MATERIAL SAFETY DATA SHEET

APEX

IDENTIFICATION OF THE SUPPLIER:

AGRO CHEMICALS INDUSTRIES LTD
JORDAN AMMAN
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E-mail: info@aci.com.jo.

PRODUCT IDENTIFICATION:

Common Name: Tebuconazole+ Trifloxystrobin
Trade Name: Apex
Chemical Name:
Tebuconazole: (RS)-1-P-chlorophenyl-,4-dimethyl-3-(1H-1,2,4 triazole-1-ylmethyl) pentan-3-ol
Trifloxystrobin: methyl (E)-methoxyimino-{(E)-α-[1-(α,α,α-trifluorom-tolyl)ethylideneaminooxy]-o-tolyl}acetate
Chemical Formula:
Tebuconazole: $C_{16}H_{22}ClN_3O$
Trifloxystrobin: $C_{20}H_{19}F_3N_2O_4$
Molecular Weight:
Tebuconazole: 307.8
Trifloxystrobin: 408.4

PRODUCT COMPOSITION:

Active Ingredient:	% w/v	CAS #
Tebuconazole	26.2 % w/v	[107534-96-3]
Trifloxystrobin	26.2 % w/v	[141517-21-7]

Inert ingredient: Up to 1liter

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HAZARDS IDENTIFICATION:

Classification in accordance with regulation HCS 29CFR §1910.1200
Reproductive toxicity: Category 2

Signal word: Warning
Hazard statements:
Suspected of damaging fertility or the unborn child
Precautionary statements Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Store locked up.
Dispose of contents/container in accordance with local regulation.
Other hazards
No other hazards known.

FIRST AID MEASURES:

General advice:
When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

If inhaled:
Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

If on skin:
Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.

If in eyes:

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Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

If swallowed:

Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Most important symptoms and effects, both acute and delayed

Symptoms: To date no symptoms are known.

Indication of any immediate medical attention and special treatment needed

Treatment Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote

FIRE FIGHTING MEASURES:

Extinguishing media

Suitable :Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

Unsuitable : High volume water jet

Special hazards arising from the substance or mixture :

Dangerous gases are evolved in the event of a fire.

Advice for firefighters

Special protective equipment for fire-fighters :

Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing

Further information: Evacuate personnel to safe areas. Fight fire from upwind position. Keep out of smoke. Do not allow run-off from fire fight enter drains or water courses.

Flash point no data available

Autoignition temperature no data available

Lower explosion limit : no data

Upper explosion limit : no data

Explosivity : no data

ACCIDENTAL RELEASE MEASURES:

Personal precautions, protective equipment and emergency procedures

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Precautions: Isolate hazard area. Keep unauthorized people away. Avoid contact with spilled product or contaminated surfaces.

Methods and materials for containment and cleaning up

Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations. Contaminated soil may have to be removed and disposed.

Additional advice Do not allow to enter soil, waterways or waste water canal.

Reference to other sections Information regarding safe handling, see section 7. Information regarding personal protective equipment, see section 8. Information regarding waste disposal, see section 13.

HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling :Handle and open container in a manner as to prevent spillage. Use only in area provided with appropriate exhaust ventilation.

Hygiene measures: Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove soiled clothing immediately and clean thoroughly before using again. Remove and wash contaminated gloves, including the inside, before re-use. Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash thoroughly and put on clean clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers: Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

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EXPOSURE CONIROLS/ PERSONAL PROTECTION:

Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Tebuconazole	107534-96-3	5ug/m3 (AN ESL)	07 2011	TX ESL
Tebuconazole	107534-96-3	50ug/m3 (ST ESL)	07 2011	TX ESL
Tebuconazole	107534-96-3	0.2 mg/m3 (TWA)		OES BCS*
Trifloxystrobin	141517-21-7	2.7 mg/m3 (TWA)		OES BCS*
Glycerine (Respirable fraction.)	56-81-5	5 mg/m3 (PEL)	02 2006	OSHA Z1
Glycerine (Total dust.)	56-81-5	15 mg/m3 (PEL)	02 2006	OSHA Z1
Glycerine (Respirable fraction.)	56-81-5	5 mg/m3 (TWA)	1989	OSHA Z1A
Glycerine (Total dust.)	56-81-5	10 mg/m3 (TWA)	1989	OSHA Z1A
Glycerine (Total dust and mist.)	56-81-5	10 mg/m3 (TWA)	06 2008	TN OEL
Glycerine (Respirable fraction and dust or fume.)	56-81-5	5 mg/m3 (TWA)	06 2008	TN OEL
Glycerine	56-81-5	1000ug/m3 (ST ESL)	03 2014	TX ESL
Glycerine	56-81-5	50ug/m3 (ST ESL)	03 2014	TX ESL
Glycerine	56-81-5	100ug/m3 (AN ESL)	03 2014	TX ESL
Glycerine	56-81-5	5ug/m3 (AN ESL)	03 2014	TX ESL

*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

Exposure controls Personal protective equipment

Personal protective equipment

In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply

Respiratory protection: When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations

Hand protection: Chemical resistant nitrile rubber gloves

Eye protection : Safety glasses with side-shields

Skin and body protection :Wear long-sleeved shirt and long pants and shoes plus socks

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General protective measures :
Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water.
Keep and wash PPE separately from other laundry.

PHYSICAL AND CHEMICAL PROPERTIES:

Appearance	white to light beige
Physical State	suspension
Odor	mild characteristic
Odour Threshold	no data available
pH	9 at 10 % (23 °C) (deionized water)
Vapor Pressure	no data available
Vapor Density (Air = 1)	no data available
Density	1.16 g/cm³ at 20 °C
Evapouration rate	no data available
Boiling Point	no data available
Melting / Freezing Point	no data available
Water solubility	dispersible
Minimum Ignition Energy	not applicable
Decomposition temperature	no data available
Partition coefficient: n-octanol/water	not applicable
Viscosity	500 - 1,000 mPa.s at 25 °C
Flash point	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Explosivity	not applicable

STABILITY AND REACTIVITY:

Reactivity

Thermal decomposition	no data available
Chemical stability	Stable under recommended storage conditions
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.

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Conditions to avoid	Extremes of temperature and direct sunlight. freezing
Hazardous decomposition products	No decomposition products expected under normal conditions of use.

TOXICOLOGICAL INFORMATION:

Exposure routes	Eye contact, Ingestion, Inhalation, Skin contact, Skin Absorption
Immediate Effects	
Eye	Moderate eye irritation.
Skin	Harmful if absorbed through skin.
Ingestion	Harmful if swallowed
Inhalation	Harmful if inhaled.
Information on toxicological effects	
Acute oral toxicity	LD50 (male/female combined rat) > 2,000 mg/kg
Acute inhalation toxicity	LC50 (male/female combined rat) > 1.7 mg/l Exposure time: 4 h Determined in the form of a respirable aerosol. Highest attainable concentration. No deaths (actual) LC50 (male/female combined rat) > 6.8 mg/l Exposure time: 1.0 h Determined in the form of a respirable aerosol. Extrapolated from the 4 hr LC50. (actual)
Acute dermal toxicity	LD50 (male/female combined rat) > 4,000 mg/kg

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Skin irritation	No skin irritation (rabbit)
Eye irritation	No eye irritation (rabbit)
Sensitisation	Non-sensitizing. (guinea pig)

Assessment repeated dose toxicity

Tebuconazole did not cause specific target organ toxicity in experimental animal studies.
Trifloxystrobin did not cause specific target organ toxicity in experimental animal studies

Assessment mutagenicity

Tebuconazole was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
Trifloxystrobin was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment carcinogenicity

Tebuconazole caused at high dose levels an increased incidence of tumours in mice in the following organ(s): liver. The mechanism of tumour formation is not considered to be relevant to man.
Trifloxystrobin was not carcinogenic in lifetime feeding studies in rats and mice

Assessment toxicity to reproduction

Tebuconazole caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. The reproduction toxicity seen with Tebuconazole is related to parental toxicity.
Trifloxystrobin caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. The reproduction toxicity seen with Trifloxystrobin is related to parental toxicity.

Assessment developmental toxicity

Tebuconazole caused developmental toxicity only at dose levels toxic to the dams. Tebuconazole caused an increased incidence of post implantation losses, an increased incidence of non-specific malformations.
Trifloxystrobin caused developmental toxicity only at dose levels toxic to the dams. The developmental effects seen with Trifloxystrobin are related to maternal toxicity.

Further information

Only acute toxicity studies have been performed on the formulated product.

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The non-acute information pertains to the active ingredient(s).

ECOLOGICAL INFORMATION:

Toxicity to fish:
LC50 (Oncorhynchus mykiss (rainbow trout)) 4.4 mg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient tebuconazole.
LC50 (Oncorhynchus mykiss (rainbow trout)) 0.015 mg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient trifloxystrobin.

Toxicity to aquatic invertebrates
EC50 (Daphnia magna (Water flea)) 2.79 mg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient tebuconazole.
EC50 (Daphnia magna (Water flea)) 0.016 mg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient trifloxystrobin.
Toxicity to aquatic plants
EC50 (Raphidocelis subcapitata (freshwater green alga)) 3.8 mg/l
Growth rate; Exposure time: 72 h
The value mentioned relates to the active ingredient tebuconazole.

Biodegradability
Tebuconazole: not rapidly biodegradable
Trifloxystrobin: not rapidly biodegradable

Koc
Tebuconazole: Koc: 769
Trifloxystrobin: Koc: 2377

Bioaccumulation
Tebuconazole: Bioconcentration factor (BCF) 35 - 59
Does not bioaccumulate.
Trifloxystrobin: Bioconcentration factor (BCF) 431
Does not bioaccumulate.

Mobility in soil
Tebuconazole: Slightly mobile in soils
Trifloxystrobin: Slightly mobile in soils

Environmental precautions

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Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites.
Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water.
Do not allow to get into surface water, drains and ground water.
Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark.

DISPOSAL CONSIDERATIONS:

Waste treatment methods
Product: Pesticide, spray mixture or rinse water that cannot be used according to label instructions may be disposed of on site or at an approved waste disposal facility.
Dispose in accordance with all local, state/provincial and federal regulations.

Contaminated packaging
Follow advice on product label and/or leaflet.
Triple rinse containers.
Do not re-use empty containers.
Puncture container to avoid re-use.
Completely empty container into application equipment, then dispose of empty container in a sanitary landfill, by incineration or by other procedures approved by state/provincial and local authorities.
If burned, stay out of smoke.

RCRA Information: Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

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