Section 1. Identification

Product identifier : pDual Expression Vector - 20 micrograms, Part Number 214501
Part no. (chemical kit) : 214501
Part no. : pDual expression vector 214501-51
           XL1-Blue E. coli Strain 200268-81

Relevant identified uses of the substance or mixture and uses advised against

Material uses : Analytical reagent.
                pDual expression vector 0.02 ml
                XL1-Blue E. coli Strain 0.5 ml

Supplier/Manufacturer : Agilent Technologies Australia Pty Ltd
                        679 Springvale Road
                        Mulgrave
                        Victoria 3170, Australia
                        1800 802 402

Emergency telephone number (with hours of operation) : CHEMTREC®: +(61)-290372994

Section 2. Hazard(s) identification

Classification of the substance or mixture
Not classified.

 XL1-Blue E. coli Strain Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 10 - 30%

GHS label elements

Signal word : pDual expression vector No signal word.
              XL1-Blue E. coli Strain No signal word.

Hazard statements : pDual expression vector No known significant effects or critical hazards.
                    XL1-Blue E. coli Strain No known significant effects or critical hazards.

Precautionary statements

Prevention : pDual expression vector Not applicable.
             XL1-Blue E. coli Strain Not applicable.

Response : pDual expression vector Not applicable.
           XL1-Blue E. coli Strain Not applicable.

Storage : pDual expression vector Not applicable.
          XL1-Blue E. coli Strain Not applicable.

Disposal : pDual expression vector Not applicable.
           XL1-Blue E. coli Strain Not applicable.

Supplemental label elements

Additional warning phrases : pDual expression vector Not applicable.
                           XL1-Blue E. coli Strain Not applicable.

Other hazards which do not result in classification : pDual expression vector None known.
                                                   XL1-Blue E. coli Strain None known.

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Section 3. Composition and ingredient information

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>pDual expression vector</th>
<th>Mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue E. coli Strain</td>
<td></td>
<td>Mixture</td>
</tr>
</tbody>
</table>

CAS number/other identifiers

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>% (w/w)</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue E. coli Strain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>≥10 - ≤30</td>
<td>56-81-5</td>
</tr>
</tbody>
</table>

There are no additional ingredients present 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, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact

pDual expression vector

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

XL1-Blue E. coli Strain

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation

pDual expression vector

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

XL1-Blue E. coli Strain

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin contact

pDual expression vector

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

XL1-Blue E. coli Strain

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion

pDual expression vector

Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

XL1-Blue E. coli Strain

Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Potential acute health effects

Eye contact

pDual expression vector

No known significant effects or critical hazards.

XL1-Blue E. coli Strain

No known significant effects or critical hazards.

Inhalation

pDual expression vector

No known significant effects or critical hazards.

XL1-Blue E. coli Strain

No known significant effects or critical hazards.

Skin contact

pDual expression vector

No known significant effects or critical hazards.

XL1-Blue E. coli Strain

No known significant effects or critical hazards.

Most important symptoms/effects, acute and delayed

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Section 4. First aid measures

Ingestion
: pDual expression vector
   XL1-Blue E. coli Strain
   No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact
: pDual expression vector
   XL1-Blue E. coli Strain
   No specific data.

Inhalation
: pDual expression vector
   XL1-Blue E. coli Strain
   No specific data.

Skin contact
: pDual expression vector
   XL1-Blue E. coli Strain
   No specific data.

Ingestion
: pDual expression vector
   XL1-Blue E. coli Strain
   No specific data.

Notes to physician
: pDual expression vector
   Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
   XL1-Blue E. coli Strain
   Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments
: pDual expression vector
   No specific treatment.
   XL1-Blue E. coli Strain
   No specific treatment.

Protection of first-aiders
: pDual expression vector
   No action shall be taken involving any personal risk or without suitable training.
   XL1-Blue E. coli Strain
   No action shall be taken involving any personal risk or without suitable training.

Indication of immediate medical attention and special treatment needed, if necessary

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media
: pDual expression vector
   Use an extinguishing agent suitable for the surrounding fire.
   XL1-Blue E. coli Strain
   Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media
: pDual expression vector
   None known.
   XL1-Blue E. coli Strain
   None known.

Specific hazards arising from the chemical
: pDual expression vector
   In a fire or if heated, a pressure increase will occur and the container may burst.
   XL1-Blue E. coli Strain
   In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products
: pDual expression vector
   No specific data.
   Decomposition products may include the following materials:
   carbon dioxide
   carbon monoxide
   halogenated compounds
   metal oxide/oxides
   XL1-Blue E. coli Strain

Special protective actions for fire-fighters
: pDual expression vector
   Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
   XL1-Blue E. coli Strain
   Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Section 5. Firefighting measures

Special protective equipment for fire-fighters:
- pDual expression vector
  Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- XL1-Blue E. coli Strain
  Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:
- pDual expression vector
  No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
- XL1-Blue E. coli Strain
  No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

For emergency responders:
- pDual expression vector
  If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- XL1-Blue E. coli Strain
  If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:
- pDual expression vector
  Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- XL1-Blue E. coli Strain
  Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and material for containment and cleaning up:

Methods for cleaning up:
- pDual expression vector
  Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- XL1-Blue E. coli Strain
  Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Section 7. Handling and storage

Precautions for safe handling

Protective measures
- pDual expression vector
- XL1-Blue E. coli Strain

Advice on general occupational hygiene
- pDual expression vector
- XL1-Blue E. coli Strain

Conditions for safe storage, including any incompatibilities
- pDual expression vector
- XL1-Blue E. coli Strain

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue E. coli Strain</td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safe Work Australia (Australia, 1/2014).</td>
</tr>
<tr>
<td></td>
<td>TWA: 10 mg/m³ 8 hours.</td>
</tr>
</tbody>
</table>

Appropriate engineering controls
- Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls
- Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Section 8. Exposure controls and personal protection

Individual protection measures

Hygiene measures: Handle as biohazard material (Biosafety level 1). Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state: pDual expression vector Liquid. XL1-Blue E. coli Strain Liquid.

Colour: pDual expression vector Not available. XL1-Blue E. coli Strain Not available.

Odour: pDual expression vector Not available. XL1-Blue E. coli Strain Not available.

Odour threshold: pDual expression vector Not available. XL1-Blue E. coli Strain Not available.

pH: pDual expression vector 7.5 XL1-Blue E. coli Strain 7.5

Melting point: pDual expression vector 0°C (32°F) XL1-Blue E. coli Strain Not available.

Boiling point: pDual expression vector 100°C (212°F) XL1-Blue E. coli Strain Not available.

Flash point: pDual expression vector Not available. XL1-Blue E. coli Strain Not available.

Evaporation rate: pDual expression vector Not available. XL1-Blue E. coli Strain Not available.

Flammability (solid, gas): pDual expression vector Not applicable. XL1-Blue E. coli Strain Not applicable.

Lower and upper explosive (flammable) limits: pDual expression vector Not available. XL1-Blue E. coli Strain Not available.

Vapour pressure: pDual expression vector Not available. XL1-Blue E. coli Strain Not available.

Vapour density: pDual expression vector Not available. XL1-Blue E. coli Strain Not available.
Section 9. Physical and chemical properties

Relative density : pDual expression vector Not available.  
XL1-Blue E. coli Strain Not available.

Solubility : pDual expression vector Easily soluble in the following materials: cold water and hot water.  
XL1-Blue E. coli Strain Soluble in the following materials: cold water and hot water.

Partition coefficient: n-octanol/water : pDual expression vector Not available.  
XL1-Blue E. coli Strain Not available.

Auto-ignition temperature : pDual expression vector Not available.  
XL1-Blue E. coli Strain Not available.

Decomposition temperature : pDual expression vector Not available.  
XL1-Blue E. coli Strain Not available.

Viscosity : pDual expression vector Not available.  
XL1-Blue E. coli Strain Not available.

Section 10. Stability and reactivity

Reactivity : pDual expression vector No specific test data related to reactivity available for this product or its ingredients.  
XL1-Blue E. coli Strain No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : pDual expression vector The product is stable.  
XL1-Blue E. coli Strain The product is stable.

Possibility of hazardous reactions : pDual expression vector Under normal conditions of storage and use, hazardous reactions will not occur.  
XL1-Blue E. coli Strain Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : pDual expression vector No specific data.  
XL1-Blue E. coli Strain No specific data.

Incompatible materials : pDual expression vector May react or be incompatible with oxidising materials.  
XL1-Blue E. coli Strain May react or be incompatible with oxidising materials.

Hazardous decomposition products : pDual expression vector Under normal conditions of storage and use, hazardous decomposition products should not be produced.  
XL1-Blue E. coli Strain Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue E. coli Strain</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>12600 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Irritation/Corrosion

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue E. coli Strain</td>
<td>Eyes - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>Glycerol</td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 500 milligrams</td>
<td>-</td>
</tr>
</tbody>
</table>

Date of issue/Date of revision : 25/09/2018  Date of previous issue : 24/03/2017  Version : 5  7/11
Section 11. Toxicological information

**Sensitisation**
Not available.

**Mutagenicity**

Conclusion/Summary: Not available.

**Carcinogenicity**

Conclusion/Summary: Not available.

**Reproductive toxicity**

Conclusion/Summary: Not available.

**Teratogenicity**

Conclusion/Summary: Not available.

**Specific target organ toxicity (single exposure)**
Not available.

**Specific target organ toxicity (repeated exposure)**
Not available.

**Aspiration hazard**
Not available.

Information on likely routes of exposure:

- pDual expression vector
- XL1-Blue E. coli Strain

**Potential acute health effects**

Eye contact:
- pDual expression vector
- XL1-Blue E. coli Strain
  No known significant effects or critical hazards.

Inhalation:
- pDual expression vector
- XL1-Blue E. coli Strain
  No known significant effects or critical hazards.

Skin contact:
- pDual expression vector
- XL1-Blue E. coli Strain
  No known significant effects or critical hazards.

Ingestion:
- pDual expression vector
- XL1-Blue E. coli Strain
  No known significant effects or critical hazards.

**Symptoms related to the physical, chemical and toxicological characteristics**

Eye contact:
- pDual expression vector
- XL1-Blue E. coli Strain
  No specific data.

Inhalation:
- pDual expression vector
- XL1-Blue E. coli Strain
  No specific data.

Skin contact:
- pDual expression vector
- XL1-Blue E. coli Strain
  No specific data.

Ingestion:
- pDual expression vector
- XL1-Blue E. coli Strain
  No specific data.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Short term exposure**

Potential immediate effects: Not available.

Potential delayed effects: Not available.

**Long term exposure**

Potential immediate effects: Not available.

Potential delayed effects: Not available.

Potential chronic health effects
Section 11. Toxicological information

**General**
- pDual expression vector: No known significant effects or critical hazards.
- XL1-Blue E. coli Strain: No known significant effects or critical hazards.

**Carcinogenicity**
- pDual expression vector: No known significant effects or critical hazards.
- XL1-Blue E. coli Strain: No known significant effects or critical hazards.

**Mutagenicity**
- pDual expression vector: No known significant effects or critical hazards.
- XL1-Blue E. coli Strain: No known significant effects or critical hazards.

**Teratogenicity**
- pDual expression vector: No known significant effects or critical hazards.
- XL1-Blue E. coli Strain: No known significant effects or critical hazards.

**Developmental effects**
- pDual expression vector: No known significant effects or critical hazards.
- XL1-Blue E. coli Strain: No known significant effects or critical hazards.

**Fertility effects**
- pDual expression vector: No known significant effects or critical hazards.
- XL1-Blue E. coli Strain: No known significant effects or critical hazards.

**Numerical measures of toxicity**

**Acute toxicity estimates**
- Not available.

Section 12. Ecological information

**Toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue E. coli Strain</td>
<td>Acute LC50 54000 mg/l Fresh water</td>
<td>Fish - Oncorhynchus mykiss</td>
<td>96 hours</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Persistence and degradability**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Test</th>
<th>Result</th>
<th>Dose</th>
<th>Inoculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue E. coli Strain</td>
<td>301D Ready Biodegradability - Closed Bottle Test</td>
<td>93 % - 30 days</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Bioaccumulative potential**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP_{ow}</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>XL1-Blue E. coli Strain</td>
<td>-1.76</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>Glycerol</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Mobility in soil**

- Soil/water partition coefficient (KOC): Not available.

**Other adverse effects**: No known significant effects or critical hazards.

Section 13. Disposal considerations

**Disposal methods**
- The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or...
Section 13. Disposal considerations

Landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

ADG / IMDG / IATA: Not regulated as Dangerous Goods according to the ADG Code.

Special precautions for user: Transport within user’s premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of Marpol and the IBC Code: Not available.

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons
Not regulated.

Model Work Health and Safety Regulations - Scheduled Substances
No listed substance

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals
Not listed.

Montreal Protocol (Annexes A, B, C, E)
Not listed.

Stockholm Convention on Persistent Organic Pollutants
Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)
Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals
Not listed.

Inventory list

Australia: All components are listed or exempted.
Canada: Not determined.
China: All components are listed or exempted.
Europe: All components are listed or exempted.
Japan: Japan inventory (ENCS): All components are listed or exempted.
Japan inventory (ISHL): All components are listed or exempted.
Malaysia: Not determined.
New Zealand: All components are listed or exempted.
Philippines: Not determined.
Republic of Korea: All components are listed or exempted.
Taiwan: All components are listed or exempted.
Thailand: Not determined.
Turkey: Not determined.
United States: All components are listed or exempted.
Viet Nam: Not determined.
Section 16. Any other relevant information

History
Date of issue/Date of revision : 25/09/2018
Date of previous issue : 24/03/2017
Version : 5
Key to abbreviations : ADG = Australian Dangerous Goods
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
NOHSC = National Occupational Health and Safety Commission
SUSMP = Standard Uniform Schedule of Medicine and Poisons
UN = United Nations

Procedure used to derive the classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not classified.</td>
<td></td>
</tr>
</tbody>
</table>

References : Not available.

(kv) Indicates information that has changed from previously issued version.

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