

Material Safety Data Sheet

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Product Name:	LiverAce™ Singleplex Kit
Catalogue Number:	RLA001

1.2 Recommended use of the chemical and restrictions on use

Identified uses:	This product is intended for research purposes only/ Laboratory chemicals
Uses advised against:	This product is not intended for use in diagnostic procedures or therapeutics

1.3 Details of the supplier of the safety data sheet

Manufacturer address:	Avenida de la Innovación, 1, Edificio BIC 18016 Granada (Spain)
Tel:	+94 958 84 64 63
Email:	info@destinagenomics.com

1.4 Kit Components

Item Name	Catalogue #	Volume	Quantity	Main Ingredients
96-Well Plate	RAM001	-----	1	-----
miR-122 Beads	RAM002	70 µL	1	Water based buffer with Tween-20 (≤0.05% v/v) & Sodium Azide (≤0.05%w/v)
miR-122 Standard	RAM003	Powder	1	miR-122 lyophilized
miR-122 Control	RAM004	Powder	1	miR-122 lyophilized
Assay Matrix	RAM005	1.5 mL	1	PBS 1x based buffer (proprietary formulation), 0.08% NaN ₃
Assay Buffer	RAM006	15 mL	1	PBS 1x based buffer (proprietary formulation), 0.08% NaN ₃ , pH 6.8
Lysis Buffer	RAM007	13 mL	1	Water based buffer (proprietary formulation) with 0.5M LiCl, 0.01M EDTA, 1% LiDS

Item Name	Catalogue #	Volume	Quantity	Main Ingredients
Additive 1	RAM008	Powder	1	~30 mg of DTT in powder form
Additive 2	RAM009	30 µL	1	Proteinase K
10X Wash Buffer	RAM010	115 mL	1	PBS 1x based buffer with 1% Tween20
SMART-C-Biotin	RAM011	130 µL	1	Detection biotinylated system
Reducing Agent	RAM012	Powder	1	~30 mg of sodium cyanoborohydride in powder form
500X Streptavidin-Phycoerythrin	RAM013	15 µL	1	In 10 mM sodium phosphate, 140 mM sodium chloride, 15 mg/mL BSA, 0.09% (w/v) sodium azide, pH 7.3

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

The kit contains components with hazardous properties. Approximately 30 mg sodium cyanoborohydride is included in powder form. Sodium cyanoborohydride is water-reactive and toxic in powder form. This component shall be handled using appropriate laboratory precautions, including suitable personal protective equipment, avoidance of dust generation, and handling in a well-ventilated area or fume hood where applicable. When supplied as part of the kit, the sodium cyanoborohydride is provided as a small quantity of powder in sealed packaging with desiccant and enclosed within the kit box. The packaging is intended to protect the reagent from moisture and limit exposure during normal handling and transport.

2.2 Label elements

The product does not need to be labelled according to EC Directive 1272/2008/EC.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS:

Sodium cyanoborohydride may react with water, moisture, or acids, potentially releasing flammable and/or toxic gases.

Note:

Bovine products (BSA) have been derived from US origin and processed in USDA licensed facilities, and are free from known infections, however, it should be considered that no available test method can offer complete assurance of eliminating potential biohazardous risk.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization:

Mixture

miR-122 Beads (RAM002) Assay Matrix (RAM005) Assay Matrix (RAM006)		Hazard Classification of Pure Ingredients	
Chemical Name	Concentration	EU 1272/2008 CLP/GHS	US OSHA
Sodium Azide ^{1, 2} CAS # 26628-22-8 EINECS # 247-852-1 Index # 011-004-00-7	≤ 0.09% (w/v)	T+;R28-32 N;R50/53 Acute Tox. Oral 2 (H300, H310, H330) Aquatic Acute 1 Aquatic Longterm 1 H300; H400; H410	Highly toxic irritant

¹ Substance with Community workplace exposure limits

² Present at concentration below the cut-off limits

Additive 1 (RAM008)		Hazard Classification of Pure Ingredients	
Chemical Name	Concentration	EU 1272/2008 CLP/GHS	US OSHA
Dithiothreitol (DTT) CAS # 3483-12-3 EINECS # 222-468-7	Powder; ~30 mg	Acute Tox. Oral 4 (H302) Skin Irrit. 2 (H315) Eye Dam. 1 (H318) Aquatic Acute 3 (H402)	HCS: H302; H315; H318; H402

Additive 2 (RAM009)		Hazard Classification of Pure Ingredients	
Chemical Name	Concentration	EU 1272/2008 CLP/GHS	US OSHA
Proteinase K CAS # 39450-01-6 EINECS # 254-457-8	30 uL	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Resp. Sens. 1 (H334) STOT SE 3 (H335)	HCS: H315; H319; H334; H335

Lysis Buffer (RAM007)		Hazard Classification of Pure Ingredients	
Chemical Name	Concentration	EU 1272/2008 CLP/GHS	US OSHA
Lithium chloride CAS # 7447-41-8 EINECS # 231-212-3	0.5 M	Acute Tox. Oral 4 (H302) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319)	HCS: H302; H315; H319
Ethylenediaminetetraacetic acid (EDTA) CAS # 60-00-4 EINECS # 200-449-4	0.01 M	Eye Irrit. 2 (H319)	HCS: H319; H332; H373
Lithium dodecyl sulfate (LiDS) CAS # 2044-56-6 EINECS # 218-058-2	1% (w/v)	Flam. Sol. 2 (H228) Acute Tox. Oral 4 (H302) Acute Tox. Inhal. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335)	HCS: H228; H302; H332; H315; H319; H335

Reducing Agent (RAM012)		Hazard Classification of Pure Ingredients	
Chemical Name	Concentration	EU 1272/2008 CLP/GHS	US OSHA
Sodium cyanoborohydride CAS # 25895-60-7 EINECS # 247-317-2	Powder; ~30 mg	Flam. Sol. 1/2 (H228) Water-react. 1/2 (H260/H261) Acute Tox. Oral 2 (H300) Acute Tox. Dermal 2 (H310) Acute Tox. Inhal. 2 (H330) Skin Corr. 1B (H314) Eye Dam. 1 (H318) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410) EUH032	HCS: H228; H260/H261; H300; H310; H330; H314; H318; H400; H410

See Section 16 for further information on GHS Classification

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

General information

Immediately remove any clothing soiled by the product.

If Inhaled

Supply fresh air; consult doctor in case of complaints.

In case of Eye Contact

Rinse opened eye for several minutes under running water. Remove contact lenses if present and easy to do. Continue rinsing and seek medical attention if irritation persists or exposure involved reducing agent/DTT.

If Swallowed

Rinse mouth with water. Then, have the person drink 1-2 glasses of water. Seek medical attention and appropriate follow-up, especially if reducing agent or DTT exposure is suspected

In case of skin contact

Immediately wash with water and soap and rinse thoroughly. Seek medical attention, especially for reducing agent contact or persistent irritation.

4.2 Most important symptoms and effects, both acute and delayed.

Prolonged or repeated exposure may cause irritation to eyes, skin or respiratory tract. Proteinase K may cause allergy or asthma symptoms if inhaled. Sodium cyanoborohydride is hazardous as a pure powder and may be corrosive; DTT can irritate eyes, skin and respiratory tract.

4.3 Indication of any immediate medical attention and special treatment needed

Immediate medical attention is needed for suspected exposure to sodium cyanoborohydride/reducing agent or if respiratory sensitization symptoms occur.

4.4 General advice

If symptoms persist, call a physician. Show this safety data sheet to the doctor in attendance. Do not breathe dust/fume/gas/mist/vapors/spray.

SECTION 5. FIREFIGHTING MEASURES

5.1 Flammable properties

Most liquid kit components are aqueous and nonflammable. Powder components require additional caution: sodium cyanoborohydride is a flammable/water-reactive solid and may release flammable gases on contact with water; DTT may form combustible dust.

5.2 Extinguishing media

For fires involving aqueous components, use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. For fires/spills involving dry sodium cyanoborohydride, avoid direct water contact

and use dry chemical or other agent suitable for water-reactive solids.

5.3 Special hazards arising from the substance or mixture

Sodium cyanoborohydride may release flammable gases in contact with water and toxic gases in contact with acids. Thermal decomposition may produce hazardous fumes depending on component.

5.4 Advice for firefighters

Protective equipment: Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear protective clothing. Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid breathing vapors, mist, dust or gas. For powder spills, avoid dust generation and use a fume hood or local exhaust if feasible.

6.2 Environmental precautions

Prevent release to drains and the environment. Reducing agent/DTT residues should not be released uncontrolled.

6.3 Methods and material for containment and cleaning up

Absorb aqueous spills with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). For powder spills, collect carefully using dry methods; keep sodium cyanoborohydride dry and away from acids/water; place residues in an appropriate hazardous-waste container.

6.4 Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7. HANDLING & STORAGE

7.1 Precautions for safe handling

Wear a laboratory coat, safety glasses and chemically resistant gloves. Use good laboratory practices. Avoid inhalation, contact with eyes, skin and clothing. Avoid the formation of dust and aerosols. Use in a well-ventilated area. Keep away from sources of ignition. Avoid prolonged or repeated exposure. Wash hands thoroughly after handling.

Information about protection against explosions and fires

Keep reducing agent away from water/moisture, acids and ignition sources. Avoid dust formation from DTT and reducing agent powders. Sodium azide-containing waste should not be allowed to accumulate in lead or copper plumbing.

7.2 Conditions for safe storage, including any incompatibilities

Requirements to be met by storerooms and receptacles

Refer to Instructions for Use (IFU) for storage conditions

Information about storage in one common storage facility

Not required

Further information about storage conditions

None

Specific end use(s)

The test kit is intended for laboratory use by trained professional users only.

SECTION 8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Control Parameters

Components with limit values that require monitoring at the workplace

Chemical Name	Occupational Exposure Limits/Source
Sodium azide ³	0.3 mg/m ³ STEL/ceiling; 0.1 mg/m ³ TWA where applicable. Verify against local/national exposure limits.
Proteinase K ³	No specific OSHA/EU OEL identified in this review; respiratory sensitizer - prevent dust/aerosol inhalation.
Dithiothreitol (DTT) ³	No specific OEL identified in this review; avoid dust; handle powder in fume hood as irritant/harmful reagent.
Sodium cyanoborohydride ³	No specific OEL identified in this review; water-reactive/acutely toxic/corrosive powder - handle in fume hood and keep dry.

³ Substance is used at concentrations below the exposure limit values.

8.2 Exposure controls

Appropriate Engineering Controls

Use in a fume hood where applicable. Ensure all engineering measures described under section 7 of SDS are in place. Ensure the laboratory is equipped with a safety shower and eye wash station.

Personal protective equipment

Wear a laboratory coat, safety glasses and chemically resistant gloves. Use good laboratory practices.

General protective and hygienic measures

The usual precautionary measures should be adhered to when handling chemicals. General laboratory ventilation should be adequate for normal use.

Eye / Face Protection

Use appropriate safety glasses.

Skin Protection

Use appropriate chemical resistant gloves (minimum requirement use standard BS EN374:2003). Gloves should be inspected before use. Wash and dry hands thoroughly after handling.

Body Protection

Wear appropriate protective clothing (lab coats).

Penetration time of glove material

The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.

SECTION 9. PHYSICAL & CHEMICAL PROPERTIES**9.1 Information on basic physical and chemical properties****General Information**

Item Name	Physical State	Appearance
96-Well Plate	Solid	plastic plate
miR-122 Beads	Liquid suspension	Light yellow to opaque suspension
miR-122 Standard	Lyophilized powder	White powder (may not be visible)
miR-122 Control	Lyophilized powder	White powder (may not be visible)
Assay Matrix	Liquid	Clear solution
Assay Buffer	Liquid	Clear solution
Lysis Buffer	Liquid	Clear solution
Additive 1	Powder	White powder
Additive 2	Liquid	Clear solution

10X Wash Buffer	Liquid	Clear solution
SMART-C-Biotin	Liquid	Clear solution
Reducing Agent	Powder	White powder
500X Streptavidin-Phycoerythrin	Liquid	Light red/pink solution

Information below applies to all components of the test kit:

Odour	Odourless
Odour threshold	No information available
pH-value	Not determined
Melting point/Freezing point	No information available
Initial boiling point and boiling range	No information available
Flash point	No information available
Flammability (solid, gaseous)	No information available
Upper flammability limit	No information available
Lower flammability limit	No information available
Decomposition temperature	No information available
Self igniting	No information available

Explosive properties	No information available
Vapour pressure at 20 °C	No information available
Density	No information available
Relative density	No information available
Vapour density	No information available
Evaporation rate	No information available
Solubility	No information available
Solubility in other contents	No information available
Partition coefficient: n-octanol/water	No information available
Viscosity	No information available

SECTION 10. STABILITY & REACTIVITY

10.1 Reactivity

Stable under recommended transport or storage conditions. Aqueous components are expected to be stable when stored as instructed. Reducing Agent (sodium cyanoborohydride) is water-reactive and must be kept dry.

10.2 Chemical stability

Stable under recommended transport or storage conditions.

10.3 Possibility of hazardous reactions

Concentrated sodium azide may react with copper and lead plumbing to form explosive metal azides and may react with acids to form hydrazoic acid. Sodium cyanoborohydride may react with water or acids to release flammable/toxic gases. DTT is a reducing agent and should be kept away from strong oxidizers. Hazardous reactions are not expected under recommended kit storage and handling conditions.

10.4 Thermal decomposition/conditions to be avoided

<u>Heat & Moisture</u>	Reducing Agent and DTT powder; avoid extremes for all components
<u>Water/acids</u>	Reducing Agent (sodium cyanoborohydride); sodium azide-containing waste should not contact acids
<u>Oxidizing agents</u>	DTT and other reducing agents
<u>Prolonged exposure to light</u>	miR-122 Beads, SMART-C-Biotin, 500X Streptavidin-Phycoerythrin

10.5 Incompatible materials

Strong acids/alkalis, strong oxidizing agents, water/moisture for sodium cyanoborohydride powder, and lead/copper plumbing for azide-containing waste. Keep reducing agent away from acids, water and ignition sources.

10.6 Hazardous decomposition products

Decomposition products may include oxides of carbon, nitrogen and sulfur, boron compounds and cyanide-containing or other hazardous fumes depending on component and conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity: Based on available data, the classification criteria are not met

Primary irritant effect

Skin corrosion/irritation:	Based on available data, the classification criteria are not met
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Serious eye damage/irritation:	Based on available data, the classification criteria are not met. Components that are irritants are below the classification concentration
Respiratory or skin sensitization:	Based on available data, the classification criteria are not met. Components are not sensitizers.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

Germ cell mutagenicity:	Based on available data, the classification criteria are not met
Carcinogenicity:	Based on available data, the classification criteria are not met.
Reproductive toxicity:	Based on available data, the classification criteria are not met. Components are not sensitizers.
STOT-single exposure:	Based on available data, the classification criteria are not met
STOT-repeated exposure:	Based on available data, the classification criteria are not met
Aspiration hazard:	Based on available data, the classification criteria are not met

SECTION 12. ECOLOGICAL INFORMATION

Aquatic toxicity	No further relevant information available
Persistence and degradability	No further relevant information available
Bioaccumulative potential	Components are not sensitizers
Mobility in soil	No further relevant information available
General notes	Do not discharge unused reagent or waste to drains unless permitted by local procedures/regulations
Results of PBT and vPvB Assessment	Components are not classified as PBT or vPvB
Other adverse effects	No further relevant information available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Product

Transfer to a suitable container and arrange for collection by specialized disposal company in accordance with national, regional, or local legislation.

Contaminated Packaging

Dispose of contaminated packaging as hazardous or laboratory chemical waste in accordance with national, regional, or local legislation.

SECTION 14. TRANSPORT INFORMATION

Transportation of this product is not regulated under ICAO, IMDG, US DOT, European ADR or Canadian TDG, because it is in a very small quantity, the product benefits from a total exemption from the ADR regulation.

14.1 UN number

ADR/RID: -

IMDG: -

IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: -

IMDG: -

IATA: -

14.4 Packaging group

ADR/RID: -

IMDG: -

IATA: -

14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no IATA: -

14.6 Special precautions for user

No data available

SECTION 15. REGULATORY INFORMATION**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This product is not regulated under US Federal and State Regulations, EU labeling Classification, Canada, and WHMIS Classification

This safety datasheet complies with the requirements of Regulation (EC) No. 453/2010.

International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors

Neither banned nor restricted

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)

Neither banned nor restricted

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals

Neither banned nor restricted

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59)

This product does not contain substances of very high concern (Regulation (EC) No. 453/2010)

REACH - List of substances subject to authorization (Annex XIV)

Neither banned nor restricted

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer

Neither banned nor restricted

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out

SECTION 16. OTHER INFORMATION

GHS Classes and Hazard Phrases for Reference (See Section 3):

H228 Flammable solid.

H260 In contact with water releases flammable gases which may ignite spontaneously.

H261 In contact with water releases flammable gas.

H300 Fatal if swallowed.

H302 Harmful if swallowed.

H310 Fatal in contact with skin.

H314 Causes severe skin burns and eye damage.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H330 Fatal if inhaled.

H332 Harmful if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H373 May cause damage to organs through prolonged or repeated exposure.

H400 Very toxic to aquatic life.

H401 Toxic to aquatic life.

H402 Harmful to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the

specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Destina Genomica S.L. shall not be held liable for any damage resulting from handling or from contact with the product.