

CLAYTON PLANT PROTECTION

CLAYTON TOTE Safety Data Sheet according to Regulation (EU) No. 453/2010. Version 1/dsc 20/2/2018

This version replaces all previous versions

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier CLAYTON TOTE

1.2. Relevant identified uses of the substance or mixture and uses advised. INSECTICIDE. *Contains dimethoate, cyclohexane, hydrocarbons, C9, aromatics and maleic anhydride*

1.3. Details of the supplier of the safety data sheet : Marketing Company in UK

Clayton Plant Protection (UK) Ltd., Bracetown Business Park, Clonee, Dublin15. Ireland.

Tel: (00 353) 1 8210127 www.cpp.ag Email: info@cpp.ag

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

Flammable liquid: Category 3 (H226)

Acute oral toxicity: Category 4 (H302)

Acute inhalation toxicity: Category 4 (H332)

Eye irritation: Category 2 (H319)

Sensitisation – skin: Category 1B (H317)

Aspiration toxicity: Category 1 (H304)

Hazards to the aquatic environment, chronic: Category 1 (H410)

WHO classification Class II: Moderately hazardous

Physicochemical hazards The product is flammable.

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

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..... 3621-04, Dimethoate 400 g/l EC

Contains dimethoate, cyclohexanone, hydrocarbons, C9, aromatics and maleic anhydride

Hazard pictograms (GHS02, GHS07, GHS08, GHS09)

Signal wordDanger



Hazard statements

H226 Flammable liquid and vapour.

H302 Harmful if swallowed.

H304 May be fatal if swallowed and enters airways

H317 May cause an allergic skin reaction

H319 Causes serious eye irritation

H332 Harmful if inhaled.

H410 Very toxic to aquatic life with long lasting effects

Supplementary hazard statement

EUH401To avoid risks to human health and the environment, comply with the instructions of use.

Precautionary statements

P261Avoid breathing vapours

P280Wear protective gloves and eye/face protection.

P303+P361+P352 ...IF ON SKIN (or hair): Remove immediately all contaminated clothing. Wash with plenty of soap and water

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310Immediately call a POISON CENTRE or doctor/physician.

P501 Dispose of contents/container as hazardous waste

2.3. Other hazardsNone of the ingredients in the product meets the criteria for being PBT or vPvB.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. SubstancesThe product is a mixture, not a substance.

3.2. MixturesSee section 16 for full text of hazard statements.

Active ingredient

DimethoateContent: 39% by weight

CAS namePhosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)- 2-oxoethyl] ester

CAS no.60-51-5

IUPAC nameO,O-Dimethyl S-methylcarbamoylmethyl phosphorodithioate

Other name(s) O,O-Dimethyl S-(N-methylcarbamoylmethyl) phosphorodithioate

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ISO name/EU nameDimethoate

EC no. (EINECS no.) ..200-480-3

EU index no. 015-051-00-4

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 ingredients	Content (% w/w)	CAS no.	EC no.	Classification
Cyclohexanone Reg. no. 01-2119453616-35	48	108-94-1	EINECS no.: 203-631-1	Flam. Liq. 3 (H226) Acute Tox. 4 (H332)
Hydrocarbons, C9, aromatics Reg. no. 01-2119455851-35	8		918-668-5	Flam. Liq. 3 (H226) STOT SE 3 (H335) STOT SE 3 (H336) Asp. Tox. 1 (H304) Aquatic Chronic 2 (H411)
Maleic anhydride Reg. no. 01-2119472428-31	0.1 - 1	108-31-6	EINECS no.: 203-571-6	Acute Tox. 4 (H302) Skin Corr. 1B (H314) Resp. Sens. 1 (H334) Skin Sens. 1 (H317)

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures. If exposure has occurred, do not wait for symptoms to develop, but immediately start the procedures described below.

InhalationIf 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 contactImmediately 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.

IngestionCall 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.

In an industrial setting the antidote atropine sulphate should be available at the workplace. It may be helpful to show this safety data sheet to physician.

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

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.

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SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing mediaDry 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. The product (dimethoate) may decompose rapidly when heated, which can result in explosion.

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, 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.

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 38°C, which is 10°C below its flash point of 48°C, the fire and explosion hazard is considered minor. At higher temperatures the hazard gradually becomes more serious.

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

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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

		Year	
Dimethoate	ACGIH (USA) TLV OSHA (USA) PEL EU, 2000/39/EC as amended Germany, MAK HSE (UK) WEL	2015	Not established; BEI
		2015	Not established
		2009	Not established
		2014	Not established; BAT
		2011	Not established
Cyclohexanone	ACGIH (USA) TLV OSHA (USA) PEL EU, 2000/39/EC as amended Germany, MAK HSE (UK) WEL	2015	TWA 20 ppm STEL 50 ppm Skin notation
		2015	TWA 50 ppm (200 mg/m ³)
		2009	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
		2014	Skin notation; EKA
		2011	8-hr TWA 10 ppm (41 mg/m ³) STEL 20 ppm (82 mg/m ³); 15-minute reference period Skin notation; BMGV

Aromatic hydrocarbons	100 ppm total hydrocarbon is recommended. The mixture contains trimethyl benzene. The ACGIH recommends a TLV-TWA of 25 ppm (123 g/m ³) for trimethyl benzene. 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 0.001 mg/kg bw/day. PNEC, aquatic environment 0.0008 mg/l
Cyclohexanone	DNEL, dermal 10 mg/kg bw/day DNEL, inhalation 100 mg/m ³ PNEC, aquatic environment 0.0329 mg/l
Aromatic hydrocarbons	DNEL, dermal 25 mg/kg bw/day DNEL, inhalation 150 mg/m ³ PNEC, aquatic environment Not applicable

8.2. Exposure controlsWhen 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 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.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on physical and chemical properties

Appearance Blue liquid	Vapour density (Air = 1) Cyclohexanone : 3.4
Odour Aromatic, almond-like	Aromatic hydrocarbons : > 1
Odour threshold Not determined	Relative density Not determined
pH 1% solution in water: approx. 3.14 at 25°C	Density: 1.06 g/ml at 20°C
Melting point/freezing point Below 0°C Crystallisation may occur from 0°C downward.	Solubility(ies) Solubility of dimethoate at 25°C in: cyclohexanone 1220g/l.
Initial boiling point and boiling range Not determined	n-heptane 0.242g/l.
Dimethoate : decomposes	methanol 1590g/l
Cyclohexanone : 156°C	xylene 313g/l
Aromatic hydrocarbons : 155 - 181°C	water 39.8g/l
Flash point 48°C (Setaflash closed cup)	Partition coefficient n-octanol/water
Evaporation rate (Butyl acetate = 1)	Dimethoate : log Kow = 0.704
Cyclohexanone : 0.3	Cyclohexanone : log Kow = 0.86 at 25°C
Aromatic hydrocarbons : 0.15	Aromatic hydrocarbons : some of the main components have log Kow = 3.4 - 4.1
Flammability (solid/gas) Not applicable (liquid) Upper/lower flammability or explosive limits	Autoignition temperature 310°C
Cyclohexanone : 1 - 9.4 vol% (1 - 9.4 kPa)	Decomposition temperature Not determined (however, see subsection 10.2.)
Aromatic hydrocarbons : 0.8 - 7.0 vol% (0.8 - 7 kPa)	Viscosity 6.4 mPa.s at 20°C, 4.0 mPa.s at 40°C
Vapour pressure	Explosive properties Not explosive
Dimethoate : 1.35 x 10 ⁻⁴ Pa at 25°C	Oxidising properties Not oxidising
Cyclohexanone : 0.47 kPa at 20°C	
Aromatic hydrocarbons: 0.20 kPa at 20°C. 0.71 kPa at 38°C	

9.2. Other information Miscibility. The product is emulsifiable 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 (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 decomposition is to a considerable extent dependent on time as well as temperature due to self-accelerating exothermic and autocatalytic reactions. The reactions involve rearrangements and polymerisation releasing volatile malodorous and inflammable compounds such as dimethyl sulphide and methyl mercaptan.

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 toxicological effects * = 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 LD50, oral, rat: approx. 550 mg/kg (method OECD 425)

- skin LD50, dermal, rat: > 2000 mg/kg (method OECD 402) *

- inhalation LC50, inhalation, rat: approx. 3 mg/l/4 h (measured on a similar product, method FIFRA 81.03)

Skin corrosion/irritation Not irritating to skin (method OECD 404). *

Serious eye damage/irritation Moderately irritating to eyes (method OECD 405).

Respiratory or skin sensitisation ... Weakly sensitising (method OECD 429).

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: 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 presents an aspiration pneumonia hazard.

Symptoms and effects, acute and delayed. On contact, the first symptoms to appear may be irritation and allergic reactions. 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.

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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 LD50, oral, rat: 386 mg/kg (method FIFRA 81.01)
- skin LD50, dermal, rat: > 2000 mg/kg (method FIFRA 81.02) *
- inhalation LC50, 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 LD50, oral, rat: 1820 mg/kg (average of 6 study results)
- skin LD50, dermal, rabbit: 950 mg/kg (average of 5 study results)
- inhalation LC50, 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 reported. Negative results were found in a number of tests. *

Hydrocarbons, C9, aromatics

Acute toxicity. The substance is not considered as harmful. * The acute toxicity is measured as:

Route(s) of entry - ingestion LD50, oral, rat: 3592 mg/kg (method similar to OECD 401)
- skin LD50, dermal, rabbit: > 3160 mg/kg (method similar to OECD 402)
- inhalation LC50, inhalation, rat: > 6.2 mg/l/4 h (method similar to OECD 403)

Skin corrosion/irritation. Mildly irritating to skin at prolonged exposure. Can cause skin dryness (method similar to OECD 404).

Serious eye damage/irritation. May cause mild, short-lasting discomfort to eyes (method similar to OECD 405). *

Respiratory or skin sensitisation. Not expected to cause allergic reactions (method similar to OECD 406). *

Aspiration hazard. Aromatic hydrocarbons present an aspiration hazard.

Maleic anhydride

Toxicokinetics, metabolism and distribution

After oral intake, maleic anhydride 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. The substance is harmful by ingestion. The acute toxicity is measured as:

Route(s) of entry - ingestion LD50, oral, rat: 1090 mg/kg (method OECD 401)
- skin LD50, dermal, rabbit: 2620 mg/kg (method OECD 402) *
- inhalation LC50, inhalation, rat: no reliable data available

Skin corrosion/irritation. The substance is corrosive (method similar to OECD 404).

Serious eye damage/irritation. The substance is corrosive.

Respiratory or skin sensitisation. Allergenic properties have been observed in humans.

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 acute ecotoxicity of the product is measured as: -

Fish Bluegill sunfish (*Lepomis macrochirus*) 96-h LC50: > 100 mg/l

Invertebrates Daphnids (*Daphnia magna*) 48-h EC50: 8.9 mg/l

Algae Green algae (*Pseudokirchneriella subcapitata*) 72-h IC50: 246 mg/l

Bees Honeybee (*Apis mellifera*) 48-h LC50, contact: 0.37ug/bee 48-h LC50, oral: 0.29ug/bee

The following has been measured on the active ingredient dimethoate:

Invertebrates Daphnids (*Daphnia magna*) 48-h EC50: 2.0 mg/l 21-day NOEC: 0.04 mg/l

Birds Bobwhite quail (*Colinus virginianus*) LD50: 10.5 mg/kg

Earthworms *Eisenia foetida foetida* 14-day LC50: 31 mg/kg dry soil

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 abiotically.

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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.

Aromatic hydrocarbons are not readily biodegradable. However, they are expected to be degraded in the environment at a moderate rate. A BOD₅/COD ratio of 0.43 was measured. When evaporated, they are expected to degrade rapidly to the air.

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.

Aromatic hydrocarbons have a moderate potential to bioaccumulate if continuous exposure is maintained. Most components can be metabolised by many organisms, bacteria, fungi, etc. BCFs of some of the main components are 300 - 400 (by model calculation).

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

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

Aromatic hydrocarbons are not mobile in the environment, but are highly volatile and will rapidly evaporate to the air if released into the water or on the surface of 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 packaging 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. 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 - 1993

14.2. UN proper shipping name - Flammable liquid, n.o.s. (cyclohexanone, alkyl(C3-C4)benzenes and dimethoate)

14.3. Transport hazard class(es) - 3

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

Second Seveso category: flammable

Young people under the age of 18 are not allowed to work with the substance.

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.

CLAYTON PLANT PROTECTION

CLAYTON TOTE Safety Data Sheet according to Regulation (EU) No. 453/2010. Version 1/dsc 20/2/2018

This version replaces all previous versions

SECTION 16: OTHER INFORMATION

List of abbreviations -

ACGIH American Conference of Governmental Industrial Hygienists	IUPAC International Union of Pure and Applied Chemistry
BAT Biologische Arbeitsstoff-Toleranzwert	LC50 50% Lethal Concentration
BCF BioConcentration Factor	LD50 50% Lethal Dose
BEI Biological Exposure Index	LOAEL Lowest Observed Adverse Effect Level
BMGV Biological Monitoring Guidance Value	LOEL Lowest Observed Effect Level
BOD5 Biological Oxygen Demand (for 5 days)	MAK Maximale Arbeitsplatz-Konzentration
CAS Chemical Abstracts Service	MARPOL Set of rules from the International Maritime Organisation (IMO) for prevention of sea pollution
COD Chemical Oxygen Demand Dir. Directive	n.o.s. Not otherwise specified
DNEL Derived No Effect Level	OECD Organisation for Economic Cooperation and Development
EC European Community, or Emulsifiable Concentrate	OSHA Occupational Safety and Health Administration
EC50 50% Effect Concentration	PBT Persistent, Bioaccumulative, Toxic
EINECS European INventory of Existing Commercial Chemical Substances	PEL Personal Exposure Limit
EKA Expositionsäquivalent für Krebserzeugende Arbeitsstoffe	PNEC Predicted No Effect Concentration Reg. Registration, or Regulation
FIFRA Federal Insecticide, Fungicide and Rodenticide Act	STEL Short-Term Exposure Limit
GHS Globally Harmonized classification and labelling System of chemicals, Fifth revised edition 2013	STOT Specific Target Organ Toxicity
HSE Health & Safety Executive, UK	TLV Threshold Limit Value
IBC International Bulk Chemical code IC50 50% Inhibition Concentration	TWA Time Weighted Average
ISO International Organisation for Standardization	vPvB very Persistent, very Bioaccumulative
	WEL Workplace Exposure Limit
	WHO World Health Organisation

References - Data measured on this and a similar 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 Acute oral toxicity: test data Inhalation toxicity: read-across

Eye irritation: test data Sensitisation – skin: test data Aspiration toxicity: test data Hazards to the aquatic

environment: calculation method

Used hazard statements

H226 Flammable liquid and vapour.	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H242 Heating may cause a fire.	H335 May cause respiratory irritation.
H302 Harmful if swallowed.	H336 May cause drowsiness or dizziness.
H304 May be fatal if swallowed and enters airways.	H410 Very toxic to aquatic life with long lasting effects.
H312 Harmful in contact with skin.	H411 Toxic to aquatic life with long lasting effects.
H314 Causes severe skin burns and eye damage.	EUH401 To avoid risks to human health and the environment, comply with the instructions of use.
H317 May cause an allergic skin reaction.	
H319 Causes serious eye irritation.	
H332 Harmful if inhaled.	

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 correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.