MATERIAL SAFETY DATA SHEET

Date of Issue: August 26th 2010

Bayer CropScience

1. IDENTIFICATION OF MATERIAL AND SUPPLIER

Product name **Hussar® OD Selective Herbicide**

Other names	None
Product codes and pack sizes	79388977 (3L)
Chemical group	Sulfonylurea + pyrazoline dicarboxylate safener
Recommended use	Agricultural herbicide
Formulation	Oil dispersion (OD)
Supplier	Bayer CropScience Pty Ltd ABN 87 000 226 022
Address	391 - 393 Tooronga Road, East Hawthorn Victoria 3123, Australia
Telephone	(03) 9248 6888
Facsimile	(03) 9248 6800
Website	www.bayercropscience.com.au
Contact	Development Manager (03) 9248 6888
Emergency Telephone Number	1800 033 111 – Orica SH&E Shared Services

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARDOUS SUBSTANCE (see Risk phrases below) - DANGEROUS GOOD

Combustible liquid. Very toxic to aquatic organisms.

Hazard classification	Hazardous (National Occupational Health and Safety Commission - NOHSC)
Risk phrases	R36 – Irritating to eyes. R65 – Harmful: May cause lung damage if swallowed.
Safety phrases	See Sections 4, 5, 6, 7, 8, 9, 13
ADG classification	See Section 14.
SUSDP classification (Poisons Schedule)	Schedule 5 (Standard for the Uniform Scheduling of Drugs and Poisons)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
Iodosulfuron-methyl-sodium	[144550-36-7]	100
Mefenpyr-diethyl (crop safener)	[135590-91-9]	300
Solvent naphtha (petroleum), light aromatic	[64742-95-6]	≈ 80
Solvent naphtha (petroleum), heavy aromatic	[64742-94-5]	≈ 280
Naphthalene (in Solvent naphtha (petroleum), heavy aromoatic))	[91-20-3]	(≈ 3)
Sodium dioctyl sulphosuccinate	[577-11-7]	≈ 140
Naphthalenesulfonic acid, sodium salt, polymer, with formaldehyde	[9008-63-3]	≈ 20
Other ingredients	non hazardous	≈ 210

4. FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to the doctor.

Inhalation

If inhaled, remove patient to fresh air and keep warm and at rest. Obtain medical advice if symptoms are experienced. If breathing stops or shows signs of failing, start artificial respiration. Call for prompt medical attention.

Skin contact

Carefully remove contaminated clothing immediately. Wash affected areas with soap and water. Seek medical aid if symptoms persist.

Eye contact

Rinse eyes immediately with plenty of water and obtain medical aid.

Ingestion

Wash out mouth with water. Do NOT induce vomiting. Drink water in small sips. Seek medical advice as above. Do not give anything by mouth to a person who is unconscious or semi conscious.

First Aid Facilities

Provide eyewash and safety shower facilities in the workplace.

Medical attention

Symptoms of poisoning

Local: Irritation of eyes and respiratory tract. Skin dryness or cracking from repeated exposure.
Systemic: Headache, dizziness, drowsiness, nausea, confusion, anaesthesia and other central nervous system effects. May cause lung damage if swallowed, with symptoms including cough, tachypnoea (rapid breathing), breathlessness, cyanosis (blueness of the skin) and fever.

Treatment

For *local contamination* treatment should be symptomatic after decontamination. In case of skin or eye contamination, treat as above under First Aid Measures.

Note for physicians

As this product contains a hydrocarbon liquid, care should be taken to prevent pulmonary aspiration. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema.

Due to the low oral toxicity, and the risk of aspiration into the lung, gastric lavage is not recommended. In case of ingestion of large amounts, it may be considered after adequate airway protection (intubation with block), as the risk of spontaneous vomiting with aspiration might be higher. Activated charcoal and cathartics (magnesium or sodium) should be given. Treatment should be supportive and symptomatic. In case of acute respiratory distress syndrome, the use of PEEP-ventilation has been suggested. Monitor kidney, liver and pancreas function.

Contraindications: Catecholamines should be avoided due to an increased risk of ventricular fibrillation.

5. FIRE FIGHTING MEASURES

Extinguishing media Water, foam, dry powder, carbon dioxide

Hazards from combustion products In a fire, formation of hydrogen chloride, hydrogen iodide, cyanides, and oxides of carbon, nitrogen and sulphur can be expected.

Precautions for fire fighters The product is a Class C1 Combustible liquid. Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). If possible and without risk, remove intact containers from exposure to fire. Otherwise, spray containers with water to keep cool. Avoid spraying directly into containers due to danger of boilover. Contain fire-fighting water by bunding area with sand or earth to prevent it entering any bodies of water. Dispose of fire control water or other extinguishing agent and spillage safely later.

Hazchem code ▪3Z

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with the spilled material or contaminated surfaces. Extinguish all possible sources of ignition. When dealing with spills do not eat, drink or smoke and wear protective clothing and equipment as described in Section 8 - PERSONAL PROTECTION. Keep people and animals away. Prevent spilled material from entering drains or watercourses. Contain spill and absorb with earth, sand, clay, or other absorbent material. Collect and store in properly labelled, sealed drums for safe disposal. Deal with all spillages immediately. If contamination of drains, streams, watercourses, etc. is unavoidable, warn the local water authority.

7. HANDLING AND STORAGE

Handling Keep out of reach of children. Product will irritate the eyes. Avoid contact with eyes. Wash hands after use. After each day's use wash gloves, goggles and contaminated clothing. Keep product away from sources of ignition.

Storage Store in the closed, original container in a dry, cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Keep away from ignition sources and protect from extreme heat.

Flammability Combustible liquid, Class C1 - flashpoint greater than 60° C and less than 150º C.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards Bayer CropScience recommends an exposure limit of 1 mg/m^3 for iodosulfuron.
The manufacturer of the solvent recommends an Occupational Exposure Limit for solvent naphtha (petroleum), heavy aromatic: TWA: 100 mg/m^3 (17 ppm).
For the small amount of naphthalene present in the solvent the NOHSC Occupational Exposure Limits are: TWA: 10 ppm (52 mg/m^3), STEL: 15 ppm (79 mg/m^3).

Definitions:
Exposure standard – Time Weighted Average (TWA) means the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION- CONTINUED

Exposure standard – Short term exposure limit (STEL) means a 15 minute TWA exposure which should not be exceeded at any time during the working day.

Biological limit values None allocated.

Engineering controls Control process conditions to avoid contact. Use in a well-ventilated area only.

Personal Protective Equipment

Eyes:	Goggles or face-shield
Clothing:	Cotton overalls buttoned to the neck and wrist (or equivalent clothing)
Gloves:	Elbow-length PVC or nitrile gloves.
Respiratory:	If airborne concentrations are likely to exceed the exposure standards above or if inhalation of vapour is likely, an AS/NZS 1715/1716 approved respirator should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Brown liquid
Odour:	Aromatic
pH:	7.7 (1% dilution)
Vapour pressure:	6.7 x 10^{-6} mPa at 25° C (iodosulfuron-methyl-sodium) 0.005 kPa (20 °C) (solvent)
Vapour density:	> 1.00 (101.3 kPa/air=1) (solvent)
Boiling point:	220 to 290° C (boiling point range of solvent)
Freezing/melting point:	- 13° C (solvent)
Solubility:	Disperses in water
Specific Gravity:	1.130 at 20 °C
Flash Point:	81 °C
Flammability (explosive) limits:	LEL: 0.6; UEL: 7.0 Vol. % in air (solvent)
Auto-ignition temperature:	460° C
Partition coefficient (octanol/water):	Iodosulfuron-methyl-sodium: Log P_{ow} = - 0.70 (pH 7); Mefenpyr-diethyl: Log P_{ow} = 3.83 (21°C)

10. STABILITY AND REACTIVITY

Chemical stability Stable under normal conditions of use.

Conditions to avoid Avoid ignition sources and extreme heat. Do no store for prolonged periods in direct sunlight.

Incompatible materials Avoid strong oxidising agents, acids and bases.

Hazardous decomposition products In a fire, formation of hydrogen chloride, hydrogen iodide, cyanides, and oxides of carbon, nitrogen and sulphur can be expected.

Hazardous reactions None known

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

Inhalation Inhalation of the solvent vapour may be irritating to respiratory tract, may cause headaches and dizziness, could be anaesthetic, and may have other central nervous system effects.

Skin contact May irritate the skin. Repeated exposure may cause skin dryness or cracking.

Eye contact Irritating to eyes.

Ingestion Harmful if swallowed. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema.

ANIMAL TOXICITY DATA

Acute:

Oral toxicity LD_{50} rat: > 5000 mg/kg (*similar formulation*)

Dermal toxicity LD_{50} rat: > 4000 mg/kg (*similar formulation*)

Inhalation toxicity LC rat >2.81 mg/L, respirable fine dust (4h) (*iodosulfuron-methyl-sodium)*
Highest attainable concentration

Skin irritation Not irritating – rabbit (*similar formulation*)

Eye irritation Irritating – rabbit

Sensitisation Not a sensitiser - guinea pig (*similar formulation*)

Chronic:

Iodosulfuron-methyl-sodium and mefenpyr-diethyl showed no mutagenicity, reproductive toxicity or carcinogenicity in animal studies. Prolonged or repeated skin contact with the hydrocarbon solvents in this product may result in irritation and dermatitis. This product contains naphthalene. The International Agency for Research on Cancer evaluated naphthalene and concluded that there was sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. Accordingly, IARC classified naphthalene as a possible human carcinogen (Group 2B).

12. ECOLOGICAL INFORMATION

Hussar OD is very toxic to aquatic organisms. It has low toxicity to birds, bees and earthworms.
Small amounts or very low concentrations can damage non-target vegetation.
DO NOT contaminate streams, rivers or waterways with the chemical or used containers.

Ecotoxicity

Hussar OD:

Fish toxicity:	LC_{50} (96 h) rainbow trout (*Oncorhynchus mykiss)* 7.75 mg/L
Aquatic invertebrate toxicity:	EC_{50} (48 h) water flea (*Daphnia magma)* 8.3 mg/L
Algal toxicity:	EC_{50} (72 h) green algae (*Pseudokirchneriella subcapitata)* 6.71 mg/L
Aquatic plant toxicity:	EC_{50} (7 d) duck weed (*Lemna gibba*): 8.4 µg/L

12. ECOLOGICAL INFORMATION- CONTINUED

Iodosulfuron-methyl-sodium:

Fish toxicity:	LC_{50} (96 h) rainbow trout (*Oncorhynchus mykiss*) > 100 mg/L
Aquatic invertebrate toxicity:	EC_{50} (48 h) water flea (*Daphnia magma)* >100 mg/L
Algal toxicity:	EC_{50} (72 h) green algae 0.152 mg/L
Aquatic plant toxicity:	EC_{50} (7 d) duck weed (*Lemna gibba*): 0.83 µg/L
Bird toxicity:	LD_{50} bobwhite quail, mallard duck, Japanese quail > 2000 mg/kg
Bees:	LD_{50} (oral) > 80 µg/bee; (contact) > 150 µg/bee
Worms:	LC_{50} > 1000 mg/kg soil

Environmental fate, persistence and degradability, mobility

For iodosulfuron-methyl-sodium photodegradation DT_{50} is about 50 days. Abiotic hydrolysis DT_{50} 31 days (pH 5), >365 days (pH 7), 362 days (pH 9) (20° C). Soil DT_{50} 1-5 days (7-10 days with low soil moisture); degradation is mainly microbial. K_{oc} 0.8-152. Iodosulfuron-methyl-sodium and its metabolites have almost no vertical movement in soil; lysimeter and computer simulation studies indicate that neither iodosulfuron-methyl-sodium nor its metabolites would be transported to soil layers deeper than 1 m.

13. DISPOSAL CONSIDERATIONS

Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt. Dispose of waste product through a reputable waste contractor.

14. TRANSPORT INFORMATION

UN number	UN 3082
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (contains iodosulfuron-methyl-sodium, solvent naphtha (petroleum) heavy aromatic solution)
Class and Subsidiary Risk	Class 9
Packing Group	Packing Group III
Hazchem code	▪3Z
Marine Pollutant	Yes
Note for Road and Rail Transport	According to AU01, Environmentally Hazardous Substances in packagings, IBCs or any other receptacle not exceeding 500 kg or 500 L are not subject to the ADG Code

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Code Act 1994
Australian Pesticides and Veterinary Medicines Authority approval number: 61992
See also Section 2.

16. OTHER INFORMATION

Trademark information Hussar® is a registered trademark of Bayer.

Preparation information Replaces November 27th 2009 edition.
Reasons for revision: Hazard identification, Fire fighting measures.

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

END OF MSDS