

# SAFETY DATA SHEET



Agilent High Sensitivity Protein 250 Kit, Part Number 5067-1575

## Section 1. Identification

|                                |   |                |
|--------------------------------|---|----------------|
| <b>Product identifier</b>      | : Agilent High Sensitivity Protein 250 Kit, Part Number 5067-1575 |                |
| <b>Part No. (Chemical Kit)</b> | : 5067-1575   |                |
| <b>Part No.</b>                | : Dimethyl sulfoxide  | Not available. |
|                                | : Protein 250 Labeling Dye  | Not available. |
|                                | : Protein 250 Destaining Solution                                 | Not available. |
|                                | : Protein 250 Gel Matrix  | Not available. |
|                                | : Protein 250 Sample Buffer                                       | Not available. |
|                                | : Protein 250 Labeling Buffer                                     | Not available. |
|                                | : Ethanolamine solution   | Not available. |
|                                | : Protein 250 Ladder  | Not available. |

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

Analytical chemistry.  
Research and Development

|                                 |              |
|---------------------------------|--------------|
| Dimethyl sulfoxide              | 1 x 0.1 ml   |
| Protein 250 Labeling Dye        | 1 x 0.018 mg |
| Protein 250 Destaining Solution | 1 x 0.150 ml |
| Protein 250 Gel Matrix          | 1 x 0.6 ml   |
| Protein 250 Sample Buffer       | 3 x 0.1 ml   |
| Protein 250 Labeling Buffer     | 1 x 1 ml     |
| Ethanolamine solution           | 1 x 0.1 ml   |
| Protein 250 Ladder              | 1 x 0.018 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

|   |   |
|---|---|
| Dimethyl sulfoxide<br>H227              | FLAMMABLE LIQUIDS - Category 4                  |
| Protein 250 Labeling Dye<br>H318        | SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1 |
| Protein 250 Destaining Solution<br>H402 | ACUTE AQUATIC HAZARD - Category 3               |
| Protein 250 Gel Matrix<br>H402          | ACUTE AQUATIC HAZARD - Category 3               |

## Section 2. Hazard(s) identification

|                                 |  |
|---------------------------------|--|
| Dimethyl sulfoxide              | Not applicable.  |
| Protein 250 Labeling Dye        | Not applicable.  |
| Protein 250 Destaining Solution | Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 4.5%                            |
| Protein 250 Gel Matrix          | Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 12.1%                           |
| Protein 250 Sample Buffer       | Not applicable.  |
| Protein 250 Labeling Buffer     | Not applicable.  |
| Ethanolamine solution           | Not applicable.  |
| Protein 250 Ladder              | Not applicable.  |
| Dimethyl sulfoxide              | Not applicable.  |
| Protein 250 Labeling Dye        | Not applicable.  |
| Protein 250 Destaining Solution | Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 4.5%  |
| Protein 250 Gel Matrix          | Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 12.1% |
| Protein 250 Sample Buffer       | Not applicable.  |
| Protein 250 Labeling Buffer     | Not applicable.  |
| Ethanolamine solution           | Not applicable.  |
| Protein 250 Ladder              | Not applicable.  |

### GHS label elements

#### Hazard pictograms



#### Signal word

|                                 |                 |
|---------------------------------|-----------------|
| Dimethyl sulfoxide              | WARNING         |
| Protein 250 Labeling Dye        | DANGER          |
| Protein 250 Destaining Solution | No signal word. |
| Protein 250 Gel Matrix          | No signal word. |
| Protein 250 Sample Buffer       | No signal word. |
| Protein 250 Labeling Buffer     | No signal word. |
| Ethanolamine solution           | No signal word. |
| Protein 250 Ladder              | No signal word. |

#### Hazard statements

|                                 |   |
|---------------------------------|---|
| Dimethyl sulfoxide              | H227 - Combustible liquid.                        |
| Protein 250 Labeling Dye        | H318 - Causes serious eye damage.                 |
| Protein 250 Destaining Solution | H402 - Harmful to aquatic life.                   |
| Protein 250 Gel Matrix          | H402 - Harmful to aquatic life.                   |
| Protein 250 Sample Buffer       | No known significant effects or critical hazards. |
| Protein 250 Labeling Buffer     | No known significant effects or critical hazards. |
| Ethanolamine solution           | No known significant effects or critical hazards. |
| Protein 250 Ladder              | No known significant effects or critical hazards. |

### Precautionary statements

#### Prevention

|                                 |  |
|---------------------------------|--|
| Dimethyl sulfoxide              | P280 - Wear protective gloves. Wear eye or face protection.  |
|                                 | P210 - Keep away from flames and hot surfaces. - No smoking. |
| Protein 250 Labeling Dye        | P280 - Wear eye or face protection.                          |
| Protein 250 Destaining Solution | P273 - Avoid release to the environment.                     |
| Protein 250 Gel Matrix          | P273 - Avoid release to the environment.                     |
| Protein 250 Sample Buffer       | Not applicable.  |
| Protein 250 Labeling Buffer     | Not applicable.  |
| Ethanolamine solution           | Not applicable.  |
| Protein 250 Ladder              | Not applicable.  |

## Section 2. Hazard(s) identification

|  |                                 |   |
|--|---------------------------------|---|
| <b>Response</b>  | : Dimethyl sulfoxide            | Not applicable.   |
|  | Protein 250 Labeling Dye        | P305 + P351 + P338 + P310 - 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 physician. |
|  | Protein 250 Destaining Solution | Not applicable.   |
|  | Protein 250 Gel Matrix          | Not applicable.   |
|  | Protein 250 Sample Buffer       | Not applicable.   |
|  | Protein 250 Labeling Buffer     | Not applicable.   |
| <b>Storage</b>   | : Dimethyl sulfoxide            | P403 - Store in a well-ventilated place.<br>P235 - Keep cool.   |
|  | Protein 250 Labeling Dye        | Not applicable.   |
|  | Protein 250 Destaining Solution | Not applicable.   |
|  | Protein 250 Gel Matrix          | Not applicable.   |
|  | Protein 250 Sample Buffer       | Not applicable.   |
|  | Protein 250 Labeling Buffer     | Not applicable.   |
| <b>Disposal</b>  | : Dimethyl sulfoxide            | P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.  |
|  | Protein 250 Labeling Dye        | Not applicable.   |
|  | Protein 250 Destaining Solution | P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.  |
|  | Protein 250 Gel Matrix          | P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.  |
|  | Protein 250 Sample Buffer       | Not applicable.   |
|  | Protein 250 Labeling Buffer     | Not applicable.   |
| <b>Supplemental label elements</b>                         | : Dimethyl sulfoxide            | Not applicable.   |
|  | Protein 250 Labeling Dye        | Not applicable.   |
|  | Protein 250 Destaining Solution | Not applicable.   |
|  | Protein 250 Gel Matrix          | Not applicable.   |
|  | Protein 250 Sample Buffer       | Not applicable.   |
|  | Protein 250 Labeling Buffer     | Not applicable.   |
| <b>Other hazards which do not result in classification</b> | : Dimethyl sulfoxide            | None known.   |
|  | Protein 250 Labeling Dye        | May form explosible dust-air mixture if dispersed. Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.                |
|  | Protein 250 Destaining Solution | None known.   |
|  | Protein 250 Gel Matrix          | None known.   |
|  | Protein 250 Sample Buffer       | None known.   |
|  | Protein 250 Labeling Buffer     | None known.   |

## Section 3. Composition and ingredient information

|                          |                    |                                 |           |
|--------------------------|--------------------|---------------------------------|-----------|
| <b>Substance/mixture</b> | :                  | Dimethyl sulfoxide              | Substance |
|                          |                    | Protein 250 Labeling Dye        | Substance |
|                          |                    | Protein 250 Destaining Solution | Mixture   |
|                          |                    | Protein 250 Gel Matrix          | Mixture   |
|                          |                    | Protein 250 Sample Buffer       | Mixture   |
|                          |                    | Protein 250 Labeling Buffer     | Mixture   |
|                          |                    | Ethanolamine solution           | Mixture   |
|                          | Protein 250 Ladder | Mixture                         |           |

### CAS number/other identifiers

| Ingredient name  | % (w/w)   | CAS number  |
|--|-----------|-------------|
| <b>Dimethyl sulfoxide</b><br>Dimethyl sulfoxide  | 100       | 67-68-5     |
| <b>Protein 250 Labeling Dye</b><br>3H-Indolium, 2-[3-[7-(diethylamino)-2-(1,1-dimethylethyl)-4H-1-benzopyran-4-ylidene]-1-propen-1-yl]-3-[4-[(2,5-dioxo-1-pyrrolidinyl)oxy]-4-oxobutyl]-3-methyl-5-sulfo-1-(3-sulfopropyl)-, inner salt, sodium salt (1:1) | 100       | 704891-70-3 |
| <b>Protein 250 Destaining Solution</b><br>Sodium dodecyl sulphate  | ≤2        | 151-21-3    |
| <b>Protein 250 Gel Matrix</b><br>Sodium dodecyl sulphate   | ≤2        | 151-21-3    |
| <b>Protein 250 Ladder</b><br>Glycerol  | ≥10 - ≤30 | 56-81-5     |

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

|                    |   |                                 |  |
|--------------------|---|---------------------------------|--|
| <b>Eye contact</b> | : | Dimethyl sulfoxide              | Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.   |
|                    |   | Protein 250 Labeling Dye        | Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. |
|                    |   | Protein 250 Destaining Solution | Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.   |
|                    |   | Protein 250 Gel Matrix          | Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.   |
|                    |   | Protein 250 Sample Buffer       | Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids.   |

## Section 4. First aid measures

|                   |                                 |   |
|-------------------|---------------------------------|---|
|                   |                                 | Check for and remove any contact lenses. Get medical attention if irritation occurs.  |
|                   | Protein 250 Labeling Buffer     | 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.   |
|                   | Ethanolamine solution           | 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.   |
|                   | Protein 250 Ladder              | 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.   |
| <b>Inhalation</b> | : Dimethyl sulfoxide            | Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.  |
|                   | Protein 250 Labeling Dye        | Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. |
|                   | Protein 250 Destaining Solution | Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.  |
|                   | Protein 250 Gel Matrix          | Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.  |

## Section 4. First aid measures

Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Protein 250 Sample Buffer Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Protein 250 Labeling Buffer Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

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

Protein 250 Ladder Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

### Skin contact

: Dimethyl sulfoxide

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Protein 250 Labeling Dye Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Protein 250 Destaining Solution Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Protein 250 Gel Matrix Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Protein 250 Sample Buffer Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Protein 250 Labeling Buffer Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

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

Protein 250 Ladder Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

### Ingestion

: Dimethyl sulfoxide

Wash out mouth with water. Remove dentures if any. 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. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless



## Section 4. First aid measures

### Protein 250 Labeling Dye

directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Protein 250 Destaining Solution

Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. 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. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Wash out mouth with water. Remove dentures if any. 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. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Protein 250 Gel Matrix

Wash out mouth with water. Remove dentures if any. 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. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Protein 250 Sample Buffer

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

## Section 4. First aid measures

|                             |   |
|-----------------------------|---|
| Protein 250 Labeling Buffer | directed to do so by medical personnel. Get medical attention if symptoms occur.<br>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. |
| Ethanolamine solution       | 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.   |
| Protein 250 Ladder          | 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.   |

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

|                     |  |   |
|---------------------|--|---|
| <b>Eye contact</b>  | : Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder     | No known significant effects or critical hazards.<br>Causes serious eye damage.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.  |
| <b>Inhalation</b>   | : Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br><br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder | No known significant effects or critical hazards.<br>Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards. |
| <b>Skin contact</b> | : Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder     | No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.  |



## Section 4. First aid measures

|                  |                    |   |   |
|------------------|--------------------|---|---|
| <b>Ingestion</b> | :                  | Dimethyl sulfoxide                                | No known significant effects or critical hazards. |
|                  |                    | Protein 250 Labeling Dye                          | No known significant effects or critical hazards. |
|                  |                    | Protein 250 Destaining Solution                   | No known significant effects or critical hazards. |
|                  |                    | Protein 250 Gel Matrix                            | No known significant effects or critical hazards. |
|                  |                    | Protein 250 Sample Buffer                         | No known significant effects or critical hazards. |
|                  |                    | Protein 250 Labeling Buffer                       | No known significant effects or critical hazards. |
|                  |                    | Ethanolamine solution                             | No known significant effects or critical hazards. |
|                  | Protein 250 Ladder | No known significant effects or critical hazards. |   |

### Over-exposure signs/symptoms

|                     |                    |                                 |  |
|---------------------|--------------------|---------------------------------|--|
| <b>Eye contact</b>  | :                  | Dimethyl sulfoxide              | No specific data.  |
|                     |                    | Protein 250 Labeling Dye        | Adverse symptoms may include the following:<br>pain<br>watering<br>redness                           |
|                     |                    | Protein 250 Destaining Solution | No specific data.  |
|                     |                    | Protein 250 Gel Matrix          | No specific data.  |
|                     |                    | Protein 250 Sample Buffer       | No specific data.  |
|                     |                    | Protein 250 Labeling Buffer     | No specific data.  |
|                     |                    | Ethanolamine solution           | No specific data.  |
| <b>Inhalation</b>   | :                  | Dimethyl sulfoxide              | No specific data.  |
|                     |                    | Protein 250 Labeling Dye        | Adverse symptoms may include the following:<br>respiratory tract irritation<br>coughing              |
|                     |                    | Protein 250 Destaining Solution | No specific data.  |
|                     |                    | Protein 250 Gel Matrix          | No specific data.  |
|                     |                    | Protein 250 Sample Buffer       | No specific data.  |
|                     |                    | Protein 250 Labeling Buffer     | No specific data.  |
|                     |                    | Ethanolamine solution           | No specific data.  |
| <b>Skin contact</b> | :                  | Dimethyl sulfoxide              | No specific data.  |
|                     |                    | Protein 250 Labeling Dye        | Adverse symptoms may include the following:<br>pain or irritation<br>redness<br>blistering may occur |
|                     |                    | Protein 250 Destaining Solution | No specific data.  |
|                     |                    | Protein 250 Gel Matrix          | No specific data.  |
|                     |                    | Protein 250 Sample Buffer       | No specific data.  |
|                     |                    | Protein 250 Labeling Buffer     | No specific data.  |
|                     |                    | Ethanolamine solution           | No specific data.  |
| <b>Ingestion</b>    | :                  | Dimethyl sulfoxide              | No specific data.  |
|                     |                    | Protein 250 Labeling Dye        | Adverse symptoms may include the following:<br>stomach pains   |
|                     |                    | Protein 250 Destaining Solution | No specific data.  |
|                     |                    | Protein 250 Gel Matrix          | No specific data.  |
|                     |                    | Protein 250 Sample Buffer       | No specific data.  |
|                     |                    | Protein 250 Labeling Buffer     | No specific data.  |
|                     |                    | Ethanolamine solution           | No specific data.  |
|                     | Protein 250 Ladder | No specific data.               |  |

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

## Section 4. First aid measures

|                                   |                                 |   |
|-----------------------------------|---------------------------------|---|
| <b>Notes to physician</b>         | : Dimethyl sulfoxide            | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.   |
|                                   | Protein 250 Labeling Dye        | In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.   |
|                                   | Protein 250 Destaining Solution | In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.   |
|                                   | Protein 250 Gel Matrix          | In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.   |
|                                   | Protein 250 Sample Buffer       | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.   |
|                                   | Protein 250 Labeling Buffer     | In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.   |
|                                   | Ethanolamine solution           | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.   |
|                                   | Protein 250 Ladder              | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.   |
| <b>Specific treatments</b>        | : Dimethyl sulfoxide            | No specific treatment.  |
|                                   | Protein 250 Labeling Dye        | No specific treatment.  |
|                                   | Protein 250 Destaining Solution | No specific treatment.  |
|                                   | Protein 250 Gel Matrix          | No specific treatment.  |
|                                   | Protein 250 Sample Buffer       | No specific treatment.  |
|                                   | Protein 250 Labeling Buffer     | No specific treatment.  |
|                                   | Ethanolamine solution           | No specific treatment.  |
|                                   | Protein 250 Ladder              | No specific treatment.  |
| <b>Protection of first-aiders</b> | : Dimethyl sulfoxide            | No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.  |
|                                   | Protein 250 Labeling Dye        | No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. |
|                                   | Protein 250 Destaining Solution | No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.  |
|                                   | Protein 250 Gel Matrix          | No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.  |
|                                   | Protein 250 Sample Buffer       | No action shall be taken involving any personal risk or without suitable training.  |
|                                   | Protein 250 Labeling Buffer     | No action shall be taken involving any personal risk or without suitable training.  |
|                                   | Ethanolamine solution           | No action shall be taken involving any personal risk or without suitable training.  |

## Section 4. First aid measures

Protein 250 Ladder

No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

## Section 5. Firefighting measures

### Extinguishing media

#### Suitable extinguishing media

|                                 |  |
|---------------------------------|--|
| Dimethyl sulfoxide              | Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam. |
| Protein 250 Labeling Dye        | Use dry chemical powder.                                       |
| Protein 250 Destaining Solution | Use an extinguishing agent suitable for the surrounding fire.  |
| Protein 250 Gel Matrix          | Use an extinguishing agent suitable for the surrounding fire.  |
| Protein 250 Sample Buffer       | Use an extinguishing agent suitable for the surrounding fire.  |
| Protein 250 Labeling Buffer     | Use an extinguishing agent suitable for the surrounding fire.  |
| Ethanolamine solution           | Use an extinguishing agent suitable for the surrounding fire.  |
| Protein 250 Ladder              | Use an extinguishing agent suitable for the surrounding fire.  |

#### Unsuitable extinguishing media

|                                 |   |
|---------------------------------|---|
| Dimethyl sulfoxide              | Do not use water jet.   |
| Protein 250 Labeling Dye        | Avoid high pressure media which could cause the formation of a potentially explosible dust-air mixture. |
| Protein 250 Destaining Solution | None known.   |
| Protein 250 Gel Matrix          | None known.   |
| Protein 250 Sample Buffer       | None known.   |
| Protein 250 Labeling Buffer     | None known.   |
| Ethanolamine solution           | None known.   |
| Protein 250 Ladder              | None known.   |

#### Specific hazards arising from the chemical

|                                 |  |
|---------------------------------|--|
| Dimethyl sulfoxide              | Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. |
| Protein 250 Labeling Dye        | May form explosible dust-air mixture if dispersed.   |
| Protein 250 Destaining Solution | In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.  |
| Protein 250 Gel Matrix          | In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.  |
| Protein 250 Sample Buffer       | In a fire or if heated, a pressure increase will occur and the container may burst.  |
| Protein 250 Labeling Buffer     | In a fire or if heated, a pressure increase will occur and the container may burst.  |
| Ethanolamine solution           | In a fire or if heated, a pressure increase will occur and the container may burst.  |
| Protein 250 Ladder              | In a fire or if heated, a pressure increase will occur and the container may burst.  |

## Section 5. Firefighting measures

|   |  |  |
|---|--|--|
| <b>Hazardous thermal decomposition products</b>     | : Dimethyl sulfoxide                                     | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>sulfur oxides  |
|   | Protein 250 Labeling Dye                                 | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>nitrogen oxides<br>sulfur oxides<br>metal oxide/oxides   |
|   | Protein 250 Destaining Solution                          | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>nitrogen oxides<br>sulfur oxides<br>metal oxide/oxides   |
|   | Protein 250 Gel Matrix                                   | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>nitrogen oxides<br>sulfur oxides<br>metal oxide/oxides   |
|   | Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer | No specific data.<br>Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>nitrogen oxides   |
|   | Ethanolamine solution<br>Protein 250 Ladder              | No specific data.<br>Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide  |
| <b>Special protective actions for fire-fighters</b> | : Dimethyl sulfoxide                                     | 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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. |
|   | Protein 250 Labeling Dye                                 | 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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. |
|   | Protein 250 Destaining Solution                          | 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.  |
|   | Protein 250 Gel Matrix                                   | 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.  |
|   | Protein 250 Sample Buffer                                | 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.  |
|   | Protein 250 Labeling Buffer                              | Promptly isolate the scene by removing all persons   |

## Section 5. Firefighting measures

### Special protective equipment for fire-fighters

|  |                                 |   |
|--|---------------------------------|---|
|  |                                 | from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.  |
|  | Ethanolamine solution           | 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. |
|  | Protein 250 Ladder              | 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. |
|  | : Dimethyl sulfoxide            | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.                         |
|  | Protein 250 Labeling Dye        | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.                         |
|  | Protein 250 Destaining Solution | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.                         |
|  | Protein 250 Gel Matrix          | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.                         |
|  | Protein 250 Sample Buffer       | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.                         |
|  | Protein 250 Labeling Buffer     | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.                         |
|  | Ethanolamine solution           | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.                         |
|  | Protein 250 Ladder              | 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

|  |                          |   |
|--|--------------------------|---|
|  | : Dimethyl sulfoxide     | 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. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. |
|  | Protein 250 Labeling Dye | 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. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not  |

## Section 6. Accidental release measures

|  |   |
|--|---|
| Protein 250 Destaining Solution                      | breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. 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. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. |
| Protein 250 Gel Matrix                               | 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. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.   |
| Protein 250 Sample Buffer                            | 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.   |
| Protein 250 Labeling Buffer                          | 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.   |
| Ethanolamine solution                                | 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.   |
| Protein 250 Ladder                                   | 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.   |
| <b>For emergency responders</b> : Dimethyl sulfoxide | 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".   |
| Protein 250 Labeling Dye                             | 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".   |
| Protein 250 Destaining Solution                      | 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".   |
| Protein 250 Gel Matrix                               | 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".   |
| Protein 250 Sample Buffer                            | 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".   |



## Section 6. Accidental release measures

|                             |   |
|-----------------------------|---|
| Protein 250 Labeling Buffer | 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". |
| Ethanolamine solution       | 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". |
| Protein 250 Ladder          | 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 : Dimethyl sulfoxide

|                                 |  |
|---------------------------------|--|
| Protein 250 Labeling Dye        | 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).  |
| Protein 250 Destaining Solution | 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). Water polluting material. May be harmful to the environment if released in large quantities. |
| Protein 250 Gel Matrix          | 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). Water polluting material. May be harmful to the environment if released in large quantities. |
| Protein 250 Sample Buffer       | 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).  |
| Protein 250 Labeling Buffer     | 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).  |
| Ethanolamine solution           | 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).  |
| Protein 250 Ladder              | 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](#)

## Section 6. Accidental release measures


|                                |                                 |  |
|--------------------------------|---------------------------------|--|
| <b>Methods for cleaning up</b> | : Dimethyl sulfoxide            | Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. 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. |
|                                | Protein 250 Labeling Dye        | Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.   |
|                                | Protein 250 Destaining Solution | 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.  |
|                                | Protein 250 Gel Matrix          | 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.  |
|                                | Protein 250 Sample Buffer       | 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.  |
|                                | Protein 250 Labeling Buffer     | 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.  |
|                                | Ethanolamine solution           | 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.  |
|                                | Protein 250 Ladder              | 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

|                            |                      |  |
|----------------------------|----------------------|--|
| <b>Protective measures</b> | : Dimethyl sulfoxide | Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open |
|----------------------------|----------------------|--|

## Section 7. Handling and storage

|  |  |
|--|--|
| Protein 250 Labeling Dye   | <p>flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.</p> <p>Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.</p> |
| Protein 250 Destaining Solution  | <p>Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.</p>  |
| Protein 250 Gel Matrix   | <p>Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.</p>  |
| Protein 250 Sample Buffer  | <p>Put on appropriate personal protective equipment (see Section 8).</p>   |
| Protein 250 Labeling Buffer  | <p>Put on appropriate personal protective equipment (see Section 8).</p>   |
| Ethanolamine solution  | <p>Put on appropriate personal protective equipment (see Section 8).</p>   |
| Protein 250 Ladder   | <p>Put on appropriate personal protective equipment (see Section 8).</p>   |
| :  Dimethyl sulfoxide | <p>Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.</p>   |
| Protein 250 Labeling Dye   | <p>Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.</p>   |

### Advice on general occupational hygiene

## Section 7. Handling and storage

|                                 |   |
|---------------------------------|---|
| Protein 250 Destaining Solution | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| Protein 250 Gel Matrix          | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| Protein 250 Sample Buffer       | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| Protein 250 Labeling Buffer     | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| Ethanolamine solution           | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |
| Protein 250 Ladder              | Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. |

**Conditions for safe storage, including any incompatibilities** : Dimethyl sulfoxide

Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

|                          |   |
|--------------------------|---|
| Protein 250 Labeling Dye | Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate |
|--------------------------|---|

## Section 7. Handling and storage

|                                 |  |
|---------------------------------|--|
| Protein 250 Destaining Solution | <p>from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.</p> <p>Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.</p> |
| Protein 250 Gel Matrix          | <p>Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.</p>  |
| Protein 250 Sample Buffer       | <p>Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.</p>  |
| Protein 250 Labeling Buffer     | <p>Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.</p>  |
| Ethanolamine solution           | <p>Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.</p>  |
| Protein 250 Ladder              | <p>Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully</p>   |

## Section 7. Handling and storage

resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

## Section 8. Exposure controls and personal protection

### Control parameters

#### Occupational exposure limits

| Ingredient name                       | Exposure limits   |
|---------------------------------------|---|
| <b>Protein 250 Ladder</b><br>Glycerol | <b>Safe Work Australia (Australia, 1/2014).</b><br>TWA: 10 mg/m <sup>3</sup> 8 hours. |

- Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- 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.
- Individual protection measures**
- Hygiene measures** : 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: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
- 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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- 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

|                        |   |                                 |                      |
|------------------------|---|---------------------------------|----------------------|
| <b>Physical state</b>  | : | Dimethyl sulfoxide              | Liquid. [Clear.]     |
|                        |   | Protein 250 Labeling Dye        | Solid. [lyophilised] |
|                        |   | Protein 250 Destaining Solution | Liquid.              |
|                        |   | Protein 250 Gel Matrix          | Liquid.              |
|                        |   | Protein 250 Sample Buffer       | Liquid.              |
|                        |   | Protein 250 Labeling Buffer     | Liquid.              |
|                        |   | Ethanolamine solution           | Liquid.              |
|                        |   | Protein 250 Ladder              | Liquid.              |
| <b>Colour</b>          | : | Dimethyl sulfoxide              | Colourless.          |
|                        |   | Protein 250 Labeling Dye        | Not available.       |
|                        |   | Protein 250 Destaining Solution | Not available.       |
|                        |   | Protein 250 Gel Matrix          | Not available.       |
|                        |   | Protein 250 Sample Buffer       | Not available.       |
|                        |   | Protein 250 Labeling Buffer     | Not available.       |
|                        |   | Ethanolamine solution           | Not available.       |
|                        |   | Protein 250 Ladder              | Not available.       |
| <b>Odour</b>           | : | Dimethyl sulfoxide              | Odourless. [Slight]  |
|                        |   | Protein 250 Labeling Dye        | Odourless.           |
|                        |   | Protein 250 Destaining Solution | Not available.       |
|                        |   | Protein 250 Gel Matrix          | Not available.       |
|                        |   | Protein 250 Sample Buffer       | Not available.       |
|                        |   | Protein 250 Labeling Buffer     | Not available.       |
|                        |   | Ethanolamine solution           | Not available.       |
|                        |   | Protein 250 Ladder              | Not available.       |
| <b>Odour threshold</b> | : | Dimethyl sulfoxide              | Not available.       |
|                        |   | Protein 250 Labeling Dye        | Not available.       |
|                        |   | Protein 250 Destaining Solution | Not available.       |
|                        |   | Protein 250 Gel Matrix          | Not available.       |
|                        |   | Protein 250 Sample Buffer       | Not available.       |
|                        |   | Protein 250 Labeling Buffer     | Not available.       |
|                        |   | Ethanolamine solution           | Not available.       |
|                        |   | Protein 250 Ladder              | Not available.       |
| <b>pH</b>              | : | Dimethyl sulfoxide              | Not available.       |
|                        |   | Protein 250 Labeling Dye        | Not available.       |
|                        |   | Protein 250 Destaining Solution | Not available.       |
|                        |   | Protein 250 Gel Matrix          | Not available.       |
|                        |   | Protein 250 Sample Buffer       | Not available.       |
|                        |   | Protein 250 Labeling Buffer     | 8.6 to 8.9           |
|                        |   | Ethanolamine solution           | Not available.       |
|                        |   | Protein 250 Ladder              | Not available.       |
| <b>Melting point</b>   | : | Dimethyl sulfoxide              | 18.5°C (65.3°F)      |
|                        |   | Protein 250 Labeling Dye        | Not available.       |
|                        |   | Protein 250 Destaining Solution | Not available.       |
|                        |   | Protein 250 Gel Matrix          | Not available.       |
|                        |   | Protein 250 Sample Buffer       | 0°C (32°F)           |
|                        |   | Protein 250 Labeling Buffer     | 0°C (32°F)           |
|                        |   | Ethanolamine solution           | 0°C (32°F)           |
|                        |   | Protein 250 Ladder              | Not available.       |

## Section 9. Physical and chemical properties

|   |   |                                 |   |
|---|---|---------------------------------|---|
| <b>Boiling point</b>                                | : | Dimethyl sulfoxide              | 189°C (372.2°F)                           |
|   |   | Protein 250 Labeling Dye        | Not available.                            |
|   |   | Protein 250 Destaining Solution | Not available.                            |
|   |   | Protein 250 Gel Matrix          | Not available.                            |
|   |   | Protein 250 Sample Buffer       | 100°C (212°F)                             |
|   |   | Protein 250 Labeling Buffer     | 100°C (212°F)                             |
|   |   | Ethanolamine solution           | 100°C (212°F)                             |
|   |   | Protein 250 Ladder              | Not available.                            |
| <b>Flash point</b>                                  | : | Dimethyl sulfoxide              | Open cup: 87°C (188.6°F)                  |
|   |   | Protein 250 Labeling Dye        | Not available.                            |
|   |   | Protein 250 Destaining Solution | Not available.                            |
|   |   | Protein 250 Gel Matrix          | Not available.                            |
|   |   | Protein 250 Sample Buffer       | Not available.                            |
|   |   | Protein 250 Labeling Buffer     | Not available.                            |
|   |   | Ethanolamine solution           | Not available.                            |
|   |   | Protein 250 Ladder              | Not available.                            |
| <b>Evaporation rate</b>                             | : | Dimethyl sulfoxide              | 0.026 (butyl acetate = 1)                 |
|   |   | Protein 250 Labeling Dye        | Not available.                            |
|   |   | Protein 250 Destaining Solution | Not available.                            |
|   |   | Protein 250 Gel Matrix          | Not available.                            |
|   |   | Protein 250 Sample Buffer       | Not available.                            |
|   |   | Protein 250 Labeling Buffer     | Not available.                            |
|   |   | Ethanolamine solution           | Not available.                            |
|   |   | Protein 250 Ladder              | Not available.                            |
| <b>Flammability (solid, gas)</b>                    | : | Dimethyl sulfoxide              | Not applicable.                           |
|   |   | Protein 250 Labeling Dye        | May be combustible at high temperature.   |
|   |   | Protein 250 Destaining Solution | Not applicable.                           |
|   |   | Protein 250 Gel Matrix          | Not applicable.                           |
|   |   | Protein 250 Sample Buffer       | Not applicable.                           |
|   |   | Protein 250 Labeling Buffer     | Not applicable.                           |
|   |   | Ethanolamine solution           | Not applicable.                           |
|   |   | Protein 250 Ladder              | Not applicable.                           |
| <b>Lower and upper explosive (flammable) limits</b> | : | Dimethyl sulfoxide              | Lower: 2.6%<br>Upper: 28.5%               |
|   |   | Protein 250 Labeling Dye        | Not available.                            |
|   |   | Protein 250 Destaining Solution | Not available.                            |
|   |   | Protein 250 Gel Matrix          | Not available.                            |
|   |   | Protein 250 Sample Buffer       | Not available.                            |
|   |   | Protein 250 Labeling Buffer     | Not available.                            |
|   |   | Ethanolamine solution           | Not available.                            |
|   |   | Protein 250 Ladder              | Not available.                            |
| <b>Vapour pressure</b>                              | : | Dimethyl sulfoxide              | 0.056 kPa (0.42 mm Hg) [room temperature] |
|   |   | Protein 250 Labeling Dye        | Not available.                            |
|   |   | Protein 250 Destaining Solution | Not available.                            |
|   |   | Protein 250 Gel Matrix          | Not available.                            |
|   |   | Protein 250 Sample Buffer       | Not available.                            |
|   |   | Protein 250 Labeling Buffer     | Not available.                            |
|   |   | Ethanolamine solution           | Not available.                            |
|   |   | Protein 250 Ladder              | Not available.                            |
| <b>Vapour density</b>                               | : | Dimethyl sulfoxide              | 2.7 [Air = 1]                             |
|   |   | Protein 250 Labeling Dye        | Not available.                            |
|   |   | Protein 250 Destaining Solution | Not available.                            |
|   |   | Protein 250 Gel Matrix          | Not available.                            |
|   |   | Protein 250 Sample Buffer       | Not available.                            |
|   |   | Protein 250 Labeling Buffer     | Not available.                            |

## Section 9. Physical and chemical properties





|   |                                 |  |
|---|---------------------------------|--|
|   | Ethanolamine solution           | Not available.   |
|   | Protein 250 Ladder              | Not available.   |
| <b>Relative density</b>                       | : Dimethyl sulfoxide            | 1.1  |
|   | Protein 250 Labeling Dye        | Not available.   |
|   | Protein 250 Destaining Solution | Not available.   |
|   | Protein 250 Gel Matrix          | Not available.   |
|   | Protein 250 Sample Buffer       | Not available.   |
|   | Protein 250 Labeling Buffer     | Not available.   |
|   | Ethanolamine solution           | Not available.   |
|   | Protein 250 Ladder              | Not available.   |
| <b>Solubility</b>                             | : Dimethyl sulfoxide            | Easily soluble in the following materials: cold water and hot water.           |
|   | Protein 250 Labeling Dye        | Easily soluble in the following materials: cold water, hot water and methanol. |
|   | Protein 250 Destaining Solution | Easily soluble in the following materials: cold water and hot water.           |
|   | Protein 250 Gel Matrix          | Easily soluble in the following materials: cold water and hot water.           |
|   | Protein 250 Sample Buffer       | Easily soluble in the following materials: cold water and hot water.           |
|   | Protein 250 Labeling Buffer     | Easily soluble in the following materials: cold water and hot water.           |
|   | Ethanolamine solution           | Easily soluble in the following materials: cold water and hot water.           |
|   | Protein 250 Ladder              | Easily soluble in the following materials: cold water and hot water.           |
| <b>Partition coefficient: n-octanol/water</b> | : Dimethyl sulfoxide            | -1.35  |
|   | Protein 250 Labeling Dye        | Not available.   |
|   | Protein 250 Destaining Solution | Not available.   |
|   | Protein 250 Gel Matrix          | Not available.   |
|   | Protein 250 Sample Buffer       | Not available.   |
|   | Protein 250 Labeling Buffer     | Not available.   |
|   | Ethanolamine solution           | Not available.   |
|   | Protein 250 Ladder              | Not available.   |
| <b>Auto-ignition temperature</b>              | : Dimethyl sulfoxide            | 300 to 302°C (572 to 575.6°F)  |
|   | Protein 250 Labeling Dye        | Not available.   |
|   | Protein 250 Destaining Solution | Not available.   |
|   | Protein 250 Gel Matrix          | Not available.   |
|   | Protein 250 Sample Buffer       | Not available.   |
|   | Protein 250 Labeling Buffer     | Not available.   |
|   | Ethanolamine solution           | Not available.   |
|   | Protein 250 Ladder              | Not available.   |
| <b>Decomposition temperature</b>              | : Dimethyl sulfoxide            | 140 to 189°C (284 to 372.2°F)  |
|   | Protein 250 Labeling Dye        | Not available.   |
|   | Protein 250 Destaining Solution | Not available.   |
|   | Protein 250 Gel Matrix          | Not available.   |
|   | Protein 250 Sample Buffer       | Not available.   |
|   | Protein 250 Labeling Buffer     | Not available.   |
|   | Ethanolamine solution           | Not available.   |
|   | Protein 250 Ladder              | Not available.   |
| <b>Viscosity</b>                              | : Dimethyl sulfoxide            | Dynamic (room temperature): 2.14 mPa·s (2.14 cP)                               |
|   | Protein 250 Labeling Dye        | Not available.   |
|   | Protein 250 Destaining Solution | Not available.   |
|   | Protein 250 Gel Matrix          | Not available.   |
|   | Protein 250 Sample Buffer       | Not available.   |
|   | Protein 250 Labeling Buffer     | Not available.   |
|   | Ethanolamine solution           | Not available.   |

## Section 9. Physical and chemical properties

Protein 250 Ladder

Not available.

## Section 10. Stability and reactivity

|   |  |  |
|---|--|--|
| <b>Reactivity</b>                         | :  Dimethyl sulfoxide   | No specific test data related to reactivity available for this product or its ingredients.   |
|   | Protein 250 Labeling Dye   | No specific test data related to reactivity available for this product or its ingredients.   |
|   | Protein 250 Destaining Solution  | No specific test data related to reactivity available for this product or its ingredients.   |
|   | Protein 250 Gel Matrix   | No specific test data related to reactivity available for this product or its ingredients.   |
|   | Protein 250 Sample Buffer  | No specific test data related to reactivity available for this product or its ingredients.   |
|   | Protein 250 Labeling Buffer  | No specific test data related to reactivity available for this product or its ingredients.   |
|   | Ethanolamine solution  | No specific test data related to reactivity available for this product or its ingredients.   |
|   | Protein 250 Ladder   | No specific test data related to reactivity available for this product or its ingredients.   |
| <b>Chemical stability</b>                 | :  Dimethyl sulfoxide   | The product is stable.   |
|   | Protein 250 Labeling Dye   | The product is stable.   |
|   | Protein 250 Destaining Solution  | The product is stable.   |
|   | Protein 250 Gel Matrix   | The product is stable.   |
|   | Protein 250 Sample Buffer  | The product is stable.   |
|   | Protein 250 Labeling Buffer  | The product is stable.   |
|   | Ethanolamine solution  | The product is stable.   |
|   | Protein 250 Ladder   | The product is stable.   |
| <b>Possibility of hazardous reactions</b> | :  Dimethyl sulfoxide | Under normal conditions of storage and use, hazardous reactions will not occur.  |
|   | Protein 250 Labeling Dye   | Under normal conditions of storage and use, hazardous reactions will not occur.  |
|   | Protein 250 Destaining Solution  | Under normal conditions of storage and use, hazardous reactions will not occur.  |
|   | Protein 250 Gel Matrix   | Under normal conditions of storage and use, hazardous reactions will not occur.  |
|   | Protein 250 Sample Buffer  | Under normal conditions of storage and use, hazardous reactions will not occur.  |
|   | Protein 250 Labeling Buffer  | Under normal conditions of storage and use, hazardous reactions will not occur.  |
|   | Ethanolamine solution  | Under normal conditions of storage and use, hazardous reactions will not occur.  |
|   | Protein 250 Ladder   | Under normal conditions of storage and use, hazardous reactions will not occur.  |
| <b>Conditions to avoid</b>                | :  Dimethyl sulfoxide | Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas.  |
|   | Protein 250 Labeling Dye   | Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Prevent dust accumulation. |
|   | Protein 250 Destaining Solution  | No specific data.  |

## Section 10. Stability and reactivity

|                             |                   |
|-----------------------------|-------------------|
| Protein 250 Gel Matrix      | No specific data. |
| Protein 250 Sample Buffer   | No specific data. |
| Protein 250 Labeling Buffer | No specific data. |
| Ethanolamine solution       | No specific data. |
| Protein 250 Ladder          | No specific data. |

|                               |   |                                 |   |
|-------------------------------|---|---------------------------------|---|
| <b>Incompatible materials</b> | : | Dimethyl sulfoxide              | Reactive or incompatible with the following materials:<br>oxidizing materials |
|                               |   | Protein 250 Labeling Dye        | Reactive or incompatible with the following materials:<br>oxidizing materials |
|                               |   | Protein 250 Destaining Solution | May react or be incompatible with oxidising materials.                        |
|                               |   | Protein 250 Gel Matrix          | May react or be incompatible with oxidising materials.                        |
|                               |   | Protein 250 Sample Buffer       | May react or be incompatible with oxidising materials.                        |
|                               |   | Protein 250 Labeling Buffer     | May react or be incompatible with oxidising materials.                        |
|                               |   | Ethanolamine solution           | May react or be incompatible with oxidising materials.                        |
|                               |   | Protein 250 Ladder              | May react or be incompatible with oxidising materials.                        |

|   |   |                                 |  |
|---|---|---------------------------------|--|
| <b>Hazardous decomposition products</b> | : | Dimethyl sulfoxide              | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
|   |   | Protein 250 Labeling Dye        | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
|   |   | Protein 250 Destaining Solution | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
|   |   | Protein 250 Gel Matrix          | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
|   |   | Protein 250 Sample Buffer       | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
|   |   | Protein 250 Labeling Buffer     | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
|   |   | Ethanolamine solution           | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
|   |   | Protein 250 Ladder              | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

| Product/ingredient name   | Result                   | Species       | Dose                       | Exposure |
|---|--------------------------|---------------|----------------------------|----------|
| <b>Dimethyl sulfoxide</b><br>Dimethyl sulfoxide                   | LD50 Dermal<br>LD50 Oral | Rat<br>Rat    | 40000 mg/kg<br>14500 mg/kg | -<br>-   |
| <b>Protein 250 Destaining Solution</b><br>Sodium dodecyl sulphate | LD50 Dermal<br>LD50 Oral | Rabbit<br>Rat | 580 mg/kg<br>1288 mg/kg    | -<br>-   |
| <b>Protein 250 Gel Matrix</b><br>Sodium dodecyl sulphate          | LD50 Dermal<br>LD50 Oral | Rabbit<br>Rat | 580 mg/kg<br>1288 mg/kg    | -<br>-   |

## Section 11. Toxicological information

|                                       |           |     |             |   |
|---------------------------------------|-----------|-----|-------------|---|
| <b>Protein 250 Ladder</b><br>Glycerol | LD50 Oral | Rat | 12600 mg/kg | - |
|---------------------------------------|-----------|-----|-------------|---|

### Irritation/Corrosion

| Product/ingredient name   | Result                   | Species    | Score | Exposure                | Observation |
|---|--------------------------|------------|-------|-------------------------|-------------|
| <b>Dimethyl sulfoxide</b><br>Dimethyl sulfoxide                   | Eyes - Mild irritant     | Rabbit     | -     | 24 hours 500 milligrams | -           |
|   | Eyes - Mild irritant     | Rabbit     | -     | 100 milligrams          | -           |
|   | Skin - Mild irritant     | Rabbit     | -     | 24 hours 500 milligrams | -           |
|   | Skin - Mild irritant     | Rabbit     | -     | 100 milligrams          | -           |
| <b>Protein 250 Destaining Solution</b><br>Sodium dodecyl sulphate | Eyes - Mild irritant     | Rabbit     | -     | 250 Micrograms          | -           |
|   | Eyes - Moderate irritant | Rabbit     | -     | 24 hours 100 milligrams | -           |
|   | Eyes - Moderate irritant | Rabbit     | -     | 10 milligrams           | -           |
|   | Skin - Mild irritant     | Guinea pig | -     | 24 hours 25 milligrams  | -           |
|   | Skin - Moderate irritant | Mouse      | -     | 24 hours 25 milligrams  | -           |
|   | Skin - Mild irritant     | Rabbit     | -     | 24 hours 50 milligrams  | -           |
| <b>Protein 250 Gel Matrix</b><br>Sodium dodecyl sulphate          | Skin - Moderate irritant | Rabbit     | -     | 24 hours 25 milligrams  | -           |
|   | Eyes - Mild irritant     | Rabbit     | -     | 250 Micrograms          | -           |
|   | Eyes - Moderate irritant | Rabbit     | -     | 24 hours 100 milligrams | -           |
|   | Eyes - Moderate irritant | Rabbit     | -     | 10 milligrams           | -           |
|   | Skin - Mild irritant     | Guinea pig | -     | 24 hours 25 milligrams  | -           |
|   | Skin - Moderate irritant | Mouse      | -     | 24 hours 25 milligrams  | -           |
| <b>Protein 250 Ladder</b><br>Glycerol                             | Skin - Mild irritant     | Rabbit     | -     | 24 hours 50 milligrams  | -           |
|   | Skin - Moderate irritant | Rabbit     | -     | 24 hours 25 milligrams  | -           |
|   | Eyes - Mild irritant     | Rabbit     | -     | 24 hours 500 milligrams | -           |
|   | Skin - Mild irritant     | Rabbit     | -     | 24 hours 500 milligrams | -           |

### Sensitisation

Not available.

### Mutagenicity

Not available.

### Carcinogenicity

Not available.

### Reproductive toxicity



## Section 11. Toxicological information

Not available.

### Teratogenicity

Not available.

### Specific target organ toxicity (single exposure)

| Name  | Category   | Route of exposure | Target organs                |
|---|------------|-------------------|------------------------------|
| <b>Protein 250 Destaining Solution</b><br>Sodium dodecyl sulphate | Category 3 | Not applicable.   | Respiratory tract irritation |
| <b>Protein 250 Gel Matrix</b><br>Sodium dodecyl sulphate          | Category 3 | Not applicable.   | Respiratory tract irritation |

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

|   |  |  |
|---|--|--|
| <b>Information on likely routes of exposure</b> | <b>Dimethyl sulfoxide</b>                              | Routes of entry anticipated: Oral, Dermal, Inhalation. |
|   | <b>Protein 250 Labeling Dye</b>                        | Routes of entry anticipated: Oral, Dermal, Inhalation. |
|   | <b>Protein 250 Destaining Solution</b>                 | Routes of entry anticipated: Oral, Dermal, Inhalation. |
|   | <b>Protein 250 Gel Matrix</b>                          | Routes of entry anticipated: Oral, Dermal, Inhalation. |
|   | <b>Protein 250 Sample Buffer</b>                       | Not available.   |
|   | <b>Protein 250 Labeling Buffer</b>                     | Routes of entry anticipated: Oral, Dermal, Inhalation. |
|   | <b>Ethanolamine solution</b>                           | Not available.   |
| <b>Protein 250 Ladder</b>                       | Routes of entry anticipated: Oral, Dermal, Inhalation. |  |

### Potential acute health effects

|                     |  |  |
|---------------------|--|--|
| <b>Eye contact</b>  | <b>Dimethyl sulfoxide</b>              | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Labeling Dye</b>        | Causes serious eye damage.   |
|                     | <b>Protein 250 Destaining Solution</b> | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Gel Matrix</b>          | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Sample Buffer</b>       | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Labeling Buffer</b>     | No known significant effects or critical hazards.  |
|                     | <b>Ethanolamine solution</b>           | No known significant effects or critical hazards.  |
| <b>Inhalation</b>   | <b>Protein 250 Ladder</b>              | No known significant effects or critical hazards.  |
|                     | <b>Dimethyl sulfoxide</b>              | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Labeling Dye</b>        | Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. |
|                     | <b>Protein 250 Destaining Solution</b> | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Gel Matrix</b>          | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Sample Buffer</b>       | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Labeling Buffer</b>     | No known significant effects or critical hazards.  |
| <b>Skin contact</b> | <b>Ethanolamine solution</b>           | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Ladder</b>              | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Labeling Buffer</b>     | No known significant effects or critical hazards.  |
|                     | <b>Ethanolamine solution</b>           | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Labeling Dye</b>        | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Destaining Solution</b> | No known significant effects or critical hazards.  |
|                     | <b>Protein 250 Gel Matrix</b>          | No known significant effects or critical hazards.  |

## Section 11. Toxicological information

|                    |   |   |
|--------------------|---|---|
| <b>Ingestion</b>   | Protein 250 Ladder                                | No known significant effects or critical hazards. |
|                    | : Dimethyl sulfoxide                              | No known significant effects or critical hazards. |
|                    | Protein 250 Labeling Dye                          | No known significant effects or critical hazards. |
|                    | Protein 250 Destaining Solution                   | No known significant effects or critical hazards. |
|                    | Protein 250 Gel Matrix                            | No known significant effects or critical hazards. |
|                    | Protein 250 Sample Buffer                         | No known significant effects or critical hazards. |
|                    | Protein 250 Labeling Buffer                       | No known significant effects or critical hazards. |
|                    | Ethanolamine solution                             | No known significant effects or critical hazards. |
| Protein 250 Ladder | No known significant effects or critical hazards. |   |

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

|                     |                                 |  |
|---------------------|---------------------------------|--|
| <b>Eye contact</b>  | : Dimethyl sulfoxide            | No specific data.  |
|                     | Protein 250 Labeling Dye        | Adverse symptoms may include the following:<br>pain<br>watering<br>redness                           |
|                     | Protein 250 Destaining Solution | No specific data.  |
|                     | Protein 250 Gel Matrix          | No specific data.  |
|                     | Protein 250 Sample Buffer       | No specific data.  |
|                     | Protein 250 Labeling Buffer     | No specific data.  |
|                     | Ethanolamine solution           | No specific data.  |
|                     | Protein 250 Ladder              | No specific data.  |
| <b>Inhalation</b>   | : Dimethyl sulfoxide            | No specific data.  |
|                     | Protein 250 Labeling Dye        | Adverse symptoms may include the following:<br>respiratory tract irritation<br>coughing              |
|                     | Protein 250 Destaining Solution | No specific data.  |
|                     | Protein 250 Gel Matrix          | No specific data.  |
|                     | Protein 250 Sample Buffer       | No specific data.  |
|                     | Protein 250 Labeling Buffer     | No specific data.  |
|                     | Ethanolamine solution           | No specific data.  |
|                     | Protein 250 Ladder              | No specific data.  |
| <b>Skin contact</b> | : Dimethyl sulfoxide            | No specific data.  |
|                     | Protein 250 Labeling Dye        | Adverse symptoms may include the following:<br>pain or irritation<br>redness<br>blistering may occur |
|                     | Protein 250 Destaining Solution | No specific data.  |
|                     | Protein 250 Gel Matrix          | No specific data.  |
|                     | Protein 250 Sample Buffer       | No specific data.  |
|                     | Protein 250 Labeling Buffer     | No specific data.  |
|                     | Ethanolamine solution           | No specific data.  |
|                     | Protein 250 Ladder              | No specific data.  |
| <b>Ingestion</b>    | : Dimethyl sulfoxide            | No specific data.  |
|                     | Protein 250 Labeling Dye        | Adverse symptoms may include the following:<br>stomach pains   |
|                     | Protein 250 Destaining Solution | No specific data.  |
|                     | Protein 250 Gel Matrix          | No specific data.  |
|                     | Protein 250 Sample Buffer       | No specific data.  |
|                     | Protein 250 Labeling Buffer     | No specific data.  |
|                     | Ethanolamine solution           | No specific data.  |
|                     | Protein 250 Ladder              | No specific data.  |

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

#### Short term exposure

## Section 11. Toxicological information

**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

Not available.

|                              |  |  |
|------------------------------|--|--|
| <b>General</b>               | : <input checked="" type="checkbox"/> Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br><br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder | No known significant effects or critical hazards.<br>Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.<br>No known significant effects or critical hazards.<br><br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards. |
| <b>Carcinogenicity</b>       | : <input checked="" type="checkbox"/> Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder     | No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.   |
| <b>Mutagenicity</b>          | : <input checked="" type="checkbox"/> Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder     | No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.   |
| <b>Teratogenicity</b>        | : <input checked="" type="checkbox"/> Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder     | No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.   |
| <b>Developmental effects</b> | : <input checked="" type="checkbox"/> Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder     | No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.   |

## Section 11. Toxicological information

|                          |  |  |
|--------------------------|--|--|
| <b>Fertility effects</b> | : <input checked="" type="checkbox"/> Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder | No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards.<br>No known significant effects or critical hazards. |
|--------------------------|--|--|

### Numerical measures of toxicity

#### Acute toxicity estimates

| Route  | ATE value                       |
|--|---------------------------------|
| <input checked="" type="checkbox"/> <b>Protein 250 Destaining Solution</b><br>Oral<br>Dermal | 128800.1 mg/kg<br>58000.1 mg/kg |
| <b>Protein 250 Gel Matrix</b><br>Oral<br>Dermal  | 113241 mg/kg<br>50993.6 mg/kg   |

|                          |  |  |
|--------------------------|--|--|
| <b>Other information</b> | : <input checked="" type="checkbox"/> Dimethyl sulfoxide<br>Protein 250 Labeling Dye<br>Protein 250 Destaining Solution<br>Protein 250 Gel Matrix<br><br>Protein 250 Sample Buffer<br>Protein 250 Labeling Buffer<br>Ethanolamine solution<br>Protein 250 Ladder | Not available.<br>Not available.<br>Not available.<br>Adverse symptoms may include the following:<br>Repeated exposure may cause skin dryness or cracking.<br>Not available.<br>Not available.<br>Not available.<br>Not available. |
|--------------------------|--|--|

## Section 12. Ecological information

### Toxicity

| Product/ingredient name   | Result                               | Species                                   | Exposure |
|---|--------------------------------------|---|----------|
| <input checked="" type="checkbox"/> <b>Dimethyl sulfoxide</b><br>Dimethyl sulfoxide | Acute LC50 25000 ppm Fresh water     | Daphnia - Daphnia magna - Neonate         | 48 hours |
|   | Acute LC50 34000000 µg/l Fresh water | Fish - Pimephales promelas                | 96 hours |
|   | Chronic NOEC 100 µl/L Marine water   | Algae - Ulva lactuca                      | 72 hours |
| <b>Protein 250 Destaining Solution</b><br>Sodium dodecyl sulphate                   | Acute EC50 1200 µg/l Marine water    | Algae - Skeletonema costatum              | 96 hours |
|   | Acute LC50 900 µg/l Marine water     | Crustaceans - Artemia salina - Adult      | 48 hours |
|   | Acute LC50 1400 µg/l Fresh water     | Daphnia - Daphnia pulex - Neonate         | 48 hours |
|   | Acute LC50 590 µg/l Fresh water      | Fish - Cirrhinus mrigala - Larvae         | 96 hours |
|   | Chronic NOEC 1.25 mg/l Marine water  | Algae - Ulva fasciata - Zoea              | 96 hours |
|   | Chronic NOEC 1 mg/l Fresh water      | Crustaceans - Pseudosida ramosa - Neonate | 21 days  |
|   | Chronic NOEC 3.2 mg/l Fresh water    | Daphnia - Daphnia magna - Neonate         | 21 days  |
| Chronic NOEC >1357 µg/l Fresh water   | Fish - Pimephales promelas           | 42 days                                   |          |

## Section 12. Ecological information

|  |                                     |   |          |
|--|-------------------------------------|---|----------|
| <b>Protein 250 Gel Matrix</b><br>Sodium dodecyl sulphate | Acute EC50 1200 µg/l Marine water   | Algae - Skeletonema costatum              | 96 hours |
|  | Acute LC50 900 µg/l Marine water    | Crustaceans - Artemia salina - Adult      | 48 hours |
|  | Acute LC50 1400 µg/l Fresh water    | Daphnia - Daphnia pulex - Neonate         | 48 hours |
|  | Acute LC50 590 µg/l Fresh water     | Fish - Cirrhinus mrigala - Larvae         | 96 hours |
|  | Chronic NOEC 1.25 mg/l Marine water | Algae - Ulva fasciata - Zoea              | 96 hours |
|  | Chronic NOEC 1 mg/l Fresh water     | Crustaceans - Pseudosida ramosa - Neonate | 21 days  |
| Chronic NOEC 3.2 mg/l Fresh water                        | Daphnia - Daphnia magna - Neonate   | 21 days                                   |          |
| Chronic NOEC >1357 µg/l Fresh water                      | Fish - Pimephales promelas          | 42 days                                   |          |
| <b>Protein 250 Ladder</b><br>Glycerol                    | Acute LC50 54000 mg/l Fresh water   | Fish - Oncorhynchus mykiss                | 96 hours |

### Persistence and degradability

| Product/ingredient name   | Aquatic half-life | Photolysis | Biodegradability |
|---|-------------------|------------|------------------|
| <b>Protein 250 Destaining Solution</b><br>Sodium dodecyl sulphate | -                 | -          | Readily          |
| <b>Protein 250 Gel Matrix</b><br>Sodium dodecyl sulphate          | -                 | -          | Readily          |

### Bioaccumulative potential

| Product/ingredient name   | LogP <sub>ow</sub> | BCF  | Potential |
|---|--------------------|------|-----------|
| <b>Dimethyl sulfoxide</b><br>Dimethyl sulfoxide                   | -1.35              | 3.16 | low       |
| <b>Protein 250 Destaining Solution</b><br>Sodium dodecyl sulphate | -2.03              | -    | low       |
| <b>Protein 250 Gel Matrix</b><br>Sodium dodecyl sulphate          | -2.03              | -    | low       |
| <b>Protein 250 Ladder</b><br>Glycerol                             | -1.76              | -    | low       |

### Mobility in soil

Soil/water partition coefficient (K<sub>oc</sub>) : 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 landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when

## Section 13. Disposal considerations

handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

### Regulatory 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

6

### Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

**Australia inventory (AICS)** : Not determined.

### 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 Inform Consent (PIC)

Not listed.

#### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### International lists

#### National inventory

**Canada** : Not determined.  
**China** : Not determined.  
**Europe** : Not determined.  
**Japan** : **Japan inventory (ENCs):** Not determined.  
**Japan inventory (ISHL):** Not determined.  
**Malaysia** : Not determined.  
**New Zealand** : Not determined.  
**Philippines** : Not determined.  
**Republic of Korea** : Not determined.  
**Taiwan** : Not determined.  
**Turkey** : Not determined.  
**United States** : Not determined.



## Section 16. Any other relevant information

### History

**Date of issue/Date of revision** : 08/03/2016

**Date of previous issue** : 30/03/2015.

**Version** : 6

### 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  
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
 NOHSC = National Occupational Health and Safety Commission  
 SUSMP = Standard Uniform Schedule of Medicine and Poisons  
 UN = United Nations

### Procedure used to derive the classification

| Classification  | Justification         |
|---|-----------------------|
| <b>Dimethyl sulfoxide</b><br>Flam. Liq. 4, H227                 | On basis of test data |
| <b>Protein 250 Labeling Dye</b><br>Eye Dam. 1, H318             | Expert judgment       |
| <b>Protein 250 Destaining Solution</b><br>Aquatic Acute 3, H402 | Calculation method    |
| <b>Protein 250 Gel Matrix</b><br>Aquatic Acute 3, H402          | Calculation method    |

**References** : Not available.

Indicates information that has changed from previously issued version.

### Notice to reader

**Disclaimer:** The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.