. Mean half-life of 5.9 days for aerobic biodegradation.

LPG: Unlikely to cause long term adverse effects in the environment.

Bioaccumulative potential:

Ethanol: The estimated BCF of 3, from its log K_{ow} of -0.31and a regression-derived equation, suggests the potential for bioconcentration in aquatic organisms is low.

DEET: BCFs of 0.8-2.4 measured in carp suggest bioconcentration in aquatic organisms is low.

LPG: Not expected to bioaccumlate.

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Product:	Bushman Repellent Personal	Date
	Insect Repellent	
Company:	Juno I td	

ate Prepared: 29 September 2021

Replaces: 16 December 2016

Page 10 of 13

Mobility in soil:

Ethanol: The log K_{oc} value of 0.20, indicates that ethanol is expected to have very high mobility in soil.

LPG: Spillages are unlikely to penetrate the soil. The product is likely to vaporise rapidly into the air.

DEET: expected to have moderate mobility based upon an estimated K_{oc} of 115.

13 Disposal Considerations

Disposal Methods:

Small quantities: small quantities may be disposed of in household garbage. Do not puncture cans. Do not incinerate.

Large quantities: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. Do not incinerate. Containers may contain residual alcohol which could cause explosion if exposed to sources of ignition. Note Section 8 when disposing of large quantities.

14 Transport Information

Consult the ADG 7.7, IMDG and ICAO/IATA Codes for all the transport requirements for the specified UN Number.

	Land Transport (ADG 7.7)	Sea Transport (IMDG)*	Air Transport (ICAO/IATA)*
UN Number	1950	1950	1950
UN proper shipping name	AEROSOL	AEROSOL	AEROSOL
Transport Hazard Class	2	2	2
Packaging Group	None assigned - see packaging instructions		
Marine Pollutant		No	
Limited Quantities*	See SP 277		

^{**} Consult IMDG Code for sea transport and ICAO/IATA Code for air transport provisions and instructions.

Packaging Instructions

P207: Authorised packaging for UN 1950 - see page 774 of ADG 7.7.

Environmental hazards for transport purposes	Classified as Aquatic chronic hazard category 2 – toxic to aquatic life with long lasting effects. Not a marine pollutant.
Special Precautions for User:	Do not puncture cans. Keep away from sources of heat.

Product:	Bushman Repellent Personal Insect Repellent		Date Prepared: 29 September 2021		
Company:	Juno Ltd		Replaces: 16 December 2016		
			Page 11 of 13		
Hazchem C	ode:	•2YE assigned according to the rules and LPG conten ADG 7.7 has not issued a code.			

15 Regulatory Information

Poison Scheduling:	Not Sch	eduled
APVMA Registration No	60969	
Montreal Protocol (Ozone depleting sub https://www.environment.gov.au/prote one/montreal-protocol		Does not contain an ozone depleting substance
The Stockholm Convention (Persistent O Pollutants) <u>http://chm.pops.int/Home/tabid/2121/</u> <u>spx</u>	-	Does not contain a POP
The Rotterdam Convention (Prior Inform Consent) <u>http://www.pic.int/TheConvention/ChemnexIIIChemicals</u> Basel Convention (Hazardous Waste)		Not a chemical included in Annex III The Basel Convention may be triggered
		when disposing of this product as a waste. See Annex 1 Categories of Wastes to be Controlled.
International Convention for the Prevention of Pollution from Ships (MARPOL)		Human health: See section 11. Bioaccumulation & Biodegradation: see section 12. Aquatic toxicity: See section 12. Interference with other uses of the sea: none known

16 Other Information

Glossary

ADG AS/NZS	Australian Code for the Transport of Dangerous Goods by Road & Rail Edition 7.5, 2017 Australian Standard/New Zealand Standard
BCF: CAS Number:	Bioconcentration Factor - a measure for the characterization of the accumulation of a chemical in an organism. It is defined as the concentration of a chemical in an organism (plants, microorganisms, animals) divided by the concentration in a reference compartment (e.g. food, surrounding water). Unique Chemical Abstracts Service Registry Number
EC ₅₀ :	Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species).
ErC ₅₀	The concentration of test substance which results in a 50 percent reduction in growth rate.
Explosive Limits:	The range of concentrations (% by volume in air) of a flammable gas or vapour that can result in an explosion for ignition in a confined space.
GHS:	Globally Harmonized System of classification and labelling of

Product:	Bushman Repellent Personal Insect Repellent	Date Prepared: 29 September 2021
Company:	Juno Ltd	Replaces: 16 December 2016
		Page 12 of 13

	Page 12 01 13	
	chemicals (GHS)	
Hazchem Code:	Emergency action code of numbers and letters that provide	
	information to emergency services, especially fire fighters	
HCIS:	Hazardous Chemical Information System	
	(http://hcis.safeworkaustralia.gov.au/HazardousChemical)	
IARC:	International Agency for Research on Cancer	
IDLH:	Immediately dangerous to life or health (IDLH) is defined by the US	
14	National Institute for Occupational Safety and Health (NIOSH) The organic carbon partition coefficient (mL soil water /g organic	
K _{oc}	carbon).	
LC ₅₀ :	Lethal Concentration 50% – concentration in air which is fatal to 50%	
LO ₅₀ .		
	of a test population. The dose of a chemical that will kill 50% of the test animals receiving	
LC ₅₀	it.	
NTP:	National Toxicology Program (USA)	
pH:	Measure of how acidic or alkaline a material is using a 1 - 14 scale.	
pri.	Ũ	
_	pH 1 is strongly acidic and pH 14 strongly alkaline	
P _{ow} :	The octanol-water partition coefficient. Commonly used to indicate	
	potential the fate of chemicals in the environment	
SDS:	Safety Data Sheet	
STEL:	Short term exposure limit (STEL) means the time-weighted average	
	maximum airborne concentration of a substance calculated over a 15	
	minute period.	
SWA:	Safe Work Australia.	
TWA:	8-hour Time-weighted average (TWA) means the maximum average	
	airborne concentration of a substance when calculated over an eight-	
	hour working day, for a five-day working week.	
WES:	Workplace exposure standard	
UN Number:	United Nations Dangerous Goods Number	

References:

Work Safe Australia Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice (2020). The exposure standards comply with the Australian Workplace Exposure Standards for Airborne Contaminants. The Dangerous Goods Classification complies with the Australian Code for the Transport of Dangerous Goods by Road & Rail Edition 7.7, 2020. Other information from ChemIDPlus and linked databases and the European Chemicals Agency Classification and Labelling database. Component SDSs.

Date Prepared:	9 September 2021
Replaces:	15 December 2016
Sections Revised:	All

Disclaimer

This Safety Data Sheet (SDS) has been prepared in compliance with the Work Safe Australia Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice).. The information in this SDS should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to

SAFETY DATA SHEET			
Product:	Bushman Repellent Personal Insect Repellent	Date Prepared: 29 September 2021	
Company:	Juno Ltd	Replaces: 16 December 2016	
		Page 13 of 13	

appropriate safety precautions. It does not represent any guarantee of the properties of the product. Juno Limited shall not be held liable for any damage resulting from handling or from contact with the above product.

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