

Material group	170 (50000284)	Page 1 of 12
Product name	Metsulfuron-methyl Technical	Revision: March 2021
Safety data sheet according to EU Reg. 1907/2006 as amended		Supersedes October 2020

SAFETY DATA SHEET

Metsulfuron-methyl Technical

Revision: Sections containing a revision or new information are marked with a ♣.

♣ SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

- 1.1. **Product identifier** **Metsulfuron-methyl Technical**
CAS no. 74223-64-6
- 1.2. **Relevant identified uses of the substance or mixture and uses advised against** Can be used as active ingredient in herbicides only.
- 1.3. **Details of the supplier of the safety data sheet** **FMC Agricultural Solutions A/S**
 Thyborønvej 78
 DK-7673 Harbøre
 Denmark
SDS.Ronland@fmc.com
- 1.4. **Emergency telephone number**
Medical emergencies:
- | | |
|-------------------------------------|---|
| Austria: +43 1 406 43 43 | Malta: 112 |
| Belgium: +32 70 245 245 | Netherlands: +31 30 274 88 88 |
| Bulgaria: +359 2 9154 409 | Norway: +47 22 591300 |
| Cyprus: 1401 | Poland: +48 22 619 66 54 |
| Czech Republic: +420 224 919 293 | +48 22 619 08 97 |
| +420 224 915 402 | Portugal: 800 250 250 (in Portugal only) |
| Denmark: +45 82 12 12 12 | +351 21 330 3284 |
| England and Wales: 111 | Romania: +40 21318 3606 |
| Estonia: +372 7943500 | Scotland: +8454 24 24 24 |
| Finland: +358 9 471 977 | Slovakia: +421 2 54 77 4 166 |
| France: +33 (0) 1 45 42 59 59 | Slovenia: +386 41 650 500 |
| Greece: 30 210 77 93 777 | South Africa: +27 83 123 3911 (Bateleur Emergency Response Co.) |
| Hungary: +36 80 20 11 99 | Spain: +34 91 562 04 20 |
| Ireland (Republic): +353 1 837 9964 | Sweden: +46 08-331231 |
| Italy: +39 02 6610 1029 | 112 |
| Latvia: +371 670 42 473 | Switzerland: 145 |
| 112 | Turkey: 114 |
| Lithuania: +370 523 62052 | U.S.A. & Canada: +1 800 331-3148 |
| +370 687 53378 | All other countries: +1 651 632-6793 (Collect) |
| Luxembourg: +352 8002 5500 | |

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For fire, leak, spill or other accident emergencies:

U.S.A.: +1 800 424-9300 (CHEMTREC – U.S.A.)
 All other countries: +1 703 741-5970 (CHEMTREC – International)

SECTION 2: HAZARDS IDENTIFICATION

- 2.1. **Classification of the substance or mixture** Hazards to the aquatic environment, acute: Category 1 (H400)
 chronic Category 1 (H410)
 M-factor 1000

WHO classification Class U (unlikely to present acute hazard in normal use).

Health hazards The product may cause mild irritation to skin and eyes.

Environmental hazards The product is expected to be toxic to most plants.

2.2. **Label elements**

According to EU Reg. 1272/2008 as amended

Product identifier Metsulfuron-methyl Technical
 CAS no. 74223-64-6

Hazard pictograms (GHS09)



Signal word Warning

Hazard statement
 H410 Very toxic to aquatic life with long lasting effects.

Supplementary hazard statement
 EUH401 To avoid risks to human health and the environment, comply with the instructions of use.

Precautionary statements
 P273 Avoid release to the environment.
 P391 Collect spillage.
 P501 Dispose of contents and container as hazardous waste.

- 2.3. **Other hazards** Excessive dust formation may pose a dust explosion hazard.
 The substance does not meet the criteria for being PBT or vPvB.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. **Substances**

CAS name Benzoic acid, 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]amino]sulfonyl]-, methyl ester
 CAS no. 74223-64-6

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IUPAC name(s)	Methyl 2-(4-methoxy-6-methyl-1,3,5-triazin-2-ylcarbamoyl-sulfamoyl)benzoate
ISO name/EU name	Metsulfuron-methyl
EC no. (EINECS no.)	None
EU index no.	613-139-00-2
Molecular weight	381.36

3.2. **Mixtures** The product is a substance, not a mixture.

♣ SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation	If experiencing any discomfort, immediately remove from exposure. Light cases: Keep person under surveillance. Get medical attention immediately if symptoms develop. Serious cases: Get medical attention immediately or call for an ambulance.
Skin contact	Immediately remove contaminated clothing and footwear. Flush skin with water. Wash with water and soap. See physician if any symptom develops.
Eye contact	Immediately rinse eyes with much water or eyewash solution, occasionally opening eyelids, until no evidence of chemical remains. Remove contact lenses after a few minutes and rinse again. See physician if irritation develops.
Ingestion	Inducing vomiting is not recommended. Let the exposed person rinse mouth and drink water or milk. If vomiting does occur, let him/her rinse mouth and drink fluids again. Call a doctor or get medical attention immediately.

4.2. **Most important symptoms and effects, both acute and delayed** To our knowledge, adverse effects in humans have not been reported.

4.3. **Indication of any immediate medical attention and special treatment needed** Immediate medical attention is required in case of ingestion
 It may be helpful to show this safety data sheet to physician.

Note to physician A specific antidote against this substance is not known. Treatment is as for a general chemical. Gastric lavage and/or administration of activated charcoal can be considered. Possible mucosal damage may contraindicate the use of gastric lavage.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. **Extinguishing media** Dry chemical or carbon dioxide for small fires, water spray or foam for large fires. Avoid heavy hose streams.

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5.2. Special hazards arising from the substance or mixture

The essential breakdown products are volatile, toxic, irritant and inflammable compounds such as nitrogen oxides, sulphur dioxide, carbon monoxide and carbon dioxide.

5.3. Advice for firefighters

Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapours and toxic decomposition products. Fight fire from protected location or maximum possible distance. Dike area to prevent water runoff. Firemen should wear self-contained breathing apparatus and protective clothing.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

It is recommended to have a predetermined plan for the handling of spills. Empty, closable vessels (not metal) for the collection of spills should be available.

In case of large spill (involving 10 tonnes of the product or more):

1. use personal protection equipment; see section 8
2. call emergency telephone no.; see section 1
3. alert authorities.

Observe all safety precautions when cleaning up spills. Use personal protection equipment. Depending on the magnitude of the spill this may mean wearing respirator, face mask or eye protection, chemical resistant clothing, gloves and rubber boots.

Stop the source of the spill immediately if safe to do so. Reduce and avoid formation of airborne dust as much as possible, if appropriate by moistening. Remove sources of ignition.

6.2. Environmental precautions

Contain the spill to prevent any further contamination of surface, soil or water. Wash waters must be prevented from entering surface water drains. Uncontrolled discharge into water courses must be alerted to the appropriate regulatory body.

6.3. Methods and materials for containment and cleaning up

It is recommended to consider possibilities to prevent damaging effects of spills, such as bunding or capping. See GHS (Annex 4, Section 6).

Surface water drains should be covered if appropriate. Minor spills on the floor or other impervious surface should immediately be swept up or preferably vacuumed up using equipment with high efficiency final filter. Transfer to suitable containers. Clean area with strong industrial detergent and much water. Absorb wash liquid onto inert absorbent such as universal binder, Fuller's earth, bentonite or other absorbent clay and collect in suitable containers. The used containers should be properly closed and labelled.

Large spills which soak into the ground should be dug up and transferred to suitable containers.

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Spills in water should be contained as much as possible by isolation of the contaminated water. The contaminated water must be collected and removed for treatment or disposal.

- 6.4. **Reference to other sections** See subsection 7.1. for fire prevention
 See subsection 8.2. for personal protection.
 See section 13 for disposal.

SECTION 7: HANDLING AND STORAGE

- 7.1. **Precautions for safe handling** Like most organic powders, the product can form explosive mixtures with air. Avoid dust formation and take precautionary measures against static discharge. Use explosion protected equipment. Keep away from sources of ignition and protect from exposure to fire and heat.

In an industrial environment it is recommended to avoid all personal contact with the product, if possible by using closed systems with remote system control. The material should be handled by mechanical means as much as possible. Adequate ventilation or local exhaust ventilation is required. The exhaust gases should be filtered or treated otherwise. For personal protection in this situation, see section 8.

For its use as a pesticide, first look for precautions and personal protection measures on the officially approved label on the packaging or for other official guidance or policy in force. If these are lacking, see section 8.

Avoid contact with eyes, skin or clothing. Avoid breathing dust. Wash thoroughly with water and soap after handling. Remove contaminated clothing immediately and wash before reuse.

Do not discharge to the environment. Do not contaminate water when disposing of equipment wash waters. Collect all waste material and remains from cleaning equipment, etc., and dispose of as hazardous waste. See section 13 for disposal.

- 7.2. **Conditions for safe storage, including any incompatibilities** The product is stable under normal conditions of warehouse storage.
- Keep in closed, labelled containers (not metal). The storage room should be constructed of incombustible material, closed, dry, ventilated and with impermeable floor, without access of unauthorised persons or children. The room should only be used for storage of chemicals. Food, drink, feed and seed should not be present. A hand wash station should be available.

- 7.3. **Specific end use(s)** The product is an active ingredient for the production of registered pesticides which may only be used for the applications they are registered for.

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Personal exposure limits

To our knowledge not established for metsulfuron-methyl. An exposure limit of 10 mg/m³ (8-hr TWA) is recommended by the manufacturer. However, personal exposure limits defined by local regulations may exist and must be observed.

Metsulfuron-methyl

DNEL

Not established

PNEC, aquatic environment

The EFSA has established an AOEL of 0.25 mg/kg bw/day
 0.016 µg/l

8.2. Exposure controls

When used in a closed system, personal protection equipment will not be required. The following is meant for other situations, when the use of a closed system is not possible, or when it is necessary to open the system. Consider the need to render equipment or piping systems non-hazardous before opening.

In cases of incidental high exposure, maximal personal protection equipment may be necessary, such as respirator, face mask, chemical resistant coveralls.



Respiratory protection

The product does not automatically present an airborne exposure concern during normal handling, but in the event of an accidental discharge of the material which produces a heavy vapour or dust, workers must put on officially approved respiratory protection equipment with a universal filter type including particle filter.



Protective gloves

Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber. The breakthrough times of these materials for the product are unknown, but it is expected that they will give adequate protection.



Eye protection

Wear safety glasses. It is recommended to have an eye wash fountain immediately available in the workplace when there is a potential for eye contact.



Other skin protection

Wear appropriate chemical resistant clothing to prevent skin contact depending on the extent of exposure. During most normal work situations where exposure to the material cannot be avoided for a limited time span, waterproof pants and apron of chemical resistant material or coveralls of polyethylene (PE) will be sufficient. Coveralls of PE must be discarded after use if contaminated. In cases of excessive or prolonged exposure, coveralls of barrier laminate may be required.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state	Solid
Colour	Off-white
Odour	Faint, ester-like
Melting point/freezing point	162°C
Boiling point or initial boiling point and boiling range	Decomposes
Flammability	Not highly flammable; ignitable
Lower and upper explosive limit ..	Not determined
Flash point	Not determined
Auto-ignition temperature	Not determined
Decomposition temperature	Starting from approx. 162°C
pH	10 g/l dispersion in water: 3.9
Kinematic viscosity	Not determined
Solubility	Solubility of metsulfuron-methyl at 25°C in:
	n-hexane 0.584 mg/l
	ethyl acetate 11.1 g/l
	water 0.55 g/l at pH 5
	2.79 g/l at pH 7
	213 g/l at pH 9
Partition coefficient n-octanol/water (log value)	Log K_{ow} = -1.7 at pH 7 and 25°C
Vapour pressure	1.1 x 10 ⁻¹⁰ Pa at 20°C
	3.3 x 10 ⁻¹⁰ Pa at 25°C
Density and/or relative density	Density: 1.41 g/cm ³ at 20°C
Relative vapour density	Not determined
Particle characteristics	Granules

9.2. **Other information** No more relevant information is available.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity	To our knowledge, the product has no special reactivities.
10.2. Chemical stability	The product is stable during normal handling and storage at ambient temperatures.
10.3. Possibility of hazardous reactions	None known.
10.4. Conditions to avoid	Heating of the product will evolve harmful and irritant vapours.
10.5. Incompatible materials	None known.
10.6. Hazardous decomposition products	See subsection 5.2.

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SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

* = Based on available data, the classification criteria are not met.

Metsulfuron-methyl

Toxicokinetics, metabolism and distribution

Metsulfuron-methyl is rapidly absorbed after oral intake. It is widely distributed in the body. It is partially metabolised. Excretion is rapid, within a few days. No indication of bioaccumulation is found.

Acute toxicity

The substance is not harmful by inhalation, in contact with skin or if swallowed. * However, it should always be treated with the usual care of handling chemicals. The acute toxicity is measured as:

Route(s) of entry - ingestion

LD₅₀, oral, rat: > 5000 mg/kg (method 40 CFR 163-81-1)

- skin

LD₅₀, dermal, rabbit: > 2000 mg/kg (method 40 CFR 163-81-2)

- inhalation

LC₅₀, inhalation, rat: > 5.3 mg/l/4 h

Skin corrosion/irritation

Not irritating to skin (method FIFRA 81.5). *

Serious eye damage/irritation

Not irritating to eyes (method OECD 405). *

Respiratory or skin sensitisation ...

The substance was not a sensitizer to guinea pigs (method OECD 406). *

Germ cell mutagenicity

Metsulfuron-methyl was positive for chromosome aberrations in Chinese hamster ovary cells (method OECD 473). However, in this study the negative control gave too many aberrations. Germ cell mutagenicity is thus not proven. Other mutagenicity tests were negative. *

Carcinogenicity

No indications of carcinogenic effects are found for metsulfuron-methyl in rats and mice (method OJ L133). *

Reproductive toxicity

No effects on fertility are found for metsulfuron-methyl (method OJ L133). No indications of teratogenic (birth defects causing) effects of metsulfuron-methyl are found (method OJ L133). *

STOT – single exposure

To our knowledge, no specific effects have been observed for the substance. *

STOT – repeated exposure

Target organ: no specific target organ
 NOEL: 84 mg/kg bw/day in a 90-day rat study. At higher exposure levels decrease of total serum protein was seen in females and of total leukocyte counts in males (method FIFRA 82.1). *

Aspiration hazards

The substance is not of a type known to present an aspiration pneumonia hazard. *

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11.2. **Information on other hazards** No more relevant information is available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. **Toxicity** Metsulfuron-methyl is highly toxic to green algae and aquatic plants, but it is considered as non-toxic to fish, aquatic invertebrates, soil micro- and macroorganisms, birds, mammals and insects.

The measured ecotoxicity of metsulfuron-methyl is:

- Fish	Guppy (<i>Poecilia reticulata</i>)	96-h LC ₅₀ : > 100 mg/l
	Rainbow trout (<i>Oncorhynchus mykiss</i>)	21-day NOEC: 68 mg/l
- Invertebrates	Daphnids (<i>Daphnia magna</i>)	48-h EC ₅₀ : > 120 mg/l
		21-day NOEC: 0.50 mg/l
- Algae	Green algae (<i>Selenastrum capricornutum</i>)	72-h IC ₅₀ : 0.045 mg/l
	Blue-green algae (<i>Anabaena flos-aquae</i>)	72-h ErC ₅₀ : 0.1134 mg/l
- Aquatic plants	Spiked watermilfoil (<i>Myriophyllum spicatum</i>)	ErC ₅₀ : 0.23 µg/l
	Duckweed (<i>Lemna gibba</i>)	ErC ₅₀ : 0.57 µg/l
	Minor duckweed (<i>Lemna minor</i>)	14-day NOEC: 0.16 µg/l
- Earthworms	<i>Eisenia foetida foetida</i>	56-day NOEC: 6.0 mg/kg
- Birds	Mallard duck (<i>Anas platyrhynchos</i>)	LD ₅₀ : > 2510 mg/kg
- Insects	Honeybees (<i>Apis mellifera</i>)	LD ₅₀ , oral: > 91.72 µg/bee
		LD ₅₀ , contact: > 100 µg/bee

12.2. **Persistence and degradability** Metsulfuron-methyl does not meet the criteria for being readily biodegradable. It is moderately persistent in the environment. Primary degradation half-lives vary with circumstances, from a few weeks to a few months in aerobic soil and water. Degradation occurs both by chemical hydrolysis and by microbiological degradation.

12.3. **Bioaccumulative potential** See section 9 for n-octanol/water partition coefficient.

Due to high solubility in water, metsulfuron-methyl does not bioaccumulate. Bioconcentration factor is < 1.

12.4. **Mobility in soil** Under normal conditions, metsulfuron-methyl is mobile in soil. The risk of leaching to ground water is very low for the parent substance, but for some degradation products the risk can be high in vulnerable groundwater situations.

12.5. **Results of PBT and vPvB assessment** The substance does not meet the criteria for being PBT or vPvB.

12.6. **Endocrine disrupting properties** The substance is not known to have endocrine disrupting properties.

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12.7. **Other adverse effects** Other relevant hazardous effects in the environment are not known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. **Waste treatment methods** Remaining quantities of the material and empty but unclean packaging should be regarded as hazardous waste.

Disposal of waste and packagings must always be in accordance with all applicable local regulations.

Disposal of product According to the Waste Framework Directive (2008/98/EC), possibilities for reuse or reprocessing should first be considered. If this is not possible, the material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing.

Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Disposal of packaging It is recommended to consider possible ways of disposal in the following order:
 1. Reuse or recycling should first be considered. If offered for recycling, containers must be emptied and triply rinsed (or equivalent). Do not discharge rinsing water to sewer systems.
 2. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.
 3. Delivery of the packaging to a licensed service for disposal of hazardous waste.
 4. Disposal in a landfill or burning in open air should only occur as a last resort. For disposal in a landfill, containers should be emptied completely, rinsed and punctured to make them unusable for other purposes. If burned, stay out of smoke.

SECTION 14: TRANSPORT INFORMATION

ADR/RID/IMDG/IATA/ICAO classification

- 14.1. **UN number** 3077
- 14.2. **UN proper shipping name** Environmentally hazardous substance, solid, n.o.s. (metsulfuron-methyl)
- 14.3. **Transport hazard class(es)** 9
- 14.4. **Packing group** III
- 14.5. **Environmental hazards** Marine pollutant
- 14.6. **Special precautions for user** Avoid any unnecessary contact with the product. Misuse can result in

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damage to health. Do not discharge to the environment.

- 14.7. **Maritime transport in bulk according to IMO instruments ..** The product is not transported in bulk by ship.

SECTION 15: REGULATORY INFORMATION

- 15.1. **Safety, health and environmental regulations/legislation specific for the substance or mixture** Seveso category (Dir. 2012/18/EU): dangerous for the environment.
 The substance is covered by EU chemical legislation.
- 15.2. **Chemical safety assessment** A chemical safety assessment is not required to be included for this product.

♣ SECTION 16: OTHER INFORMATION

Relevant changes in the safety data sheet

Minor corrections only.

List of abbreviations

AOEL	Acceptable Operator Exposure Level
CAS	Chemical Abstracts Service
CFR	Code of Federal Regulations
Dir.	Directive
DNEL	Derived No Effect Level
EC	European Community
EC ₅₀	50% Effect Concentration
E _r C ₅₀	50% Effect Concentration based on growth
EFSA	European Food Safety Authority
EINECS	European INventory of Existing Commercial Chemical Substances
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
GHS	Globally Harmonized classification and labelling of chemicals, seventh revised edition 2017
IC ₅₀	50% Inhibition Concentration
IMO	International Maritime Organisation
ISO	International Organisation for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LC ₅₀	50% Lethal Concentration
LD ₅₀	50% Lethal Dose
M-factor	Multiplication factor
NOEC	No Observed Effect Concentration
NOEL	No Observed Effect Level
n.o.s.	Not otherwise specified
OECD	Organisation for Economic Cooperation and Development
OJ	Official Journal (of the EU)
PBT	Persistent, Bioaccumulative, Toxic
PNEC	Predicted No Effect Concentration
Reg.	Regulation
STOT	Specific Target Organ Toxicity
TWA	Time Weighted Average

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vPvB very Persistent, very Bioaccumulative
WHO World Health Organisation

References Data are available from published literature and can be found several places.

Method for classification Reg. 1272/2008 Annex VI

Used hazard statements
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
EUH401 To avoid risks to human health and the environment,
 comply with the instructions of use

Advice on training 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.

The information provided in this safety data sheet is believed to be accurate and reliable, but uses of the product vary and situations unforeseen by FMC Corporation A/S may exist. The user has to check the validity of the information under local circumstances.

Prepared by FMC Agricultural Solutions A/S / GHB