



Safety Data Sheet (SDS) for TwinStrand Duplex Sequencing™ Kit Components:

FORMAMIDE

In accordance with GHS & OSHA's Hazard Communication Standard 2012

September 8, 2020 - Version 1.0

For Research Use Only. Not for use in diagnostic procedures.



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SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product identifier:

Identification as on the label/Trade name: TwinStrand Duplex Sequencing™ Kit Formamide
Additional information: Part number: 03-2014-XX

Relevant identification uses of the substance and uses advices against:

Recommended use: Reagents used for producing sequencing libraries and target enrichment for Duplex Sequencing.

Restrictions on use: Not known.

Details of the supplier of the Safety Data Sheet:

TwinStrand Biosciences, Inc.

3131 Elliott Ave Seattle, WA 98121

Tele: +1(877) 202-TWIN

Emergency telephone numbers:

+1 (877) 202-TWIN (9am-5pm, Pacific Standard Time)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substances or mixture:

The substance and mixture are classified according to GHS, OSHA's Hazard Communication Standard 2012

Carcinogenicity (Category 2)	H351
Reproductive toxicity (Category 1B)	H360
Specific target organ toxicity – repeated exposure	H373
Oral (Category 2), Blood	

The most important adverse effects:

The most important adverse physiochemical effects: None.

The most important adverse human health effects: Toxic if swallowed, causes damage to organs.

Label elements:

Hazard pictograms:



Signal words: Danger

Hazard statements: H301 Toxic if swallowed. H370 Causes damage to organs. H351 Suspected of causing cancer. H360 May damage fertility or the unborn child. H373 May cause damage to organs (Blood) through prolonged or repeated exposure if swallowed.

Precautionary statements: P264 Wash thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. P330 Rinse mouth. P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P260 Do not breathe dust/fume/gas/mist/vapors/spray. P280 Wear protective gloves/protective clothing/eye protection/face protection. P308+P313 IF exposed or concerned: Get medical advice/attention. P405 Store locked up. P501 Dispose of contents/container in an approved waste disposal plant.

Special labeling of certain mixtures: None known.

Other hazards: None known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture: Substance, Formamide.

Ingredients:

Substance Name (IUPAC/EC)	CAS-No.	Concentration % by weight	Classification EC1272/2008
	EC-No.		
Formamide (Substance)	75-12-7	100%	Carcinogenicity (Category 2) H351. Reproductive toxicity (Category 1B) H360. Specific target organ toxicity – repeated exposure, Oral (Category 2), Blood, H373.

Only ingredients that are classified as a health hazard and are: present above their cut-off/concentration limits or present a health risk below the cut-off/concentration limits are documented above.

There are no additional ingredients which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available in Section 8.

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST-AID MEASURES

Description of first aid measures:

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

In case of inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration. In case of discomfort, seek medical attention.

In case of skin contact: Wash off with soap and plenty of water for at least 15 minutes. In case of discomfort seek medical attention.

In case of eye contact: Flush eyes thoroughly with water for 15 minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing. In case of discomfort seek medical attention.

In case of ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. In case of discomfort seek medical attention.

Most important symptoms and effects, both acute and delayed:

See section 2. See section 11.

Indication of any immediate medical attention and special treatment needed: None known.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguisher media:

Suitable extinguisher media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Prevent contamination of drains or waterways.

Unsuitable extinguishing media: None known.

Special hazards arising from the mixture: Sealed containers may rupture when heated.

Advice for fire-fighters: Evacuate area and contact emergency services. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

For emergency responders: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

Methods for containment and cleaning up:

For small spills: Contain spilled material if possible. Clay, soil or commercially available absorbents may be used, collect in suitable and properly labelled containers.

For large spills: Contain area to prevent spill from spreading. Minimize adverse effects on the environment. Clay, soil or commercially available absorbents.

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 information on disposal.

Additional information: None known.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling:

Protective measures: Observe directions on label and instruction for use. Avoid contact with skin and eyes.

Advice on general occupational hygiene: Do not smoke. Do not eat, drink, or smoke when handling this product.

Conditions for safe storage, including incompatibilities: Store in a cool place. Keep container tightly closed in a dry and well-ventilated place.

Specific end users: Analytical reagent use only as directed.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Control parameters:

Occupational exposure limits: No data available.

Biological exposure indices (BEI): No data available.

Additional exposure limits under the conditions of use: No data available.

Exposure control:

Appropriate engineering controls: Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

Individual protection measures, such as personal protective equipment:

Eye/face protection: Use safety glasses. If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Hand protection: Use chemical resistant gloves. Examples of preferred glove barrier materials include: Butyl rubber, Neoprene, Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, Polyvinyl alcohol, Polyvinyl chloride.

Body protection: Not necessary under normal use.

Respiratory protection: If discomfort is experienced, use an approved air-purifying respirator. Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines.

Environmental exposure controls: None required.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties:

Appearance (form): Liquid.

Color: Colorless.

Odor: Odorless.

Odor threshold: Not known.

pH (concentration): Not known.

Melting point/range (°C): Not known.

Freezing point/range (°C): Not known.

Boiling point/range (°C): Not known.

Flash point (°C): Not known.

Evaporation rate: Not known.

Flammability (solid, gas): Not known.

Ignition temperature (°C): Not known.

Upper/lower flammability/explosive limits: Not known.

Vapor pressure (20°C): Not known.

Vapor density: Not known.

Relative density (25°C): Not known.

Water solubility (g/L) at 20°C: Not known.

n-Octanol/Water partition coefficient: Not known.

Auto-ignition temperature: Not known.

Decomposition temperature: Not known.

Viscosity, dynamic (mPa s): Not known.

Physical hazards:

None.

SECTION 10: STABILITY AND REACTIVITY

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical stability: Stable under recommended conditions of storage. Product will not undergo hazardous polymerization.

Possibility of hazardous reactions: Hazardous polymerization is not expected to occur.

Conditions to avoid: Do not store next to heat source, in direct sunlight, or elevated storage temperature.

Incompatible materials: Not known.

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: TOXICOLOGICAL INFORMATION

Likely routes of exposure: Ingestion, skin and eye contact.

Description of exposure:

Delayed, immediate or chronic effects from short-term exposure: None known.

Delayed, immediate or chronic effects from long-term exposure: None known.

Numerical measures of toxicity:

LD50 – Oral: Rat – male and female – 5,325 mg/kg (OECD Test Guideline 401)

LC50 Inhalation: Rat – male – 4 hr - > 21 mg/l (OECD Test Guideline 403)

LD50 Dermal: Rabbit – 17,000 mg/kg No data available

Skin corrosion/irritation Skin - Rabbit Result: No skin irritation - 20 hr

Serious eye damage/eye irritation Eyes - Rabbit Result: Mild eye irritation (OECD Test Guideline 405)

Respiratory or skin sensitization: No data available

Germ cell mutagenicity: Ames test *S. typhimurium* Result: negative

Mutagenicity (micronucleus test): Mouse - male and female Result: negative **Carcinogenicity:** Suspected human carcinogens

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity: Presumed human reproductive toxicant

Specific target organ toxicity - single exposure: No data available

Specific target organ toxicity - repeated exposure: Oral - May cause damage to organs through prolonged or repeated exposure. - Blood

Aspiration hazard: No data available

Additional Information: Repeated dose toxicity - Rat - female - Oral - No observed adverse effect level - 40 mg/kg

Repeated dose toxicity - Rat - male and female - Dermal - No observed adverse effect level - 100 mg/kg RTECS: LQ0525000

Gastrointestinal disturbance: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Blood - Irregularities - Based on Human Evidence

Description of symptoms: No data available.

Is chemical listed in the National Toxicology Program Report on Carcinogens (latest edition)?
No.

Has chemical been found to be a potential carcinogen in the International Agency for Research on Cancer Monographs (latest edition), or found to be a potential carcinogen by OSHA? No.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish: static test LC50 – *Leuciscus idus* (Golden orfe) – 6,569 mg/l – 96 hr

Toxicity to daphnia and other aquatic invertebrates: static test EC50 – *Daphnia magna* (Water flea) - > 500 mg/l – 48 hr

Toxicity to algae: static test EC50 – *Desmodesmus subspicatus* (green algae) - > 500 mg/l – 72 hr

Toxicity to bacteria: Respiration inhibition EC50 – Sludge Treatment - > 1,000 mg/l – 30 min (OECD Test Guideline 209)

Persistence and degradability: Biodegradability – aerobic Exposure time 28 days, Result 99% Readily biodegradable (OECD Test Guideline 301A)

Bioaccumulative potential: No data available.

Mobility in soil: No data available.

Results of PBT and vPvB assessment: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

Other adverse effects: No data available.

Product does not contain any organic halogens.

SECTION 13: DISPOSAL CONSIDERATIONS (non-mandatory section)

Appropriate disposal containers: No special disposal containers.

Recommendations of appropriate disposal methods: No special disposal recommendations.

Physical and chemical properties that may affect disposal activities: None known.

Sewage disposal: Flush with copious amounts of fresh water.

Special precautions for landfills or incineration activities: None known.

SECTION 14: TRANSPORT INFORMATION (non-mandatory section)

UN Number: Not required.

UN proper shipping name: Not required.

Transport hazard class(es): Not required.

Packing group number: N/A

Environmental hazards: Not required.

Guidance on transporting in bulk: Not required.

Special precautions: None known.

SECTION 15: REGULATORY INFORMATION (non-mandatory section)

This SDS is in accordance with Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012.

Sections 12 through 15 must be included to conform with the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS) but the content is not enforced by OSHA.

SECTION 16: OTHER INFORMATION

SDS prepared: September 8, 2020

Version 1.0

This information is based upon the present state of our knowledge. This SDS has been compiled and is intended solely for TwinStrand Duplex Sequencing™ Kit. You may contact TwinStrand Biosciences for an explanation of any parts of this SDS.

Use reagents as instructed in the manual. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.