



Material Safety Data Sheet (MSDS)

RAPID

IDENTIFICATION OF THE SUPPLIER:

AGRO CHEMICALS INDUSTRIES LTD
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PRODUCT IDENTIFICATION:

Common Name: Flubendiamide
Trade Name: Rapid
Chemical Name: N2-[1,1-dimethyl-2-(methyl-2-(methylsulfonyl)ethyl]-3-iodo-N1-[2-methyl-4-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]phenyl]-1,2-benzenedicarboxamide
Chemical Formula: C₂₃H₂₂F₇IN₂O₄S
Molecular Weight: 682.4

PRODUCT COMPOSITION:

<i>Active Ingredient:</i>	<i>CAS #</i>	<i>% w/v</i>
Flubendiamide	[10004-44-1]	48
<i>Inert ingredient:</i>		
Up to 1 Liter		

FIRE FIGHTING MEASURES:

1 Extinguishing media

Suitable

2 Special hazards arising from the substance or mixture

Water spray, Carbon dioxide (CO₂), Foam, Sand
In the event of fire the following may be released:
Hydrogen cyanide (hydrocyanic acid), Hydrogen fluoride, Carbon monoxide (CO), Sulphur oxides, Nitrogen oxides (NO_x)

3 Advice for firefighters



Special protective equipment for firefighters

Wear self-contained breathing apparatus and protective suit.

Further information

Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure being built up due to heat. Whenever possible, contain fire-fighting water by diking area with sand or earth. Do not allow run-off from firefighting to enter drains or water courses.

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ACCIDENTAL RELEASE MEASURES:

- 1. Personal precautions, protective equipment and emergency procedures**

Precautions Keep unauthorized people away. Avoid contact with spilled product or contaminated surfaces. When dealing with a spillage do not eat, drink or smoke. Use personal protective equipment.
- 2. Environmental precautions** Do not allow to get into surface water, drains and ground water. If the product contaminates rivers and lakes or drains inform respective authorities.
- 3. 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). Clean contaminated floors and objects thoroughly, observing environmental regulations. Keep in suitable, closed containers for disposal.
- 4. 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:

1. Precautions for safe handling

Advice on safe handling Use only in area provided with appropriate exhaust ventilation.

Hygiene measures

Avoid contact with skin, eyes and clothing. Keep working clothes separately. Wash hands before breaks and immediately after handling the product. Remove soiled clothing immediately and



clean thoroughly before using again. Garments that cannot be cleaned must be destroyed (burnt).

2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Store in a place accessible by authorized persons only. Keep away from direct sunlight.

Advice on common storage

Keep away from food, drink and animal feedingstuffs.

EXPOSURE CONTROLS / PERSONAL PROTECTION:

1. Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Flubendiamide	272451-65-7	0.5 mg/m ³ (TWA)		OES BCS*
Glycerine (Inhalable mist.)	56-81-5	10 mg/m ³ (TWA)	12 2011	AU NOEL

*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

2. Exposure controls

Respiratory protection

Respiratory protection is not required under anticipated circumstances of exposure.

Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer's instructions regarding wearing and maintenance.

Hand protection

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. Wash gloves when contaminated. Dispose of when contaminated inside, when perforated or when contamination on the outside cannot be removed. Wash hands frequently and always before eating, drinking, smoking or using the toilet.

Material	Nitrile rubber
Rate of permeability	> 480 min
Glove thickness	> 0.4 mm
Directive	Protective gloves complying with EN 374.



Eye protection

Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).

Skin and body protection

Wear standard coveralls and Category 3 Type 6 suit.
If there is a risk of significant exposure, consider a higher protective type suit.
Wear two layers of clothing wherever possible.
Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently.
If chemical protection suit is splashed, sprayed or significantly contaminated, decontaminate as far as possible, then carefully remove and dispose of as advised by manufacturer.

General protective measures

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

Engineering Controls Advice on safe handling

Use only in area provided with appropriate exhaust ventilation.

PHYSICAL AND CHEMICAL PROPERTIES:

1. Information on basic physical and chemical properties

Form	suspension
Colour	white to light beige
Odour	weak, characteristic
Odour Threshold	No data available
pH	6.5 - 7.5 (100 %) (23 °C)
Melting point/range	No data available
Boiling Point	No data available
Flash point	>100 °C No flash point - Determination conducted up to the boiling point.
Flammability	No data available
Auto-ignition temperature	435 °C
Minimum ignition energy	No data available
Self-accelerating decomposition temperature (SADT)	No data available
Upper explosion limit	No data available
Lower explosion limit	No data available
Vapour pressure	No data available
Evaporation rate	No data available



Relative vapour density	No data available
Relative density	No data available
Density	ca. 1.22 g/cm ³ (20 °C)
Water solubility	miscible
Partition coefficient: n-octanol/water	Flubendiamide: log Pow: 4.2 (25 °C)
Viscosity, dynamic	No data available
Viscosity, kinematic	No data available
Surface tension	49.5 mN/m
	Determined in the undiluted form.
Oxidizing properties	No data available
Explosivity	No data available
9.2 Other information	Further safety related physical-chemical data are not known.

STABILITY AND REACTIVITY:

1. Reactivity	Stable under normal conditions.
Thermal decomposition	No data available
2. Chemical stability	Stable under recommended storage conditions.
3. Possibility of hazardous reactions	No hazardous reactions when stored and handled according to prescribed instructions.
4. Conditions to avoid	Extremes of temperature and direct sunlight.
5. Incompatible materials	Store only in the original container.
6. Hazardous decomposition products	Thermal decomposition can lead to release of: Carbon dioxide (CO ₂) Carbon monoxide Nitrogen oxides (NO _x) Sulphur oxides Hydrogen fluoride Hydrogen cyanide (hydrocyanic acid)



TOXICOLOGICAL INFORMATION:

1.

Information on toxicological effects

Acute oral toxicity	LD50 (Rat) > 2,000 mg/kg
Acute inhalation toxicity	LC50 (Rat) > 2.564 mg/l Exposure time: 4 h Highest attainable concentration. Determined in the form of a respirable aerosol.
Acute dermal toxicity	LD50 (Rat) > 4,000 mg/kg
Skin corrosion/irritation	No skin irritation (Rabbit)
Serious eye damage/eye irritation	No eye irritation (Rabbit)
Respiratory or skin sensitisation	Skin: Non-sensitizing (Guinea pig) OECD Test Guideline 406, Buehler test

Assessment mutagenicity

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

Assessment carcinogenicity

Flubendiamide was not carcinogenic in lifetime feeding studies in rats and mice.

Assessment toxicity to reproduction

Flubendiamide did not cause reproductive toxicity in a two-generation study in rats.

Assessment developmental toxicity

Flubendiamide did not cause developmental toxicity in rats and rabbits.

Assessment STOT Specific target organ toxicity – single exposure

Flubendiamide: Based on available data, the classification criteria are not met.

Assessment STOT Specific target organ toxicity – repeated exposure

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

Aspiration hazard

Based on available data, the classification criteria are not met.

Information on likely routes of exposure

Harmful if inhaled.

May cause skin irritation.

May cause eye irritation.

May be harmful if swallowed.

Early onset symptoms related to exposure

Refer to Section 4

Delayed health effects from exposure

Refer to Section 11

Exposure levels and health effects

Refer to Section 4

Interactive effects



Not known

When specific chemical data is not available

Not applicable

Mixture of chemicals

Refer to Section 2.1

Further information

No further toxicological information is available.

ECOLOGICAL INFORMATION:

1. Toxicity	
Toxicity to fish	LC50 (Oncorhynchus mykiss (rainbow trout)) > 250 mg/l Exposure time: 96 h
Toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 0.0065 mg/l Exposure time: 48 h
Toxicity to aquatic plants	IC50 (Raphidocelis subcapitata (freshwater green alga)) > 0.07 mg/l Exposure time: 72 h The value mentioned relates to the active ingredient. No acute toxicity was observed at its limit of water solubility.
2. Persistence and degradability	
Biodegradability	Readily biodegradable. The value mentioned relates to the active ingredient flubendiamide.
Biodegradability	Flubendiamide: Not rapidly biodegradable
Koc	Flubendiamide: Koc: 2197
3. Bioaccumulative potential	
Bioaccumulation	Flubendiamide: Bioconcentration factor (BCF) 73 Does not bioaccumulate.
4. Mobility in soil	
Mobility in soil	DT50 13 d. Depending on photolysis. The value mentioned relates to the active ingredient flubendiamide. DT50 600 d. Depending on microbial activity. The value mentioned relates to the active ingredient flubendiamide.
Mobility in soil	Flubendiamide: Slightly mobile in soils
12.5 Other adverse effects	
Additional ecological information	No other effects to be mentioned.



DISPOSAL CONSIDERATIONS:

Triple-rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or Territory government regulations. Do not burn empty containers or product.

Do not reuse container for any other purpose.

TRANSPORT INFORMATION:

ADG

UN number	3082
Transport hazard class(es)	9
Subsidiary Risk	None
Packaging group	III
Description of the goods	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUBENDIAMIDE)

Hazchem Code

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AU01: Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to this Code when transported by road or rail in;

a) packagings that do not incorporate a receptacle exceeding 500 kg(L); or

b) IBCs

IMDG

UN number	3082
Transport hazard class(es)	9
Subsidiary Risk	None
Packaging group	III
Marine pollutant	YES
Description of the goods	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUBENDIAMIDE)

IATA

UN number	3082
Transport hazard class(es)	9
Subsidiary Risk	None
Packaging group	III
Environm. Hazardous Mark	YES
Description of the goods	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (FLUBENDIAMIDE)