

MATERIAL SAFETY DATA SHEET

**VIVANTIS TECHNOLOGIES SDN BHD
REVONGEN CORPORATION CENTER**

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SECTION 1: CHEMICAL IDENTIFICATION

Catalogue Number: GF-GL-005; GF-GL-025; GF-GL-100

Product Name: GF-1 Gelatin DNA Extraction Kit with 5 preps, 25 preps and 100 preps

Description: DNA extraction kit for various gelatin-based food samples.

Intended Use:

For research use and laboratory use only.

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SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

All concentrations are below the acceptable limits specific to each chemical.

Component(s)	Hazardous Ingredient(s)	CAS No.	Concentration
CT Buffer	Cetyltrimethylammonium Bromide	57-09-0	≤ 70%
IP Buffer	Isopropyl alcohol	67-63-0	≤ 70%
GS Buffer	No hazardous substance or mixture in the ingredients	-	-
Wash Buffer	No hazardous substance or mixture in the ingredients	-	-
Elution Buffer	No hazardous substance or mixture in the ingredients	-	-
Proteinase K	Proteinase, Tritirachium album serine	39450-01-6	>95%

Acute Effects

The ingredients in this diagnostic kit are irritants to skin, eyes and respiratory system. They are harmful if it comes into contact with the skin and toxic if ingested.

Chronic Effects

Hazardous in case of ingestion.

SECTION 3: HAZARDS IDENTIFICATION

GHS Classification

The extraction kit consists of individual ingredients for different components of kit.

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Component(s)	Hazardous Ingredient(s)	CAS No.	Concentration
CT Buffer	Cetyltrimethylammonium Bromide	57-09-0	≤ 70%
Classification (Regulation (EC) No. 1272/2008) Acute Toxicity, oral 4; H302 Acute Toxicity, inhalation 4; H332 Skin Irritation 2; H315 Eye Damage 1; H318 STOT Single Exposure 3; H335 Aquatic Chronic 1; H410			

Component(s)	Hazardous Ingredient(s)	CAS No.	Concentration
IP Buffer	Isopropyl alcohol	67-63-0	≤ 99%
Classification (Regulation (EC) No. 1272/2008) Flam. Liq. 2; H225 Eye Irritation 2; H319 STOT Single Exposure 3; H336			

Component(s)	Hazardous Ingredient(s)
GS Buffer	No hazardous substance or mixture in the ingredients
Classification (Regulation (EC) No. 1272/2008) Not a hazardous substance or mixture.	
Classification (67/548/EEC) Not a hazardous substance or mixture.	

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Component(s)	Hazardous Ingredient(s)
Wash Buffer 2	No hazardous substance or mixture in the ingredients
Classification (Regulation (EC) No. 1272/2008) Not a hazardous substance or mixture.	
Classification (67/548/EEC) Not a hazardous substance or mixture.	

Component(s)	Hazardous Ingredient(s)
Elution Buffer	No hazardous substance or mixture in the ingredients
Classification (Regulation (EC) No. 1272/2008) Not a hazardous substance or mixture.	
Classification (67/548/EEC) Not a hazardous substance or mixture.	

Component(s)	Hazardous Ingredient(s)	CAS No.	Concentration
Proteinase K	Proteinase, Tritirachium album serine	39450-01-6	>95%
Classification (Regulation (EC) No. 1272/2008) Skin Irritation 2; H315 Eye Irritation 2; H319 Respiratory Sensitivity 1; H334 Skin Sensitivity 1; H317 STOT Single Exposure 3; H335			
Classification (67/548/EEC) Xi; R36/37/38/42 Xi; Xi; R36/37/38 Xn; R42 Xi; R43			

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Classification of the whole kit according to CLASS regulation 2013

Acute toxicity, Category 4, Oral;	H302: Harmful if swallowed
Acute toxicity, Category 4, Inhalation;	H332: Harmful if inhaled
Skin irritation, Category 2;	H315: Causes skin irritation
Eye Damage, Category 1;	H318: Causes serious eye damage
STOT Single Exposure,	
Respiratory tract irritation, Category 3;	H335: May cause respiratory irritation
Chronic aquatic toxicity, Category 3;	H412: Harmful to aquatic life with long lasting effects

Label elements

Labeling according to regulation (EC) No. 1272/2008

Hazard pictograms



Signal word

Danger

Hazard statements

H302 + H312 + H332	Harmful if swallowed or if inhaled
H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H412	Harmful to aquatic life with long lasting effects

Precautionary statements

Prevention:

P210	Keep away from heat / sparks / open flames / hot surfaces – No smoking
P260	Do not breathe dust / fume / gas / mist / vapors / spray
P261	Avoid breathing dust / fume / gas / mist / vapors / spray
P273	Avoid release to the environment
P280	Wear protective gloves / protective clothing / eye protection / face protection

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Response:

- P301 + P312 + P330 If swallowed, call a poison center / doctor if you feel unwell. Rinse mouth.
 P302 + P352 If on skin, wash with plenty of soap and water.
 P305 + P351 + P338 If in eyes, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor / physician.
 P342 + P311 If experiencing respiratory symptoms, call a poison center or doctor / physician.
 P362 + P364 Take off contaminated clothing and wash it before reuse.

Other hazards

Not applicable

SECTION 4: FIRST-AID MEASURES

In case of contact with eyes, immediately flush with copious amounts of water for at least 15 minutes. Remove contact lenses, if present and easy to do.

In case of contact with skin, immediately wash with soap and copious amounts of water for several minutes. Take off immediately all contaminated clothing.

In case of ingestion, wash out mouth with water provided the person is conscious. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician immediately. Do not attempt to neutralize.

In case of inhalation, move to fresh air. Give artificial respiration if not breathing. Call a physician. Treat symptomatically if there is indication of immediate medical attention and special treatment needed.

For **IP Buffer**, there are most important symptoms and effects, both acute and delayed:

Breathing difficulties. May cause central nervous system depression: inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

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SECTION 5: FIRE FIGHTING MEASURES

For other components in the kit,

Extinguishing Media

Suitable: Water spray, carbon dioxide, dry chemical powder or appropriate foam.

Unsuitable: No information available.

Do not allow run-off from firefighting to enter drains or water courses.

Wear self-contained breathing apparatus and protective clothing and equipment to prevent contact with skin and eyes for firefighting.

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.

For IP Buffer,

Extinguishing Media

Suitable: Carbon dioxide, dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray.

Unsuitable: Do not use water jet. Does not use a solid water streams as it may scatter and spread fire.

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA / NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

Special hazards arising from substance or mixture

Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide, peroxides.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions

Wear the protective clothing, rubber gloves and mask. Wear self-contained breathing apparatus, rubber boots and goggles if necessary.

Do not breathe vapors, aerosols, mist or gas. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, and consult an expert.

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Environmental Precautions

Do not let product enter drains. Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Measures for Cleaning / Collecting

Soak up with inert absorbent material: sand, silica gel, acid binder, universal binder, sawdust.
Collect spilled liquid with liquid-binding material or inert absorbent and place in closed container for disposal.

For **IP Buffer**, use spark-proof tools and explosion-proof equipment.
Dispose of in accordance with federal, state and local environmental regulations.
Wash spill site after material pickup is complete. Flush spill area with water.

SECTION 7: HANDLING AND STORAGE

Handling

Good laboratory techniques should be used when handling. Do not eat, drink, smoke or apply cosmetics in laboratory areas. Do not mouth pipette reagents or samples by mouth. Use reagents according to the product insert.

Work under hood or open-air space. Do not inhale substance / mixture. Avoid generation of vapors / aerosols.

Apply preventive skin protection. Change the contaminated clothing immediately after work. Wash hands and face after working with substance.

Avoid extreme temperatures during transport.

For **IP Buffer**, keep away from open flames, hot surfaces and sources of ignition. Use explosion-proof equipment. Use only non-sparking tools. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

Storage

Store all components as directed in the product insert. Keep tightly closed in a dry and well-ventilated place.

For **IP Buffer**, keep away from heat and sources of ignition. Flammables area.

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Wear appropriate personal protective equipment when working with components or samples, including laboratory coats, disposable gloves and eye protection. Avoid hand and mouth contact. Wash hands as soon as possible after handling components or samples. Handle in accordance with good industrial hygiene and safety practice.

Control Parameters

For other components in the kit,

Exposure Limits: Contains no substances with occupational exposure limit values
 Engineering measures: Ensure adequate ventilation, especially in confined areas

For IP Buffer, exposure limits:

Route of exposure	Acute effects		Chronic effects	
	Local	Systemic	Local	Systemic
Oral				
Dermal				888 mg/kg
inhalation				500 mg/m3

Predicted No Effect Concentration (PNEC),

The product does not have any harmful effects if it is used and handled as specified.

Fresh water	140.9 mg/L
Fresh water sediment	552 mg/kg
Marine water	140.9 mg/L
Water Intermittent	140.9 mg/L
Food chain	160 mg/kg
Microorganisms in sewage treatment	2251 mg/L
Soil (Agriculture)	28 mg/kg

Engineering measures:

Ensure that eyewash stations and safety showers are close to the workstation location.

Use explosion-proof electrical / ventilating / lighting / equipment. Ensure adequate ventilation, especially in confined areas.

The introduction of process or equipment changes to minimize release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous material at source.

Exposure Controls

Respiratory Protection	In case of insufficient ventilation wear respirators and components tested and approved under appropriate government standards.
Hand Protection	Wear suitable protective gloves. Gloves must be inspected prior to use. Use proper glove removal technique to avoid skin contact with this product. Dispose contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Eye & Face Protection	Eye wash bottle with pure water. Tightly fitting safety goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU). Wear face-shield and protective suit for abnormal processing problems.
Skin & Body Protection	Wear suitable protective clothing and impervious clothing. Choose body protection according to the amount and concentration of the dangerous substance at the workplace.

Environmental Exposure Controls

Do not let product enter drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information for CT Buffer, GS Buffer, Wash Buffer, Elution Buffer, Proteinase K

Appearance:	Liquid, Colorless
Odor:	No odor
pH:	CT Buffer: pH8 GS Buffer: pH6-8 Wash Buffer: pH7-9 Elution Buffer: pH7-8 Proteinase K: pH7.5
Melting Point:	No information available
Boiling Point:	No information available
Flash Point:	No information available
Autoignition Temperature:	No information available
Decomposition Temperature:	No information available
Evaporation rate:	No information available
Flammability:	No information available
Upper Explosion Limit:	No information available
Lower Explosion Limit:	No information available
Vapor Pressure:	No information available
Relative Density:	No information available

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Specific Gravity:	No information available
Water Solubility:	All buffers are soluble in water
Partition coefficient: n-octanol/water:	No information available
Explosive Properties:	Not classified as explosive
Oxidizing Properties:	Not classified as oxidizing
Other information:	No information available

Information for IP Buffer

Appearance:	Liquid, Colorless
Odor:	Alcohol-like
pH:	7
Melting Point:	-89.5°C
Boiling Point @ 760mmHg:	81 - 83°C
Flash Point:	12°C (Method: Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106))
Autoignition Temperature:	425°C (ASTM E-659)
Decomposition Temperature:	No information available
Evaporation rate:	1.7 (ASTM D 3539 (Butyl acetate = 1.0))
Flammability:	No information available
Upper Explosion Limit:	12 Vol%
Lower Explosion Limit:	2 Vol%
Vapor Pressure:	43 mmHg @ 20°C
Vapor Density:	2.1 @ 20°C (Air = 1.0)
Relative Density:	No information available
Specific Gravity:	0.785
Water Solubility:	Miscible
Partition coefficient: n-octanol/water:	0.05
Viscosity:	2.27 mPa.s at 20°C
Explosive Properties:	Not classified as explosive
Oxidizing Properties:	Not classified as oxidizing
Other information:	No information available

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SECTION 10: STABILITY AND REACTIVITY

The contents of the kit are stable under normal handling and storage conditions as stated in the product insert until the expiration date indicated on the corresponding label.

Reactivity:	No dangerous reaction known under conditions of normal use
Chemical stability:	Stable under normal conditions.
Possibility of hazardous reactions:	Reacts with oxidizing agents; keep away from heat and sources of ignition No decomposition if stored and applied as directed
Conditions to avoid:	Heat, flames and sparks. For IP Buffer: Keep away from open flames, hot surfaces and sources of ignition.
Incompatible materials:	No dangerous reaction known under conditions of normal use
Materials to avoid:	Strong acids, oxidizing agents, bases, halogens, acid anhydrides.
Polymerization:	Hazardous polymerization does not occur

Hazardous decomposition products:

In case of fire hazardous decomposition products may be produced such as: carbon monoxide, carbon dioxide, peroxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Information for Cetyltrimethylammonium Bromide (CT Buffer)

Acute Toxicity

Acute oral toxicity:	LD50 Oral (Rat): 410 mg/kg
Acute inhalation toxicity:	No toxicity data available
Acute dermal toxicity:	No toxicity data available

Skin corrosion / irritation:	Rabbit: Causes moderate skin irritation
Serious eye damage / eye irritation:	Rabbit: Causes serious eye irritation
Respiratory or skin sensitization:	Not classified based on available information
Germ cell mutagenicity:	Not classified based on available information
Carcinogenicity effects:	Not classified based on available information
Reproductive toxicity:	Not classified based on available information
Aspiration toxicity:	Not classified based on available information
STOT – Single exposure:	May cause respiratory irritation if inhaled
STOT – Repeated exposure:	May cause damage to gastrointestinal tract via prolonged or repeated oral exposure.

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Information for Isopropyl alcohol (IP Buffer)

Acute Toxicity

Acute oral toxicity:	LD50 Oral (Rat): 5840 mg/kg
Acute inhalation toxicity:	LC50 (Rat): 72.6 mg/L, 4 hrs
Acute dermal toxicity:	LD50 (Rat): 13900 mg/kg
	LD50 (Rabbit): 12870 mg/kg

Symptoms and effects in both acute and delayed:

May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Skin corrosion / irritation:	Not classified based on available information
Serious eye damage / eye irritation:	Causes serious eye irritation, category 2
Respiratory or skin sensitization:	Not classified based on available information
Germ cell mutagenicity:	Not classified based on available information
Carcinogenicity effects:	Not classified based on available information
Reproductive toxicity:	Not classified based on available information
Aspiration toxicity:	Not classified based on available information
STOT – Single exposure:	Target organ is central nervous system, category 3
STOT – Repeated exposure:	May cause damage to gastrointestinal tract via prolonged or repeated oral exposure.

Information for GS Buffer, Wash Buffer, Elution Buffer

Acute Toxicity:	Not classified based on available information
Skin corrosion / irritation:	Not classified based on available information
Serious eye damage / eye irritation:	Not classified based on available information
Respiratory or skin sensitization:	Not classified based on available information
Germ cell mutagenicity:	Not classified based on available information
Carcinogenicity effects:	Not classified based on available information
Reproductive toxicity:	Not classified based on available information
Aspiration toxicity:	Not classified based on available information
STOT – Single exposure:	Not classified based on available information
STOT – Repeated exposure:	Not classified based on available information

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Information for Proteinase K

Acute Toxicity:	Not classified based on available information
Skin corrosion / irritation:	Causes skin irritation and / or dermatitis
Serious eye damage / eye irritation:	Causes eye irritation; may cause irreversible eye damage
Respiratory or skin sensitization:	May cause skin allergy or may cause sensitization by inhalation
Germ cell mutagenicity:	Not classified based on available information
Carcinogenicity effects:	Not classified based on available information
Reproductive toxicity:	Not classified based on available information
Aspiration toxicity:	Not classified based on available information
STOT – Single exposure:	May cause respiratory irritation.
STOT – Repeated exposure:	Not classified as specific target organ toxicant, repeated exposure.

Additional toxicological information

The product is not subject to classification according to the calculation method of the General EU Classification Guidelines for preparation as issued in the latest version. When used and handled according to specifications, the product does not have any harmful effects to our experience and the information provided to us.

SECTION 12: ECOLOGICAL INFORMATION

The extraction kit contains **Cetyltrimethylammonium Bromide (CT Buffer)** and **Isopropyl alcohol** known to be hazardous to the environment or not degradable in wastewater treatment plants. Self-assessment: Hazardous for water. Do not allow product or large quantities of it to reach ground water, water course or sewage system.

Toxicity

Cetyltrimethylammonium Bromide

Algae / aquatic plants:	EC50 (<i>Pseudokirchneriella subcapitata</i>): 0.09 mg/L; Exposure time: 96hr
Fish:	EC50 (<i>Danio rerio</i>): 0.3 mg/mL; Exposure time: 96hr
Water Flea:	EC50 (<i>Daphnia magna</i>): 0.03 mg/L; Exposure time: 48hr

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Isopropyl alcohol

Freshwater Fish:	LC50 (Pimephales promelas): 11130 mg/L; Exposure time: 96hr LC50 (Lepomis macrochirus): >1400000 µg/L; Exposure time: 96hr LC50 (Pimephales promelas): 9640 mg/L; Exposure time: 96hr flow-through
Water Flea:	EC50: 13299 mg/L; Exposure time: 48hr EC50: 9714 mg/L; Exposure time: 24hr
Freshwater Algae:	EC50 (Desmodesmus subspicatus): >1000 mg/L; Exposure time: 72hr EC50 (Desmodesmus subspicatus): >1000 mg/L; Exposure time: 96hr
Microtox:	EC50 (Photobacterium phosphoreum): 35390 mg/L; Exposure time: 5 min

Persistence and Degradability

Cetyltrimethylammonium Bromide

Biodegradable

Isopropyl alcohol

Expected to be biodegradable.

Persistence is unlikely, based on information available.

Bioaccumulative Potential

Cetyltrimethylammonium Bromide

Accumulation not expected

Isopropyl alcohol

0.05 log Pow

Mobility in Soil

For IP Buffer, the component contains volatile organic compounds which will evaporate easily from all surfaces. Will likely to be mobile in the environment due to its volatility. Disperses rapidly in air. The surface tension: 22.7 Mn AT 20°C.

No data available for the extraction kit, including Cetyltrimethylammonium Bromide and Proteinase K.

Results of PBT and vPvB assessment

No applicable for the extraction kit, including Cetyltrimethylammonium Bromide, Isopropyl alcohol and Proteinase K.

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Other adverse effects

Cetyltrimethylammonium Bromide

Very toxic to aquatic life.

No other information for the other components in the kit

SECTION 13: DISPOSAL CONSIDERATIONS

Do not contaminate ponds, waterways or drains with chemical or used container. Used components from this product should be disposed to a licensed waste management company.

Waste material must be disposed of in accordance with federal, state and local environmental regulations.

SECTION 14: TRANSPORT INFORMATION

IATA / ADR / DOT-US / IMDG

Not regulated as dangerous product in the meaning of transport regulations.

UN Number:	Not regulated as dangerous product
UN proper shipping name:	Not regulated as dangerous product
Transport hazard class:	Not regulated as dangerous product
Packing group:	Not regulated as dangerous product
Environmental Hazards:	Not regulated as dangerous product

SECTION 15: REGULATORY INFORMATION

International Inventories

TSCA:	Complies
DSL/NDSL:	Complies
EINECS/ELINCS:	Complies
ENCS:	Complies
IECSC:	Complies
KECL:	Complies
PICCS:	Complies
AICS:	Complies

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R 22:	Harmful if swallowed.
R 36/37/38:	Irritating to eyes, respiratory system and skin.
R 36/37:	Irritating to eyes and skin.
R 41:	Risk of serious damage to eyes.
R42:	May cause sensitization by inhalation.
R43:	May cause sensitization by skin contact.
S 26:	Rinse eyes immediately with plenty of water.
S 36/37/39:	Wear suitable protective clothing, gloves and eye/face protection.

Korea / Taiwan / China

No information available

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This product does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional or state level pertaining to release of this product.

US State Regulations

California Proposition 65

Not regulated

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Canada Regulatory Information

WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

SECTION 16: OTHER INFORMATION

The information contained in this MSDS relates only to the material(s) designed and does not relate to use(s) in combination with any other material, process(es) and /or chemical reaction(s). Vivantis Technologies Sdn. Bhd. provides this information in good faith, from sources believed to be accurate; however, Vivantis assumes no liability for its accuracy or completeness, and thus shall not be held liable for any damage resulting from handling or from contact with the above product.

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