

Thyborønvej 78 DK-7673 Harboøre Denmark

+45 9690 9690 www.fmc.com

CVR No. DK 12 76 00 43

Material group	-	Page 1 of 13
Product name	BRUSH-OFF®	
		February 2019
Safety data shee	t according to EU Reg. 1907/2006 as amended	Supersedes June 2018

SAFETY DATA SHEET BRUSH-OFF®

Revision: Sections containing a revision or new information are marked with a $\clubsuit.$

♣ SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING				
1.1.	Product identifier	BRUSH-OFF®		
1.2.	Relevant identified uses of the substance or mixture and uses advised against	Can be used as herbicide only.		
1.3.	Details of the supplier of the safety data sheet	CHEMINOVA A/S , a subsidiary of FMC Corporation Thyborønvej 78 DK-7673 Harboøre Denmark SDS.Ronland@fmc.com		
	Details of the supplier of the product	FMC Chemicals (Pty) Ltd Pegasus Building 1, Floor 2 210 Amarand Ave Menlyn Pretoria, 0181 South Africa		
1.4.	Emergency telephone number	For any emergency or poisoning contact: Griffon Poison Information Centre (24 hrs) +27-(0)-82-446-8946 For fire, leak, spill or other accident emergencies +1 703 / 527 3887 (CHEMTREC - Collect)		

♣ SECTION 2: HAZARDS IDENTIFICATION

2.1.	Classification of the substance or mixture	Eye irritation: Category 2 (H319) Hazards to the aquatic environment, acute: Category 1 (H400) chronic Category 1 (H410)
	WHO classification	Class U (unlikely to present acute hazard in normal use).
	Health hazards	The product has irritating properties.
	Environmental hazards	The product is expected to be toxic to most plants.



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2.2. Label elements

According to EU Reg. 1272/2008 as amended Product identifier Brush-Off

Hazard pictogram (GHS09)



Signal word Warning

Hazard statements

H319 Causes serious eye irritation.

Supplementary hazard statement

instructions of use.

Precautionary statements

P280 Wear eye protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove

contact lenses, if present and easy to do. Continue rinsing.

2.3. **Other hazards** Excessive dust formation may pose a dust explosion hazard.

None of the ingredients in the product meets the criteria for being PBT

or vPvB.

♣ SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. **Substances** The product is a mixture, not a substance.

3.2. **Mixtures** See section 16 for full text of hazard statements.

Active ingredient

Metsulfuron-methyl Content: 60% by weight

yl)amino]carbonyl]amino]sulfonyl]-, methyl ester

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



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Classification of the ingredient Hazards to the aquatic environment, acute: Category 1 (H400) chronic: Category 1 (H410)

Reportable ingredient	Content (% w/w)	CAS no.	EC no. (EINECS no.)	Classification
Trisodium orthophosphate	5 - 10	7601-54-9	231-509-8	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335)
Residues (petroleum), catalytic reformer fractionator, sulfonated, polymers with formaldehyde, sodium salts	5 - 10	68425-94-5	None	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319)

♣ 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. Rinse mouth and drink water or milk. If vomiting does occur, 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	Irritation.
4.3.	Indication of any immediate	Immediate medical attention is required in case of ingestion
	medical attention and special treatment needed	It may be helpful to show this safety data sheet to physician.
	Note to physician	A specific antidote against this substance is not known. Gastric lavage and/or administration of activated charcoal can be considered. After decontamination, treatment is supportive and symptomatic.

***** SECTION 5: FIRE-FIGHTING MEASURES



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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 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.

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.



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

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 or spray mist.

Remove contaminated clothing immediately. Wash thoroughly after handling. Before removing gloves, wash them with water and soap. After work, take off all work clothes and footwear. Take a shower, using water and soap. Wear only clean clothes when leaving job. Wash protective clothing and protective equipment with water and soap after each use.

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. The storage room should be constructed of incombustible material, closed, dry, ventilated and with



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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 a registered pesticide which may only be used for the applications it is registered for, in accordance with a label approved by the regulatory authorities.

♣ SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

product. An exposure limit of 10 mg/m³ (8-hr TWA) is recommended

for other sulphonylureas.

Year

Sucrose South Africa REL 1995

TWA 10 mg/m^3

Short term exposure limit 20 mg/m³

However, other personal exposure limits defined by local regulations

may exist and must be observed.

Metsulfuron-methyl

DNEL, dermal 0.7 mg/kg bw/day

PNEC, aquatic environment 16 ng/l

Trisodium orthophosphate

DNEL, inhalation, systemic 4.07 mg/m³

PNEC, aquatic environment No hazard identified

> 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.

The precautions mentioned below are primarily meant for handling of the undiluted product and for preparing the spray solution, but can be

recommended for spraying as well.

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

resistant coveralls.

Respirato

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.



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Protective gloves

Wear chemical resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber or viton. 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.

***** SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on physical and chemical properties

explosive limits Not determined

 $3.3 \times 10^{-10} \text{ Pa at } 25^{\circ}\text{C}$

Bulk density: 680 g/cm³

Solubility(ies) 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

Decomposition temperature **Metsulfuron-methyl** : starting from approx. 162°C



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Oxidising properties Not oxidising

9.2. Other information

Miscibility The product can be dispersed in water.

♣ SECTION 10: STABILITY AND REACTIVITY

temperatures.

10.3. **Possibility of hazardous reactions** None known.

10.4. **Conditions to avoid** Heating of the product may evolve harmful and irritant vapours.

10.5. **Incompatible materials** None known.

10.6. **Hazardous decomposition products** See subsection 5.2.

♣ SECTION 11: TOXICOLOGICAL INFORMATION

11.1. **Information on toxicological effects** * = Based on available data, the classification criteria are not met.

<u>Product</u>

swallowed. * However, it should always be treated with the usual care

of handling chemicals. The acute toxicity is measured as:

 $Route(s) \ of \ entry \qquad \ -ingestion \qquad LD_{50}, \ oral, \ rat: > 5000 \ mg/kg$

- skin LD₅₀, dermal, rabbit: > 5000 mg/kg

- inhalation LC₅₀, inhalation, rat: not available

Skin corrosion/irritation Not irritating to skin. *

Serious eye damage/irritation Not irritating to eyes. *

Respiratory or skin sensitisation ... Not a skin sensitizer. *

Carcinogenicity The product contains no ingredients known to be carcinogenic. *

Reproductive toxicity The product contains no ingredients found to have adverse effects on

reproduction. *

exposure. *

STOT – repeated exposure The following has been measured on the active ingredient



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	metsulfuron-methyl: 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 hazard	The product contains no ingredients known to present an aspiration pneumonia hazard. *	
Symptoms and effects, acute and delayed	Irritation. To our knowledge, adverse effects in humans have not bee reported. The product is not expected to cause severe adverse effects to health, but adverse health effects cannot be excluded in case of massive exposure. Generally, sulphonylurea herbicides cause letharg confusion, dizziness, seizures and coma on ingestion.	
<u>Metsulfuron-methyl</u> 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	LD ₅₀ , oral, rat: > 5000 mg/kg (method 40 CFR 163-81-1)	
- skin	LD_{50} , dermal, rabbit: > 2000 mg/kg (method 40 CFR 163-81-2)	
- inhalation	LC_{50} , inhalation, rat: $> 5.0 \text{ mg/l/4} \text{ h}$ (method EEC B2)	
Skin corrosion/irritation	Not irritating to skin (method FIFRA 81.5). *	
Serious eye damage/irritation	The substance may be mildly irritating to eyes (method FIFRA 81.4).	
Respiratory or skin sensitisation	The substance was not a sensitizer to guinea pigs (method OECD 406). *	
<u>Trisodium orthophosphate</u> Toxicokinetics, metabolism and distribution	Both sodium and phosphate ions are essential body constituents and are regulated within narrow ranges. These ranges will not be exceeded, except locally in unusual situations such as accidents. Generally, a high phosphate diet is not considered healthy, but this is not relevant for circumstances at the workplace.	
Acute toxicity	The substance is not considered as harmful by single exposure. *	
Route(s) of entry - ingestion	LD_{50} , oral, rat: > 2000 mg/kg (method OECD 420)	
- skin	LD_{50} , dermal, rat: > 2000 mg/kg (measured on a comparable substance, method OECD 402)	
- inhalation	LC_{50} , inhalation, rat: > 0.83 mg/l/4 h (measured on a comparable substance, method OECD 403)	



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Skin corrosion/irritation Results of animal tests indicate that the substance is not irritating to

skin.

Serious eye damage/irritation Irritating to eyes (method EPA OTS 798.4500).

Respiratory or skin sensitisation ... Not sensitising (method OECD 429). *

Residues (petroleum), catalytic reformer fractionator, sulfonated, polymers with formaldehyde,

sodium salts

Acute toxicity The substance is not considered as harmful. *

Route(s) of entry - ingestion LD₅₀, oral, rat: 3800 mg/kg (measured on a similar product)

- skin LD₅₀, dermal, rat: not available

- inhalation LC₅₀, inhalation, rat: not available

Skin corrosion/irritation Irritating to skin.

Serious eye damage/irritation Irritating to eyes.

Respiratory or skin sensitisation ... Not sensitising. *

♣ SECTION 12: ECOLOGICAL INFORMATION

considered as non-toxic to fish, aquatic invertebrates, soil micro- and

macroorganisms, birds, mammals and insects.

The measured ecotoxicity of the active ingredient metsulfuron-methyl is:

21-day NOEC: 68 mg/l

21-day NOEC: 150 mg/l

- Algae Green algae (Selenastrum capricornutum) 72-h IC₅₀: 0.045 mg/l

- Aquatic plants Duckweed (*Lemna gibba*) EC₅₀: 0.36 μg/l

- Birds Mallard duck LD50: > 2510 mg/kg

 LD_{50} , oral: > 44.3 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.



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		The product contains minor amounts of not readily biodegradable components, which may not be degradable in waste water treatment plants.
12.3.	Bioaccumulative potential	See section 9 for n-octanol/water partition coefficients.
		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. It has a potential for leaching to groundwater.
12.5.	Results of PBT and vPvB assessment	None of the ingredients meets the criteria for being PBT or vPvB.
12.6.	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 feasible, 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. Reuse is prohibited except by the authorisation holder. 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.



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SECTION 14: TRANSPORT INFORMATION

ADR/RID/IMDG/IATA/ICAO classification

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

damage to health. Do not discharge to the environment.

14.7. Transport in bulk according to

Annex II of MARPOL 73/78 and the

IBC code 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.

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

CAS Chemical Abstracts Service CFR Code of Federal Regulations

Dir. Directive

DNEL Derived No Effect Level EC European Community EC₅₀ 50% Effect Concentration

EINECS European INventory of Existing Commercial Chemical

Substances

EPA OTS Office of Technology Solutions, Environmental Protection

Agency, US

FIFRA Federal Insecticide, Fungicide and Rodenticide Act

GHS Globally Harmonized classification and labelling System of

chemicals, Fifth revised edition 2013

IBC International Bulk Chemical code



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	IC ₅₀ ISO IUPAC LC ₅₀ LD ₅₀ MARPOL NOEC NOEL n.o.s. OECD PBT PNEC Reg. REL STOT vPvB WHO	50% Inhibition Concentration International Organisation for Standardization International Union of Pure and Applied Chemistry 50% Lethal Concentration 50% Lethal Dose Set of rules from the International Maritime Organisation (IMO) for prevention of sea pollution No Observed Effect Concentration No Observed Effect Level Not otherwise specified Organisation for Economic Cooperation and Development Persistent, Bioaccumulative, Toxic Predicted No Effect Concentration Regulation Recommended Exposure Limit Specific Target Organ Toxicity very Persistent, very Bioaccumulative World Health Organisation
References	Data measured on the product are unpublished company data. Data on ingredients are available from published literature and can be found several places.	
Method for classification	Eye irritation: test data Hazards to the aquatic environment: calculation method	
Used hazard statements	H315 H319 H335 H400 H410 EUH401	Cause skin irritation. Causes serious eye irritation. May cause respiratory irritation. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects. 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 may exist. The user has to check the validity of the information under local circumstances.

Prepared by: FMC Corporation / Cheminova A/S / GHB