



MATERIAL SAFETY DATA SHEET

Issue Date: 1 August 2011

Issued by: NUFARM MALAYSIA SDN BHD

Product Name:	Metsulfuron-methyl 20% WG
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1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND COMPANY:

Product Name	Metsulfuron-methyl 20% WG
Company Name	NUFARM MALAYSIA SDN BHD (207731-P)
Company Address	L2.03 Wisma BU8, No. 11, Lebuh Bandar Utama, Bandar Utama, 47800, Petaling Jaya, Selangor D.E., Malaysia.
Tel/Fax Number	Tel: (+60 3) 7629 7233 Fax: (+60 3) 7629 7229
Email	sales.my@my.nufarm.com
Emergency Contact	National Poison Centre 1800 88 8099 (Normal Hour) (+60 12) 430 9499 (After Hour)
Product Type	Herbicide
Product Use	A selective systemic herbicide used to control grasses and broad-leaved weeds in paddy, mature & in mature oil palm and rubber.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION:

<u>Emergency Overview:</u>	
Appearance and Odour	Off-white to tan granules with slight odour.
Warning Statements	CAUTION. Keep out of reach of children. Harmful if absorbed through skin. Causes moderate eye irritation. Avoid breathing dust or spray mist. Avoid contact with eyes, skin and clothing
<u>Potential Health Effects:</u>	
Ingestion	Slightly toxic based on toxicity studies.
Eye Contact	Eye contact with this material may cause eye irritation with tearing, pain or blurred vision.
Skin Contact	Repeated dermal contact with the active ingredient may cause skin irritation with itching, burning, redness, swelling or rash.
Inhalation	Low inhalation toxicity.
<u>Potential Environment Effect:</u>	Practically non-toxic to fish, birds and bees.

3. COMPOSITION / INFORMATION ON INGREDIENTS:

Type of Formulation	Water Dispersible Granule (WG)		
Ingredients	<u>Name</u>	<u>CAS</u>	<u>Proportion</u>
	A.I.: Metsulfuron-methyl	74223-64-6	20.0%, w/w
	Inert Ingredients		80.0%, w/w

4. FIRST AID MEASURES:

Ingestion	Contact the doctor or National Poison Centre immediately. Have the person sip water if able to swallow. Do NOT induce vomiting unless told to do so by doctor or National Poison Centre. Make every effort to prevent vomit from entering the lungs by careful placement of the patient.
Eye	Hold eyelids open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call National Poison Centre or doctor for treatment advice.



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Skin	Remove contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Wash affected area with soap and water. Call National Poison Centre or doctor for treatment advice.
Inhalation	Remove affected person to fresh air until recovered. If the person is not breathing, call 999 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call National Poison Centre or doctor for further treatment advice.

5. FIRE FIGHTING MEASURES:

Extinguishing Media	Water spray, Dry powder, sand, foam, carbon dioxide (CO ₂). Avoid using high volume water jet.
Special Fire Fighting Procedures	Use personal protective equipment. Wear self contained breathing apparatus for fire-fighting if necessary.
Specific Hazards during Fire	In the event of fire, (NO _x , CO _x , SO ₂) may be formed.
Further Information	Standard procedure for chemical fires. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

6. ACCIDENTAL RELEASE MEASURES:

Spills and Disposal	Recover the product by sweeping up or vacuuming without raising dust. Collect spilled material and waste in sealable open-top type containers for disposal.
Environmental Precaution	Prevent material from entering public sewer systems or any waterways.

7. HANDLING AND STORAGE:

Handling	Avoid generating or breathing dusts while handling the product and mixing. Do not use product container for any other purpose. Wash out the container and dispose of it in an approved manner.
Storage	For personal protective equipment (PPE) and hygiene advice, refer Section 8. Store in the closed, original container in a dry, well ventilated area out of direct sunlight. Store in a safe place away from foodstuffs, seeds or fertilizers. Store out of the reach of children. Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION:

Engineering Controls	Handle in well ventilated area, generally natural ventilation is adequate.
Personal Protective Equipment	
Eye/ Face Protection	To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.
Skin Protection	To avoid contact with skin, wear long pants, long-sleeved shirt, socks, shoes and chemical resistant gloves. An emergency shower or water supply should be readily accessible to the work area.
Respiratory Protection	Not normally required. If vapours or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.
General Hygiene Considerations	Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this materials: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.



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9. PHYSICAL AND CHEMICAL PROPERTIES:

Physical State	Solid
Appearance	Off-white to tan granules
Odour	Slight odour
Bulk Density	0.6 – 0.9 g/ml
Solubility in Water	Dispersible
Vapour Pressure	3.3×10^{-7} mPa (25°C, metsulfuron-methyl)
Octanol/Water Partition Coefficient	K_{ow} Log P is 0.0018 (pH 7, 25°C for metsulfuron-methyl)
Flammability	Non combustible material.
Other Information	pKa is 3.8 (20°C, metsulfuron-methyl)

10. STABILITY AND REACTIVITY:

Stability	Stable under normal handling and storage conditions.
Incompatibility with other materials	None reasonable foreseeable
Hazardous	No decomposition if stored and applied as directed.
Decomposition Product	
Hazardous Polymerization	Hazardous Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION:

Toxicology Information	No harmful effects are expected if the precautions on the label and this MSDS are followed.
Acute Toxicity - Oral	LD ₅₀ (rat): > 1667 mg/kg
Acute Toxicity - Dermal	LD ₅₀ (rabbit): > 667 mg/kg
Eye Irritation	Not a skin irritant (rabbit).
Skin Irritation	Slight eye irritant (rabbit).
Skin Sensitization	Not a sensitizer (guinea pig).
Chronic Effects	Base on available data, repeated exposures are not anticipated to cause additional significant adverse effects.
Reproductive Toxicity	Animal tests with metsulfuron-methyl have not demonstrated reproductive effects.
Developmental Toxicity	Animal tests with metsulfuron-methyl have not demonstrated developmental effects.
Genotoxicity	There have been some positive and negative studies, but the weight of evidence is that metsulfuron-methyl is not mutagenic.

12. ECOLOGICAL INFORMATION:

Acute Toxicity - Fish	The following data is for the active ingredient, metsulfuron-methyl: LC ₅₀ (96hr) Bluegill Sunfish: > 150 mg/L LC ₅₀ (96hr) Rainbow Trout: > 150 mg/L
Acute Toxicity - Daphnia	EC ₅₀ (48 hr) Daphnia: > 120 mg/L
Acute Toxicity - Algae	EC ₅₀ (72hr) Green Algae: > 0.157 mg/L
Acute Toxicity - Other Organisms	LC ₅₀ (8 d) Bobwhite Quail: > 5620 mg/kg LD ₅₀ (8 d) Mallard duck: > 2510 ppm Not toxic to bees. LD ₅₀ (oral) Bee: > 44.3 µg/bee LD ₅₀ (contact) Bee: > 50 µg/bee
Environmental Fate	Metsulfuron-methyl is relatively mobile in most soils, but will be retained longer in soils with higher percentages of organic matter. It is more mobile in alkaline soils than in acidic soils. Metsulfuron-methyl will degrade faster under acidic conditions, and in soils with higher moisture contents and higher temperature. Metsulfuron-methyl is stable to photolysis, but will break down in ultraviolet light. Half-life estimates in soil range from 14 to 180 days, with



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Other Precautions

an average of 30 days. Metsulfuron-methyl is stable to hydrolysis at neutral and alkaline pHs. The estimated half-life in acidic water is 3 weeks.
DO NOT contaminate dams, rivers or streams with this product or the containers which have held this product.

13. DISPOSAL CONSIDERATIONS:

Product Disposal	Ideally the product should be used for its intended purpose. If there's a need to dispose of the product, approach local authorities who hold periodic collection of unwanted chemical. On site disposal of the product is not acceptable.
Container Disposal	Do not use this container for any other purpose. Triple rinse containers, add rinsate to the spray tank, then offer for recycling / reconditioning or puncture top, sides and bottom and dispose of in landfill in accordance with local regulations. If no landfill is available, bury the containers below 500mm 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.

14. TRANSPORT INFORMATION:

Transport Information	It is a good practice to separate this product from food, food related materials, animal feedstuffs, seed or fertilizers during transport.
Storage and Transport UN Number (Sea Transport)	Follow the precautions indicated in this MSDS, Section 7: HANDLING AND STORAGE. 3077
IMO Class/Packing Group	Class 9, Packing Group III
IMO Marine Pollutant	Marine Pollutant
IMO Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S (contains metsulfuron-methyl)

15. REGULATORY INFORMATION:

Risk Phrase:	N/A
Safety Phrase:	N/A
Poisons Schedule	No data
Hazard Category	Class IV (Malaysia Regulation)
Packaging and Labeling	KEEP AWAY FROM FOODSTUFF AND CHILDREN. READ THE LABEL BEFORE USE.

16. OTHER INFORMATION:

Contact Person / Point	Nufarm Malaysia Sdn Bhd Mr. PMG Pitchai Phone: (+60 3) 31761888 Ext 217 Position: Safety & Health Officer DOSH Reg No: JKKP IS 127/438/2/2294 Email: pmg.pitchai@my.nufarm.com
Revisions Highlighted	First Issue.

...END OF MSDS ...

Note: While the information given herein is, to the best of our knowledge, correct and is given in good faith, we make no warranty, with respect hereto and disclaim all liability from reliance thereon. It is expected that individuals receiving the information will exercise their independent judgment in determining its appropriateness for a particular purpose.