# SAFETY DATA SHEET

Agilent Technologies

**Fuel Ethanol Analyzer Checkout Mix - G3440-85010**

## Section 1. Identification

**GHS product identifier** : Fuel Ethanol Analyzer Checkout Mix - G3440-85010

**Part No. (Chemical Kit)** : G3440-85010

**Part No.** : Sample 1 (Calibration Mix) Not available.
Sample 2 (Fuel Ethanol) Not available.

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

**Material uses** : Analytical chemistry.
4 x 2 ml
Sample 1 (Calibration Mix) 2 ml
Sample 2 (Fuel Ethanol) 2 ml

**Supplier/Manufacturer** : Agilent Technologies Shanghai Co., Ltd.
CALC-AP
412 Ying Lun Road, Waigaoqiao Free Trade Zone Shanghai 200131 P. R. China

**Emergency telephone number (with hours of operation)** : Chemtrec: +(44)-870-8200418

## Section 2. Hazards identification

**Classification of the substance or mixture** : Sample 1 (Calibration Mix)

FLAMMABLE LIQUIDS - Category 2
SKIN CORROSION/IRRITATION - Category 3
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
TOXIC TO REPRODUCTION [Fertility] - Category 1B
TOXIC TO REPRODUCTION [Unborn child] - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [liver] - Category 2
AQUATIC TOXICITY (ACUTE) - Category 2

Sample 2 (Fuel Ethanol)

FLAMMABLE LIQUIDS - Category 2
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
GERM CELL MUTAGENICITY - Category 1B
CARCINOGENICITY - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [liver] - Category 2
AQUATIC TOXICITY (ACUTE) - Category 2
AQUATIC TOXICITY (CHRONIC) - Category 3

Sample 1 (Calibration Mix) Not applicable.
Sample 2 (Fuel Ethanol) Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 5%

**GHS label elements**

**Hazard pictograms** :

**Signal word** : Sample 1 (Calibration Mix) Danger
Sample 2 (Fuel Ethanol) Danger

# Section 2. Hazards identification

**Hazard statements** : Sample 1 (Calibration Mix)

Highly flammable liquid and vapour.
Causes serious eye irritation.
Causes mild skin irritation.
May damage fertility or the unborn child.
May cause respiratory irritation.
May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure. (liver)
Toxic to aquatic life.

Sample 2 (Fuel Ethanol)

Highly flammable liquid and vapour.
Causes serious eye irritation.
Causes skin irritation.
May cause genetic defects.
May cause cancer.
May cause respiratory irritation.
May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure. (liver)
Toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

**Precautionary statements**

**Prevention** : Sample 1 (Calibration Mix)

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapour. Wash hands thoroughly after handling.

Sample 2 (Fuel Ethanol)

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapour. Wash hands thoroughly after handling.

**Response** : Sample 1 (Calibration Mix)

Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

## Section 2. Hazards identification

| | | | |
|---|---|---|---|
| | | Sample 2 (Fuel Ethanol) | Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention. |
| **Storage** | : | Sample 1 (Calibration Mix) | Store locked up. Store in a well-ventilated place. Keep cool. |
| | | Sample 2 (Fuel Ethanol) | Store locked up. Store in a well-ventilated place. Keep cool. |
| **Disposal** | : | Sample 1 (Calibration Mix) | Dispose of contents and container in accordance with all local, regional, national and international regulations. |
| | | Sample 2 (Fuel Ethanol) | Dispose of contents and container in accordance with all local, regional, national and international regulations. |
| **Other hazards which do not result in classification** | : | Sample 1 (Calibration Mix) | Defatting to the skin. |
| | | Sample 2 (Fuel Ethanol) | None known. |

## Section 3. Composition/information on ingredients

| | | | |
|---|---|---|---|
| **Substance/mixture** | : | Sample 1 (Calibration Mix) | Mixture |
| | | Sample 2 (Fuel Ethanol) | Mixture |

**CAS number/other identifiers**

**Part No.** : G3440-85010

| Ingredient name | % | CAS number |
|---|---|---|
| **Sample 1 (Calibration Mix)** | | |
| Ethanol | >=90 | 64-17-5 |
| n-Heptane | 2.5 - <5 | 142-82-5 |
| Methanol | <3 | 67-56-1 |
| **Sample 2 (Fuel Ethanol)** | | |
| Ethanol | >=90 | 64-17-5 |
| Gasoline | 1 - <10 | 86290-81-5 |
| Gasoline, natural | 1 - <10 | 8006-61-9 |

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

**Occupational exposure limits, if available, are listed in Section 8.**

## Section 4. First-aid measures

**Description of necessary first aid measures**

| | | | |
|---|---|---|---|
| **Inhalation** | : | Sample 1 (Calibration Mix) | 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 |

## Section 4. First-aid measures

| | | | |
|---|---|---|---|
| | | | 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. |
| | | Sample 2 (Fuel Ethanol) | 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. |
| **Ingestion** | : | Sample 1 (Calibration Mix) | Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. |
| | | Sample 2 (Fuel Ethanol) | Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. |

# Section 4. First-aid measures

**Skin contact** : Sample 1 (Calibration Mix): Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Sample 2 (Fuel Ethanol): Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**Eye contact** : Sample 1 (Calibration Mix): 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.

Sample 2 (Fuel Ethanol): 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.

## Most important symptoms/effects, acute and delayed

### Potential acute health effects

**Inhalation** : Sample 1 (Calibration Mix): Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.

Sample 2 (Fuel Ethanol): Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.

**Ingestion** : Sample 1 (Calibration Mix): Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Sample 2 (Fuel Ethanol): Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

**Skin contact** : Sample 1 (Calibration Mix) Sample 2 (Fuel Ethanol): Causes mild skin irritation. Defatting to the skin. Causes skin irritation.

**Eye contact** : Sample 1 (Calibration Mix): Causes serious eye irritation.
Sample 2 (Fuel Ethanol): Causes serious eye irritation.

### Over-exposure signs/symptoms

**Inhalation** : Sample 1 (Calibration Mix): Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
reduced foetal weight
increase in foetal deaths
skeletal malformations

Sample 2 (Fuel Ethanol): Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue

# Section 4. First-aid measures

| | | | |
|---|---|---|---|
| | | | dizziness/vertigo<br>unconsciousness |
| **Ingestion** | : | Sample 1 (Calibration Mix) | Adverse symptoms may include the following:<br>reduced foetal weight<br>increase in foetal deaths<br>skeletal malformations |
| | | Sample 2 (Fuel Ethanol) | No specific data. |
| **Skin** | : | Sample 1 (Calibration Mix) | Adverse symptoms may include the following:<br>irritation<br>redness<br>dryness<br>cracking<br>reduced foetal weight<br>increase in foetal deaths<br>skeletal malformations |
| | | Sample 2 (Fuel Ethanol) | Adverse symptoms may include the following:<br>irritation<br>redness |
| **Eyes** | : | Sample 1 (Calibration Mix) | Adverse symptoms may include the following:<br>pain or irritation<br>watering<br>redness |
| | | Sample 2 (Fuel Ethanol) | Adverse symptoms may include the following:<br>pain or irritation<br>watering<br>redness |

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

| | | | |
|---|---|---|---|
| **Specific treatments** | : | Sample 1 (Calibration Mix) | No specific treatment. |
| | | Sample 2 (Fuel Ethanol) | No specific treatment. |
| **Notes to physician** | : | Sample 1 (Calibration Mix) | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
| | | Sample 2 (Fuel Ethanol) | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
| **Protection of first-aiders** | : | Sample 1 (Calibration Mix) | No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. |
| | | Sample 2 (Fuel Ethanol) | No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. |

**See toxicological information (Section 11)**

# Section 5. Fire-fighting measures

## Extinguishing media

**Suitable** : Sample 1 (Calibration Mix): Use dry chemical, $CO_2$, water spray (fog) or foam.

Sample 2 (Fuel Ethanol): Use dry chemical, $CO_2$, water spray (fog) or foam.

**Not suitable** : Sample 1 (Calibration Mix): Do not use water jet.

Sample 2 (Fuel Ethanol): Do not use water jet.

**Specific hazards arising from the chemical** : Sample 1 (Calibration Mix): Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Sample 2 (Fuel Ethanol): Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

**Hazardous thermal decomposition products** : Sample 1 (Calibration Mix): Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Sample 2 (Fuel Ethanol): Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

**Special precautions for fire-fighters** : Sample 1 (Calibration Mix): 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.

Sample 2 (Fuel Ethanol): 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** :

Sample 1 (Calibration Mix): Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Sample 2 (Fuel Ethanol): Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

**For non-emergency personnel** :

Sample 1 (Calibration Mix): No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Sample 2 (Fuel Ethanol): No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

**For emergency responders** :

Sample 1 (Calibration Mix): If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Sample 2 (Fuel Ethanol): If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions** :

Sample 1 (Calibration Mix): Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Sample 2 (Fuel Ethanol): Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

## Section 6. Accidental release measures

**Methods and materials for containment and cleaning up** :

Sample 1 (Calibration Mix): Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Sample 2 (Fuel Ethanol): Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

## Section 7. Handling and storage

**Precautions for safe handling** :

Sample 1 (Calibration Mix): 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.

Sample 2 (Fuel Ethanol): Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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

Sample 1 (Calibration Mix): 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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

Sample 2 (Fuel Ethanol): 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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

# Section 8. Exposure controls/personal protection

## Control parameters

### Occupational exposure limits

| Ingredient name | Exposure limits |
|---|---|
| **Sample 1 (Calibration Mix)** | |
| Ethanol | **ACGIH TLV (United States, 3/2012).**<br>STEL: 1000 ppm 15 minutes. |
| n-Heptane | **GBZ-2 (China, 4/2007).**<br>PC-STEL: 1000 mg/m³ 15 minutes.<br>PC-TWA: 500 mg/m³ 8 hours. |
| Methanol | **GBZ-2 (China, 4/2007). Absorbed through skin.**<br>PC-STEL: 50 mg/m³ 15 minutes.<br>PC-TWA: 25 mg/m³ 8 hours. |
| **Sample 2 (Fuel Ethanol)** | |
| Ethanol | **ACGIH TLV (United States, 3/2012).**<br>STEL: 1000 ppm 15 minutes. |
| Gasoline | **ACGIH TLV (United States, 3/2012).**<br>STEL: 1480 mg/m³ 15 minutes.<br>STEL: 500 ppm 15 minutes.<br>TWA: 890 mg/m³ 8 hours.<br>TWA: 300 ppm 8 hours. |

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**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.

**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.

**Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Eye 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**

## Section 8. Exposure controls/personal protection

**Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

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

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

## Section 9. Physical and chemical properties

**Appearance**

| | | | |
|---|---|---|---|
| **Physical state** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Liquid. [Clear.]<br>Liquid. |
| **Colour** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Colourless.<br>Colourless. |
| **Odour** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Sweet.<br>Alcohol-like. / Characteristic. / Gasoline-like [Strong] |
| **Odour threshold** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Not available.<br>Not available. |
| **pH** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Not available.<br>Not available. |
| **Melting point** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | -107°C (-160.6°F)<br><-113.89°C (<-173°F) |
| **Boiling point** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | 98 to 99°C (208.4 to 210.2°F)<br>73.89 to 79.45°C (165 to 175°F) |
| **Flash point** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Closed cup: -8°C (17.6°F) [ASTM D56]<br>Closed cup: 10 to 13°C (50 to 55.4°F) |
| **Evaporation rate** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | >1 (butyl acetate = 1)<br>1.7 (butyl acetate = 1) |
| **Flammability (solid, gas)** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Not available.<br>Not available. |
| **Lower and upper explosive (flammable) limits** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Lower: 1%<br>Not available. |
| **Vapour pressure** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | 11.7 kPa (88 mm Hg) [room temperature] @ 37.8 °C (100 °F)<br>Not available. |
| **Vapour density** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | 3.9 [Air = 1]<br>1.6 [Air = 1] |
| **Relative density** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | 0.6963<br>0.79 |
| **Solubility** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Insoluble in the following materials: cold water and hot water.<br>Soluble in the following materials: cold water and hot water. |
| **Partition coefficient: n-octanol/water** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Not available.<br>Not available. |
| **Auto-ignition temperature** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Not available.<br>>365°C (>689°F) |
| **Decomposition temperature** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Not available.<br>Not available. |
| **Viscosity** | : | Sample 1 (Calibration Mix)<br>Sample 2 (Fuel Ethanol) | Not available.<br>Not available. |

# Section 10. Stability and reactivity

**Reactivity** : Sample 1 (Calibration Mix): No specific test data related to reactivity available for this product or its ingredients.

Sample 2 (Fuel Ethanol): No specific test data related to reactivity available for this product or its ingredients.

**Chemical stability** : Sample 1 (Calibration Mix): The product is stable.

Sample 2 (Fuel Ethanol): The product is stable.

**Possibility of hazardous reactions** : Sample 1 (Calibration Mix): Under normal conditions of storage and use, hazardous reactions will not occur.

Sample 2 (Fuel Ethanol): Under normal conditions of storage and use, hazardous reactions will not occur.

**Conditions to avoid** : Sample 1 (Calibration Mix): Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Sample 2 (Fuel Ethanol): Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

**Incompatible materials** : Sample 1 (Calibration Mix): Reactive or incompatible with the following materials:
oxidizing materials

Sample 2 (Fuel Ethanol): Reactive or incompatible with the following materials:
oxidizing materials

**Hazardous decomposition products** : Sample 1 (Calibration Mix): Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Sample 2 (Fuel Ethanol): Under normal conditions of storage and use, hazardous decomposition products should not be produced.

# Section 11. Toxicological information

## Information on toxicological effects

### Acute toxicity

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| **Sample 1 (Calibration Mix)** | | | | |
| Ethanol | LC50 Inhalation Vapour | Rat | 124700 mg/m³ | 4 hours |
| | LD50 Oral | Rat | 7 g/kg | - |
| n-Heptane | LC50 Inhalation Gas. | Rat | 48000 ppm | 4 hours |
| | LC50 Inhalation Vapour | Rat | 103 g/m³ | 4 hours |
| Methanol | LC50 Inhalation Gas. | Rat | 145000 ppm | 1 hours |
| | LC50 Inhalation Gas. | Rat | 64000 ppm | 4 hours |
| | LD50 Dermal | Rabbit | 15800 mg/kg | - |
| | LD50 Oral | Rat | 5600 mg/kg | - |
| **Sample 2 (Fuel Ethanol)** | | | | |
| Ethanol | LC50 Inhalation Vapour | Rat | 124700 mg/m³ | 4 hours |
| | LD50 Oral | Rat | 7 g/kg | - |
| Gasoline | LC50 Inhalation Vapour | Rat | >5.2 mg/l | 4 hours |
| | LD50 Oral | Rat | 13.6 g/kg | - |

### Irritation/Corrosion

# Section 11. Toxicological information

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|---|---|---|---|---|---|
| **Sample 1 (Calibration Mix)** | | | | | |
| Ethanol | Eyes - Mild irritant | Rabbit | - | 24 hours 500 milligrams | - |
| | Eyes - Moderate irritant | Rabbit | - | 0.066666667 minutes 100 milligrams | - |
| | Eyes - Moderate irritant | Rabbit | - | 100 microliters | - |
| | Skin - Mild irritant | Rabbit | - | 400 milligrams | - |
| | Skin - Moderate irritant | Rabbit | - | 24 hours 20 milligrams | - |
| Methanol | Eyes - Moderate irritant | Rabbit | - | 24 hours 100 milligrams | - |
| | Eyes - Moderate irritant | Rabbit | - | 40 milligrams | - |
| | Skin - Moderate irritant | Rabbit | - | 24 hours 20 milligrams | - |
| **Sample 2 (Fuel Ethanol)** | | | | | |
| Ethanol | Eyes - Mild irritant | Rabbit | - | 24 hours 500 milligrams | - |
| | Eyes - Moderate irritant | Rabbit | - | 0.066666667 minutes 100 milligrams | - |
| | Eyes - Moderate irritant | Rabbit | - | 100 microliters | - |
| | Skin - Mild irritant | Rabbit | - | 400 milligrams | - |
| | Skin - Moderate irritant | Rabbit | - | 24 hours 20 milligrams | - |

## Sensitisation

Not available.

## Specific target organ toxicity (single exposure)

| Name | Category | Route of exposure | Target organs |
|---|---|---|---|
| **Sample 1 (Calibration Mix)** | | | |
| Ethanol | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| n-Heptane | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| Methanol | Category 1 | Not determined | central nervous system (CNS) |
| | Category 3 | Not applicable. | Respiratory tract irritation |
| **Sample 2 (Fuel Ethanol)** | | | |
| Ethanol | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| Gasoline | Category 3 | Not applicable. | Respiratory tract irritation and Narcotic effects |
| Gasoline, natural | Category 3 | Not applicable. | Respiratory tract irritation |

## Specific target organ toxicity (repeated exposure)

# Section 11. Toxicological information

| Name | Category | Route of exposure | Target organs |
|---|---|---|---|
| **Sample 1 (Calibration Mix)** | | | |
| Ethanol | Category 2 | Not determined | liver |
| **Sample 2 (Fuel Ethanol)** | | | |
| Ethanol | Category 2 | Not determined | liver |
| Gasoline | Category 2 | Not determined | kidneys |

**Aspiration hazard**

| Name | Result |
|---|---|
| **Sample 1 (Calibration Mix)** | |
| n-Heptane | ASPIRATION HAZARD - Category 1 |
| **Sample 2 (Fuel Ethanol)** | |
| Gasoline | ASPIRATION HAZARD - Category 1 |
| Gasoline, natural | ASPIRATION HAZARD - Category 1 |

**Chronic toxicity / Carcinogenicity / Mutagenicity / Teratogenicity / Reproductive toxicity**

Not available.

**Information on the likely routes of exposure** : Not available.

**Potential acute health effects**

**Inhalation** : Sample 1 (Calibration Mix): Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.

Sample 2 (Fuel Ethanol): Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.

**Ingestion** : Sample 1 (Calibration Mix): Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Sample 2 (Fuel Ethanol): Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

**Skin contact** : Sample 1 (Calibration Mix): Causes mild skin irritation. Defatting to the skin.

Sample 2 (Fuel Ethanol): Causes skin irritation.

**Eye contact** : Sample 1 (Calibration Mix): Causes serious eye irritation.

Sample 2 (Fuel Ethanol): Causes serious eye irritation.

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

**Inhalation** : Sample 1 (Calibration Mix): Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
reduced foetal weight
increase in foetal deaths
skeletal malformations

Sample 2 (Fuel Ethanol): Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo

# Section 11. Toxicological information

unconsciousness

| | | | |
|---|---|---|---|
| **Ingestion** | : | Sample 1 (Calibration Mix) | Adverse symptoms may include the following:<br>reduced foetal weight<br>increase in foetal deaths<br>skeletal malformations |
| | | Sample 2 (Fuel Ethanol) | No specific data. |
| **Skin contact** | : | Sample 1 (Calibration Mix) | Adverse symptoms may include the following:<br>irritation<br>redness<br>dryness<br>cracking<br>reduced foetal weight<br>increase in foetal deaths<br>skeletal malformations |
| | | Sample 2 (Fuel Ethanol) | Adverse symptoms may include the following:<br>irritation<br>redness |
| **Eye contact** | : | Sample 1 (Calibration Mix) | Adverse symptoms may include the following:<br>pain or irritation<br>watering<br>redness |
| | | Sample 2 (Fuel Ethanol) | Adverse symptoms may include the following:<br>pain or irritation<br>watering<br>redness |

## 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** | : | Sample 1 (Calibration Mix) | May cause damage to organs through prolonged or repeated exposure. |
| | | Sample 2 (Fuel Ethanol) | May cause damage to organs through prolonged or repeated exposure. |
| **Carcinogenicity** | : | Sample 1 (Calibration Mix) | No known significant effects or critical hazards. |
| | | Sample 2 (Fuel Ethanol) | May cause cancer. Risk of cancer depends on duration and level of exposure. |
| **Mutagenicity** | : | Sample 1 (Calibration Mix) | No known significant effects or critical hazards. |
| | | Sample 2 (Fuel Ethanol) | May cause genetic defects. |
| **Teratogenicity** | : | Sample 1 (Calibration Mix) | May damage the unborn child. |
| | | Sample 2 (Fuel Ethanol) | No known significant effects or critical hazards. |
| **Developmental effects** | : | Sample 1 (Calibration Mix) | No known significant effects or critical hazards. |
| | | Sample 2 (Fuel Ethanol) | No known significant effects or critical hazards. |
| **Fertility effects** | : | Sample 1 (Calibration Mix) | May damage fertility. |
| | | Sample 2 (Fuel Ethanol) | No known significant effects or critical hazards. |

## Numerical measures of toxicity

### Acute toxicity estimates

| Route | ATE value |
|---|---|
| **Sample 2 (Fuel Ethanol)**<br>Inhalation (vapours) | 60 mg/l |

# Section 11. Toxicological information

**Other information** : Sample 1 (Calibration Mix) Not available.
Sample 2 (Fuel Ethanol) Not available.

# Section 12. Ecological information

## Toxicity

| Product/ingredient name | Result | Species | Exposure |
|---|---|---|---|
| **Sample 1 (Calibration Mix)** | | | |
| Ethanol | Acute EC50 17.921 mg/l Marine water | Algae - Ulva pertusa | 96 hours |
| | Acute EC50 2000 µg/l Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 25500 µg/l Marine water | Crustaceans - Artemia franciscana - Larvae | 48 hours |
| | Acute LC50 42000 µg/l Fresh water | Fish - Oncorhynchus mykiss | 4 days |
| | Chronic NOEC 4.995 mg/l Marine water | Algae - Ulva pertusa | 96 hours |
| | Chronic NOEC 0.375 ul/L Fresh water | Fish - Gambusia holbrooki - Larvae | 12 weeks |
| n-Heptane | Acute LC50 375000 µg/l Fresh water | Fish - Oreochromis mossambicus | 96 hours |
| Methanol | Acute EC50 16.912 mg/l Marine water | Algae - Ulva pertusa | 96 hours |
| | Acute EC50 10000000 µg/l Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 2500000 µg/l Marine water | Crustaceans - Crangon crangon - Adult | 48 hours |
| | Acute LC50 100000 µg/l Fresh water | Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) | 96 hours |
| | Chronic NOEC 9.96 mg/l Marine water | Algae - Ulva pertusa | 96 hours |
| **Sample 2 (Fuel Ethanol)** | | | |
| Ethanol | Acute EC50 17.921 mg/l Marine water | Algae - Ulva pertusa | 96 hours |
| | Acute EC50 2000 µg/l Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 25500 µg/l Marine water | Crustaceans - Artemia franciscana - Larvae | 48 hours |
| | Acute LC50 42000 µg/l Fresh water | Fish - Oncorhynchus mykiss | 4 days |
| | Chronic NOEC 4.995 mg/l Marine water | Algae - Ulva pertusa | 96 hours |
| | Chronic NOEC 0.375 ul/L Fresh water | Fish - Gambusia holbrooki - Larvae | 12 weeks |
| Gasoline | Acute EC50 56 mg/l | Algae | 72 hours |
| | Acute LC50 119 mg/l | Fish | 96 hours |
| Gasoline, natural | Acute EC50 17.5 mg/l Marine water | Crustaceans - Artemia sp. - Nauplii | 48 hours |
| | Acute EC50 1.5 mg/l Marine water | Daphnia - Daphnia magna - Neonate | 48 hours |

## Persistence/degradability

Not available.

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|---|---|---|---|
| **Sample 1 (Calibration Mix)** | | | |
| Ethanol | - | - | Readily |
| **Sample 2 (Fuel Ethanol)** | | | |
| Ethanol | - | - | Readily |

## Bioaccumulative potential

# Section 12. Ecological information

| Product/ingredient name | $LogP_{ow}$ | BCF | Potential |
|---|---|---|---|
| **Sample 1 (Calibration Mix)** | | | |
| Ethanol | -0.31 | - | low |
| n-Heptane | 4.66 | - | high |
| Methanol | -0.77 | - | low |
| **Sample 2 (Fuel Ethanol)** | | | |
| Ethanol | -0.31 | - | low |
| Gasoline | 2 to 7 | - | high |
| Gasoline, natural | 2.1 to 6 | - | high |

**Mobility in soil**

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

**Other adverse effects** :

# Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

# Section 14. Transport information

| | UN | IMDG | IATA |
|---|---|---|---|
| **UN number** | UN3316 | UN3316 | UN3316 |
| **UN proper shipping name** | CHEMICAL KIT | CHEMICAL KIT | Chemical kit |
| **Transport hazard class(es)** | 9  | 9  | 9  |
| **Packing group** | II | II | II |
| **Environmental hazards** | No. | No. | No. |
| **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 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 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. |
| | | | |

## Section 14. Transport information

| | | | |
|---|---|---|---|
| **Additional information** | - | **Emergency schedules (EmS)**<br>F-A, _S-P_ | **Passenger and Cargo Aircraft**Quantity limitation: 10 kg<br>Packaging instructions: 960<br>**Cargo Aircraft Only**Quantity limitation: 10 kg<br>Packaging instructions: 960<br>**Limited Quantities - Passenger Aircraft**Quantity limitation: 1 kg<br>Packaging instructions: Y960<br><br>**Remarks**<br>Excepted Quantity |

## Section 15. Regulatory information

**Safety, health and environmental regulations specific for the product** : No known specific national and/or regional regulations applicable to this product (including its ingredients).

## Section 16. Other information

**History**

**Date of issue/Date of revision** : 19/03/2013

**Date of previous issue** : No previous validation.

**Version** : 2

**References** : Not available.

**Indicates information that has changed from previously issued version.**

**Notice to reader**

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