



MATERIAL SAFETY DATA SHEET

METAFURON 20 WG HERBICIDE

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT : METAFURON 20 WG HERBICIDE

Product Use : A selective systemic herbicide used to control grasses and broad-leaved weeds in paddy, mature & in mature oil palm and rubber.

COMPANY IDENTIFICATION:

PT. Nufarm Indonesia
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2. COMPOSITION/INFORMATION ON INGREDIENTS

Type of Formulation : Water Dispersible Granule (WG)

Ingradiant	Cas No	Proportion
Metsulfuron-methyl <i>methyl 2-[[[(4-methoxy-6-methyl-1,3,5-triazine-2-yl)aminocarbonyl]aminosulfonyl]benzoate</i>	74223-64-6	20%
Inert ingredients		80%

3. HAZARDOUS IDENTIFICATIONS

Dangerous for the environment : R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Special labelling of certain substances and mixtures : To avoid risks to man and the environment, comply with the instructions for use.

S35 This material and its container must be disposed of in a safe way.

S57 Use appropriate container to avoid environmental contamination.

4. FIRST AID MEASURES

Description of first aid measures

General advice : Never give anything by mouth to an unconscious person.

Inhalation : Move to fresh air. Consult a physician after significant exposure. Artificial respiration and/or oxygen may be necessary.

Skin contact : Take off contaminated clothing and shoes immediately. Wash off immediately with soap and plenty of water. In the case of skin irritation or allergic reactions see a physician. Wash contaminated clothing before re-use.

Eye contact : If easy to do, remove contact lens, if worn. Hold eye open and rinse slowly and gently with water for 15-20 minutes. If eye irritation persists, consult a specialist.

Ingestion : Obtain medical attention. DO NOT induce vomiting unless directed to do so by a physician or poison control center. If victim is conscious: Rinse mouth with water.

5. FIRE FIGHTING MEASURES

Extinguishing Media : Water spray, Dry powder, sand, foam, carbon dioxide (CO₂).
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, SO₂) 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.
For personal protective equipment (PPE) and hygiene advice, refer Section 8.

Storage : 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State : Solid

Appearance : Pale yellow – cream coloured granule

Odour : Slight odour

Bulk Density : 0.6 – 0.9 g/ml

Solubility in Water : Dispersible

pH : 4 - 7 (1% dispersion)

Vapour Pressure : 3.3×10^{-7} mPa (25oC, metsulfuron-methyl)

Octanol/Water Partition

Coefficient : Kow Log P is 0.0018 (pH 7, 25oC for metsulfuron-methyl)

Flammability : Non combustible material.

Other Information : pKa is 3.8 (20oC, metsulfuron-methyl)

10. STABILITY AND REACTIVITY

Stability : Stable under normal handling and storage conditions.

Conditions to avoid : Decomposes on heating $> 140^{\circ}\text{C}$.

Materials to avoid : None under normal conditions of use.

Hazardous decom : Carbon oxides, nitrogen oxides (NO_x), sulphur oxides.

Position Products

Incompatibility with other materials : None reasonable foreseeable

Hazardous Decomposition Product : No decomposition if stored and applied as directed.

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 LD50 (rat): > 5000 mg/kg

Acute Toxicity : Dermal LD50 (rabbit): > 2000 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:
LC50 (96hr) Bluegill Sunfish: > 150 mg/L
LC50 (96hr) Rainbow Trout : > 150 mg/L

Acute Toxicity - Daphnia : EC50 (48 hr) Daphnia: > 120 mg/L

Acute Toxicity - Algae : EC50 (72hr) Green Algae: > 0.157 mg/L

Acute Toxicity Other Organisms : LC50 (8 d) Bobwhite Quail: > 5620 mg/kg
LD50 (8 d) Mallard duck > 2510 ppm
Not toxic to bees.
LD50 (oral) Bee > 44.3 µg/bee
LD50 (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 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.

Other Precautions : DO NOT contaminate dams, rivers or streams with this product or the containers which have held this product.

Environmental Exposure Limit : Active Ingredient 8 ng/l (water), 0.52 µg/kg (soil, sediment)

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.

UN proper shipping name : Environmentally hazardous substance, solid, n.o.s
(Metsulfuron methyl)

UN Number : 3077

Road/Railway

Proper shipping name : Enviromentally hazardous substance, solid , n.o.s
(Metsulfuron methyl)

UN Number : 3077

Class : 9

Packing group : III

Hazard : 90

Identification No

Inland wareways

Proper shipping Name : Environmentally hazardous substance, solid, n.o.s
(Metsulfuron methyl)

UN Number : 3077
Class : 9
Item : 12
Letter : C
Hazard : 90
Identification No

Sea

Proper shipping name : Environmentally hazardous substance, solid, n.o.s
(Metsulfuron methyl)

UN Number : 3077
Class : 9
Packing group : III
Marine pollutant : P

Air

Proper shipping name : Environmentally hazardous substance, solid, n.o.s
(Mertsufuron methyl)

UN Number : 3077
Class : 9
Packing group : III

15. REGULATORY INFORMATION

Hazardous components which must be listed on the label : Metsulfuron methyl

Symbol(s) :	N	Dangerous for the environment
R phrases :	R51/53	Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
S phrases :	S35	This material and its container must be disposed of in a safe way
	S57	Use appropriate contamination to avoid environmental contamination.

Packaging and Labeling : KEEP AWAY FROM FOODSTUFF AND CHILDREN.
READ THE LABEL BEFORE USE.

16. OTHER INFORMATION

Used R-phrases	R36	Irritating to eyes.
	R36/38	Irritating to eyes and skin.
	R38	Irritating to skin.
	R41	Risk of serious damage to eyes.
	R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
	R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

This material should only be used by persons who are made aware of its hazardous properties and have been instructed in the required safety precautions.