SAFETY DATA SHEET

Fuego

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** .....

Fuego
Contains metazachlor and 1,2-benzisothiazol-3(2H)-one

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**

FMC Agricultural Solutions A/S
Thyborønvej 78
DK-7673 Harboøre
Denmark
SDS.Ronland@fmc.com

1.4. **Emergency telephone number**

Medical emergencies:

Austria: +43 1 406 43 43
Belgium: +32 70 245 245
Bulgaria: +359 2 9154 409
Cyprus: 1401
Czech Republic: +420 224 919 293
+420 224 915 402
Denmark: +45 82 12 12 12
England and Wales: 111
Estonia: +372 7943500
France: +33 (0) 1 45 42 59 59
Finland: +358 9 471 977
Greece: 30 210 77 93 777
Hungary: +36 80 20 11 99
Ireland (Republic): +353 1 837 9964
Italy: +39 02 6610 1029
Latvia: +371 670 42 473
112
Lithuania: +370 523 62052
+370 687 53378
Luxembourg: +352 8002 5500
Netherlands: +31 30 274 88 88
Norway: +47 22 591300
Poland: +48 22 619 66 54
+48 22 619 08 97
Portugal: 808 250 250 (in Portugal only)
+351 21 330 3284
Romania: +40 21318 3606
Scotland: +8454 24 24 24
Slovakia: +421 2 54 77 4 166
Slovenia: +386 41 650 500
South Africa: +27 83 123 3911 (Bateleur Emergency Response Co.)
Spain: +34 91 562 04 20
Sweden: +46 08-331231
112
Switzerland: 145
Turkey: 114
U.S.A. & Canada: +1 800 / 331 3148
All other countries: +1 651 / 632 6793 (Collect)

For fire, leak, spill or other accident emergencies:

U.S.A.: +1 800 / 424 9300 (CHEMTREC)
All other countries: +1 703 / 527 3887 (CHEMTREC - Collect)

♣ SECTION 2: HAZARDS IDENTIFICATION

2.1. **Classification of the substance or mixture**

Acute oral toxicity: Category 4 (H302)
Sensitisation – skin: Category 1 (H317)
Carcinogenicity: Category 2 (H351)
Hazards to the aquatic environment, acute: Category 1 (H400)
chronic: Category 1 (H410)

WHO classification ..... Class II, moderately hazardous

Health hazards ..... The product may cause allergic sensitisation and may be harmful by ingestion.

The ingredient metazachlor is suspected of causing cancer.

Environmental hazards ..... The product is very toxic to aquatic organisms.

2.2. **Label elements**

According to EU Reg. 1272/2008 as amended

Product identifier ..... Fuego
Contains metazachlor and 1,2-benzisothiazol-3(2H)-one

Hazard pictograms (GHS07, GHS08, GHS09)

Signal word ..... Warning

Hazard statements

H302 ..... Harmful if swallowed.
H317 ..... May cause an allergic skin reaction.
H351 ..... Suspected of causing cancer.
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

P202 ..... Do not handle until all safety precautions have been read and understood.
P261 ..... Avoid breathing vapours or spray.
P264 ..... Wash hands thoroughly after handling.
P280 ..... Wear protective gloves, protective clothing and eye protection.
P312 ..... Call a POISON CENTER or doctor/physician if you feel unwell.
P501 ..... Dispose of contents/container as hazardous waste.

2.3. **Other hazards** ..... 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

Metazachlor ..... Content: 47.0% by weight

CAS name ..... Acetamide, 2-chloro-N-(2,6-dimethylphenyl)-N-(1H-pyrazol-1-yl-methyl)-

CAS no. 67129-08-2

IUPAC name ..... N-((1H-Pyrazol-1-yl)methyl)-2-chloro-N-(2,6-dimethylphenyl)-acetamide
2-Chloro-N-(pyrazol-1-ylmethyl)acet-2′,6′-xylidide

ISO name/EU name ..... Metazachlor

EC no. (EINECS no.) 266-583-0

EU index no. 616-205-00-9

Molecular weight 277.7

Classification of the ingredient ..... Sensitisation – skin: Category 1B (H317)
Carcinogenicity: Category 2 (H351)
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
1,2-Benzisothiazol-3(2H)-one	< 0.05	2634-33-5	220-120-9	Acute Tox. 4 (H302) Skin Irrit 2 (H315) Eye Dam. 1 (H318) Skin Sens. 1A (H317) Aquatic Acute 1 (H400)

♣ 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. Get medical attention 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. Get medical attention if irritation develops.

Ingestion ..... Let the exposed person rinse mouth and drink several glasses of water or milk, but not induce vomiting. If vomiting does occur, let him/her rinse mouth and drink fluids again. Get medical attention immediately.

4.2. **Most important symptoms and effects, both acute and delayed** Possibly allergic reactions

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.
	Notes to physician	A specific antidote for exposure to this material is not known. Gastric lavage and/or the administration of activated charcoal can be considered. After decontamination, treatment should be directed at the control of symptoms and the clinical condition.

♣ 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.
5.2.	**Special hazards arising from the substance or mixture**	The essential breakdown products are volatile, malodorous, toxic, irritant and inflammable compounds such as hydrogen chloride, nitrogen oxides, carbon monoxide, carbon dioxide and various chlorinated organic compounds.
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. Keep unprotected persons away from the spill area. Avoid and reduce formation of vapour or mist as much as possible.
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).

If appropriate, surface water drains should be covered. Minor spills on the floor or other impervious surface should be absorbed onto an absorptive material such as universal binder, Fuller's earth or other absorbent clays. Collect the contaminated absorbent in suitable containers. Clean area with detergent and much water. Absorb wash liquid with absorbent and transfer to 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.

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 8.2. for personal protection.
See section 13 for disposal.

♣ SECTION 7: HANDLING AND STORAGE

7.1. **Precautions for safe handling** .... 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.

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.

Store in closed, labelled containers. The storage room should be constructed of incombustible material, closed, dry, ventilated and with impermeable floor, without access of unauthorised persons or children. A warning sign reading "POISON" is recommended. 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**

Personal exposure limits ..... To our knowledge not established for any of the ingredients in this product.

However, personal exposure limits defined by local regulations may exist and must be observed.

Metazachlor

DNEL ..... Not established
The EFSA has established an AOEL of 0.2 mg/kg bw/day

PNEC, aquatic environment ..... 20 ng/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.

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 may be necessary, such as respirator, face mask, chemical resistant coveralls.

Respiratory protection — In the event of an accidental discharge of the material which produces a heavy vapour or mist, 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. Generally, however, the use of protective gloves will give only partial protection against dermal exposure. Small tears in the gloves and cross-contamination can easily occur. It is recommended to limit the work to be done manually and to change the gloves frequently.

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**

Appearance	White liquid
Odour	Weak, characteristic
Odour threshold	Not determined
pH	1% dispersion in water: 6.7 – 7.7
Melting point/freezing point	Not determined
Initial boiling point and boiling range	> 125°C
Flash point	> 100°C
Evaporation rate	Not determined
Flammability (solid/gas)	Not applicable (liquid)
Upper/lower flammability or explosive limits	Not determined
Vapour pressure	**Metazachlor** : 9.5×10^{-5} Pa at 20°C
Vapour density	Not determined
Relative density	1.11 – 1.15 at 20°C
Solubility(ies)	Solubility of **metazachlor** at 20°C in:
	ethyl acetate > 250 g/l
	n-heptane < 10 g/l
	water 0.45 g/l
Partition coefficient n-octanol/water	**Metazachlor** : log K_{ow} = 2.49 at 21°C
Autoignition temperature	> 600°C
Decomposition temperature	Not determined
Viscosity	755 mm^2/s at 40°C
Explosive properties	Not explosive
Oxidising properties	Not oxidising

9.2. **Other information**

Miscibility ..... The product is dispersible in water.

♣ 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.

♣ SECTION 11: TOXICOLOGICAL INFORMATION

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

Product

Acute toxicity		The product is harmful by ingestion, but is not considered as harmful by skin contact or inhalation. The acute toxicity is measured as:
Route(s) of entry	- ingestion	LD_{50}, oral, rat: 1234 mg/kg (method OECD 401)
	- skin	LD_{50}, dermal, rat: > 4000 mg/kg (method OECD 402) *
	- inhalation	LC_{50}, inhalation, rat: > 3.99 mg/l/4 h (method OECD 403) *
Skin corrosion/irritation		Not irritating to skin (method OECD 404). *
Serious eye damage/irritation		Not irritating to eyes (method OECD 405). *
Respiratory or skin sensitisation ...		Sensitising (method OECD 406).
Germ cell mutagenicity		The product contains no ingredients known to be mutagenic. *
Carcinogenicity		The active ingredient metazachlor is a suspected carcinogen. Increase of various tumour types was observed in rats and mice.
Reproductive toxicity		The product contains no ingredients known to have adverse effects on reproduction. *
STOT – single exposure		To our knowledge, no specific effects have been observed after single exposure. *
STOT – repeated exposure		The following has been measured on the active ingredient metazachlor: Target organ: liver and red blood cells NOAEL/NOEL: 250 ppm (20 - 30 mg/kg bw/day) in a 90-day rat study (method OECD 408). At this dose level adaptive changes in the liver and decreased number of red blood cells were seen. *
Aspiration hazard		The product does not present an aspiration hazard. *
Symptoms and effects, acute and delayed		Possibly allergic reactions.

Metazachlor

Toxicokinetics, metabolism and distribution		The substance is rapidly absorbed. It is widely distributed in the body, but preferably binds to red blood cells. It is extensively metabolised and rapidly excreted, approx. 80% within 24 hours. There is no evidence of accumulation.
Acute toxicity		Metazachlor is not considered harmful by single exposure. * The acute toxicity is measured as:
Route(s) of entry	- ingestion	LD_{50}, oral, rat: > 2000 mg/kg (method OECD 401)
	- skin	LD_{50}, dermal, rat: > 2000 mg/kg (method OECD 402)
	- inhalation	LC_{50}, inhalation, rat: > 1.58 mg/l/4 h (method OECD 403)
Skin corrosion/irritation		Not irritating to skin (method OECD 404). *
Serious eye damage/irritation		Slightly irritating to eyes (method OECD 405). *

Respiratory or skin sensitisation ... Results from animal tests are mixed:
Magnussen and Kligman maximisation test: positive
Open epicutaneous test: negative
Buehler test (method OECD 406): negative
Second Buehler test (method OECD 406): negative

1,2-Benzisothiazol-3(2H)-one

Acute toxicity ..... The substance is harmful by ingestion.

Route(s) of entry - ingestion LD_{50}, oral, rat (male): 670 mg/kg

LD_{50}, oral, rat (female): 784 mg/kg
(method OPPTS 870.1100, measured on 73% solution)

- skin LD_{50}, dermal, rat: > 2000 mg/kg *
(method OPPTS 870.1200, measured on 73% solution)

- inhalation LC_{50}, inhalation, rat: not available

Skin corrosion/irritation ..... Slightly irritating to skin (method OPPTS 870.2500).

Serious eye damage/irritation ..... Severely irritating to eyes (method OPPTS 870.2400).

Respiratory or skin sensitisation ... Moderate dermal sensitizer to guinea pigs (method OPPTS 870.2600).
The substance appears to be significantly more sensitising to humans.

♣ SECTION 12: ECOLOGICAL INFORMATION

12.1. **Toxicity** ..... The product is a herbicide and must therefore be expected to be harmful to all plants. It is toxic to algae, but it is considered as non-toxic to daphnids, fish, soil micro- and macroorganisms, birds and insects.

The ecotoxicity measured on the product is:

- Fish	Rainbow trout (*Oncorhynchus mykiss*)	96-h LC_{50}: 7.34 mg/l
- Invertebrates	Daphnids (*Daphnia magna*)	48-h EC_{50}: 67.8 mg/l
- Algae	Green algae (*Desmodesmus subspicatus*)	72-h EC_{50}: 0.0437 mg/l
- Plants	Duckweed (*Lemna gibba*)	EC_{50}: 0.0203 mg/l

12.2. **Persistence and degradability** .... **Metazachlor** is biodegradable in the environment, but does not meet the criteria for being readily biodegradable. Primary degeradation rates vary from one to several weeks in aerobic soil. It is degraded slower in water.

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 octanol-water partition coefficients.

For **metazachlor**, bioaccumulation is not to be expected based on its solubility in water.

12.4. **Mobility in soil** ..... Under normal conditions **metazachlor** is moderately mobile in soil.

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 for 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.

♣ SECTION 14: TRANSPORT INFORMATION

ADR/RID/IMDG/IATA/ICAO classification

14.1. **UN number** 3082

14.2. **UN proper shipping name** ..... Environmentally hazardous substance, liquid, n.o.s. (metazachlor)

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 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

The Young Worker Directive (94/33/EC) prohibits people under the age of 18 to work with this product.

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: Numerous changes have been made to adapt the format of the safety data sheet, but these do not involve new information concerning hazardous properties.

List of abbreviations .....

AOEL	Acceptable Operator Exposure Level
CAS	Chemical Abstracts Service
Dir.	Directive
DNEL	Derived No Effect Level
EC	European Community
EC_{50}	50% Effect Concentration
EFSA	European Food Safety Authority
EINECS	European INventory of Existing Commercial Chemical Substances
GHS	Globally Harmonized classification and labelling System of chemicals, Fifth revised edition 2013
IBC	International Bulk Chemical code
ISO	International Organisation for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LC_{50}	50% Lethal Concentration
LD_{50}	50% Lethal Dose
MARPOL	Set of rules from the International Maritime Organisation (IMO) for prevention of sea pollution
NOAEL	No Observed Adverse Effect Level
NOEL	No Observed Effect Level
n.o.s.	Not otherwise specified
OECD	Organisation for Economic Cooperation and Development
OPPTS	Office for Prevention, Pesticides and Toxic Substances
PBT	Persistent, Bioaccumulative, Toxic
PNEC	Predicted No Effect Concentration
Reg.	Regulation
STOT	Specific Target Organ Toxicity
vPvB	very Persistent, very Bioaccumulative
WHO	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 .....
Acute oral toxicity: test data
Sensitisation – skin: test data
Carcinogenicity: calculation rules
Hazards to the aquatic environment, acute: test data

Used hazard statements .....

H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H351	Suspected of causing cancer.
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 may exist. The user has to check the validity of the information under local circumstances.

Prepared by: FMC Agricultural Solutions A/S / GHB