SAFETY DATA SHEET

ASSOCIATE® 240 EC

Version	Revision Date:	SDS Number:	Date of last issue: -
0.0	30.05.2023	800080000509	Date of first issue: 30.05.2023

Corteva Agriscience™ encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container. This Safety Data Sheet adheres to the standards and regulatory requirements of South Africa and may not meet the regulatory requirements in other countries.

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

1.1 Product identifier

Trade name : ASSOCIATE® 240 EC

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Substance/Mixture : Fungicide

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION
Manufacturer/importer
Corteva Agriscience RSA Proprietary Limited (“Corteva Agriscience RSA”)
Block A, 2nd Floor, Lakefield Office Park, 272 West Avenue
Centurion, Gauteng, 0163
South Africa

Customer Information Number : +27 (0) 12 683 5700
E-mail address : SDS@corteva.com

1.4 Emergency telephone number

24-Hour Local Emergency Contact: +27 82 895 0621
24-Hour Emergency Contact: +32 3 575 55 55

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Carcinogenicity, Category 2	H351: Suspected of causing cancer.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : H315 Causes skin irritation.
H319 Causes serious eye irritation.
H351 Suspected of causing cancer.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P201 Obtain special instructions before use.
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P391 Collect spillage.

Hazardous components which must be listed on the label:
proquinazid (ISO)

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
proquinazid (ISO)	189278-12-4 616-211-00-1	Carc. 2; H351 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 _____ M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 10	16,1
tetraconazole (ISO)	112281-77-3	Acute Tox. 4; H302	8,46

	407-760-6 613-174-00-3	Acute Tox. 4; H332 Aquatic Chronic 2; H411	
Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts	90194-26-6 290-635-1	Skin Irrit. 2; H315 Eye Dam. 1; H318 Aquatic Chronic 3; H412	>= 1 - < 2,5
toluene	108-88-3 203-625-9 601-021-00-3 01-2119471310-51	Flam. Liq. 2; H225 Skin Irrit. 2; H315 Repr. 2; H361d STOT SE 3; H336 (Central nervous system) STOT RE 2; H373 (Nervous system) Asp. Tox. 1; H304 Aquatic Chronic 3; H412	>= 0,1 - < 0,25

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Never give anything by mouth to an unconscious person.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.
Artificial respiration and/or oxygen may be necessary.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off immediately with soap and plenty of water.
In the case of skin irritation or allergic reactions see a physician.
Wash contaminated clothing before re-use.

In case of eye contact : If easy to do, remove contact lens, if worn.
Hold eye open and rinse slowly and gently with water for 15-20 minutes.
Get medical attention immediately.

If swallowed : Call a physician or poison control centre immediately.
Do not induce vomiting without medical advice.
If victim is conscious:
Rinse mouth with water.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : No cases of human intoxication are known and the symptoms of experimental intoxication are not known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)

Unsuitable extinguishing media : Do not use direct water stream.
High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Exposure to combustion products may be a hazard to health.
Vapours may form explosive mixtures with air.
Do not allow run-off from fire fighting to enter drains or water courses.
Flash back possible over considerable distance.

Hazardous combustion products : Nitrogen oxides (NOx)
Carbon oxides

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Specific extinguishing methods : Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Further information : Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.
Do not use a solid water stream as it may scatter and spread fire.
Use a water spray to cool fully closed containers.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Ensure adequate ventilation.
Use personal protective equipment.
Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2 Environmental precautions

Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
Discharge into the environment must be avoided.
Prevent further leakage or spillage if safe to do so.
Prevent spreading over a wide area (e.g. by containment or oil barriers).
Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained.
Prevent from entering into soil, ditches, sewers,underwater.
See Section 12, Ecological Information.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Clean up remaining materials from spill with suitable absorbant.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in.
For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped,
Recovered material should be stored in a vented container.
The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container.
Keep in suitable, closed containers for disposal.
Wipe up with absorbent material (e.g. cloth, fleece).
Non-sparking tools should be used.
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Suppress (knock down) gases/vapours/mists with a water spray jet.
See Section 13, Disposal Considerations, for additional information.

6.4 Reference to other sections

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Local/Total ventilation	:	Use with local exhaust ventilation.
Advice on safe handling	:	Avoid formation of aerosol. Provide sufficient air exchange and/or exhaust in work rooms. Do not breathe vapours/dust. Do not smoke. Handle in accordance with good industrial hygiene and safety practice. Avoid exposure - obtain special instructions before use. Smoking, eating and drinking should be prohibited in the application area. Do not get on skin or clothing. Do not breathe vapours or spray mist. Do not swallow. Do not get in eyes. Avoid contact with skin and eyes. Keep container tightly closed. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Regular cleaning of equipment, work area and clothing. Keep working clothes separately. Contaminated work clothing should not be allowed out of the workplace. Wash hands and face before breaks and immediately after handling the product. Remove clothing/PPE immediately if material gets inside. For environmental protection remove and wash all contaminated protective equipment before re-use. Dispose of rinse water in accordance with local and national regulations.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Store in a closed container. No smoking. Prevent unauthorized access. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labelled containers. Store in accordance with the particular national regulations.
Advice on common storage	:	Strong oxidizing agents Explosives Gases
Packaging material	:	Unsuitable material: None known.

7.3 Specific end use(s)

Specific use(s)	:	Plant protection products subject to Regulation (EC) No 1107/2009.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
toluene	108-88-3	OEL-RL	40 ppm	ZA OEL
	Further information: danger of cutaneous absorption, Occupational Exposure Limits - Restricted Limits For Hazardous Chemical Agents			
		TWA	50 ppm 192 mg/m3	2006/15/EC
		STEL	100 ppm 384 mg/m3	2006/15/EC

Biological occupational exposure limits

Substance name	CAS-No.	Control parameters	Sampling time	Basis
toluene	108-88-3	Toluene: 0,02 mg/l (Blood)	Prior to last shift of workweek	ZA BEI
		Toluene: 0,03 mg/l (Urine)	End of shift	ZA BEI
		o-Cresol: 0.3 mg/g Creatinine (Urine)	End of shift	ZA BEI

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
toluene	Workers	Inhalation	Acute systemic effects	384 mg/m3
	Workers	Inhalation	Acute local effects	384 mg/m3
	Workers	Skin contact	Long-term systemic effects	384 mg/kg bw/day
	Workers	Inhalation	Long-term systemic effects	192 mg/m3
	Workers	Inhalation	Long-term local effects	192 mg/m3
	Consumers	Inhalation	Acute systemic effects	226 mg/m3
	Consumers	Inhalation	Acute local effects	226 mg/m3
	Consumers	Skin contact	Long-term systemic effects	226 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	56,5 mg/m3
	Consumers	Ingestion	Long-term systemic effects	8,13 mg/kg bw/day
	Consumers	Inhalation	Long-term local effects	56,5 mg/m3

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
toluene	Fresh water	0,68 mg/l

	Marine water	0,68 mg/l
	Intermittent use/release	0,68 mg/l
	Sewage treatment plant	13,61 mg/l
	Fresh water sediment	16,39 mg/kg
	Marine sediment	16,39 mg/kg
	Soil	2,89 mg/kg

8.2 Exposure controls

Engineering measures

Ensure adequate ventilation, especially in confined areas.
Use sufficient ventilation to keep employee exposure below recommended limits.
In other cases, It is recommended to use the following protective equipment.
Provide for appropriate exhaust ventilation and dust collection at machinery.

Personal protective equipment

Eye/face protection : Safety glasses with side-shields conforming to EN166
Additionally wear a face shield where the possibility exists for face contact due to splashing, spraying or airborne contact with this material.

Hand protection

Remarks : The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Gauntlets shorter than 35 cm long shall be worn under the combination sleeve. Gauntlets of 35 cm long or longer shall be worn over the combination sleeve. Before removing gloves clean them with soap and water.

Skin and body protection : Manufacturing and processing work:
Full protective clothing Type 6 (EN 13034)
Spray application - outdoor:
Tractor / sprayer with hood:
No personal body protection normally required.
Tractor / sprayer without hood:
Low application:
Full protective clothing Type 6 (EN 13034)
Nitrile rubber boots (EN 13832-3 / EN ISO 20345).
Middle-height application:
Full protective clothing Type 4 (EN 14605)
Nitrile rubber boots (EN 13832-3 / EN ISO 20345).
Backpack / knapsack sprayer:
Full protective clothing Type 4 (EN 14605)
Nitrile rubber boots (EN 13832-3 / EN ISO 20345).
To optimize the ergonomy it may be recommended to use cotton underwear when wearing some fabrics. Take advice from supplier.

		Garment materials that are resistant to both water vapour and air will maximise wearing comfort. Materials should be robust to maintain the integrity and barrier in use. The permeation resistance of the fabric must be verified independently of the « type » protection recommended, to ensure an appropriate performance level of the material adequate to the corresponding agent and type of exposure. When exceptional circumstances require an access to the treated area before the end of re-entry periods, wear full protective clothing Type 6(EN 13034), nitrile rubber gloves class 3 (EN 374) and nitrile rubber boots (EN 13832-3 / EN ISO 20345). Mixer and loaders must wear: Full protective clothing Type 6 (EN 13034) Rubber apron Nitrile rubber boots (EN 13832-3 / EN ISO 20345).
Respiratory protection	:	Manufacturing and processing work: Half mask with vapour filter A1 (EN 141)
Protective measures	:	The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. All chemical protective clothing should be visually inspected prior to use. Clothing and gloves should be replaced in case of chemical or physical damage or if contaminated. Only protected handlers may be in the area during application.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	liquid
Colour	:	light yellow
Odour	:	characteristic
Odour Threshold	:	not determined
pH	:	6,83
Melting point/freezing point	:	Not applicable
Boiling point/boiling range	:	No data available
Flash point	:	67,5 °C
Evaporation rate	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available

Relative vapour density	:	No data available
Density	:	0,995 g/cm3
Solubility(ies)		
Water solubility	:	emulsifiable
Partition coefficient: n-octanol/water	:	Not applicable
Viscosity		
Viscosity, kinematic	:	5,22 mm2/s
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.

9.2 Other information

Self-ignition	:	320 °C

SECTION 10: Stability and reactivity

10.1 Reactivity

Not classified as a reactivity hazard.

10.2 Chemical stability

No decomposition if stored and applied as directed.
Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Stable under recommended storage conditions. No hazards to be specially mentioned. Vapours may form explosive mixture with air. May form explosive dust-air mixture.

10.4 Conditions to avoid

Conditions to avoid	:	Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid	:	Strong acids Strong bases

10.6 Hazardous decomposition products

Carbon oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute oral toxicity	:	LD50 (Rat): > 2.000 mg/kg Method: OECD Test Guideline 423
Acute inhalation toxicity	:	Acute toxicity estimate: > 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
Acute dermal toxicity	:	LD50 (Rat): > 2.000 mg/kg Method: OECD Test Guideline 402

Components:

proquinazid (ISO):

Acute oral toxicity	:	LD50 (Rat, male): > 5.000 mg/kg Method: OECD Test Guideline 401 LD50 (Rat, female): 4.846 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	:	LC50 (Rat, male and female): > 5,2 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	:	LD50 (Rat): > 5.000 mg/kg Method: OECD Test Guideline 402

tetraconazole (ISO):

Acute oral toxicity	:	LD50 (Rat, male): 1.248 mg/kg
Acute inhalation toxicity	:	LC50 (Rat, male and female): > 3,66 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rat): > 2.000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Acute dermal toxicity	:	Remarks: Prolonged skin contact is unlikely to result in absorption of harmful amounts. LD50 (Rat, male and female): > 2.000 mg/kg

toluene:

Acute oral toxicity	:	LD50 (Rat): 5.580 mg/kg

Acute inhalation toxicity	:	LC50 (Rat, male): 25,7 mg/l Exposure time: 4 h Test atmosphere: vapour Remarks: Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. Alcohol consumption and exertion may increase the adverse effects of toluene. LC50 (Rat, female): 30 mg/l Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	LD50 (Rabbit): 12.267 mg/kg

Skin corrosion/irritation

Product:

Species	:	Rat
Method	:	OECD Test Guideline 404
Result	:	Skin irritation

Components:

proquinazid (ISO):

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

tetraconazole (ISO):

Species	:	Rabbit
Result	:	No skin irritation

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Result	:	Skin irritation

toluene:

Species	:	Rabbit
Result	:	Skin irritation

Serious eye damage/eye irritation

Product:

Species	:	Rabbit
Method	:	OECD Test Guideline 405
Result	:	Eye irritation

Components:

proquinazid (ISO):

Species : Rabbit
Method : OECD Test Guideline 405
Result : No eye irritation

tetraconazole (ISO):

Species : Rabbit
Result : No eye irritation

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Result : Corrosive

toluene:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitisation

Product:

Species : Guinea pig
Assessment : Does not cause skin sensitisation.
Method : OECD Test Guideline 406

Components:

proquinazid (ISO):

Test Type : Maximisation Test
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Did not cause sensitisation on laboratory animals.

tetraconazole (ISO):

Species : Guinea pig
Remarks : For skin sensitization:
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Remarks : For skin sensitization:
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

toluene:

Species : Guinea pig
Assessment : Does not cause skin sensitisation.

Germ cell mutagenicity

Components:

proquinazid (ISO):

Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were negative., In vivo tests did not show mutagenic effects

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Germ cell mutagenicity- Assessment : In vitro genetic toxicity studies were negative.

toluene:

Germ cell mutagenicity- Assessment : The majority and most reliable of the many genetic toxicity studies on toluene, both in vitro and in animals, indicate that it is not genetically toxic.

Carcinogenicity

Components:

proquinazid (ISO):

Carcinogenicity - Assessment : Has caused cancer in laboratory animals.

toluene:

Carcinogenicity - Assessment : Did not cause cancer in laboratory animals.

Reproductive toxicity

Components:

proquinazid (ISO):

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Did not cause birth defects in laboratory animals.

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Reproductive toxicity - Assessment : Did not cause birth defects in laboratory animals.

toluene:

Reproductive toxicity - Assessment : In animal studies, has been shown to interfere with reproduction., Some evidence of adverse effects on development, based on animal experiments.
In laboratory animals, toluene has been toxic to the fetus at doses toxic to the mother; it has caused birth defects in mice when administered orally, but not by inhalation.

STOT - single exposure

Components:

proquinazid (ISO):

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

tetraconazole (ISO):

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Assessment : Available data are inadequate to determine single exposure specific target organ toxicity.

toluene:

Exposure routes : Inhalation
Target Organs : Central nervous system
Assessment : May cause drowsiness or dizziness.

STOT - repeated exposure

Components:

toluene:

Exposure routes : Inhalation
Target Organs : Nervous system
Assessment : May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

proquinazid (ISO):

Species : Rat
Application Route : Diet
Remarks : In animals, effects have been reported on the following organs:
Liver effects
Kidney effects
Thyroid effects
Abnormal serum enzyme levels
Organ weight changes
altered hematology

tetraconazole (ISO):

Remarks : Based on available data, repeated exposures are not expected to cause significant adverse effects except at very high aerosol concentrations. Repeated excessive aerosol expo-

sures may cause respiratory tract irritation and even death.

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Remarks : Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

toluene:

Remarks : In animals, effects have been reported on the following organs:
central nervous system (CNS) effects
Excessive exposure may cause neurologic signs and symptoms.
Toluene has caused hearing loss in laboratory animals upon exposure to high concentrations.
Intentional misuse by deliberately inhaling toluene may cause nervous system damage, hearing loss, liver and kidney effects and death.

Aspiration toxicity

Product:

Based on physical properties, not likely to be an aspiration hazard.

Components:

proquinazid (ISO):

Based on physical properties, not likely to be an aspiration hazard.

tetraconazole (ISO):

Based on physical properties, not likely to be an aspiration hazard.

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Based on available information, aspiration hazard could not be determined.

toluene:

May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 6,90 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 1,70 mg/l

aquatic invertebrates		Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	ErC50 (Desmodesmus subspicatus (green algae)): 1,12 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to terrestrial organisms	:	LD50: 1.385 mg/kg Species: Colinus virginianus (Bobwhite quail) contact LD50: 0,392 mg/kg Exposure time: 48 h Species: Apis mellifera (bees) oral LD50: 0,506 mg/kg Exposure time: 48 h Species: Apis mellifera (bees)

Ecotoxicology Assessment

Chronic aquatic toxicity	:	Toxic to aquatic life with long lasting effects.

Components:

proquinazid (ISO):

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0,349 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 GLP: yes LC50 (Lepomis macrochirus (Bluegill sunfish)): 0,454 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0,287 mg/l Exposure time: 48 h Test Type: flow-through test Method: OECD Test Guideline 202 GLP: yes EC50 (Americamysis bahia (mysid shrimp)): 0,11 mg/l Exposure time: 96 h Test Type: flow-through test Method: US EPA Test Guideline OPP 72-3 GLP: yes
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): > 0,740 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 GLP: yes EC50 (Lemna gibba (duckweed)): > 0,2 mg/l

End point: Frond
Exposure time: 14 d
Method: US EPA Test Guideline OPP 122-2 & 123-2

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC: 0,0030 mg/l
Exposure time: 90 d
Species: Oncorhynchus mykiss (rainbow trout)
Test Type: Early Life-Stage
Method: OECD Test Guideline 210
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0,0018 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 202
GLP: yes

M-Factor (Chronic aquatic toxicity) : 10

Toxicity to soil dwelling organisms : LC50: > 1.000 mg/kg
Exposure time: 14 d
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 207
GLP:yes

Toxicity to terrestrial organisms : LD50: > 2.250 mg/kg
Species: Colinus virginianus (Bobwhite quail)
Method: US EPA Test Guideline OPP 71-1
GLP:yes

LC50: > 5.620 mg/kg
Exposure time: 5 d
Species: Colinus virginianus (Bobwhite quail)
Method: OECD Test Guideline 205
GLP:yes

LC50: > 5.620 mg/kg
Exposure time: 5 d
Species: Anas platyrhynchos (Mallard duck)
Method: OECD Test Guideline 205
GLP:yes

oral LD50: > 0,125 mg/kg
Exposure time: 72 h
Species: Apis mellifera (bees)
Method: OEPP/EPPO Test Guideline 170
GLP:yes

contact LD50: > 0,197 mg/kg
Exposure time: 72 h
Species: Apis mellifera (bees)

Method: OEPP/EPPO Test Guideline 170
GLP:yes

tetraconazole (ISO):

Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 4,3 mg/l Exposure time: 96 h LC50 (Oncorhynchus mykiss (rainbow trout)): 5,1 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 3,0 mg/l Exposure time: 48 h

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 1 - < 10 mg/l Exposure time: 96 h Test Type: Static
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 2,9 mg/l Exposure time: 48 h Test Type: Static
Toxicity to algae/aquatic plants	:	EC50 (Selenastrum capricornutum (green algae)): 29 mg/l Exposure time: 96 h Test Type: Static
Toxicity to fish (Chronic toxicity)	:	NOEC: 0,23 mg/l Exposure time: 72 d Species: Oncorhynchus mykiss (rainbow trout) Test Type: flow-through
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 1,18 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Test Type: flow-through test

toluene:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 5,8 mg/l Exposure time: 96 h Test Type: semi-static test LC50 (Fish): 5,5 mg/l Exposure time: 96 h Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 7 mg/l Exposure time: 24 h Test Type: static test Method: OECD Test Guideline 202 LC50 (water flea Ceriodaphnia dubia): 3,78 mg/l Exposure time: 48 h

Test Type: semi-static test

Toxicity to algae/aquatic plants	:	EbC50 (Pseudokirchneriella subcapitata (green algae)): 12,5 mg/l End point: Biomass Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to microorganisms	:	IC50 (Bacteria): 29 mg/l Exposure time: 16 h
Toxicity to fish (Chronic toxicity)	:	NOEC: 1,4 mg/l End point: growth Exposure time: 40 d Species: Fish Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0,74 mg/l End point: number of offspring Exposure time: 7 d Species: Ceriodaphnia dubia (water flea) NOEC: 2 mg/l End point: number of offspring Exposure time: 21 d Species: Daphnia magna (Water flea)
Toxicity to soil dwelling organisms	:	LC50: 150 - 280 mg/kg Species: Eisenia fetida (earthworms)

12.2 Persistence and degradability

Product:

Biodegradability	:	Remarks: Not readily biodegradable. Estimation based on data obtained on active ingredient.

Components:

proquinazid (ISO):

Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 1 % Exposure time: 28 d Remarks: Material is not readily biodegradable according to OECD/EEC guidelines.
Stability in water	:	Test Type: Photolysis Degradation half life (DT50): 0,03 d

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Biodegradability	:	Inoculum: activated sludge Biodegradation: 70 - 99 % Exposure time: 122 d

Result: Readily biodegradable.
Remarks: Material is expected to be readily biodegradable.

toluene:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 100 %
Exposure time: 14 d
Method: OECD Test Guideline 301C or Equivalent
Remarks: 10-day Window: Not applicable

ThOD : 3,13 kg/kg
Method: Calculated.

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Does not bioaccumulate.
Estimation based on data obtained on active ingredient.

Components:

proquinazid (ISO):

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): 821
Method: OECD Test Guideline 305
GLP: yes
Remarks: The substance has a high potential of bioaccumulation.

Partition coefficient: n-octanol/water : Remarks: No relevant data found.

tetraconazole (ISO):

Partition coefficient: n-octanol/water : Remarks: No relevant data found.

Benzenesulfonic acid 4-C10-14 alkyl derivatives, calcium salts:

Bioaccumulation : Species: Pimephales promelas (fathead minnow)
Exposure time: 8 d
Bioconcentration factor (BCF): 2 - 1.000
Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : Pow: 2,89 (20 °C)

toluene:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 13,2 - 90
Method: Measured

Partition coefficient: n-octanol/water : log Pow: 2,73
Method: Measured

Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

12.4 Mobility in soil

Product:

Distribution among environmental compartments : Remarks: Under actual use conditions the product has a low potential of mobility in soil.

Components:

proquinazid (ISO):

Distribution among environmental compartments : Koc: 821
Remarks: The product is not expected to be mobile in soils.

tetraconazole (ISO):

Distribution among environmental compartments : Remarks: No relevant data found.

toluene:

Distribution among environmental compartments : Koc: 37 - 178
Method: Estimated.
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Components:

proquinazid (ISO):

Assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

tetraconazole (ISO):

Assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

toluene:

Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

Product:

Endocrine disrupting potential : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Components:

proquinazid (ISO):

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

tetraconazole (ISO):

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

toluene:

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.
If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

SECTION 14: Transport information

14.1 UN number

UNRTDG : UN 3082

IMDG : UN 3082

IATA : UN 3082

14.2 UN proper shipping name

UNRTDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Proquinazid, Tetraconazole)
IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Proquinazid, Tetraconazole)
IATA	:	Environmentally hazardous substance, liquid, n.o.s. (Proquinazid, Tetraconazole)

14.3 Transport hazard class(es)

UNRTDG	:	9
IMDG	:	9
IATA	:	9

14.4 Packing group

UNRTDG

Packing group	:	III
Labels	:	9

IMDG

Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Remarks	:	Stowage category A

IATA (Cargo)

Packing instruction (cargo aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

14.5 Environmental hazards

IMDG

Marine pollutant	:	yes(Proquinazid, Tetraconazole)

14.6 Special precautions for user

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA Special provision A197, and ADR/RID special provision 375.

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	E2	ENVIRONMENTAL HAZARDS

Other regulations:

The product is classified as dangerous in accordance with Regulation (EC) No. 1272/2008.

15.2 Chemical safety assessment

A Chemical Safety Assessment is not required for this substance when it is used in the specified applications.
The mixture is evaluated within the frame of the provisions of Regulation (EC) No. 1107/2009.
Refer to the label for exposure assessment information.

SECTION 16: Other information

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.
Classification was done in accordance with UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS) Purple Book and complies with the Regulations for Hazardous Chemical Agents, 2021.

Full text of H-Statements

H225	:	Highly flammable liquid and vapour.
H302	:	Harmful if swallowed.
H304	:	May be fatal if swallowed and enters airways.
H315	:	Causes skin irritation.
H318	:	Causes serious eye damage.
H332	:	Harmful if inhaled.
H336	:	May cause drowsiness or dizziness.
H351	:	Suspected of causing cancer.
H361d	:	Suspected of damaging the unborn child.
H373	:	May cause damage to organs through prolonged or repeated exposure if inhaled.
H400	:	Very toxic to aquatic life.

H410	:	Very toxic to aquatic life with long lasting effects.
H411	:	Toxic to aquatic life with long lasting effects.
H412	:	Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Asp. Tox.	:	Aspiration hazard
Carc.	:	Carcinogenicity
Eye Dam.	:	Serious eye damage
Flam. Liq.	:	Flammable liquids
Repr.	:	Reproductive toxicity
Skin Irrit.	:	Skin irritation
STOT RE	:	Specific target organ toxicity - repeated exposure
STOT SE	:	Specific target organ toxicity - single exposure
2006/15/EC	:	Europe. Indicative occupational exposure limit values
ZA BEI	:	South Africa. The Regulations for Hazardous Chemical Agents, Biological Exposure Indices
ZA OEL	:	South Africa. The Regulations for Hazardous Chemical Agents, Occupational Exposure Limits
2006/15/EC / TWA	:	Limit Value - eight hours
2006/15/EC / STEL	:	Short term exposure limit
ZA OEL / OEL-RL	:	Occupational Exposure Limit Restricted limit - 8- hour exposure or equivalent (12 hour shifts)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI -

Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

Other information : Take notice of the directions of use on the label.

Classification of the mixture:		**Classification procedure:**
Skin Irrit. 2	H315	Based on product data or assessment
Eye Irrit. 2	H319	Based on product data or assessment
Carc. 2	H351	Calculation method
Aquatic Chronic 2	H411	Based on product data or assessment

Product code: GF-4241

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.

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