

MONSANTO Europe S.A.
Material Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

Product name

Avadex® Excel 15G

Chemical name

Not applicable

Synonyms

Not applicable

Company

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient

S-2,3,3-trichloroallyl-diisopropylthiocarbamate; {Triallate}

Composition

Components	CAS No.	EINECS/ ELINCS No.	% by weight (approximate)	EU Symbols & R phrases of components
Triallate	2303-17-5	218-962-7	15	Xn, N; R22, 43, 48/22, 50/53; {b}
H.A.N.	64742-94-5	265-198-5	7.5	Xn; R65; {b}
Related impurities and inert carrier			77.5	

3. HAZARDS IDENTIFICATION

Potential health effects

Likely routes of exposure

Skin contact, eye contact

Eye contact, short term

Not expected to produce significant adverse effects when recommended use instructions are followed.

Skin contact, short term

May cause allergic skin reaction.

Potential environmental effects

Not expected to produce significant adverse effects when recommended use instructions are followed.

In case of accidental spill:

May cause long-term adverse effects in the aquatic environment.

Refer to section 11 for toxicological and section 12 for environmental information.

4. FIRST AID MEASURES

Eye contact

Immediately flush with plenty of water.

If easy to do, remove contact lenses.

Skin contact

Immediately wash affected skin with plenty of water.
Use soap if available.
Pay particular attention to skin crevices, nail folds, scalp, etc.
Take off contaminated clothing, wristwatch, jewellery.
If spilled into boots, remove immediately.
Wash clothes before re-use.
If there are persistent symptoms, obtain medical advice.

Inhalation

Remove to fresh air.

Ingestion

Immediately offer water to drink.
Never give anything by mouth to an unconscious person.
Do NOT induce vomiting unless directed by medical personnel.
If swallowed, seek medical advice immediately and show this container or label.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Recommended: Water, foam, dry chemical, carbon dioxide (CO₂)

Unusual fire and explosion hazards

Minimise use of water to prevent environmental contamination.
Environmental precautions: see section 6.

Hazardous products of combustion

Carbon monoxide (CO), nitrogen oxides (NO_x), phosgene (COCl₂), carbonyl sulphide (COS), hydrogen chloride (HCl)

Fire fighting equipment

Self-contained breathing apparatus.
Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protection recommended in section 8.
In case of insufficient ventilation, wear suitable respiratory equipment.
Keep upwind of spillage.
Avoid all direct contact.
Warn everybody of toxic hazard.
Do NOT breathe gas/vapour.
Keep all non-essential people away from affected area.

Environmental precautions

Minimise spread.
Contain spillage with sand bags or other means.

Methods for cleaning up

Collect in containers for disposal.
Dig up heavily contaminated soil.
Refer to section 7 for types of containers.
Wash spill area with detergent and water.
Minimise use of water to prevent environmental contamination.

Refer to section 13 for disposal of spilled material.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

Handling

- Avoid contact with skin.
- Avoid breathing dust.
- Use only in well-ventilated areas.
- When using do not eat, drink or smoke.
- Wash hands thoroughly after handling or contact.
- Wash contaminated clothing before re-use.
- Thoroughly clean equipment after use.
- Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.
- Refer to section 13 for disposal of rinse water.
- Emptied containers retain vapour and product residue.
- Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.

Storage

- Minimum storage temperature: -10 °C
- Maximum storage temperature: 40 °C
- Incompatible materials for storage: mild steel, PVC
- Keep out of reach of children.
- Keep away from food, drink and animal feed.
- Keep only in the original container.
- Keep container tightly closed in a cool, well-ventilated place.
- Keep container dry.
- Minimum shelf life: 2 years.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits

Components	Exposure Guidelines
Triallate	MWPEG (Monsanto Workplace Permissible Exposure Limit); 0.7 mg/m ³ (TWA) MWPEG (Monsanto Workplace Permissible Exposure Limit); 2.8 mg/m ³ (STEL)
H.A.N.	Manufacturer suggested exposure limit; 100 mg/m ³ (TWA) TLV (ACGIH); No specific occupational exposure limit has been established.
Related impurities and inert carrier	No specific occupational exposure limit has been established.

Engineering controls

- Provide adequate ventilation to keep airborne concentration below exposure limits.

Eye protection

- No special requirement when used as recommended.

Skin protection

- Wear chemical resistant gloves.
- Wear chemical resistant clothing/footwear.

Respiratory protection

- If airborne exposure is excessive:
Wear respirator.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Colour/colour range:	Tan - Purple
Form:	Granules (dust free)
Odour:	Odourless
Density:	0.87 g/cm ³ ; (tap density)
pH:	~ 7.2 @ 20 °C @ 10 g/l
Partition coefficient (log Pow):	4.6 (active ingredient)

10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions of handling and storage.

Hazardous decomposition

Thermal decomposition: When heated may give off irritant/corrosive fumes.
Hazardous products of combustion: see section 5.

Materials to avoid/Reactivity

Reacts with strong acids or bases.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Data obtained on similar products and on components are summarized below.

Similar formulation

Acute oral toxicity

Rat, LD₅₀: 12,000 mg/kg body weight

Acute dermal toxicity

Rabbit, LD₅₀ (limit test): > 20,000 mg/kg body weight

Skin irritation

Rabbit, 6 animals, modified Draize test:

Redness, mean EU score: 1.25

Swelling, mean EU score: 0.25

Eye irritation

Rabbit, 6 animals, OECD 405 test:

Conjunctival redness, mean EU score: 1.11

Conjunctival swelling, mean EU score: 0.28

Corneal opacity, mean EU score: 0.00

Iris lesions, mean EU score: 0.00

Days to heal: 3

Active ingredient

Acute inhalation toxicity

Rat, LC₅₀, 4 hours, aerosol: > 5.3 mg/L

Other effects: neurotoxic signs

Maximum attainable concentration. No mortality.

Skin sensitization

Guinea pig, Buehler test:

Negative.

Guinea pig, maximisation test:

Positive incidence: 95 %

Mutagenicity

In vitro mutagenicity test(s):

Equivocal response.

In vivo mutagenicity test(s):

Not mutagenic.

Repeated dose toxicity

Rat, oral, 90 days:

NOAEL toxicity: 7.4 mg/kg body weight/day

Target organs/systems: kidneys

Other effects: decrease of body weight gain, haematological effects, histopathologic effects

Rat, dermal, 21 days:

NOAEL toxicity: 500 mg/kg body weight/day

Target organs/systems: liver, kidneys

Other effects: decrease of body weight gain, organ weight change, histopathologic effects

Carcinogenicity

Rat, oral, 2 years:

NOEL tumour: \geq 250 mg/kg diet

NOAEL toxicity: 50 mg/kg diet

Target organs/systems: kidneys, liver

Other effects: decrease of body weight gain, organ weight change

No tumours.

Mouse, oral, 2 years:

NOEL tumour: 60 mg/kg diet

NOAEL toxicity: 20 mg/kg diet

Tumours: liver (carcinoma) (adenoma)

Target organs/systems: liver

Other effects: organ weight change, haematological effects, histopathologic effects

Tumours not related to treatment.

Toxicity to reproduction/fertility

Rat, oral, 2 generations:

LOAEL toxicity: 600 mg/kg diet

LOAEL reproduction: 150 mg/kg diet

Target organs/systems in parents: brain

Other effects in parents: weight loss, change in pregnancy time

Other effects in pups: weight loss

Developmental toxicity/teratogenicity

Rat, oral, 6 - 20 days of gestation:

NOAEL toxicity: 10 mg/kg body weight

NOAEL development: 30 mg/kg body weight

Other effects in mother animal: decrease of food consumption, decrease of body weight gain

Developmental effects: weight loss, skeletal variations

Effects on offspring only observed with maternal toxicity.

Rabbit, oral, 6 - 28 days of gestation:

LOAEL toxicity: 45 mg/kg body weight

LOAEL development: 45 mg/kg body weight

Other effects in mother animal: weight loss

Developmental effects: weight loss

Acute neurotoxicity

Rat, oral, single dose, gavage:

NOAEL: 300 mg/kg body weight

Target organs/systems: central nervous system, motor nerves

Other effects: decrease of body weight gain

Repeated dose neurotoxicity

Rat, oral, 13 weeks, dietary:

NOAEL: 7.3 mg/kg body weight

LOAEL: 35.7 mg/kg body weight

Target organs/systems: central nervous system, spinal cord

Other effects: weight loss, decrease of body weight gain, neuromuscular effects, decrease of food consumption

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on similar products and on components are summarized below.

Similar formulation

Aquatic toxicity, fish

Bluegill sunfish (*Lepomis macrochirus*):

Acute toxicity, 96 hours, static, LC50: 13 mg/L

Rainbow trout (*Oncorhynchus mykiss*):

Acute toxicity, 96 hours, static, LC50: 19 mg/L

Active ingredient

Aquatic toxicity, invertebrates

Water flea (*Daphnia magna*):

Acute toxicity, 48 hours, static, EC50: 0.091 mg/L

Aquatic toxicity, algae/aquatic plants

Green algae (*Selenastrum capricornutum*):

Acute toxicity, 72 hours, static, ErC50 (growth rate): 0.047 mg/L

Avian toxicity

Bobwhite quail (*Colinus virginianus*):

Acute oral toxicity, LD50: 2,251 mg/kg body weight

Bobwhite quail (*Colinus virginianus*):

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet

Mallard duck (*Anas platyrhynchos*):

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet

Arthropod toxicity

Honey bee (*Apis mellifera*):

Oral/contact, 48 hours, LD50: > 100 µg/bee

Soil organism toxicity, invertebrates

Earthworm (*Eisenia foetida*):

Acute toxicity, 14 days, LC50: 549 mg/kg dry soil

Bioaccumulation

Bluegill sunfish (*Lepomis macrochirus*):

Fillet: BCF: 540

Rapid depuration after end of exposure.

Bluegill sunfish (*Lepomis macrochirus*):

Viscera: BCF: 2,600

Rapid depuration after end of exposure.

Dissipation

Water/sediment, 20 °C:

Half life: 2 - 3 days

Soil, aerobic, 20 °C:

Half life: 35 - 61 days

Koc: 2,416 - 7,399 L/kg

Adsorbs strongly to soil. Not expected to leach to groundwater.

Biodegradation

Manometric respirometry test:

Degradation: < 1 % within 28 days

Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Product

Keep out of drains, sewers, ditches and water ways.

Recycle if appropriate facilities/equipment available.

Dispose of as hazardous industrial waste.

Burn in special, controlled high temperature incinerator.
Follow all local/regional/national/international regulations.

Container

See the individual container label for disposal information.
Empty packaging completely.
Do NOT re-use containers.
Store for collection by approved waste disposal service.
Recycle if appropriate facilities/equipment available.
Emptied containers retain vapour and product residue.
Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.
Follow all local/regional/national/international regulations.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

ADR/RID

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. , (triallate 15%)
UN No.: UN3077
Class: 9
Kemler: 2X
Packing Group: III

IMO

For IMDG not regulated for transport.

IATA/ICAO

For ICAO not regulated for transport.

15. REGULATORY INFORMATION

EU label (manufacturer self-classification) - Classification following the EU Pesticides Directive 78/631/EEC, supplemented with elements from the EU Dangerous Preparations Directive 88/379/EEC.

Xn - Harmful	
R43	May cause sensitization by skin contact.
R48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed.
S2	Keep out of reach of children.
S13	Keep away from food, drink and animal feedingstuffs.
S20/21	When using do not eat, drink or smoke.
S36/37	Wear suitable protective clothing and gloves.

National classification - U.K.

Xi - Irritant	
R43	May cause sensitization by skin contact.
U05a	- WHEN USING DO NOT EAT, DRINK OR SMOKE.
U20a	- WASH HANDS AND EXPOSED SKIN before eating, drinking or smoking and after work.
C03	- KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDING STUFFS.
E01	- KEEP OUT OF REACH OF CHILDREN.
E13b	- DANGEROUS TO FISH OR AQUATIC LIFE. Do not contaminate surface waters or ditches with chemical or used container.
E30a	- KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.
E32a	- EMPTY CONTAINER COMPLETELY and dispose of safely.

16. OTHER INFORMATION

This Safety Data Sheet has been prepared following the EU Directive 93/112.
The information given here is not necessarily exhaustive but is representative of relevant, reliable data.
Follow all local/regional/national/international regulations.

Please consult supplier if further information is needed.
In this document the British spelling was applied.
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Endnotes:

- {a} EU label (manufacturer self-classification)
- {b} EU label (Annex I)
- {c} National classification

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, MONSANTO Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will MONSANTO Company be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. **NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR TO THE PRODUCT TO WHICH INFORMATION REFERS.**

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