SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Trade name or designation of the mixture: DG-CRB Crosslink Reversal Buffer
Registration number: -
Synonyms: None.
Issue date: 18-February-2018
Version number: 02
Revision date: 27-March-2018
Supersedes date: 18-February-2018

1.2. Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Buffer.
Uses advised against: Use in accordance with manufacturer's recommendations.

1.3. Details of the supplier of the safety data sheet
Company name: Dovetail Genomics, LLC
Address: 2161 Delaware Ave
Santa Cruz, CA 95060
United States of America
Telephone: (831) 713-4465
Website: dovetailgenomics.com
Emergency phone number: 0 800 680 0425 (access code: 334943)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended
This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

Hazard summary: Occupational exposure to the substance or mixture may cause adverse health effects.

2.2. Label elements
Label according to Regulation (EC) No. 1272/2008 as amended
Hazard pictograms: None.
Signal word: None.
Hazard statements: The product does not meet the criteria for classification.

Precautionary statements
Prevention: Observe good industrial hygiene practices.
Response: Wash hands after handling.
Storage: Store away from incompatible materials.
Disposal: Dispose of waste and residues in accordance with local authority requirements.

Supplemental label information: None.

2.3. Other hazards
Not a PBT or vPvB substance or mixture.

SECTION 3: Composition/information on ingredients

3.2. Mixtures
General information
Chemical name | % | CAS-No. / EC No. | REACH Registration No. | Index No. | Notes
--- | --- | --- | --- | --- | ---
Sodium Dodecyl Sulfate | 1 - 2 | 151-21-3 | 01-2119489461-32-XXXX | - | -

Classification: Flam. Sol. 2; H228, Acute Tox. 4; H302, Skin Irrit. 2; H315, Eye Dam. 1; H318, Acute Tox. 4; H332, STOT SE 3; H335, Aquatic Chronic 3; H412
Composition comments
All concentrations are in percent by weight unless otherwise indicated.

SECTION 4: First aid measures

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact
Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact
Rinse with water. Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. Get medical attention if symptoms occur.

4.2. Most important symptoms and effects, both acute and delayed
Exposure may cause temporary irritation, redness, or discomfort.

4.3. Indication of any immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards
No unusual fire or explosion hazards noted.

5.1. Extinguishing media

Suitable extinguishing media
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture
During fire, gases hazardous to health may be formed.

5.3. Advice for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

5.4. Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained.

For emergency responders
Avoid discharge into drains, water courses or onto the ground.

6.2. Environmental precautions

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. The product is soluble in water.

6.3. Methods and material for containment and cleaning up

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

6.4. Reference to other sections

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid contact with eyes. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities
Store in original tightly closed container. Store away from incompatible materials (see section 10 of the SDS). Storage temperature: between 2 and 8°C.

7.3. Specific end use(s)
Buffer.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits
No exposure limits noted for ingredient(s).
No biological exposure limits noted for the ingredient(s).
Recommended monitoring procedures
Follow standard monitoring procedures.

Derived no effect levels (DNELs)

<table>
<thead>
<tr>
<th>General Population</th>
<th>Components</th>
<th>Value</th>
<th>Assessment factor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Dodecyl Sulfate (CAS 151-21-3)</td>
<td>Long-term, Systemic, Dermal</td>
<td>2440 mg/kg bw/day</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-term, Systemic, Inhalation</td>
<td>85 mg/m3</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Long-term, Systemic, Oral</td>
<td>24 mg/kg bw/day</td>
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<td></td>
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</tbody>
</table>

Workers

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Assessment factor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Dodecyl Sulfate (CAS 151-21-3)</td>
<td>Long-term, Systemic, Dermal</td>
<td>4060 mg/kg bw/day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-term, Systemic, Inhalation</td>
<td>285 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>

Predicted no effect concentrations (PNECs)

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Assessment factor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Dodecyl Sulfate (CAS 151-21-3)</td>
<td>Freshwater</td>
<td>0.176 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>0.018 mg/l</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sediment (freshwater)</td>
<td>6.97 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sediment (marine water)</td>
<td>0.697 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>1.29 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STP</td>
<td>1.35 mg/l</td>
<td></td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Appropriate engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

General information
Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin protection
- Hand protection
Wear appropriate chemical resistant gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.
- Other
Wear suitable protective clothing.

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

Hygiene measures
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls
Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance
- Physical state: Liquid.
- Form: Clear liquid.
- Colour: Clear.
- Odour: Not available.
- Odour threshold: Not available.
- pH: Not available.
- Melting point/freezing point: Not available.
- Initial boiling point and boiling range: Not available.
- Flash point: Not combustible.
Evaporation rate Not available.
Flammability (solid, gas) Not applicable.
Upper/lower flammability or explosive limits
  Flammability limit - lower
  (%) Not available.
  Flammability limit - upper
  (%) Not available.
Vapour pressure Not available.
Vapour density Not available.
Relative density Not available.
Solubility Not available.
Partition coefficient (n-octanol/water) Not available.
Auto-ignition temperature Not available.
Decomposition temperature Not available.
Viscosity Not available.
Explosive properties Not explosive.
Oxidising properties Not oxidising.

9.2. Other information
No relevant additional information available.

SECTION 10: Stability and reactivity
10.1. Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2. Chemical stability Material is stable under normal conditions.
10.3. Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid Contact with incompatible materials.
10.5. Incompatible materials Strong oxidising agents.

SECTION 11: Toxicological information
General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure
  Inhalation No adverse effects due to inhalation are expected.
  Skin contact Causes mild skin irritation.
  Eye contact Direct contact with eyes may cause temporary irritation.
  Ingestion May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms Exposure may cause temporary irritation, redness, or discomfort.

11.1. Information on toxicological effects
Acute toxicity Not expected to be acutely toxic.

Components | Species | Test Results
--- | --- | ---
Sodium Dodecyl Sulfate (CAS 151-21-3)
  Acute
    Oral LD50 Rat 1200 mg/kg
  Skin corrosion/irritation Causes mild skin irritation.
  Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.
  Respiratory sensitisation Due to partial or complete lack of data the classification is not possible.
  Skin sensitisation Based on available data, the classification criteria are not met.
  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.
  Specific target organ toxicity - single exposure Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure
Based on available data, the classification criteria are not met.

Aspiration hazard
Due to partial or complete lack of data the classification is not possible.

Mixture versus substance information
No information available.

Other information
None known.

SECTION 12: Ecological information

12.1. Toxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Dodecyl Sulfate (CAS 151-21-3)</td>
<td>Aquatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Algae</td>
<td>EC50</td>
</tr>
<tr>
<td></td>
<td>Crustacea</td>
<td>LC50</td>
</tr>
<tr>
<td></td>
<td>Fish</td>
<td>LC50</td>
</tr>
<tr>
<td></td>
<td>Chroic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Crustacea</td>
<td>NOEC</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
No data is available on the degradability of this product.

12.3. Bioaccumulative potential

Partition coefficient n-octanol/water (log Kow)
Sodium Dodecyl Sulfate (CAS 151-21-3) 1.6

Bioconcentration factor (BCF)
Not available.

12.4. Mobility in soil
This product is water soluble and may disperse in soil.

12.5. Results of PBT and vPvB assessment
Not a PBT or vPvB substance or mixture.

12.6. Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Residual waste
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

EU waste code
The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Disposal methods/information
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Special precautions
Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR
14.1. - 14.6.: Not regulated as dangerous goods.

RID
14.1. - 14.6.: Not regulated as dangerous goods.

ADN
14.1. - 14.6.: Not regulated as dangerous goods.

IATA
14.1. - 14.6.: Not regulated as dangerous goods.

IMDG
14.1. - 14.6.: Not regulated as dangerous goods.
SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended
Not listed.

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended
Not listed.

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA
Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended
Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended
Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.
Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended
Not listed.

Other regulations

The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

National regulations

Follow national regulation for work with chemical agents.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: European Agreement Concerning the International Carriage of Dangerous Goods by Road.
CAS: Chemical Abstract Service.
CEN: European Committee for Standardization (Comité Européen de Normalisation).
DNEL: Derived No-Effect Level.
EC50: Effective Concentration, 50%.
ECHA: European Chemical Agency.
IATA: International Air Transport Association.
IBC: Intermediate Bulk Container.
IMDG: International Maritime Dangerous Goods.
LC50: Lethal Concentration, 50%.
LD50: Lethal Dose, 50%.
NOEC: No observed effect concentration.
OEL: Occupational Exposure Limit.
PBT: Persistent, bioaccumulative, toxic.
PNEC: Predicted No-Effect Concentration.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
STEL: Short-Term Exposure Limit.
TWA: Time Weighed Average.
vPvB: very Persistent, very Bioaccumulative.

References
ECHA registered substances database

Information on evaluation method leading to the classification of mixture
The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

Full text of any H-statements not written out in full under Sections 2 to 15
H228 Flammable solid.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H412 Harmful to aquatic life with long lasting effects.

Training information
Follow training instructions when handling this material.

Disclaimer
Dovetail Genomics, LLC cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.