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CVR No. DK 12 76 00 43

SAFETY DATA SHEET

Dimethoate 600 g/l MC

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** ..... **Dimethoate 600 g/l MC**
Contains dimethoate and cyclohexanone

1.2. **Relevant identified uses of the substance or mixture and uses advised against** ..... Can be used for preparation of insecticides only.

1.3. **Details of the supplier of the safety data sheet**

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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
Finland: +358 9 471 977
France: +33 (0) 1 45 42 59 59
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: 800 250 250 (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 / 741 5970 (CHEMTREC - Collect)

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SECTION 2: HAZARDS IDENTIFICATION

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

Flammable liquid: Category 3 (H226)
Self-reactive mixture Type F (H242)
Acute oral toxicity: Category 4 (H302)
Acute inhalation toxicity: Category 4 (H332)
Eye irritation: Category 2 (H319)
Hazards to the aquatic environment, chronic: Category 1 (H410)

WHO classification ..... Class II: Moderately hazardous

Physicochemical hazards ..... The product is flammable. On heating above 55°C, self-accelerating decomposition may occur.

Health hazards ..... The product is harmful by inhalation and by ingestion. It may be mildly to moderately irritating to skin and eyes.

The active ingredient **dimethoate** is a poison (cholinesterase inhibitor). It rapidly enters the body on contact with all skin surfaces and eyes.

Repeated exposures to cholinesterase inhibitors such as **dimethoate** may, without warning, cause increased susceptibility to doses of any cholinesterase inhibitor.

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

2.2. **Label elements**

According to EU Reg. 1272/2008 as amended

Product identifier ..... Dimethoate 600 g/l MC
Contains dimethoate and cyclohexanone

Hazard pictograms (GHS02, GHS07, GHS09)

Signal word ..... Warning

Hazard statements

H226 ..... Flammable liquid and vapour.
H242 ..... Heating may cause a fire.
H302 ..... Harmful if swallowed.
H319 ..... Causes serious eye irritation.
H332 ..... Harmful if inhaled.
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.

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Precautionary statements

P210 ..... Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261 ..... Avoid breathing vapours.
P280 ..... Wear protective gloves and eye protection or face protection.
P303+P361+P353 ..... IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water or shower.
P312 ..... Call a POISON CENTER or physician if you feel unwell.
P501 ..... Dispose of contents and 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

Dimethoate ..... Content: 55% by weight
CAS name ..... Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
CAS no. 60-51-5
IUPAC name ..... O,O-Dimethyl S-methylcarbamoylmethyl phosphorodithioate
Other name(s) ..... O,O-Dimethyl S-(N-methylcarbamoylmethyl) phosphorodithioate
ISO name/EU name ..... Dimethoate
EC no. (EINECS no.) 200-480-3
EU index no. 015-051-00-4
Molecular weight 229.26
Classification of the ingredient ..... (* = Harmonised classification)
Self-reactive substance Type F (H242)
Acute oral toxicity: Category 4 (H302) *
Acute dermal toxicity: Category 4 (H312) *
Acute inhalation toxicity: Category 4 (H332)
Hazards to the aquatic environment, chronic: Category 1 (H410)

Reportable ingredient	Content (% w/w)	CAS no.	EC no. (EINECS no.)	Classification (* = harmonised classification)
Cyclohexanone Reg. no. 01-2119453616-35	45	108-94-1	203-631-1	Flam. Liq. 3 (H226) * Acute Tox. 4 (H302) * Acute Tox. 4 (H312) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Dam. 1 (H318)

SECTION 4: FIRST AID MEASURES

4.1. **Description of first aid measures** If exposure has occurred, do not wait for symptoms to develop, but

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immediately start the procedures described below.

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.

If breathing has stopped, immediately start artificial respiration and maintain until a physician takes charge of the exposed person.

Skin contact ..... Immediately remove contaminated clothing and footwear. Flush skin with water. Wash with water and soap. See physician immediately if symptoms develop.

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 immediately.

Ingestion ..... Call a doctor or get medical attention immediately. Make the exposed person rinse mouth and then drink 1 or 2 glasses of water or milk. Induce vomiting only if:
1. a significant amount (more than a mouthful) has been ingested
2. patient is fully conscious
3. medical aid is not readily available
4. time since ingestion is less than one hour.

Let the patient induce vomiting by touching the back of the throat with a finger. If vomiting occurs, take care that vomit does not enter airways. Let the exposed person rinse mouth and drink fluids again.

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

On contact, the first symptoms to appear may be irritation. Symptoms of cholinesterase inhibition: nausea, headache, vomiting, cramps, weakness, blurred vision, pin-point pupils, tightness in chest, laboured breathing, nervousness, sweating, watering of eyes, drooling or frothing of mouth and nose, muscle spasms and coma.

4.3. **Indication of any immediate medical attention and special treatment needed**

If any of the signs of cholinesterase inhibition occurs, call a doctor (physician), clinic or hospital immediately. Explain that the victim has been exposed to **dimethoate**, an organophosphorus insecticide. Describe his/her condition and the extent of exposure. Immediately remove the exposed person from the area where the product is present.

It may be helpful to show this safety data sheet to physician.

Notes to physician ..... **Dimethoate** is a cholinesterase inhibitor affecting the central and peripheral nervous systems producing respiratory depression.

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The product contains petroleum distillates which may pose an aspiration pneumonia hazard.

Cholinesterase inhibition – treatment

Much information on (acetyl)cholinesterase inhibition by organophosphate insecticides and its treatment can be found on the internet.

Decontamination procedures such as whole body washing, gastric lavage and administration of activated charcoal are often required.

Antidote: If symptoms (see subsection 4.2.) are present, administer atropine sulphate, which often is a lifesaving antidote, in large doses, TWO to FOUR mg intravenously or intramuscularly as soon as possible. Repeat at 5 to 10 minute intervals until signs of atropinisation appear and maintain full atropinisation until all organophosphate is metabolised.

Obidoxime chloride (Toxogonin), alternatively pralidoxime chloride (2-PAM), may be administered as an adjunct to, but not a substitute for atropine sulphate. Treatment with oxime should be maintained as long as atropine sulphate is administered.

Especially in the case of dimethoate, treatment with atropine sulphate is essential. Results of treatment with oxime for dimethoate poisoning are notoriously varying and it may happen that oxime doesn't have any positive effect. In no case should oxime be used instead of atropine sulphate.

At first sign of pulmonary oedema the patient should be given supplementary oxygen and treated symptomatically.

Relapse can occur after initial improvement.
VERY CLOSE SUPERVISION OF THE PATIENT IS INDICATED FOR AT LEAST 48 HOURS, DEPENDING ON THE SEVERITY OF POISONING.

♣ 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 sulphide, dimethyl sulphide, methyl mercaptan, sulphur dioxide, carbon monoxide, carbon dioxide, nitrogen oxides and phosphorus pentoxide.

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-

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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, sealable 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 boots.

Stop the source of the spill immediately if safe to do so. Keep unprotected persons away from the spill area. Remove sources of ignition. Avoid and reduce mist formation 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).

Use non-sparking tools and equipment. 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, hydrated lime, Fuller's earth or other absorbent clays. Collect the contaminated absorbent in suitable containers. Clean area with soda lye 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 7.1. for fire prevention.
See subsection 8.2. for personal protection.
See section 13 for disposal.

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♣ SECTION 7: HANDLING AND STORAGE

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

The product is flammable. Formation of explosive vapour-air mixtures is possible. Fire prevention measures should be taken. Keep away from sources of ignition and protect from exposure to fire and heat. Take precautions against static discharge.

If the temperature of the liquid is below 42°C, which is 10°C below its flash point of 52°C, the fire and explosion hazard is considered minor. At higher temperatures, the hazard gradually becomes more serious.

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.

Keep all unprotected persons and children away from working area.

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.

Inhalation of vapours of the product can cause lowered consciousness, which increases the risks of operating machinery and driving.

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 when stored at temperatures not exceeding 25°C. Protect against strong heat from sunshine or other source, e.g. fire.

At low temperatures formation of crystals may occur.

The product should never be heated above 35°C and also local heating above this temperature should be avoided. See subsection 10.2.

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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 meant for the production of registered pesticides which may only be used for the applications they are registered for.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. **Control parameters**

Personal exposure limits

		Year	
Dimethoate	ACGIH (USA) TLV	2015	Not established; BEI
	OSHA (USA) PEL	2015	Not established
	EU, 2000/39/EC as amended	2017	Not established
	Germany, MAK	2014	Not established; BAT
	HSE (UK) WEL	2011	Not established
Cyclo-hexanone	ACGIH (USA) TLV	2015	TWA 20 ppm STEL 50 ppm Skin notation
	OSHA (USA) PEL	2015	TWA 50 ppm (200 mg/m^3)
	EU, 2000/39/EC as amended	2017	8-hr TWA 10 ppm (40.8 mg/m^3) Peak level 20 ppm (81.6 mg/m^3); max. duration 15 min. Skin notation
	Germany, MAK	2014	Skin notation; EKA
	HSE (UK) WEL	2011	8-hr TWA 10 ppm (41 mg/m^3) STEL 20 ppm (82 mg/m^3); 15-minute reference period Skin notation; BMGV

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

Monitoring methods ..... Persons working with this product for a longer period should have frequent blood tests of their cholinesterase levels. If the cholinesterase level falls below a critical point, no further exposure should be allowed until it has been determined by means of blood tests that the cholinesterase level has returned to normal.

Dimethoate

DNEL, dermal ..... Not established
The EFSA has established an AOEL of 0.001 mg/kg bw/day

PNEC, aquatic environment ..... 0.8 µg/l

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Cyclohexanone

DNEL, dermal	10 mg/kg bw/day
DNEL, inhalation	100 mg/m^3
PNEC, aquatic environment	0.0329 mg/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 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 shift the gloves frequently and to limit the work to be done manually.

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**

Physical state	Liquid
Colour	Light yellow
Odour	Mercaptanic/acetone odour
Melting point/freezing point	9°C

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Boiling point or initial boiling point and boiling range	Not determined **Dimethoate**	: decomposes
Flammability	Ignitable	
Lower and upper explosive limit	**Cyclohexanone**	: 1 - 9.4 vol% (≈ 1 - 9.4 kPa)
Flash point	52°C (Pensky-Martens closed cup)	
Auto-ignition temperature	**Dimethoate**	: 314°C
	Cyclohexanone	: 420°C
Decomposition temperature	See subsection 10.2.	
pH	Not determined	
Kinematic viscosity	6.6 mm^2/s at 21°C	
Solubility	The product is not miscible with water. Solubility of dimethoate at 25°C in: cyclohexanone 1220 g/l n-heptane 0.242 g/l methanol 1590 g/l xylene 313 g/l water 39.8 g/l	
Partition coefficient n-octanol/water (log value)	**Dimethoate**	: log K_{ow} = 0.704
	Cyclohexanone	: log K_{ow} = 0.86 at 25°C
Vapour pressure	**Dimethoate**	: 1.35 x 10^{-4} Pa at 25°C
	Cyclohexanone	: 0.47 kPa at 20°C
Density and/or relative density	Density: 1.116 g/ml at 20°C	
Relative vapour density	(Air = 1)	
	Cyclohexanone	: 3.4
Particle characteristics	Not applicable (liquid	

9.2. **Other information**

Self-accelerating decomposition temperature	55 - 60°C	
Evaporation rate	(Butyl acetate = 1)	
	Cyclohexanone	: 0.3

♣ SECTION 10: STABILITY AND REACTIVITY

10.1. **Reactivity** ..... To our knowledge, the product has no special reactivities.

10.2. **Chemical stability** ..... The product (**dimethoate**) may decompose rapidly when heated, which can result in explosion. It is recommended never to heat the product above 35°C. Direct local heating such as electric heating or by steam must be avoided.

The product is relatively stable for a long period at temperatures not exceeding 25°C. At higher temperatures decomposition will take place and lower the quality of the product.

Expected decomposition during storage for two months at average day and night temperature 30°C is approx. 3% of the dimethoate content and at average day and night temperature 25°C it is approx. 1.6%. These numbers may vary between batches due to variations in content

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of impurities. The reactions involve rearrangements and polymerisation.

The self-accelerating reactions which dimethoate is capable of, do not occur at these temperatures, but at temperatures of 55 - 60°C and higher. At these temperatures the released heat can raise the temperature further and accelerate the decomposition. Above 80°C dimethoate will decompose rapidly, causing significant risk of explosion.

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

10.4. **Conditions to avoid** ..... Heating of the product will produce harmful and irritant vapours. The product can be ignited by e.g. flame, spark or hot surface.

10.5. **Incompatible materials** ..... Strong alkalis and strong oxidising compounds. The product can corrode metals (but does not meet the criteria for classification).

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

♣ 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.

Product

Acute toxicity ..... The product is harmful by ingestion and inhalation. It is considered as less harmful by skin contact. The acute toxicity is measured as:

Route(s) of entry - ingestion LD_{50}, oral, rat: 439 mg/kg (method US-EPA 81-1)

- skin LD_{50}, dermal, rat: > 2000 mg/kg (method US-EPA 81-2) *

- inhalation LC_{50}, inhalation, rat: 2.8 mg/l/4 h

Skin corrosion/irritation ..... Mildly irritating to skin (method US-EPA 81-5). *

Serious eye damage/irritation ..... Moderately irritating to eyes (method US-EPA 81-4).

Respiratory or skin sensitisation ... Not an allergic sensitizer (method US-EPA 81-6). *

Germ cell mutagenicity ..... The product contains no ingredient known to be mutagenic. *

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

Reproductive toxicity ..... The product contains no ingredient found to have adverse effects on reproduction. *

STOT – single exposure ..... Vapours may have narcotic effects at high doses. *

STOT – repeated exposure ..... The following is found for the active ingredient dimethoate:

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Target organ: nervous system (cholinesterase inhibition)
LOAEL: 25 ppm (2.5 mg/kg bw/day) in a 90-day rat study. At this exposure level, minor cholinesterase inhibition was found, which generally does not result in observable effects or discomfort.
LOEL: approx. 40 mg/kg bw/day. It must be considered debatable if the cholinesterase inhibition found at this level constitutes an effect that warrants classification. *

Aspiration hazard ..... The product does not present an aspiration pneumonia hazard. *

Dimethoate

Toxicokinetics, metabolism and distribution: Dimethoate is rapidly absorbed and excreted following oral administration. It is extensively metabolised. Dimethoate and its metabolites are primarily found in the liver and kidneys. There is no evidence for accumulation.

Acute toxicity ..... The substance is harmful by ingestion and inhalation. It is considered as less harmful by skin contact. The acute toxicity is measured as:

Route(s) of entry	- ingestion	LD_{50}, oral, rat: 386 mg/kg (method FIFRA 81.01)
	- skin	LD_{50}, dermal, rat: > 2000 mg/kg (method FIFRA 81.02) *
	- inhalation	LC_{50}, inhalation, rat: approx. 1.6 mg/l/4 h

Skin corrosion/irritation ..... Slightly irritating to skin (method FIFRA 81.05). *

Serious eye damage/irritation ..... Moderately irritating to eyes (method FIFRA 81.04). *

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

Cyclohexanone

Toxicokinetics, metabolism and distribution: After oral intake, cyclohexanone is readily absorbed and widely distributed in the body. It is extensively metabolised to natural body constituents and partially taken up in the organism.

Acute toxicity ..... Cyclohexanone is harmful by inhalation. It may have harmful effects by ingestion and skin contact as well. Study results for inhalation toxicity are divergent. The acute toxicity is measured as:

Route(s) of entry	- ingestion	LD_{50}, oral, rat: 1820 mg/kg (average of 6 study results)
	- skin	LD_{50}, dermal, rabbit: 950 mg/kg (average of 5 study results)
	- inhalation	LC_{50}, inhalation, rat: 3 - 30 mg/l/4 h

Skin corrosion/irritation ..... Cyclohexanone has irritating properties to skin as has been found in several studies. It is not clear if the classification criteria are met.

Serious eye damage/irritation ..... Cyclohexanone has irritating properties to eyes as has been found in several studies. It is not clear if the classification criteria are met.

Respiratory or skin sensitisation ... To our knowledge, no indications of allergenic effects have been

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reported. Negative results were found in a number of tests. *

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

♣ SECTION 12: ECOLOGICAL INFORMATION

12.1. **Toxicity** ..... The product is toxic to aquatic invertebrates and highly toxic to insects. It may be harmful to birds and earthworms. It is non-toxic to fish, aquatic plants and soil macro- and microorganisms.

The following has been measured on the active ingredient **dimethoate**:

- Fish	Rainbow trout (*Salmo gairdneri*)	96-h LC_{50}: 30.2 mg/l 21-day NOEC: 0.4 mg/l
- Invertebrates	Daphnids (*Daphnia magna*)	48-h EC_{50}: 2.0 mg/l 21-day NOEC: 0.04 mg/l
- Algae	Green algae (*Selenastrum capricornutum*)	72-h IC_{50}: 90.4 mg/l
- Birds	Mallard duck (*Anas platyrhynchos*)	LD_{50}: 42 mg/kg
	Bobwhite quail (*Colinus virginianus*)	LD_{50}: 10.5 mg/kg
- Earthworms	*Eisenia foetida foetida*	14-day LC_{50}: 31 mg/kg dry soil
- Bees	Honey bees (*Apis mellifera*)	LD_{50}, acute oral: 0.15 µg/bee LD_{50}, contact: 0.12 µg/bee

12.2. **Persistence and degradability** .... The active ingredient **dimethoate** is biodegradable. It undergoes degradation in the environment and in waste water treatment plants. No adverse effects are found at concentrations up to 100 mg/l in waste water treatment plants. Degradation occurs both aerobically and anaerobically, biologically as well as abiologically.

In aerobic soil and water **dimethoate** degrades rapidly, with primary half-lives of a few days. pH has a major influence. Degradation will increase at higher pH. Degradation products are not considered as harmful to soil dwelling or aquatic organisms and are mineralised relatively rapidly.

Cyclohexanone is readily biodegradable.

12.3. **Bioaccumulative potential** ..... See section 9 for octanol-water partition coefficients.

The active ingredient **dimethoate** does not bioaccumulate; it is rapidly metabolised and excreted.

Cyclohexanone is not expected to bioaccumulate.

12.4. **Mobility in soil** ..... **Dimethoate** has a potentially high mobility in soil, but is relatively unstable. Degradation products are not mobile in soil.

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Cyclohexanone has a high mobility in the environment. It will rapidly evaporate.

12.5. **Results of PBT and vPvB assessment** ..... None of the ingredients meets the criteria for being PBT or vPvB.

12.6. **Endocrine disrupting properties** None of the ingredients is known to have endocrine disrupting properties.

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.

Dimethoate is rapidly hydrolysed at pH > 8.0.

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** 3229

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14.2. **UN proper shipping name** ..... Self-reactive liquid Type F (dimethoate)

14.3. **Transport hazard class(es)** 4.1

14.4. **Packing group** ..... Not applicable

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. **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
Second Seveso category: flammable

All ingredients are 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 .....

ACGIH	American Conference of Governmental Industrial Hygienists
AOEL	Acceptable Operator Exposure Level
BAT	Biologische Arbeitsstoff-Toleranzwert
BEI	Biological Exposure Index
BMGV	Biological Monitoring Guidance Value
CAS	Chemical Abstracts Service
Dir.	Directive
DNEL	Derived No Effect Level
EC	European Community
EC_{50}	50% Effect Concentration
EINECS	European INventory of Existing Commercial Chemical Substances
EFSA	European Food Safety Authority
EKA	Expositionsäquivalent für Krebserzeugende Arbeitsstoffe
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
GHS	Globally Harmonized classification and labelling System of chemicals, Seventh revised edition 2017
HSE	Health & Safety Executive, UK
IMO	International Maritime Organisation
IBC	International Bulk Chemical code

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IC_{50}	50% Inhibition Concentration
ISO	International Organisation for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LC_{50}	50% Lethal Concentration
LD_{50}	50% Lethal Dose
LOAEL	Lowest Observed Adverse Effect Level
LOEL	Lowest Observed Effect Level
MAK	Maximale Arbeitspaltz-Konzentration
MC	Manufacturing Concentrate
OECD	Organisation for Economic Cooperation and Development
OSHA	Occupational Safety and Health Administration
PBT	Persistent, Bioaccumulative, Toxic
PEL	Personal Exposure Limit
PNEC	Predicted No Effect Concentration
Reg.	Registration, or Regulation
STEL	Short-Term Exposure Limit
STOT	Specific Target Organ Toxicity
TLV	Threshold Limit Value
TWA	Time Weighted Average
US-EPA	Environmental Protection Agency USA
vPvB	very Persistent, very Bioaccumulative
WEL	Workplace Exposure Limit
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 ..... Flammable liquid: test data
Self-reactive mixture: test data
Acute oral toxicity: test data
Inhalation toxicity: test data
Eye irritation: test data
Hazards to the aquatic environment: calculation method

Used hazard statements .....

H226	Flammable liquid and vapour.
H242	Heating may cause a fire.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
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

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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