MATERIAL SAFETY DATA SHEET

INVADER (Beta Cyfluthrin 2.45 % SC)

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND SUPPLIER

PRODUCT NAME : Beta Cyfluthrin 2.5 % SC

CHEMICAL GROUP : Synthetic Pyrethroid

RECOMMEDED USE : A liquid insecticide concentrate for use as a general-purpose pest control spray.

FORMULATION : Suspension Concentrate

CORPORATE ADDRESS : **Arbuda Agrochemicals Limited**
1104, Ruby Crescent Business Boulevard,
Ashok Chakravarti Road, Kandivali-East,
Mumbai-400101, Maharashtra, India
Customer Care No- +91 9076907642
Email - info@arbudaagrochemicals.com

MANUFACTURER ADDRESS : **Arbuda Agrochemicals Limited**
Plot No. 279-283, GIDC, Taluka Talod ,
District- Sabarkantha, Gujarat – 383215.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature
Suspension concentrate (=flowable concentrate) (SC)
Beta-Cyfluthrin 25 g/l

Sr.No.	Component	Component Desc.	Content (w/w)
1	Beta Cyfluthrin technical	(on 100% basis)	2.45 % m/m
2	Ethoxylated derivative of styrylated phenols		2.00 % m/m
3	Trihydroxy propane		10.00 % m/m
4	Precipitated Silica		3.00 % m/m
5	Sulphuric acid (48%)		0.05 % m/m
6	Xanthane Gum		15.00 % m/m
7	Phenyl methoxy methanol		0.10 % m/m
8	Blend of methyl isothiozolone & its chloro derivative		0.10 % m/m
9	Water solution of Polydimethyl siloxane		0.10 % m/m
10	Water demineralised (Balance)		67.20 % m/m
		Total	**100 % w/w**

3. HAZARDOUS INFORMATION

3.1 Classification of the substance or mixture

Acute toxicity	:	Category 4
H302		Harmful if swallowed.
Acute aquatic toxicity	:	Category 1
H400	:	Very toxic to aquatic life.
Chronic aquatic toxicity	:	Category 1
H410	:	Very toxic to aquatic life with long lasting effects.

Hazardous components which must be listed on the label: • Beta-Cyfluthrin

Signal word: Warning

Hazard statements

H302	Harmful if swallowed.
H410	Very toxic to aquatic life with long lasting effects.
EUH208	Contains 1,2-benzisothiazolin-3-one, reaction mass of 5-chloro-2- methyl-2H-isothiazol-3-one and 2-methyl-2H-isothiazol-3- one (3:1). May produce an allergic reaction.
Precautionary statements	
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P308 + P311	IF exposed or concerned: Call a POISON CENTER/ doctor/ physician.
P391	Collect spillage.
P501	Dispose of contents/container in accordance with local regulation.

Other hazards

Cutaneous sensations may occur, such as burning or stinging on the face and mucosae. However, these sensations cause no lesions and are of a transitory nature (max. 24 hours).

Beta-Cyfluthrin: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).

4. FIRST AID MEASURES

Description of First Aid Measures

General advice	Move out of dangerous area. Place and transport the victim in a stable position (lying sideways). Remove contaminated clothing immediatelyand dispose of it safely.
Inhalation	Move to fresh air. Keep the patient warm and at rest. Call a physician or poison control center immediately.
Skin contact	Wash off thoroughly with plenty of soap and water, if available with polyethyleneglycol 400, subsequently rinse with water. Warm water may increase the subjective severity of the irritation/paresthesia. This is not a sign of systemic poisoning. In case of skin irritation, applicationof oils or lotions containing vitamin E may be considered. If symptomspersist, call a physician.

Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Warm water may increase the subjective severity of the irritation/paresthesia. This is not a sign of systemic poisoning. Apply soothing eye drops, if needed anestheticeye drops. Get medical attention if irritation develops and persists.
Ingestion	Rinse out mouth and give water in small sips to drink. Do NOT inducevomiting. Call a physician or poison control center immediately.

Most important symptoms and effects, both acute and delayed

Symptoms	Local: Skin and eye paraesthesia which may be severe, Usually transient with resolution within 24 hours, Skin, eye and mucous membrane irritation, Cough, sneezing.
	Systemic: discomfort in the chest, tachycardia, hypotension, Nausea, Abdominal pain, Diarrhoea, Vomiting, Blurred vision, Headache, Anorexia, Somnolence, Coma, Convulsions, Tremors, Prostration, Airway hyperreaction, Pulmonary oedema, Palpitation, Muscular fasciculation, Apathy, Dizziness

Indication of any immediate medical attention and special treatment needed

Risks	This product contains a pyrethroid. Pyrethroid poisoning should not be confused with carbamate or organophosphate poisoning.
Treatment	Systemic treatment: Initial treatment: symptomatic. Monitor: respiratory and cardiac functions. In case of ingestion gastric lavage should be considered in cases of significant ingestions only within the first 2 hours. However, the application of activated charcoal and sodium sulphate is always advisable. Keep respiratory tract clear. Oxygen or artificial respiration if needed. In case of convulsions, a benzodiazepine (e.g. diazepam) should be given according to standard regimens. If not effective, phenobarbital may be used. Contraindication: atropine. Contraindication: derivatives of adrenaline. There is no specific antidote. Recovery is spontaneous and without sequelae.
	In case of skin irritation, application of oils or lotions containing vitamin E may be considered.

5. FIRE FIGHTING MEASURES

Extinguishing media

Suitable	Water spray, Carbon dioxide (CO2), Foam, Sand
Hazchem Code	3Z
Special hazards arising from the substance or mixture	In the event of fire the following may be released: Carbon monoxide (CO)

Advice for firefighters

Special protective equipment for firefighters	n the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus.
Further information	Contain the spread of the fire-fighting media. Do not allow run-off from fire fighting to enter drains or water courses.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions	Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment.
Environmental Precautions	Do not allow to get into surface water, drains and ground water.

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.
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.

7. HANDLING AND STORAGE

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 immediately after work, if necessary take a shower. Remove soiled clothing immediately and clean thoroughly before using again. Garments that cannot be cleaned must be destroyed (burnt).

Conditions for safe storage, including any in compatibilities

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.
Suitable materials	HDPE (high density polyethylene)
Specific end use(s)	Refer to the label and/or leaflet.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Control parameters

Components	CAS-No.	Control parameters	Update	Basis
Beta-Cyfluthrin	1820573-27-0	0.01 mg/m3 (TWA)		OES BCS*
Synthetic amorphous silica (Total dust.)	112926-00-8	10 mg/m3 (TWA)	2001	IN OEL

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

Exposure controls 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	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
	Protective index	Class 6
	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	If product is handled while not enclosed, and if contact may occur: Complete suit protecting against chemicals.	

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Form	Suspension
Colour	white to light beige
Odour	weak, characteristic
Odour Threshold	No data available
pH	4.0 - 5.0 (100 %) (23 °C)
Melting point/range	No data available
Boiling Point	No data available
Flash point	> 100 °C
Flammability	No data available
Auto-ignition temperature	No data available

Minimum ignition energy No data available

Self-accelarating 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. 1.05 g/cm³ (20 °C)
Water solubility	Miscible
Partition coefficient: n- octanol/water	Beta-Cyfluthrin: log Pow: 6.18 (22 °C)
Viscosity, dynamic	600.0 - 1,000.0 mPa.s (20 °C)

Viscosity, kinematic	No data available
Oxidizing properties	No data available
Exclusivity	No data available
Other information	Further safety related physical-chemical data are not known.

10. STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	No hazardous reactions when stored and handled according to prescribed instructions.
Conditions to avoid	Extremes of temperature and direct sunlight.
Incompatible materials	Store only in the original container.
Hazardous decomposition products	No decomposition products expected under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute oral toxicity	LD50 (Rat) 1,600 mg/kg
Acute inhalation toxicity	LC50 (Rat) > 0.777 mg/l Exposure time: 4 h Determined in the form of a respirable aerosol. Highest attainable concentration.
Acute dermal toxicity	LD50 (Rat) > 5,000 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 STOT Specific target organ toxicity – single exposure

Beta-Cyfluthrin : Based on available data, the classification criteria are not met.

Assessment STOT Specific target organ toxicity – repeated exposure

The toxic effects of Beta-Cyfluthrin are related to transient neurobehavioral effects typical for pyrethroid neurotoxicity.

Assessment mutagenicity

Beta-Cyfluthrin was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
Assessment carcinogenicity
Beta-Cyfluthrin was not carcinogenic in lifetime feeding studies in rats and mice.
Assessment toxicity to reproduction
Beta-Cyfluthrin 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 Beta-Cyfluthrin is related to parental toxicity.

Assessment developmental toxicity
Beta-Cyfluthrin caused developmental toxicity only at dose levels toxic to the dams. The developmental effects seen with Beta-Cyfluthrin are related to maternal toxicity.
Aspiration hazard
Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 (Oncorhynchus mykiss (rainbow trout)) 0.000068 mg/l Exposure time: 96 h The value mentioned relates to the active ingredient.
Toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 0.00029 mg/l Exposure time: 48 h The value mentioned relates to the active ingredient.

Toxicity to aquatic plants	IC50 (Desmodesmus subspicatus (green algae)) > 0.01 mg/l Growth rate; Exposure time: 72 h The value mentioned relates to the active ingredient. No acute toxicity was observed at its limit of water solubility.

Persistence and degradability

Biodegradability	Beta-Cyfluthrin: Not rapidly biodegradable
Koc	Beta-Cyfluthrin: Koc: 508 - 3179

Bioaccumulative potential

Bioaccumulation	Beta-Cyfluthrin: Bioconcentration factor (BCF) 506 Does not bioaccumulate.

Mobility in soil

Mobility in soil	Beta-Cyfluthrin: Immobile in soil

Results of PBT and vPvB assessment

PBT and vPvB assessment	Beta-Cyfluthrin: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).

Other adverse effects

Additional ecological	No other effects to be mentioned.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Product	In accordance with current regulations and, if necessary, after consultation with the site operator and/or with the responsible authority, the product may be taken to a waste disposal site or incineration plant.
Contaminated packaging	Not completely emptied packagings should be disposed of as hazardous waste.
Legal basis	

Waste key in accordance with Schedule I of the Hazardous Waste Rules, 2008 as amended (India - EP Act):	
29.1 Process wastes/residues	
29.3 Date-expired and off-specification pesticides	

14. TRANSPORT INFORMATION

ADR/RID/ADN

UN number	**3082**
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
	(BETA-CYFLUTHRIN SOLUTION)
Transport hazard class(es)	9
Packaging Group	III
Environm. Hazardous Mark	YES
Hazard no.	90
Hazchem Code	3Z
Tunnel Code	-

This classification is in principle not valid for carriage by tank vessel on inland waterways. Please refer to the manufacturer for further information.

UN number	**3082**
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
	(BETA-CYFLUTHRIN SOLUTION)
Transport hazard class(es)	9
Packaging Group	III
Marine pollutant	YES

IATA

UN number	**3082**
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
	(BETA-CYFLUTHRIN SOLUTION)
Transport hazard class(es)	9
Packaging Group	III
Environm. Hazardous Mark	YES

Special precautions for user

See sections 6 to 8 of this Safety Data Sheet.

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

No transport in bulk according to the IBC Code.

15. REGULATORY INFORMATION

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

Further information	
WHO-classification: II (Moderately hazardous)	
Labeling according to Insecticide Rules 1971 as amended. (INDIA)	
	Class II: Highly toxic Colour: bright yellow Poison! Keep out of the reach of children.

16. OTHER INFORMATION

Text of the hazard statements mentioned in Section 3	
H300	Fatal if swallowed.
H301	Toxic if swallowed.
H310	Fatal in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

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The information contained in this safety data sheet is given in good faith. lt is accurate to the best of our knowledge and belief and represents the most up to date information. The information given in this data sheet does not constitute or replace the user's own assessment or work risk as required by other health and safety legislation.