Section 1 - Identification of the Substance/Mixture and Supplier

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AUSTRALIA
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Product Identifier:	**Revolution**
APVMA Approval No:	50867, 50881, 50882
Other names:	Revolution for Puppies and Kittens; Revolution for Cats, Revolution for Dogs
Chemical family:	Selamectin formulation
Recommended Use:	Topical Parasiticide for Dogs, Cats, Puppies, Kittens and Rabbits
Restrictions on use	For veterinary use only
Emergency Phone:	**1800 814 883 (all hours)**

Section 2 - Hazards Identification

Appearance: Colorless to pale yellow solution

Classification of the Substance or Mixture

GHS - Classification

Serious Eye Damage/Eye Irritation: Category 2A
Reproductive Toxicity: Category 2
Specific target organ systemic toxicity (single exposure): Category 3
Acute aquatic toxicity: Category 2
Chronic aquatic toxicity: Category 2
Flammable liquids- Category 2

Label Elements

Signal Word: Danger

Hazard Statements:
H225 - Highly flammable liquid and vapor
H336 - May cause drowsiness and dizziness
H319 - Causes serious eye irritation
H361 - Suspected of damaging fertility or the unborn child
H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements:
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P233 - Keep container tightly closed
P240 - Ground/Bond container and receiving equipment
P241 - Use explosion-proof electrical/ventilating/lighting/equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P264 - Wash hands thoroughly after handling
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P271 - Use only outdoors or in a well-ventilated area
P273 - Avoid release to the environment
P308 + P313 - IF exposed or concerned: Get medical attention/advice
P312 - Call a POISON CENTRE/doctor/physician if you feel unwell
P370 + P378 - In case of fire: Use CO2, dry chemical or foam for extinction
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/attention
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P405 - Store locked up
P403 + P235 - Store in a well-ventilated place. Keep cool
P501 - Dispose of contents/container in accordance with all local and national regulations

Other Hazards

Short Term: Not acutely toxic (based on components) May cause slight skin irritation.

Long Term: Prolonged or repeated contact may cause defatting dermatitis (dryness and cracking of the skin). Repeat-dose studies in animals have shown a potential to cause adverse effects on liver reproductive system and the developing fetus.

Note: This document has been prepared in accordance with standards for workplace safety, which require the inclusion of all known hazards of the product or its ingredients regardless of the potential risk. The precautionary statements and warnings included may not apply in all cases. Your needs may vary depending upon the potential for exposure in your workplace.

Section 3 - Composition/Information on Ingredients

Hazardous

Ingredients	CAS No	Conc,%	GHS Classification
Isopropyl alcohol	67-63-0	>60	STOT SE 3 (H336) Flam. Liq. 2 (H225) Eye Irrit. 2A (H319)
Selamectin	220119-17-5	7 – 15	Repr.2 (H361) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Dipropylene glycol methyl ether	34590-94-8	<1.0	Not Listed
Butylated hydroxytoluene	128-37-0	<1.0	Not Listed

Additional Information: Ingredient(s) indicated as hazardous have been assessed under standards for workplace safety. In accordance with 29 CFR 1910.1200, the exact percentage composition of this mixture has been withheld as a trade secret.

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non-hazardous ingredients are also possible.

Section 4 - First Aid Measures

Description of First Aid Measures

Eye Contact: Flush with water while holding eyelids open for at least 15 minutes. Seek medical attention immediately.

Skin Contact: Remove contaminated clothing. Flush area with large amounts of water. Use soap. Seek medical attention.

Ingestion: Never give anything by mouth to an unconscious person. Wash out mouth with water. Do not induce vomiting unless directed by medical personnel. Seek medical attention immediately.

Inhalation: Remove to fresh air and keep patient at rest. Seek medical attention immediately.

Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms and Effects of Exposure: For information on potential signs and symptoms of exposure, See Section 2 – Hazards Identification and/or Section 11 - Toxicological Information.

Medical Conditions Aggravated by Exposure: None known

Indication of the Immediate Medical Attention and Special Treatment Needed

Notes to Physician: None

Section 5 - Fire Fighting Measures

Extinguishing Media: Carbon dioxide, dry chemical, or foam

Special Hazards Arising from the Substance or Mixture

Hazardous Combustion Products: Formation of toxic gases is possible during heating or fire.

Fire / Explosion Hazards: Highly flammable. Vapors will form flammable or explosive mixtures with air at room temperature. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back.

Advice for Fire-Fighters

Wear approved positive pressure, self-contained breathing apparatus and full protective turn out gear. Dike and collect water used to fight fire. Use spark-proof tools and explosion-proof equipment

Section 6 - Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Personnel involved in clean-up should wear appropriate personal protective equipment (see Section 8). Minimize exposure. Eliminate all sources of ignition and ventilate area using explosion-proof equipment.

Environmental Precautions

Place waste in an appropriately labeled, sealed container for disposal. Care should be taken to avoid environmental release.

Methods and Material for Containment and Cleaning Up

Measures for Cleaning / Collecting: Contain the source of the spill if it is safe to do so. Eliminate possible ignition sources (e.g., heat, sparks, flame, impact, friction, electricity), and follow appropriate grounding procedures. Use non-combustible absorbent material to wipe up spill and place in a sealed container for disposal. Clean contaminated surface thoroughly. Prevent discharge to drains.

Additional Consideration for Large Spills: Use water spray to disperse vapors and dilute spill to a nonflammable mixture. Non-essential personnel should be evacuated from affected area. Report emergency situations immediately. Clean up operations should only be undertaken by trained personnel. Contain the source of the spill or leak and shut off all electrical equipment if it is safe to do so. Eliminate possible ignition sources (e.g., heat, sparks, flame, impact, friction, electricity), and follow appropriate grounding procedures. Collect spill with a non-combustible absorbent material and transfer to labeled container for disposal. Clean spill area thoroughly. Prevent runoff from entering waterways or sewers. Prevent discharge to drains.

Section 7 - Handling and Storage

Precautions for Safe Handling

Eliminate possible ignition sources (e.g., heat, sparks, flame, impact, friction, electricity), and follow appropriate grounding and bonding procedures. Take precautionary measures against static discharges. Use only in a well-ventilated area. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. When handling, use appropriate personal protective equipment (see Section 8). Wash hands and any exposed skin after removal of PPE. Releases to the environment should be avoided. Review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure or environmental releases. Potential points of process emissions of this material to the atmosphere should be controlled with dust collectors, HEPA filtration systems or other equivalent controls.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions: Store at room temperature in properly labeled containers. Keep away from heat, sparks, flame, and other sources of ignition. Store away from direct sunlight. Keep container tightly closed when not in use. Keep out of reach of children. Store as directed by product packaging.

Storage Temperature: Store at or below 30°C (86°F).

Specific end use(s): Antiparasitic (veterinary); endectocide (for fleas, heartworm, mites and lice)

Section 8 - Exposure Controls and Personal Protection

Control Parameters

Isopropyl alcohol

ACGIH Threshold Limit Value (TWA)	200 ppm
ACGIH Threshold Limit Value (STEL)	400 ppm
ACGIH - Biological Exposure Limit:	40 mg/L
Australia TWA	400 ppm 983 mg/m³

Selamectin

Zoetis OEL TWA 8-hr	200 µg/m³

Dipropylene glycol methyl ether

ACGIH Threshold Limit Value (TWA)	100 ppm
ACGIH Threshold Limit Value (STEL)	150 ppm
ACGIH - Skin Absorption Designation	Skin - potential significant contribution to overall exposure by the cutaneous route
Australia TWA	50 ppm 308 mg/m³

Butylated hydroxytoluene

ACGIH Threshold Limit Value (TWA)	2 mg/m³
Australia TWA	10 mg/m³

Exposure Controls

Engineering Controls:	Engineering controls should be used as the primary means to control exposures. Keep airborne contamination levels below the exposure limits listed above in this section.
Personal Protective Equipment:	Refer to applicable national standards and regulations in the selection and use of personal protective equipment (PPE).
Hands:	Impervious gloves are recommended if skin contact with drug product is possible and for bulk processing operations.
Eyes:	Wear safety glasses or goggles if eye contact is possible.
Skin:	Impervious protective clothing is recommended if skin contact with drug product is possible and for bulk processing operations.
Respiratory protection:	If the applicable Occupational Exposure Limit (OEL) is exceeded, wear an appropriate respirator with a protection factor sufficient to control exposures to below the OEL.

Section 9 - Physical and Chemical Properties:

Physical State:	Solution	**Color:**	Yellow to colorless
Odor:	Characteristic alcohol odor	**Odor Threshold:**	No data available
Molecular Formula:	Mixture	**Molecular Weight:**	Mixture

Solvent Solubility:	No data available
Water Solubility:	No data available
Solubility:	Miscible: Water
pH:	No data available
Melting/Freezing Point (°C):	No data available
Boiling Point (°C):	84

Partition Coefficient: (Method, pH, Endpoint, Value)
Selamectin
Measured Log P 3.1

Decomposition Temperature (°C):	No data available
Evaporation Rate (Gram/s):	No data available
Vapor Pressure (kPa):	No data available
Vapor Density (g/ml):	No data available
Relative Density:	0.815 - 0.847
Viscosity:	No data available

Flammability:

Autoignition Temperature (Solid) (°C):	No data available
Flammability (Solids):	No data available
Flash Point (Liquid) (°C):	19
Upper Explosive Limits (Liquid) (% by Vol.):	No data available
Lower Explosive Limits (Liquid) (% by Vol.):	No data available
Polymerization:	Will not occur

Section 10 - Stability and Reactivity

Reactivity:	No data available
Chemical Stability:	Stable under normal conditions of use.

Possibility of Hazardous Reactions

Oxidizing Properties:	No data available
Conditions to Avoid:	Keep away from heat, spark, flames and all other sources of ignition. Prevent vapor accumulation. Vapours may form explosive mixture with air. Fine particles (such as dusts, mists and vapors) may fuel fires/explosions.
Incompatible Materials:	As a precautionary measure, keep away from strong oxidizers

Hazardous Decomposition Products: Thermal decomposition products may include carbon monoxide, carbon dioxide and other toxic vapors.

Section 11 - Toxicological Information

Information on Toxicological Effects

General Information: Toxicological properties of the formulation have not been investigated. The information in this section describes the potential hazards of the individual ingredients and the formulation. Routes of exposure: inhalation, skin contact, eye contact

Acute Toxicity: (Species, Route, End Point, Dose)

Butylated hydroxytoluene
Rat Oral LD50 1700 mg/kg
Mouse Oral LD50 650 mg/kg
Rat Oral LD50 890 mg/kg
Mouse Intraperitoneal LD 50 138 mg/kg

Isopropyl alcohol
Rat Oral LD50 > 2000 mg/kg
Mouse Oral LD50 3600 mg/kg
Rat Inhalation LC50-8h 16,000 ppm
Rabbit Dermal LD50 12800 mg/kg
Rat Inhalation LC50 30mg/L

Dipropylene glycol methyl ether
Dog Oral LD50 7500 mg/kg
Rat Oral LD 50 5400 µL/kg
Rabbit Dermal LD 50 10 mL/kg

Selamectin
Rat Oral LD50 > 1600 mg/kg
Mouse Oral LD50 > 1600mg/kg

Acute Toxicity Comments: A greater than symbol (>) indicates that the toxicity endpoint being tested was not achievable at the highest dose used in the test.

Inhalation Acute Toxicity May be harmful if inhaled. May cause respiratory tract and mucous membrane irritation. Based on components, inhalation may cause irritation, headache, drowsiness, and symptoms of drunkenness.

Irritation / Sensitization: (Study Type, Species, Severity)

Butylated hydroxytoluene
Eye Irritation Rabbit Moderate
Skin Irritation Rabbit Moderate

Isopropyl alcohol
Eye Irritation Rabbit Severe
Skin Irritation Rabbit Mild

Dipropylene glycol methyl ether
Skin Irritation Rabbit Mild
Eye Irritation Rabbit Mild

Selamectin
Eye Irritation Rabbit Mild
Skin Irritation Rabbit Minimal
Skin Sensitization - GPMT Guinea Pig Negative

Irritation / Sensitization Comments: May cause eye irritation.
Skin Irritation / Sensitization May cause mild skin irritation. Based on components.

Repeated Dose Toxicity: (Duration, Species, Route, Dose, End Point, Target Organ)

Butylated hydroxytoluene

4 Week(s)	Rat	Oral	185 mg/kg	LOAEL	Liver
4 Day(s)	Mouse	Oral	2000 mg/kg	LOAEL	Liver, Kidney, Ureter, Bladder

Isopropyl alcohol

20 Week(s)	Rat	Inhalation	4000 ppm	NOAEL	Liver, Central nervous system
104 Week(s)	Rat	Inhalation	5000 ppm	Kidney	

Selamectin

3 Month(s)	Rat	Oral	5 mg/kg/day	NOAEL	Liver
3 Month(s)	Dog	Oral	40 mg/kg/day	NOAEL	None identified

Reproduction & Developmental Toxicity: (Study Type, Species, Route, Dose, End Point, Effect(s))

Butylated hydroxytoluene

Embryo / Fetal Development	Rat	Oral	6 g/kg	LOEL	Teratogenic,

Isopropyl alcohol

Prenatal & Postnatal Development	Rat	Inhalation	7,000 ppm	LOAEL	Maternal toxicity, Fetotoxicity, Embryotoxicity
2 Generation Reproductive Toxicity	Rat	Oral	1000 mg/kg/day	LOAEL	Maternal Toxicity, Fetal mortality
Prenatal & Postnatal Development	Rat	Oral	1200 mg/kg/day	NOAEL	No effects at maximum dose,

Selamectin

Reproductive & Fertility	Rat	10 mg/kg/day	NOAEL	Fetotoxicity
Prenatal & Postnatal Development	Rat	10 mg/kg/day	NOAEL	Developmental toxicity
Prenatal & Postnatal Development	Rat	Oral 40 mg/kg/day	NOAEL	Maternal Toxicity,

Genetic Toxicity: (Study Type, Cell Type/Organism, Result)

Isopropyl alcohol

Bacterial Mutagenicity (Ames)	*Salmonella*	Negative
Mammalian Cell Mutagenicity	HGPRT Chinese Hamster Ovary (CHO) cells	Negative
In Vitro Sister Chromatid Exchange	Negative	

Selamectin

Bacterial Mutagenicity (Ames)	*Salmonella*	Negative
In Vitro Cytogenetics	Human Lymphocytes	Negative
In Vivo Micronucleus	Mouse	Negative
Mammalian Cell Mutagenicity	Chinese Hamster Ovary (CHO) cells HGPRT	Negative

Carcinogen Status: None of the components of this formulation are listed as a carcinogen by IARC, NTP or OSHA. See below

Butylated hydroxytoluene
IARC: Group 3 (Not Classifiable)

Isopropyl alcohol
IARC: Group 3 (Not Classifiable)

Section 12 - Ecological Information

Environmental Overview: Environmental properties of the formulation have not been investigated. This mixture contains material that is toxic to aquatic life. Bioaccumulation

and/or long term effects are not expected. Releases to the environment should be avoided.

Toxicity:

Aquatic Toxicity: (Species, Method, End Point, Duration, Result)

Selamectin
Daphnia magna (Water Flea) OECD EC50 48 Hours 26 ng/L
Mysidopsis bahia (Mysid Shrimp) LC50 96 Hours 28 ng/L
Cyprinodon variegatus (Sheepshead Minnow) LC50 48 Hours > 28 ug/L
Selenastrum capricornutum (Green Alga) OECD EC50 72 Hours >763 ug/L
Oncorhynchus mykiss (Rainbow Trout) OECD LC50 96 Hours 266 ug/L

Aquatic Toxicity Comments: A greater than (>) symbol indicates that acute ecotoxicity was not observed at the maximum solubility. Since the substance is insoluble in aqueous solutions above this concentration, an acute ecotoxicity value (i.e. LC/EC50) is not achievable.

Persistence and Degradability: No data available

Bio-accumulative Potential: No data available

Selamectin
Measured Log P 3.1

Mobility in Soil: No data available

Section 13 - Disposal Considerations

Disposal: Dispose of small quantities and empty containers by wrapping with paper and putting in garbage. For larger quantities use a commercial waste disposal service.

Section 14 - Transport Information

The following refers to all modes of transportation unless specified below.

This material is regulated for transportation as a hazardous material/dangerous good.

UN number: UN 1219
UN proper shipping name: ISOPROPANOL SOLUTION
Transport hazard class(es): 3
Packing group: II
Environmental Hazard(s): Marine Pollutant (Selamectin)
Flash Point (°C): 19

See "excepted quantity" provisions if applicable. Marine pollutant requirements apply only to quantities >5 Liters for liquids / >5 Kilograms for solids (per inner package) when shipped as per IMDG or ADR (effective year 2015 or greater) regulations. Please refer to the applicable dangerous goods regulations for additional information. Transport according to the requirements of the appropriate regulatory body.

Section 15 - Regulatory Information

Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

Isopropyl alcohol
Australia (AICS): Present

Dipropylene glycol methyl ether
Australia (AICS): Present

Butylated hydroxytoluene
Australia (AICS): Present

Poison Schedule: None allocated.

Section 16 - Other Information

This SDS contains only safety-related information. For other data see product literature.

Data Sources: The data contained in this SDS may have been gathered from confidential internal sources, raw material suppliers, or from the published literature.

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition)
AICS	Australian Inventory of Chemical Substances
SWA	Safe Work Australia, formerly ASCC and NOHSC
CAS number	Chemical Abstracts Service Registry Number
Hazchem Code	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
SUSMP	Standard for the Uniform Scheduling of Medicines & Poisons
UN Number	United Nations Number

This version issued: 1 October 2016 and is valid for 5 years from this date
Supersedes: Revision issued November 2014

Revision History:

Date of Revision	Reason
19 Nov 2015	Update Zoetis address
01 Oct 2016	Corrections to GHS classification, hazard and precautionary statements.

Contact Points:

Zoetis	**1800 814 883**
Police and Fire Brigade:	**Dial 000**

If ineffective: **Dial Poisons Information Centre**
(13 11 26 from anywhere in Australia)

THIS SDS SUMMARISES OUR CURRENT AND BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION ABOUT THE PRODUCT DETAILED IN THIS SDS, AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE FOR THE RECOMMENDED USE. EACH USER OF THE PRODUCT MUST REVIEW THIS SDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THEIR OWN WORKPLACE. IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT ZOETIS.

Please read all labels carefully before using product.

This SDS is prepared in accord with the SWA document “Preparation of Safety Data Sheets for Hazardous Chemicals - Code of Practice” (December 2011)

End of Safety Data Sheet