

MATERIAL SAFETY DATA SHEET

**VIVANTIS TECHNOLOGIES SDN BHD
REVONGEN CORPORATION CENTER**

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SECTION 1: CHEMICAL IDENTIFICATION

Catalogue Number: GF-PT2-005-S; GF-PT2-050; GF-PT2-100

Product Name: GF-1 Plant DNA Extraction Kit II with 5 preps, 50 preps, and 100 preps

Description: DNA extraction kit for various plant samples.

Intended Use:

For research use and laboratory use only.

Company Headquarters:

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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 |
|----------------|--|------------|---------------|
| PPL Buffer | Cetyltrimethylammonium Bromide | 57-09-0 | ≤ 50% |
| PPB Buffer | Cetyltrimethylammonium Bromide | 57-09-0 | ≤ 10% |
| 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 |
|--|--------------------------------|---------|----------------|
| PPL Buffer PPB Buffer | Cetyltrimethylammonium Bromide | 57-09-0 | ≤ 50% ≤ 10% |
| <p>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</p> | | | |

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

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

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| 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 | | | |

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 |

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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:

| | |
|------|---|
| P273 | Avoid release to the environment |
| P280 | Wear protective gloves / protective clothing / eye protection / face protection |

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

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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.

SECTION 5: FIRE FIGHTING MEASURES

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.

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.

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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.

Environmental Precautions

Do not let product enter drains. Prevent further leakage or spillage if safe to do so.

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.

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.

Storage

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

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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

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

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

Appearance: Liquid, Colorless
Odor: No odor
pH: PPL Buffer: pH5
 PPB Buffer: pH5-7
 Wash Buffer: pH7-9
 Elution Buffer: pH8-9
 Proteinase K: pH7.5

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| | |
|---|-----------------------------|
| 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 |
| Specific Gravity: | No information available |
| Water Solubility: | All buffers soluble |
| 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 |

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. | |

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SECTION 11: TOXICOLOGICAL INFORMATION

Information for Cetyltrimethylammonium Bromide (PPL Buffer & PPB 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.

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 (PPL Buffer & PPB Buffer)** and 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 |

Persistence and Degradability

Cetyltrimethylammonium Bromide

Biodegradable

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Bioaccumulative Potential

Cetyltrimethylammonium Bromide

Accumulation not expected

Mobility in Soil

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 and Proteinase K.

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 |

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SECTION 15: REGULATORY INFORMATION

International Inventories

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

| | |
|-------------|--|
| 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).

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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

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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