Conforms to US OSHA Hazard Communication 29CFR1910.1200

# SAFETY DATA SHEET

ASTM D6591-06 Calibration Standard, Part Number 5190-0482

## Section 1. Identification

### 1.1 Product identifier

**Product name** : ASTM D6591-06 Calibration Standard, Part Number 5190-0482

**Part no. (chemical kit)** : 5190-0482

**Part no.** :

| | |
|---|---|
| ASTM D6591-06 Calibration Standard Solution 1 | 5190-0482-1 |
| ASTM D6591-06 Calibration Standard Solution 2 | 5190-0482-2 |
| ASTM D6591-06 Calibration Standard Solution 3 | 5190-0482-3 |
| ASTM D6591-06 Calibration Standard Solution 4 | 5190-0482-4 |

**Validation date** : 5/23/2018

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

**Material uses** : Reagents and Standards for Analytical Chemistry Laboratory Use

ASTM D6591-06 Calibration Standard Solution 1 1 ml
ASTM D6591-06 Calibration Standard Solution 2 1 ml
ASTM D6591-06 Calibration Standard Solution 3 1 ml
ASTM D6591-06 Calibration Standard Solution 4 1 ml

### 1.3 Details of the supplier of the safety data sheet

**Supplier/Manufacturer** : Agilent Technologies, Inc.
5301 Stevens Creek Blvd
Santa Clara, CA 95051, USA
800-227-9770

### 1.4 Emergency telephone number

**In case of emergency** : CHEMTREC®: 1-800-424-9300

## Section 2. Hazards identification

### 2.1 Classification of the substance or mixture

**OSHA/HCS status** :

| | |
|---|---|
| ASTM D6591-06 Calibration Standard Solution 1 | This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). |
| ASTM D6591-06 Calibration Standard Solution 2 | This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). |
| ASTM D6591-06 Calibration Standard Solution 3 | This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). |
| ASTM D6591-06 Calibration Standard Solution 4 | This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). |

### Classification of the substance or mixture

**ASTM D6591-06 Calibration Standard Solution 1**

| | |
|---|---|
| H225 | FLAMMABLE LIQUIDS - Category 2 |
| H315 | SKIN IRRITATION - Category 2 |
| H319 | EYE IRRITATION - Category 2A |
| H335 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 |
| H336 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |

# Section 2. Hazards identification

| | |
|---|---|
| H373 | SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys, liver, nervous system) - Category 2 |
| H304 | ASPIRATION HAZARD - Category 1 |

**ASTM D6591-06 Calibration Standard Solution 2**

| | |
|---|---|
| H225 | FLAMMABLE LIQUIDS - Category 2 |
| H315 | SKIN IRRITATION - Category 2 |
| H319 | EYE IRRITATION - Category 2A |
| H335 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 |
| H336 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| H373 | SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys, liver, nervous system) - Category 2 |
| H304 | ASPIRATION HAZARD - Category 1 |

**ASTM D6591-06 Calibration Standard Solution 3**

| | |
|---|---|
| H225 | FLAMMABLE LIQUIDS - Category 2 |
| H315 | SKIN IRRITATION - Category 2 |
| H319 | EYE IRRITATION - Category 2A |
| H335 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 |
| H336 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| H304 | ASPIRATION HAZARD - Category 1 |

**ASTM D6591-06 Calibration Standard Solution 4**

| | |
|---|---|
| H225 | FLAMMABLE LIQUIDS - Category 2 |
| H315 | SKIN IRRITATION - Category 2 |
| H319 | EYE IRRITATION - Category 2A |
| H335 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 |
| H336 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| H304 | ASPIRATION HAZARD - Category 1 |

| | | |
|---|---|---|
| **Ingredients of unknown toxicity** | : ASTM D6591-06 Calibration Standard Solution 1 | Percentage of the mixture consisting of ingredient (s) of unknown dermal toxicity: 1 - 10%<br>Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 1 - 10% |
| | ASTM D6591-06 Calibration Standard Solution 2 | Percentage of the mixture consisting of ingredient (s) of unknown dermal toxicity: 1 - 10%<br>Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 1 - 10% |

## 2.2 GHS label elements

# Section 2. Hazards identification

**Hazard pictograms** :

ASTM D6591-06 Calibration Standard Solution 1

ASTM D6591-06 Calibration Standard Solution 2

ASTM D6591-06 Calibration Standard Solution 3

ASTM D6591-06 Calibration Standard Solution 4

**Signal word** :

| | |
|---|---|
| ASTM D6591-06 Calibration Standard Solution 1 | Danger |
| ASTM D6591-06 Calibration Standard Solution 2 | Danger |
| ASTM D6591-06 Calibration Standard Solution 3 | Danger |
| ASTM D6591-06 Calibration Standard Solution 4 | Danger |

**Hazard statements** :

ASTM D6591-06 Calibration Standard Solution 1

H225 - Highly flammable liquid and vapor.

H319 - Causes serious eye irritation.
H315 - Causes skin irritation.
H304 - May be fatal if swallowed and enters airways.
H335 - May cause respiratory irritation.
H336 - May cause drowsiness or dizziness.
H373 - May cause damage to organs through prolonged or repeated exposure. (kidneys, liver, nervous system)

ASTM D6591-06 Calibration Standard Solution 2

H225 - Highly flammable liquid and vapor.

H319 - Causes serious eye irritation.
H315 - Causes skin irritation.
H304 - May be fatal if swallowed and enters airways.
H335 - May cause respiratory irritation.
H336 - May cause drowsiness or dizziness.
H373 - May cause damage to organs through prolonged or repeated exposure. (kidneys, liver, nervous system)

ASTM D6591-06 Calibration Standard Solution 3

H225 - Highly flammable liquid and vapor.

H319 - Causes serious eye irritation.
H315 - Causes skin irritation.
H304 - May be fatal if swallowed and enters airways.
H335 - May cause respiratory irritation.
H336 - May cause drowsiness or dizziness.

ASTM D6591-06 Calibration

H225 - Highly flammable liquid and vapor.

# Section 2. Hazards identification

| | | | |
|---|---|---|---|
| | | Standard Solution 4 | H319 - Causes serious eye irritation.<br>H315 - Causes skin irritation.<br>H304 - May be fatal if swallowed and enters airways.<br>H335 - May cause respiratory irritation.<br>H336 - May cause drowsiness or dizziness. |
| **Precautionary statements** | | | |
| **Prevention** | : | ASTM D6591-06 Calibration Standard Solution 1 | P280 - Wear protective gloves. Wear eye or face protection.<br>P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.<br>P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.<br>P242 - Use only non-sparking tools.<br>P243 - Take precautionary measures against static discharge.<br>P233 - Keep container tightly closed.<br>P271 - Use only outdoors or in a well-ventilated area.<br>P260 - Do not breathe vapor.<br>P264 - Wash hands thoroughly after handling. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | P280 - Wear protective gloves. Wear eye or face protection.<br>P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.<br>P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.<br>P242 - Use only non-sparking tools.<br>P243 - Take precautionary measures against static discharge.<br>P233 - Keep container tightly closed.<br>P271 - Use only outdoors or in a well-ventilated area.<br>P260 - Do not breathe vapor.<br>P264 - Wash hands thoroughly after handling. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | P280 - Wear protective gloves. Wear eye or face protection.<br>P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.<br>P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.<br>P242 - Use only non-sparking tools.<br>P243 - Take precautionary measures against static discharge.<br>P233 - Keep container tightly closed.<br>P271 - Use only outdoors or in a well-ventilated area.<br>P261 - Avoid breathing vapor.<br>P264 - Wash hands thoroughly after handling. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | P280 - Wear protective gloves. Wear eye or face protection.<br>P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.<br>P241 - Use explosion-proof electrical, ventilating, |

## Section 2. Hazards identification

| | | |
|---|---|---|
| | | lighting and all material-handling equipment.<br>P242 - Use only non-sparking tools.<br>P243 - Take precautionary measures against static discharge.<br>P233 - Keep container tightly closed.<br>P271 - Use only outdoors or in a well-ventilated area.<br>P261 - Avoid breathing vapor.<br>P264 - Wash hands thoroughly after handling. |
| **Response** | : ASTM D6591-06 Calibration Standard Solution 1 | P314 - Get medical attention if you feel unwell.<br><br>P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.<br>P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.<br>P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.<br>P302 + P352 + P362+P364 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse.<br>P332 + P313 - If skin irritation occurs: Get medical attention.<br>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P337 + P313 - If eye irritation persists: Get medical attention. |
| | ASTM D6591-06 Calibration Standard Solution 2 | P314 - Get medical attention if you feel unwell.<br><br>P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.<br>P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.<br>P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.<br>P302 + P352 + P362+P364 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse.<br>P332 + P313 - If skin irritation occurs: Get medical attention.<br>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P337 + P313 - If eye irritation persists: Get medical attention. |
| | ASTM D6591-06 Calibration Standard Solution 3 | P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. |

# Section 2. Hazards identification

| | | | |
|---|---|---|---|
| | | | P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.<br>P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.<br>P302 + P352 + P362+P364 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse.<br>P332 + P313 - If skin irritation occurs: Get medical attention.<br>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P337 + P313 - If eye irritation persists: Get medical attention. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.<br>P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.<br>P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.<br>P302 + P352 + P362+P364 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse.<br>P332 + P313 - If skin irritation occurs: Get medical attention.<br>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P337 + P313 - If eye irritation persists: Get medical attention. |
| **Storage** | : | ASTM D6591-06 Calibration Standard Solution 1 | P405 - Store locked up.<br>P403 - Store in a well-ventilated place.<br>P235 - Keep cool. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | P405 - Store locked up.<br>P403 - Store in a well-ventilated place.<br>P235 - Keep cool. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | P405 - Store locked up.<br>P403 - Store in a well-ventilated place.<br>P235 - Keep cool. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | P405 - Store locked up.<br>P403 - Store in a well-ventilated place.<br>P235 - Keep cool. |
| **Disposal** | : | | |

# Section 2. Hazards identification

| | | |
|---|---|---|
| | ASTM D6591-06 Calibration Standard Solution 1 | P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. |
| | ASTM D6591-06 Calibration Standard Solution 2 | P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. |
| | ASTM D6591-06 Calibration Standard Solution 3 | P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. |
| | ASTM D6591-06 Calibration Standard Solution 4 | P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. |
| **Supplemental label elements** : | ASTM D6591-06 Calibration Standard Solution 1 | None known. |
| | ASTM D6591-06 Calibration Standard Solution 2 | None known. |
| | ASTM D6591-06 Calibration Standard Solution 3 | None known. |
| | ASTM D6591-06 Calibration Standard Solution 4 | None known. |

**2.3 Other hazards**

| | | |
|---|---|---|
| **Hazards not otherwise classified** : | ASTM D6591-06 Calibration Standard Solution 1 | None known. |
| | ASTM D6591-06 Calibration Standard Solution 2 | None known. |
| | ASTM D6591-06 Calibration Standard Solution 3 | None known. |
| | ASTM D6591-06 Calibration Standard Solution 4 | None known. |

# Section 3. Composition/information on ingredients

| | | |
|---|---|---|
| **Substance/mixture** : | ASTM D6591-06 Calibration Standard Solution 1 | Mixture |
| | ASTM D6591-06 Calibration Standard Solution 2 | Mixture |
| | ASTM D6591-06 Calibration Standard Solution 3 | Mixture |
| | ASTM D6591-06 Calibration Standard Solution 4 | Mixture |

| Ingredient name | % | CAS number |
|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | |
| Heptane | ≥75 - ≤90 | 142-82-5 |
| Cyclohexane | ≤10 | 110-82-7 |
| o-xylene | ≤5 | 95-47-6 |
| 1-Methylnaphthalene | ≤5 | 90-12-0 |
| **ASTM D6591-06 Calibration Standard Solution 2** | | |
| Heptane | ≥90 | 142-82-5 |
| Cyclohexane | ≤3 | 110-82-7 |
| o-xylene | ≤3 | 95-47-6 |
| 1-Methylnaphthalene | ≤3 | 90-12-0 |
| **ASTM D6591-06 Calibration Standard Solution 3** | | |
| Heptane | ≥90 | 142-82-5 |

# Section 3. Composition/information on ingredients

| | | |
|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 4**<br>Heptane | ≥90 | 142-82-5 |

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

**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

## 4.1 Description of necessary first aid measures

**Eye contact** :

ASTM D6591-06 Calibration Standard Solution 1: 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.

ASTM D6591-06 Calibration Standard Solution 2: 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.

ASTM D6591-06 Calibration Standard Solution 3: 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.

ASTM D6591-06 Calibration Standard Solution 4: 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.

**Inhalation** :

ASTM D6591-06 Calibration Standard Solution 1: 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. Get medical attention. If necessary, call a poison center or physician. 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.

ASTM D6591-06 Calibration Standard Solution 2: 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. Get medical attention. If necessary, call a poison center or physician. If

# Section 4. First aid measures

| | | |
|---|---|---|
| | | 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. |
| | ASTM D6591-06 Calibration Standard Solution 3 | 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. Get medical attention. If necessary, call a poison center or physician. 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. |
| | ASTM D6591-06 Calibration Standard Solution 4 | 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. Get medical attention. If necessary, call a poison center or physician. 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. |
| **Skin contact** : | ASTM D6591-06 Calibration Standard Solution 1 | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. |
| | ASTM D6591-06 Calibration Standard Solution 2 | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. |
| | ASTM D6591-06 Calibration Standard Solution 3 | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. |
| | ASTM D6591-06 Calibration Standard Solution 4 | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. |

## Section 4. First aid measures

| | | |
|---|---|---|
| **Ingestion** | : ASTM D6591-06 Calibration Standard Solution 1 | 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. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. 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. |
| | ASTM D6591-06 Calibration Standard Solution 2 | 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. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. 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. |
| | ASTM D6591-06 Calibration Standard Solution 3 | 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. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. 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. |
| | ASTM D6591-06 Calibration Standard Solution 4 | 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. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit |

# Section 4. First aid measures

does not enter the lungs. 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.

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

### Potential acute health effects

| | | | |
|---|---|---|---|
| **Eye contact** | : | ASTM D6591-06 Calibration Standard Solution 1 | Causes serious eye irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Causes serious eye irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Causes serious eye irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Causes serious eye irritation. |
| **Inhalation** | : | ASTM D6591-06 Calibration Standard Solution 1 | Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation. |
| **Skin contact** | : | ASTM D6591-06 Calibration Standard Solution 1 | Causes skin irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Causes skin irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Causes skin irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Causes skin irritation. |
| **Ingestion** | : | ASTM D6591-06 Calibration Standard Solution 1 | Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. |

### Over-exposure signs/symptoms

| | | | |
|---|---|---|---|
| **Eye contact** | : | ASTM D6591-06 Calibration Standard Solution 1 | Adverse symptoms may include the following:<br>pain or irritation<br>watering<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Adverse symptoms may include the following:<br>pain or irritation |

# Section 4. First aid measures

| | | | |
|---|---|---|---|
| | | | watering<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Adverse symptoms may include the following:<br><br>pain or irritation<br>watering<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Adverse symptoms may include the following:<br><br>pain or irritation<br>watering<br>redness |
| **Inhalation** | : | ASTM D6591-06 Calibration Standard Solution 1 | Adverse symptoms may include the following:<br><br>respiratory tract irritation<br>coughing<br>nausea or vomiting<br>headache<br>drowsiness/fatigue<br>dizziness/vertigo<br>unconsciousness |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Adverse symptoms may include the following:<br><br>respiratory tract irritation<br>coughing<br>nausea or vomiting<br>headache<br>drowsiness/fatigue<br>dizziness/vertigo<br>unconsciousness |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Adverse symptoms may include the following:<br><br>respiratory tract irritation<br>coughing<br>nausea or vomiting<br>headache<br>drowsiness/fatigue<br>dizziness/vertigo<br>unconsciousness |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Adverse symptoms may include the following:<br><br>respiratory tract irritation<br>coughing<br>nausea or vomiting<br>headache<br>drowsiness/fatigue<br>dizziness/vertigo<br>unconsciousness |
| **Skin contact** | : | ASTM D6591-06 Calibration Standard Solution 1 | Adverse symptoms may include the following:<br><br>irritation<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Adverse symptoms may include the following:<br><br>irritation<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Adverse symptoms may include the following:<br><br>irritation |

# Section 4. First aid measures

| | | | |
|---|---|---|---|
| | | | redness |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Adverse symptoms may include the following:<br><br>irritation<br>redness |
| **Ingestion** | : | ASTM D6591-06 Calibration Standard Solution 1 | Adverse symptoms may include the following:<br><br>nausea or vomiting |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Adverse symptoms may include the following:<br><br>nausea or vomiting |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Adverse symptoms may include the following:<br><br>nausea or vomiting |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Adverse symptoms may include the following:<br><br>nausea or vomiting |

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

| | | | |
|---|---|---|---|
| **Notes to physician** | : | ASTM D6591-06 Calibration Standard Solution 1 | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
| **Specific treatments** | : | ASTM D6591-06 Calibration Standard Solution 1 | No specific treatment. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | No specific treatment. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | No specific treatment. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | No specific treatment. |
| **Protection of first-aiders** | : | ASTM D6591-06 Calibration Standard Solution 1 | 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. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | 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. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | 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. |

# Section 4. First aid measures

| | |
|---|---|
| ASTM D6591-06 Calibration Standard Solution 4 | 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. |

**See toxicological information (Section 11)**

# Section 5. Fire-fighting measures

## 5.1 Extinguishing media

| | | | |
|---|---|---|---|
| **Suitable extinguishing media** | : | ASTM D6591-06 Calibration Standard Solution 1 | Use dry chemical, $CO_2$, water spray (fog) or foam. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Use dry chemical, $CO_2$, water spray (fog) or foam. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Use dry chemical, $CO_2$, water spray (fog) or foam. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Use dry chemical, $CO_2$, water spray (fog) or foam. |
| **Unsuitable extinguishing media** | : | ASTM D6591-06 Calibration Standard Solution 1 | Do not use water jet. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Do not use water jet. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Do not use water jet. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Do not use water jet. |

## 5.2 Special hazards arising from the substance or mixture

| | | | |
|---|---|---|---|
| **Specific hazards arising from the chemical** | : | ASTM D6591-06 Calibration Standard Solution 1 | Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. |

# Section 5. Fire-fighting measures

| | | |
|---|---|---|
| | ASTM D6591-06 Calibration Standard Solution 4 | Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. |
| **Hazardous thermal decomposition products** : | ASTM D6591-06 Calibration Standard Solution 1 | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide |
| | ASTM D6591-06 Calibration Standard Solution 2 | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide |
| | ASTM D6591-06 Calibration Standard Solution 3 | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide |
| | ASTM D6591-06 Calibration Standard Solution 4 | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide |

## 5.3 Advice for firefighters

| | | |
|---|---|---|
| **Special protective actions for fire-fighters** : | ASTM D6591-06 Calibration Standard Solution 1 | 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. |
| | ASTM D6591-06 Calibration Standard Solution 2 | 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. |
| | ASTM D6591-06 Calibration Standard Solution 3 | 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. |
| | ASTM D6591-06 Calibration Standard Solution 4 | 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. |

# Section 5. Fire-fighting measures

| | | | |
|---|---|---|---|
| **Special protective equipment for fire-fighters** | : | ASTM D6591-06 Calibration Standard Solution 1 | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | 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

## 6.1 Personal precautions, protective equipment and emergency procedures

| | | | |
|---|---|---|---|
| **For non-emergency personnel** | : | ASTM D6591-06 Calibration Standard Solution 1 | 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 spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | 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 spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | 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 spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | 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 spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on |

# Section 6. Accidental release measures

appropriate personal protective equipment.

**For emergency responders** :

ASTM D6591-06 Calibration Standard Solution 1: If specialized 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".

ASTM D6591-06 Calibration Standard Solution 2: If specialized 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".

ASTM D6591-06 Calibration Standard Solution 3: If specialized 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".

ASTM D6591-06 Calibration Standard Solution 4: If specialized 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".

**6.2 Environmental precautions** :

ASTM D6591-06 Calibration Standard Solution 1: Avoid dispersal of spilled 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).

ASTM D6591-06 Calibration Standard Solution 2: Avoid dispersal of spilled 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).

ASTM D6591-06 Calibration Standard Solution 3: Avoid dispersal of spilled 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).

ASTM D6591-06 Calibration Standard Solution 4: Avoid dispersal of spilled 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).

### 6.3 Methods and materials for containment and cleaning up

**Methods for cleaning up** :

ASTM D6591-06 Calibration Standard Solution 1: 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.

ASTM D6591-06 Calibration Standard Solution 2: 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.

ASTM D6591-06 Calibration Standard Solution 3: 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-

## Section 6. Accidental release measures

| | |
|---|---|
| | 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. |
| ASTM D6591-06 Calibration Standard Solution 4 | 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. |

## Section 7. Handling and storage

### 7.1 Precautions for safe handling

| | | | |
|---|---|---|---|
| **Protective measures** | : | ASTM D6591-06 Calibration Standard Solution 1 | Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not swallow. Avoid contact with eyes, skin and clothing. 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 flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not swallow. Avoid contact with eyes, skin and clothing. 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 flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Put on appropriate personal protective equipment (see Section 8). Do not swallow. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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 |

# Section 7. Handling and storage

| | | |
|---|---|---|
| | | from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. |
| | ASTM D6591-06 Calibration Standard Solution 4 | Put on appropriate personal protective equipment (see Section 8). Do not swallow. Avoid contact with eyes, skin and clothing. Avoid breathing vapor 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 flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container. |
| **Advice on general occupational hygiene** : | ASTM D6591-06 Calibration Standard Solution 1 | 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. |
| | ASTM D6591-06 Calibration Standard Solution 2 | 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. |
| | ASTM D6591-06 Calibration Standard Solution 3 | 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. |
| | ASTM D6591-06 Calibration Standard Solution 4 | 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. |
| **7.2 Conditions for safe storage, including any incompatibilities** : | | |

# Section 7. Handling and storage

| | |
|---|---|
| ASTM D6591-06 Calibration Standard Solution 1 | Store between the following temperatures: 18 to 25°C (64.4 to 77°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 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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. |
| ASTM D6591-06 Calibration Standard Solution 2 | Store between the following temperatures: 18 to 25°C (64.4 to 77°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 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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. |
| ASTM D6591-06 Calibration Standard Solution 3 | Store between the following temperatures: 18 to 25°C (64.4 to 77°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 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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use. |
| ASTM D6591-06 Calibration Standard Solution 4 | Store between the following temperatures: 18 to 25°C (64.4 to 77°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 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 unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for |

# Section 7. Handling and storage

incompatible materials before handling or use.

## 7.3 Specific end use(s)

| | | | |
|---|---|---|---|
| **Recommendations** | : | ASTM D6591-06 Calibration Standard Solution 1 | Industrial applications, Professional applications. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Industrial applications, Professional applications. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Industrial applications, Professional applications. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Industrial applications, Professional applications. |
| **Industrial sector specific solutions** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not applicable. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not applicable. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not applicable. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not applicable. |

# Section 8. Exposure controls/personal protection

## 8.1 Control parameters

### Occupational exposure limits

| Ingredient name | Exposure limits |
|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | |
| Heptane | **ACGIH TLV (United States, 3/2017).**<br>TWA: 400 ppm 8 hours.<br>TWA: 1640 mg/m³ 8 hours.<br>STEL: 500 ppm 15 minutes.<br>STEL: 2050 mg/m³ 15 minutes.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 400 ppm 8 hours.<br>TWA: 1600 mg/m³ 8 hours.<br>STEL: 500 ppm 15 minutes.<br>STEL: 2000 mg/m³ 15 minutes.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 85 ppm 10 hours.<br>TWA: 350 mg/m³ 10 hours.<br>CEIL: 440 ppm 15 minutes.<br>CEIL: 1800 mg/m³ 15 minutes.<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 500 ppm 8 hours.<br>TWA: 2000 mg/m³ 8 hours. |
| Cyclohexane | **ACGIH TLV (United States, 3/2017).**<br>TWA: 100 ppm 8 hours.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 300 ppm 8 hours.<br>TWA: 1050 mg/m³ 8 hours.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 300 ppm 10 hours.<br>TWA: 1050 mg/m³ 10 hours.<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 300 ppm 8 hours.<br>TWA: 1050 mg/m³ 8 hours. |
| o-xylene | **ACGIH TLV (United States, 3/2017).** |

## Section 8. Exposure controls/personal protection

| | |
|---|---|
| | TWA: 100 ppm 8 hours.<br>TWA: 434 mg/m³ 8 hours.<br>STEL: 150 ppm 15 minutes.<br>STEL: 651 mg/m³ 15 minutes.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 100 ppm 8 hours.<br>TWA: 435 mg/m³ 8 hours.<br>STEL: 150 ppm 15 minutes.<br>STEL: 655 mg/m³ 15 minutes.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 100 ppm 10 hours.<br>TWA: 435 mg/m³ 10 hours.<br>STEL: 150 ppm 15 minutes.<br>STEL: 655 mg/m³ 15 minutes.<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 100 ppm 8 hours.<br>TWA: 435 mg/m³ 8 hours. |
| 1-Methylnaphthalene | **ACGIH TLV (United States, 3/2017).**<br>**Absorbed through skin.**<br>TWA: 0.5 ppm 8 hours.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 0.2 mg/m³ 8 hours. Form: Benzene soluble<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 0.2 mg/m³ 8 hours. Form: Benzene soluble<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 0.1 mg/m³ 10 hours. |
| **ASTM D6591-06 Calibration Standard Solution 2** | |
| Heptane | **ACGIH TLV (United States, 3/2017).**<br>TWA: 400 ppm 8 hours.<br>TWA: 1640 mg/m³ 8 hours.<br>STEL: 500 ppm 15 minutes.<br>STEL: 2050 mg/m³ 15 minutes.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 400 ppm 8 hours.<br>TWA: 1600 mg/m³ 8 hours.<br>STEL: 500 ppm 15 minutes.<br>STEL: 2000 mg/m³ 15 minutes.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 85 ppm 10 hours.<br>TWA: 350 mg/m³ 10 hours.<br>CEIL: 440 ppm 15 minutes.<br>CEIL: 1800 mg/m³ 15 minutes.<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 500 ppm 8 hours.<br>TWA: 2000 mg/m³ 8 hours. |
| Cyclohexane | **ACGIH TLV (United States, 3/2017).**<br>TWA: 100 ppm 8 hours.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 300 ppm 8 hours.<br>TWA: 1050 mg/m³ 8 hours.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 300 ppm 10 hours.<br>TWA: 1050 mg/m³ 10 hours.<br>**OSHA PEL (United States, 6/2016).** |

## Section 8. Exposure controls/personal protection

| | |
|---|---|
| | TWA: 300 ppm 8 hours.<br>TWA: 1050 mg/m³ 8 hours. |
| o-xylene | **ACGIH TLV (United States, 3/2017).**<br>TWA: 100 ppm 8 hours.<br>TWA: 434 mg/m³ 8 hours.<br>STEL: 150 ppm 15 minutes.<br>STEL: 651 mg/m³ 15 minutes.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 100 ppm 8 hours.<br>TWA: 435 mg/m³ 8 hours.<br>STEL: 150 ppm 15 minutes.<br>STEL: 655 mg/m³ 15 minutes.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 100 ppm 10 hours.<br>TWA: 435 mg/m³ 10 hours.<br>STEL: 150 ppm 15 minutes.<br>STEL: 655 mg/m³ 15 minutes.<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 100 ppm 8 hours.<br>TWA: 435 mg/m³ 8 hours. |
| 1-Methylnaphthalene | **ACGIH TLV (United States, 3/2017).**<br>**Absorbed through skin.**<br>TWA: 0.5 ppm 8 hours.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 0.2 mg/m³ 8 hours. Form: Benzene soluble<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 0.2 mg/m³ 8 hours. Form: Benzene soluble<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 0.1 mg/m³ 10 hours. |
| **ASTM D6591-06 Calibration Standard Solution 3** | |
| Heptane | **ACGIH TLV (United States, 3/2017).**<br>TWA: 400 ppm 8 hours.<br>TWA: 1640 mg/m³ 8 hours.<br>STEL: 500 ppm 15 minutes.<br>STEL: 2050 mg/m³ 15 minutes.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 400 ppm 8 hours.<br>TWA: 1600 mg/m³ 8 hours.<br>STEL: 500 ppm 15 minutes.<br>STEL: 2000 mg/m³ 15 minutes.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 85 ppm 10 hours.<br>TWA: 350 mg/m³ 10 hours.<br>CEIL: 440 ppm 15 minutes.<br>CEIL: 1800 mg/m³ 15 minutes.<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 500 ppm 8 hours.<br>TWA: 2000 mg/m³ 8 hours. |
| **ASTM D6591-06 Calibration Standard Solution 4** | |
| Heptane | **ACGIH TLV (United States, 3/2017).**<br>TWA: 400 ppm 8 hours.<br>TWA: 1640 mg/m³ 8 hours.<br>STEL: 500 ppm 15 minutes. |

# Section 8. Exposure controls/personal protection

| | |
|---|---|
| | STEL: 2050 mg/m³ 15 minutes.<br>**OSHA PEL 1989 (United States, 3/1989).**<br>TWA: 400 ppm 8 hours.<br>TWA: 1600 mg/m³ 8 hours.<br>STEL: 500 ppm 15 minutes.<br>STEL: 2000 mg/m³ 15 minutes.<br>**NIOSH REL (United States, 10/2016).**<br>TWA: 85 ppm 10 hours.<br>TWA: 350 mg/m³ 10 hours.<br>CEIL: 440 ppm 15 minutes.<br>CEIL: 1800 mg/m³ 15 minutes.<br>**OSHA PEL (United States, 6/2016).**<br>TWA: 500 ppm 8 hours.<br>TWA: 2000 mg/m³ 8 hours. |

## 8.2 Exposure controls

**Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**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.

### 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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

**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.

# Section 8. Exposure controls/personal protection

**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

## 9.1 Information on basic physical and chemical properties

### Appearance

| | | | |
|---|---|---|---|
| **Physical state** | : | ASTM D6591-06 Calibration Standard Solution 1 | Liquid. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Liquid. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Liquid. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Liquid. |
| **Color** | : | ASTM D6591-06 Calibration Standard Solution 1 | Colorless. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Colorless. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Colorless. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Colorless. |
| **Odor** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not available. |
| **Odor threshold** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not available. |
| **pH** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not available. |
| **Melting point** | : | ASTM D6591-06 Calibration Standard Solution 1 | -91°C (-131.8°F) |
| | | ASTM D6591-06 Calibration Standard Solution 2 | -91°C (-131.8°F) |
| | | ASTM D6591-06 Calibration Standard Solution 3 | -91°C (-131.8°F) |
| | | ASTM D6591-06 Calibration Standard Solution 4 | -91°C (-131.8°F) |

# Section 9. Physical and chemical properties

| | | | |
|---|---|---|---|
| **Boiling point** | : | ASTM D6591-06 Calibration Standard Solution 1 | 98°C (208.4°F) |
| | | ASTM D6591-06 Calibration Standard Solution 2 | 98°C (208.4°F) |
| | | ASTM D6591-06 Calibration Standard Solution 3 | 98°C (208.4°F) |
| | | ASTM D6591-06 Calibration Standard Solution 4 | 98°C (208.4°F) |
| **Flash point** | : | ASTM D6591-06 Calibration Standard Solution 1 | Closed cup: -1.11°C (30°F) |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Closed cup: -1.11°C (30°F) |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Closed cup: -1.11°C (30°F) |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Closed cup: -1.11°C (30°F) |
| **Evaporation rate** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not available. |
| **Flammability (solid, gas)** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not applicable. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not applicable. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not applicable. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not applicable. |
| **Lower and upper explosive (flammable) limits** | : | ASTM D6591-06 Calibration Standard Solution 1 | Lower: 1.05%<br>Upper: 6.7% |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Lower: 1.05%<br>Upper: 6.7% |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Lower: 1.05%<br>Upper: 6.7% |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Lower: 1.05%<br>Upper: 6.7% |
| **Vapor pressure** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not available. |
| **Vapor density** | : | | |

# Section 9. Physical and chemical properties

| | | | |
|---|---|---|---|
| | | ASTM D6591-06 Calibration Standard Solution 1 | 3.5 [Air = 1] |
| | | ASTM D6591-06 Calibration Standard Solution 2 | 3.5 [Air = 1] |
| | | ASTM D6591-06 Calibration Standard Solution 3 | 3.5 [Air = 1] |
| | | ASTM D6591-06 Calibration Standard Solution 4 | 3.5 [Air = 1] |
| **Relative density** | : | ASTM D6591-06 Calibration Standard Solution 1 | 0.684 |
| | | ASTM D6591-06 Calibration Standard Solution 2 | 0.684 |
| | | ASTM D6591-06 Calibration Standard Solution 3 | 0.684 |
| | | ASTM D6591-06 Calibration Standard Solution 4 | 0.684 |
| **Solubility** | : | ASTM D6591-06 Calibration Standard Solution 1 | Insoluble in the following materials: cold water and hot water. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Insoluble in the following materials: cold water and hot water. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Insoluble in the following materials: cold water and hot water. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Insoluble in the following materials: cold water and hot water. |
| **Partition coefficient: n-octanol/water** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not available. |
| **Auto-ignition temperature** | : | ASTM D6591-06 Calibration Standard Solution 1 | 215°C (419°F) |
| | | ASTM D6591-06 Calibration Standard Solution 2 | 215°C (419°F) |
| | | ASTM D6591-06 Calibration Standard Solution 3 | 215°C (419°F) |
| | | ASTM D6591-06 Calibration Standard Solution 4 | 215°C (419°F) |
| **Decomposition temperature** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not available. |
| **Viscosity** | : | ASTM D6591-06 Calibration Standard Solution 1 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Not available. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Not available. |

# Section 10. Stability and reactivity

| | | | |
|---|---|---|---|
| **10.1 Reactivity** | : | ASTM D6591-06 Calibration Standard Solution 1 | No specific test data related to reactivity available for this product or its ingredients. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | No specific test data related to reactivity available for this product or its ingredients. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | No specific test data related to reactivity available for this product or its ingredients. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | No specific test data related to reactivity available for this product or its ingredients. |
| **10.2 Chemical stability** | : | ASTM D6591-06 Calibration Standard Solution 1 | The product is stable. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | The product is stable. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | The product is stable. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | The product is stable. |
| **10.3 Possibility of hazardous reactions** | : | ASTM D6591-06 Calibration Standard Solution 1 | Under normal conditions of storage and use, hazardous reactions will not occur. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Under normal conditions of storage and use, hazardous reactions will not occur. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Under normal conditions of storage and use, hazardous reactions will not occur. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Under normal conditions of storage and use, hazardous reactions will not occur. |
| **10.4 Conditions to avoid** | : | ASTM D6591-06 Calibration Standard Solution 1 | Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. |
| **10.5 Incompatible materials** | : | ASTM D6591-06 Calibration Standard Solution 1 | Reactive or incompatible with the following materials:<br>oxidizing materials |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Reactive or incompatible with the following materials:<br>oxidizing materials |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Reactive or incompatible with the following materials:<br>oxidizing materials |

# Section 10. Stability and reactivity

| | | |
|---|---|---|
| | ASTM D6591-06 Calibration Standard Solution 4 | Reactive or incompatible with the following materials:<br>oxidizing materials |
| **10.6 Hazardous decomposition products** : | ASTM D6591-06 Calibration Standard Solution 1 | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| | ASTM D6591-06 Calibration Standard Solution 2 | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| | ASTM D6591-06 Calibration Standard Solution 3 | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| | ASTM D6591-06 Calibration Standard Solution 4 | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

# Section 11. Toxicological information

## 11.1 Information on toxicological effects

### Acute toxicity

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | | | |
| Heptane | LC50 Inhalation Vapor | Rat | 103 g/m³ | 4 hours |
| | LC50 Inhalation Vapor | Rat | 48000 ppm | 4 hours |
| Cyclohexane | LC50 Inhalation Vapor | Rat - Male, Female | >32880 mg/m³ | 4 hours |
| | LD50 Oral | Rat | 6240 mg/kg | - |
| o-xylene | LC50 Inhalation Gas. | Rat | 6350 ppm | 4 hours |
| | LC50 Inhalation Vapor | Rat | 5300 ppm | 4 hours |
| | LD50 Oral | Rat | 3000 mg/kg | - |
| 1-Methylnaphthalene | LD50 Oral | Rat | 1840 mg/kg | - |
| **ASTM D6591-06 Calibration Standard Solution 2** | | | | |
| Heptane | LC50 Inhalation Vapor | Rat | 103 g/m³ | 4 hours |
| | LC50 Inhalation Vapor | Rat | 48000 ppm | 4 hours |
| Cyclohexane | LC50 Inhalation Vapor | Rat - Male, Female | >32880 mg/m³ | 4 hours |
| | LD50 Oral | Rat | 6240 mg/kg | - |
| o-xylene | LC50 Inhalation Gas. | Rat | 6350 ppm | 4 hours |
| | LC50 Inhalation Vapor | Rat | 5300 ppm | 4 hours |
| | LD50 Oral | Rat | 3000 mg/kg | - |
| 1-Methylnaphthalene | LD50 Oral | Rat | 1840 mg/kg | - |
| **ASTM D6591-06 Calibration Standard Solution 3** | | | | |
| Heptane | LC50 Inhalation Vapor | Rat | 103 g/m³ | 4 hours |
| | LC50 Inhalation Vapor | Rat | 48000 ppm | 4 hours |
| **ASTM D6591-06 Calibration Standard Solution 4** | | | | |
| Heptane | LC50 Inhalation Vapor | Rat | 103 g/m³ | 4 hours |
| | LC50 Inhalation Vapor | Rat | 48000 ppm | 4 hours |

### Irritation/Corrosion

# Section 11. Toxicological information

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|---|---|---|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | | | | |
| 1-Methylnaphthalene | Skin - Moderate irritant | Rabbit | - | 24 hours 0.05 Mililiters | - |
| **ASTM D6591-06 Calibration Standard Solution 2** | | | | | |
| 1-Methylnaphthalene | Skin - Moderate irritant | Rabbit | - | 24 hours 0.05 Mililiters | - |

**Sensitization**

Not available.

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Not available.

**Classification**

| Product/ingredient name | OSHA | IARC | NTP |
|---|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | | |
| o-xylene | - | 3 | - |
| **ASTM D6591-06 Calibration Standard Solution 2** | | | |
| o-xylene | - | 3 | - |

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Specific target organ toxicity (single exposure)**

| Name | Category | Route of exposure | Target organs |
|---|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | | |
| Heptane | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| Cyclohexane | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| o-xylene | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| 1-Methylnaphthalene | Category 3 | Not applicable. | Respiratory tract irritation |
| **ASTM D6591-06 Calibration Standard Solution 2** | | | |
| Heptane | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |

# Section 11. Toxicological information

| | | | |
|---|---|---|---|
| Cyclohexane | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| o-xylene | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| 1-Methylnaphthalene | Category 3 | Not applicable. | Respiratory tract irritation |
| **ASTM D6591-06 Calibration Standard Solution 3** | | | |
| Heptane | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| **ASTM D6591-06 Calibration Standard Solution 4** | | | |
| Heptane | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |

**Specific target organ toxicity (repeated exposure)**

| Name | Category | Route of exposure | Target organs |
|---|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | | |
| o-xylene | Category 2 | Not determined | kidneys, liver and nervous system |
| **ASTM D6591-06 Calibration Standard Solution 2** | | | |
| o-xylene | Category 2 | Not determined | kidneys, liver and nervous system |

**Aspiration hazard**

| Name | Result |
|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | |
| ASTM D6591-06 Calibration Standard Solution 1 | ASPIRATION HAZARD - Category 1 |
| Heptane | ASPIRATION HAZARD - Category 1 |
| Cyclohexane | ASPIRATION HAZARD - Category 1 |
| o-xylene | ASPIRATION HAZARD - Category 1 |
| 1-Methylnaphthalene | ASPIRATION HAZARD - Category 1 |
| **ASTM D6591-06 Calibration Standard Solution 2** | |
| ASTM D6591-06 Calibration Standard Solution 2 | ASPIRATION HAZARD - Category 1 |
| Heptane | ASPIRATION HAZARD - Category 1 |
| Cyclohexane | ASPIRATION HAZARD - Category 1 |
| o-xylene | ASPIRATION HAZARD - Category 1 |
| 1-Methylnaphthalene | ASPIRATION HAZARD - Category 1 |
| **ASTM D6591-06 Calibration Standard Solution 3** | |
| ASTM D6591-06 Calibration Standard Solution 3 | ASPIRATION HAZARD - Category 1 |
| Heptane | ASPIRATION HAZARD - Category 1 |
| **ASTM D6591-06 Calibration Standard Solution 4** | |
| ASTM D6591-06 Calibration Standard Solution 4 | ASPIRATION HAZARD - Category 1 |
| Heptane | ASPIRATION HAZARD - Category 1 |

# Section 11. Toxicological information

| | | | |
|---|---|---|---|
| **Information on the likely routes of exposure** | : | ASTM D6591-06 Calibration Standard Solution 1 | Routes of entry anticipated: Oral, Dermal, Inhalation. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Routes of entry anticipated: Oral, Dermal, Inhalation. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Routes of entry anticipated: Oral, Dermal, Inhalation. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Routes of entry anticipated: Oral, Dermal, Inhalation. |

**Potential acute health effects**

| | | | |
|---|---|---|---|
| **Eye contact** | : | ASTM D6591-06 Calibration Standard Solution 1 | Causes serious eye irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Causes serious eye irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Causes serious eye irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Causes serious eye irritation. |
| **Inhalation** | : | ASTM D6591-06 Calibration Standard Solution 1 | Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation. |
| **Skin contact** | : | ASTM D6591-06 Calibration Standard Solution 1 | Causes skin irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Causes skin irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Causes skin irritation. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Causes skin irritation. |
| **Ingestion** | : | ASTM D6591-06 Calibration Standard Solution 1 | Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. |

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

# Section 11. Toxicological information

| | | | |
|---|---|---|---|
| **Eye contact** | : | ASTM D6591-06 Calibration Standard Solution 1 | Adverse symptoms may include the following:<br><br>pain or irritation<br>watering<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Adverse symptoms may include the following:<br><br>pain or irritation<br>watering<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Adverse symptoms may include the following:<br><br>pain or irritation<br>watering<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Adverse symptoms may include the following:<br><br>pain or irritation<br>watering<br>redness |
| **Inhalation** | : | ASTM D6591-06 Calibration Standard Solution 1 | Adverse symptoms may include the following:<br><br>respiratory tract irritation<br>coughing<br>nausea or vomiting<br>headache<br>drowsiness/fatigue<br>dizziness/vertigo<br>unconsciousness |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Adverse symptoms may include the following:<br><br>respiratory tract irritation<br>coughing<br>nausea or vomiting<br>headache<br>drowsiness/fatigue<br>dizziness/vertigo<br>unconsciousness |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Adverse symptoms may include the following:<br><br>respiratory tract irritation<br>coughing<br>nausea or vomiting<br>headache<br>drowsiness/fatigue<br>dizziness/vertigo<br>unconsciousness |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Adverse symptoms may include the following:<br><br>respiratory tract irritation<br>coughing<br>nausea or vomiting<br>headache<br>drowsiness/fatigue<br>dizziness/vertigo<br>unconsciousness |

# Section 11. Toxicological information

| | | | |
|---|---|---|---|
| **Skin contact** | : | ASTM D6591-06 Calibration Standard Solution 1 | Adverse symptoms may include the following:<br>irritation<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Adverse symptoms may include the following:<br>irritation<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Adverse symptoms may include the following:<br>irritation<br>redness |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Adverse symptoms may include the following:<br>irritation<br>redness |
| **Ingestion** | : | ASTM D6591-06 Calibration Standard Solution 1 | Adverse symptoms may include the following:<br>nausea or vomiting |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Adverse symptoms may include the following:<br>nausea or vomiting |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Adverse symptoms may include the following:<br>nausea or vomiting |
| | | ASTM D6591-06 Calibration Standard Solution 4 | Adverse symptoms may include the following:<br>nausea or vomiting |

## Delayed and immediate effects and also chronic effects from short and long term exposure

### Short term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

### Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

### Potential chronic health effects

| | | | |
|---|---|---|---|
| **General** | : | ASTM D6591-06 Calibration Standard Solution 1 | May cause damage to organs through prolonged or repeated exposure. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | May cause damage to organs through prolonged or repeated exposure. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | No known significant effects or critical hazards. |
| **Carcinogenicity** | : | ASTM D6591-06 Calibration Standard Solution 1 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | No known significant effects or critical hazards. |

# Section 11. Toxicological information

| | | | |
|---|---|---|---|
| **Mutagenicity** | : | ASTM D6591-06 Calibration Standard Solution 1 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | No known significant effects or critical hazards. |
| **Teratogenicity** | : | ASTM D6591-06 Calibration Standard Solution 1 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | No known significant effects or critical hazards. |
| **Developmental effects** | : | ASTM D6591-06 Calibration Standard Solution 1 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | No known significant effects or critical hazards. |
| **Fertility effects** | : | ASTM D6591-06 Calibration Standard Solution 1 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | No known significant effects or critical hazards. |
| | | ASTM D6591-06 Calibration Standard Solution 4 | No known significant effects or critical hazards. |

## Numerical measures of toxicity

### Acute toxicity estimates

| Route | ATE value |
|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | |
| Oral | 23437.1 mg/kg |
| Dermal | 22604.9 mg/kg |
| Inhalation (gases) | 130492 ppm |
| **ASTM D6591-06 Calibration Standard Solution 2** | |
| Oral | 83367.1 mg/kg |
| Dermal | 80297.8 mg/kg |
| Inhalation (gases) | 463537.5 ppm |

| | | | |
|---|---|---|---|
| **Other information** | : | ASTM D6591-06 Calibration Standard Solution 1 | Adverse symptoms may include the following: Repeated exposure may cause skin dryness or cracking. |
| | | ASTM D6591-06 Calibration Standard Solution 2 | Adverse symptoms may include the following: Repeated exposure may cause skin dryness or cracking. |
| | | ASTM D6591-06 Calibration Standard Solution 3 | Adverse symptoms may include the following: Repeated exposure may cause skin dryness or cracking. |

# Section 11. Toxicological information

| | |
|---|---|
| ASTM D6591-06 Calibration Standard Solution 4 | Adverse symptoms may include the following: Repeated exposure may cause skin dryness or cracking. |

# Section 12. Ecological information

## 12.1 Toxicity

| Product/ingredient name | Result | Species | Exposure |
|---|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | | |
| Heptane | Acute LC50 375000 µg/l Fresh water | Fish - Oreochromis mossambicus | 96 hours |
| Cyclohexane | Acute LC50 4530 µg/l Fresh water | Fish - Pimephales promelas | 96 hours |
| o-xylene | Acute EC50 4700 µg/l Fresh water | Algae - Pseudokirchneriella subcapitata | 72 hours |
| | Acute EC50 10700 µg/l Fresh water | Crustaceans - Artemia sp. - Nauplii | 48 hours |
| | Acute EC50 1390 µg/l Fresh water | Daphnia - Daphnia magna - Neonate | 48 hours |
| | Acute LC50 7600 µg/l Fresh water | Fish - Oncorhynchus mykiss | 96 hours |
| 1-Methylnaphthalene | Acute LC50 8200 µg/l Marine water | Crustaceans - Cancer magister - Zoea | 48 hours |
| | Acute LC50 9000 µg/l Fresh water | Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) | 96 hours |
| **ASTM D6591-06 Calibration Standard Solution 2** | | | |
| Heptane | Acute LC50 375000 µg/l Fresh water | Fish - Oreochromis mossambicus | 96 hours |
| Cyclohexane | Acute LC50 4530 µg/l Fresh water | Fish - Pimephales promelas | 96 hours |
| o-xylene | Acute EC50 4700 µg/l Fresh water | Algae - Pseudokirchneriella subcapitata | 72 hours |
| | Acute EC50 10700 µg/l Fresh water | Crustaceans - Artemia sp. - Nauplii | 48 hours |
| | Acute EC50 1390 µg/l Fresh water | Daphnia - Daphnia magna - Neonate | 48 hours |
| | Acute LC50 7600 µg/l Fresh water | Fish - Oncorhynchus mykiss | 96 hours |
| 1-Methylnaphthalene | Acute LC50 8200 µg/l Marine water | Crustaceans - Cancer magister - Zoea | 48 hours |
| | Acute LC50 9000 µg/l Fresh water | Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) | 96 hours |
| **ASTM D6591-06 Calibration Standard Solution 3** | | | |
| Heptane | Acute LC50 375000 µg/l Fresh water | Fish - Oreochromis mossambicus | 96 hours |
| **ASTM D6591-06 Calibration Standard Solution 4** | | | |
| Heptane | Acute LC50 375000 µg/l Fresh water | Fish - Oreochromis mossambicus | 96 hours |

## 12.2 Persistence and degradability

# Section 12. Ecological information

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|---|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | | |
| o-xylene | - | - | Readily |
| **ASTM D6591-06 Calibration Standard Solution 2** | | | |
| o-xylene | - | - | Readily |

## 12.3 Bioaccumulative potential

| Product/ingredient name | $LogP_{ow}$ | BCF | Potential |
|---|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | | |
| Heptane | 4.66 | 552 | high |
| Cyclohexane | 3.44 | 167 | low |
| o-xylene | 3.12 | 8.1 to 25.9 | low |
| 1-Methylnaphthalene | 3.87 | 53.7 | low |
| **ASTM D6591-06 Calibration Standard Solution 2** | | | |
| Heptane | 4.66 | 552 | high |
| Cyclohexane | 3.44 | 167 | low |
| o-xylene | 3.12 | 8.1 to 25.9 | low |
| 1-Methylnaphthalene | 3.87 | 53.7 | low |
| **ASTM D6591-06 Calibration Standard Solution 3** | | | |
| Heptane | 4.66 | 552 | high |
| **ASTM D6591-06 Calibration Standard Solution 4** | | | |
| Heptane | 4.66 | 552 | high |

## 12.4 Mobility in soil

**Soil/water partition coefficient ($K_{OC}$)** : Not available.

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

# Section 13. Disposal considerations

## 13.1 Waste treatment methods

**Disposal methods** : The generation of waste should be avoided or minimized 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 handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been

# Section 13. Disposal considerations

cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**United States - RCRA Toxic hazardous waste "U" List**

| Ingredient | CAS # | Status | Reference number |
|---|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | | |
| Cyclohexane (I); Benzene, hexahydro- (I) | 110-82-7 | Listed | U056 |
| Xylene | 95-47-6 | Listed | U239 |
| **ASTM D6591-06 Calibration Standard Solution 2** | | | |
| Cyclohexane (I); Benzene, hexahydro- (I) | 110-82-7 | Listed | U056 |
| Xylene | 95-47-6 | Listed | U239 |

**Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.**

**The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.**

**Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.**

# Section 14. Transport information

**DOT / TDG / Mexico / IMDG / IATA** : Not regulated.

**Additional information**

**Remarks**: De minimis quantities

**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

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

**U.S. Federal regulations** : **TSCA 8(a) PAIR**: Heptane

**TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

**Clean Water Act (CWA) 307**: 1-Methylnaphthalene; Phenanthrene

**Clean Water Act (CWA) 311**: Cyclohexane; o-xylene

**Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Listed

**Clean Air Act Section 602 Class I Substances** : Not listed

# Section 15. Regulatory information

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

**SARA 302/304**

**Composition/information on ingredients**

No products were found.

**SARA 304 RQ** : Not applicable.

**SARA 311/312**

**Classification** :

| | |
|---|---|
| ASTM D6591-06 Calibration Standard Solution 1 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys, liver, nervous system) - Category 2<br>ASPIRATION HAZARD - Category 1 |
| ASTM D6591-06 Calibration Standard Solution 2 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys, liver, nervous system) - Category 2<br>ASPIRATION HAZARD - Category 1 |
| ASTM D6591-06 Calibration Standard Solution 3 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1 |
| ASTM D6591-06 Calibration Standard Solution 4 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1 |

**Composition/information on ingredients**

# Section 15. Regulatory information

| Name | % | Classification |
|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | |
| Heptane | ≥75 - ≤90 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1<br>HNOC - Defatting irritant |
| Cyclohexane | ≤10 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1 |
| o-xylene | ≤5 | FLAMMABLE LIQUIDS - Category 3<br>ACUTE TOXICITY (dermal) - Category 4<br>ACUTE TOXICITY (inhalation) - Category 4<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys, liver, nervous system) - Category 2<br>ASPIRATION HAZARD - Category 1 |
| 1-Methylnaphthalene | ≤5 | FLAMMABLE LIQUIDS - Category 4<br>ACUTE TOXICITY (oral) - Category 4<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>ASPIRATION HAZARD - Category 1 |
| **ASTM D6591-06 Calibration Standard Solution 2** | | |
| Heptane | ≥90 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1<br>HNOC - Defatting irritant |
| Cyclohexane | ≤3 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1 |
| o-xylene | ≤3 | FLAMMABLE LIQUIDS - Category 3<br>ACUTE TOXICITY (dermal) - Category 4<br>ACUTE TOXICITY (inhalation) - Category 4<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys, liver, nervous system) - Category 2<br>ASPIRATION HAZARD - Category 1 |

# Section 15. Regulatory information

| | | |
|---|---|---|
| 1-Methylnaphthalene | ≤3 | FLAMMABLE LIQUIDS - Category 4<br>ACUTE TOXICITY (oral) - Category 4<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>ASPIRATION HAZARD - Category 1 |
| **ASTM D6591-06 Calibration Standard Solution 3** | | |
| Heptane | ≥90 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1<br>HNOC - Defatting irritant |
| **ASTM D6591-06 Calibration Standard Solution 4** | | |
| Heptane | ≥90 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1<br>HNOC - Defatting irritant |

## SARA 313

| | Product name | CAS number | % |
|---|---|---|---|
| **Form R - Reporting requirements** | **ASTM D6591-06 Calibration Standard Solution 1** | | |
| | Cyclohexane | 110-82-7 | ≤10 |
| | o-xylene | 95-47-6 | ≤5 |
| | **ASTM D6591-06 Calibration Standard Solution 2** | | |
| | Cyclohexane | 110-82-7 | ≤3 |
| | o-xylene | 95-47-6 | ≤3 |
| **Supplier notification** | **ASTM D6591-06 Calibration Standard Solution 1** | | |
| | Cyclohexane | 110-82-7 | ≤10 |
| | o-xylene | 95-47-6 | ≤5 |
| | **ASTM D6591-06 Calibration Standard Solution 2** | | |
| | Cyclohexane | 110-82-7 | ≤3 |
| | o-xylene | 95-47-6 | ≤3 |

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

## State regulations

**Massachusetts** : The following components are listed: HEPTANE; N-HEPTANE; CYCLOHEXANE; HEXAHYDROBENZENE; O-XYLENE; O-DIMETHYLBENZENE; 1-METHYLNAPHTHALENE

**New York** : The following components are listed: Cyclohexane; Benzene, hexahydro-; o-Xylene

# Section 15. Regulatory information

**New Jersey** : The following components are listed: n-HEPTANE; HEPTANE; CYCLOHEXANE; o-XYLENE; BENZENE, 1,2-DIMETHYL-; 1-METHYL NAPHTHALENE; NAPHTHALENE, 1-METHYL-

**Pennsylvania** : The following components are listed: HEPTANE; CYCLOHEXANE; BENZENE, 1, 2-DIMETHYL-; NAPHTHALENE, 1-METHYL-

## California Prop. 65

**WARNING**: This product can expose you to Carbon-black extracts, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

| Ingredient name | No significant risk level | Maximum acceptable dosage level |
|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | |
| Carbon-black extracts | - | - |
| **ASTM D6591-06 Calibration Standard Solution 2** | | |
| Carbon-black extracts | - | - |
| **ASTM D6591-06 Calibration Standard Solution 3** | | |
| Carbon-black extracts | - | - |
| **ASTM D6591-06 Calibration Standard Solution 4** | | |
| Carbon-black extracts | - | - |

## International regulations

### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

### Montreal Protocol (Annexes A, B, C, E)

Not listed.

### Stockholm Convention on Persistent Organic Pollutants

Not listed.

### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

### UNECE Aarhus Protocol on POPs and Heavy Metals

| Ingredient name | List name | Status |
|---|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | | |
| PAHs | POPs - Annex 3 | Listed |
| PAHs | POPs - Annex 3 | Listed |
| **ASTM D6591-06 Calibration Standard Solution 2** | | |
| PAHs | POPs - Annex 3 | Listed |
| PAHs | POPs - Annex 3 | Listed |
| **ASTM D6591-06 Calibration Standard Solution 3** | | |
| PAHs | POPs - Annex 3 | Listed |

## Inventory list

**Australia** : All components are listed or exempted.

**Canada** : All components are listed or exempted.

**China** : All components are listed or exempted.

**Europe** : All components are listed or exempted.

# Section 15. Regulatory information

**Japan** : **Japan inventory (ENCS)**: All components are listed or exempted.
**Japan inventory (ISHL)**: All components are listed or exempted.

**Malaysia** : Not determined.

**New Zealand** : All components are listed or exempted.

**Philippines** : All components are listed or exempted.

**Republic of Korea** : All components are listed or exempted.

**Taiwan** : All components are listed or exempted.

**Thailand** : Not determined.

**Turkey** : Not determined.

**United States** : All components are listed or exempted.

**Viet Nam** : Not determined.

# Section 16. Other information

## History

**Date of issue** : 05/23/2018

**Date of previous issue** : 08/31/2016

**Version** : 5

## Procedure used to derive the classification

| Classification | Justification |
|---|---|
| **ASTM D6591-06 Calibration Standard Solution 1** | |
| FLAMMABLE LIQUIDS - Category 2 | On basis of test data |
| SKIN IRRITATION - Category 2 | Calculation method |
| EYE IRRITATION - Category 2A | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys, liver, nervous system) - Category 2 | Calculation method |
| ASPIRATION HAZARD - Category 1 | Expert judgment |
| **ASTM D6591-06 Calibration Standard Solution 2** | |
| FLAMMABLE LIQUIDS - Category 2 | On basis of test data |
| SKIN IRRITATION - Category 2 | Calculation method |
| EYE IRRITATION - Category 2A | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys, liver, nervous system) - Category 2 | Calculation method |
| ASPIRATION HAZARD - Category 1 | Expert judgment |
| **ASTM D6591-06 Calibration Standard Solution 3** | |
| FLAMMABLE LIQUIDS - Category 2 | On basis of test data |
| SKIN IRRITATION - Category 2 | Calculation method |
| EYE IRRITATION - Category 2A | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 | Calculation method |
| ASPIRATION HAZARD - Category 1 | Expert judgment |

# Section 16. Other information

| | |
|---|---|
| **ASTM D6591-06 Calibration Standard Solution 4** | |
| FLAMMABLE LIQUIDS - Category 2 | On basis of test data |
| SKIN IRRITATION - Category 2 | Calculation method |
| EYE IRRITATION - Category 2A | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 | Calculation method |
| SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 | Calculation method |
| ASPIRATION HAZARD - Category 1 | Expert judgment |

**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.**