



John R Hess &amp; Company, Inc.

**KOCHKLEEN® 222****Section 1. Product and Company Identification**

|                        |                       |
|------------------------|-----------------------|
| Product name           | <b>KochKleen® 222</b> |
| Other Product Identity | Not Available         |
| Product type           | Liquid                |

**Manufacturer or supplier's details**

|                     |   |
|---------------------|---|
| Company             | John R Hess & Co., Inc.   |
| Address             | 400 Station St.<br>Cranston, RI 02910   |
| Telephone           | (401) 785-9300  |
| Telefax             | (401) 785-2510  |
| Emergency Telephone | USA: 24 Hour Emergency Response Information CHEMTREC<br>toll free: 1-800-424-9300 |

**Recommended use of the chemical and restrictions on use**

|                     |                         |
|---------------------|-------------------------|
| Product use         | Specialty Cleaners      |
| Area of application | Industrial applications |

**Section 2. Hazards Identification**

|                 |   |
|-----------------|---|
| OSHA/HCS status | This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). |
|-----------------|---|

|  |  |
|--|--|
| Classification of the substance or mixture | SKIN CORROSION - Category 1<br>SERIOUS EYE DAMAGE - Category 1 |
|--|--|

**GHS label elements**

Hazard pictograms



|             |        |
|-------------|--------|
| Signal word | Danger |
|-------------|--------|

|                   |  |
|-------------------|--|
| Hazard statements | Causes severe skin burns and eye damage. |
|-------------------|--|

**Precautionary statements**

|            |  |
|------------|--|
| Prevention | Wear protective gloves. Wear eye or face protection. Wear protective clothing. Wash hands thoroughly after handling. |
|------------|--|

|          |  |
|----------|--|
| Response | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician.<br>IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting.<br>IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. |
|----------|--|

|                                  |   |
|----------------------------------|---|
| Storage                          | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.<br>Store locked up. |
| Disposal                         | Dispose of contents and container in accordance with all local, regional, national and international regulations.   |
| Supplemental label elements      | Do not taste or swallow. Wash thoroughly after handling.  |
| Hazards not otherwise classified | Causes severe digestive tract burns.  |

### Section 3. Composition/information on ingredients

|                               |               |
|-------------------------------|---------------|
| Substance / Mixture           | Mixture       |
| Other means of identification | Not Available |

#### CAS number/other identifiers

|              |                 |
|--------------|-----------------|
| CAS number   | Not applicable. |
| Product code | 9036            |

| Ingredient name                                     | Other names                                 | %     | CAS number |
|---|---|-------|------------|
| sodium hydroxide                                    | sodium hydroxide disodium                   | 10-30 | 1310-73-2  |
| disodium decyl(sulphonatophenoxy) benzenesulphonate | decyl (sulphonatophenoxy) benzenesulphonate | 1-5   | 36445-71-3 |

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 and hence require reporting in this section.

### Section 4. First aid measures

#### Description of necessary first aid measures

|             |   |
|-------------|---|
| Eye contact | Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.  |
| Inhalation  | Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. |

|              |  |
|--------------|--|
| Skin contact | Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.   |
| Ingestion    | Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. |

### Most important symptoms/effects acute and delayed

#### Potential acute health effects

|              |   |
|--------------|---|
| Eye contact  | Causes serious eye damage                                       |
| Inhalation   | No known significant effects or critical hazards.               |
| Skin contact | Causes severe burns.  |
| Ingestion    | Severely corrosive to the digestive tract. Causes severe burns. |

#### Over-exposure signs/symptoms

|              |   |
|--------------|---|
| Eye contact  | Adverse symptoms may include the following:<br>pain<br>watering<br>redness                        |
| Inhalation   | No specific data.   |
| Skin contact | Adverse symptoms may include the following:<br>pain or irritation redness<br>blistering may occur |
| Ingestion    | Adverse symptoms may include the following:<br>stomach pains                                      |

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

|                            |   |
|----------------------------|---|
| Notes to physician         | Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.   |
| Specific treatments        | No specific treatment.  |
| Protection of first-aiders | 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 extinguishing media | Use an extinguishing agent suitable for the surrounding fire.                    |
|                              | Use dry chemical, CO <sub>2</sub> , alcohol-resistant foam or water spray (fog). |

|  |   |
|--|---|
| Unsuitable extinguishing media                 | Do not use water jet.   |
| Specific hazards arising from the chemical     | In a fire or if heated, a pressure increase will occur and the container may burst.   |
| Hazardous thermal decomposition products       | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>sulfur oxides<br>metal oxide/oxides<br>peroxides<br>sulfides                            |
| Special protective actions for fire-fighters   | 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. |
| Special protective equipment for fire-fighters | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.                         |
| Remark   | Non-combustible.  |

## Section 6. Accidental Release Measures

### Personal precautions, protective equipment and emergency procedures

For non-emergency personnel 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. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders 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".

Environmental precautions 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).

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

Small spill Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor

Large spill Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and Storage

### Precautions for safe handling

|   |   |
|---|---|
| Protective measures   | Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container. |
| Advice on general occupational hygiene                      | 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 | Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from acids. 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.        |

## Section 8. Exposure Controls/Personal Protection

### Control parameters

#### Occupational exposure limit values

| Ingredient name  | Exposure limits   |
|------------------|---|
| sodium hydroxide | ACGIH TLV (United States, 4/2014).<br>C: 2 mg/m <sup>3</sup><br>OSHA PEL 1989 (United States, 3/1989).<br>CEIL: 2 mg/m <sup>3</sup><br>NIOSH REL (United States, 10/2013).<br>CEIL: 2 mg/m <sup>3</sup><br>OSHA PEL (United States, 2/2013).<br>TWA: 2 mg/m <sup>3</sup> 8 hours. |

|                                  |  |
|----------------------------------|--|
| Appropriate engineering controls | If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.   |
| Environmental exposure controls  | Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. |

**Individual protection measures**

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

**Eye/face protection** Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

**Skin protection**

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

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

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

**Respiratory protection** 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.

**Section 9. Physical and Chemical Properties**

|  |                        |
|--|------------------------|
| Appearance                                 | Liquid (clear)         |
| Color                                      | Amber (light)          |
| Odor                                       | Pungent                |
| Odor Threshold                             | 0.75 mg/m <sup>3</sup> |
| pH   | >13 [11.84 (1%)]       |
| Melting point                              | Not available          |
| Boiling point                              | Not available          |
| Flash point                                | Not available          |
| Evaporation rate                           | Not available          |
| Lower & Upper explosion limits (flammable) | Not available          |
| Vapor pressure                             | Not available          |

|                           |  |
|---------------------------|--|
| Vapor density             | Similar to water   |
| Relative density          | 1.317 [at 20°C]  |
| Solubility                | Soluble in the following materials: cold water and hot water |
| Water solubility          | Not available  |
| Partition coefficient:    |  |
| n- octanol/water          | Not available  |
| Autoignition temperature  | Not available  |
| Decomposition temperature | Not available  |
| Viscosity                 |  |
| SADT                      | Not available  |
| Viscosity                 | Not available  |

## Section 10. Stability and Reactivity

|  |   |
|--|---|
| Reactivity                                 | No specific test data related to reactivity available for this product or its ingredients.  |
| Chemical stability                         | The product is stable.  |
| Possibility of hazardous Reactions         | Under normal conditions of storage and use, hazardous reactions will not occur.<br><br>Can react with certain metals, such as aluminum, to produce flammable hydrogen gas. Under normal conditions of storage and use, hazardous polymerization will not occur. |
| Conditions to avoid Incompatible materials | No specific data<br>Reactive or incompatible with the following materials: oxidizing materials and metals. brass, Peroxide., tin, zinc, copper, bronze, Chlorinated hydrocarbon.<br>Reactive or incompatible with the following materials:<br>acids             |
| Hazardous decomposition products           | 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 |
|--|-----------|---------|------------|----------|
| disodium decyl (sulphonatophenoxy) benzenesulphonate | LD50 Oral | Rat     | 1420 mg/kg | -        |

**Irritation/Corrosion**

| Product/ingredient name                                    | Result                 | Species | Score | Exposure                                 | Observation |
|--|------------------------|---------|-------|--|-------------|
| sodium hydroxide   | Eyes - Mild irritant   | Rabbit  | -     | 400<br>Micrograms                        | -           |
|  | Eyes - Severe irritant | Rabbit  | -     | 24 hours 50<br>Micrograms                | -           |
|  | Eyes - Severe irritant | Rabbit  | -     | 1 Percent                                | -           |
|  | Eyes - Severe irritant | Rabbit  | -     | 0.5 minutes 1 milligrams<br>24 hours 500 | -           |
|  | Skin - Severe irritant | Rabbit  | -     |  | -           |
| disodium decyl<br>(sulphonatophenoxy)<br>benzenesulphonate | Eyes - Severe irritant | Rabbit  | -     | milligrams<br>0.1 milliliters            | -           |
|  | Skin - Mild irritant   | Rabbit  | -     | 0.5 milliliters                          | -           |

**Sensitization**

Not available

**Mutagenicity**

Not available

**Carcinogenicity**

Not available

**Reproductive toxicity**

Not available

**Teratogenicity**

Not available

**STOT-single exposure**

Not available

**STOT-repeated exposure**

Not available

**Aspiration hazard**

Not available

**Information on likely routes of exposure**

Routes of entry anticipated: Oral, Dermal, Inhalation.

**Potential acute health effects**

|              |   |
|--------------|---|
| Eye contact  | Causes serious eye damage                                       |
| Inhalation   | No known significant effects or critical hazards.               |
| Skin contact | Causes severe burns.  |
| Ingestion    | Severely corrosive to the digestive tract. Causes severe burns. |

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



|              |   |
|--------------|---|
| Eye contact  | Adverse symptoms may include the following:<br>pain<br>watering<br>redness                        |
| Inhalation   | No specific data.   |
| Skin contact | Adverse symptoms may include the following:<br>pain or irritation redness<br>blistering may occur |
| Ingestion    | Adverse symptoms may include the following:<br>stomach pains                                      |

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

#### Short term exposure

|                             |               |
|-----------------------------|---------------|
| Potential immediate effects | Not available |
| Potential delayed effects   | Not available |

#### Long term effects

|                             |               |
|-----------------------------|---------------|
| Potential immediate effects | Not available |
| Potential delayed effects   | Not available |

#### Potential chronic health effects

|                       |   |
|-----------------------|---|
| General               | No known significant effects or critical hazards. |
| Carcinogenicity       | No known significant effects or critical hazards. |
| Mutagenicity          | No known significant effects or critical hazards. |
| Teratogenicity        | No known significant effects or critical hazards. |
| Developmental effects | No known significant effects or critical hazards. |
| Fertility effects     | No known significant effects or critical hazards. |

#### Numerical measures of toxicity

##### Acute toxicity estimates

| Route | ATE value   |
|-------|-------------|
| Oral  | 19880 mg/kg |

## Section 12. Ecological Information

#### Toxicity

| Product/ingredient name | Result                            | Species                                    | Exposure |
|-------------------------|-----------------------------------|--|----------|
| sodium hydroxide        | Acute EC50 40.38 mg/l Fresh water | Crustaceans - Ceriodaphnia dubia - Neonate | 48 hours |
|                         | Acute LC50 125 ppm Fresh water    | Fish - Gambusia affinis - Adult            | 96 hours |

**Persistence and degradability**

| Product/ingredient name                              | Aquatic half-life | Photolysis | Biodegradability |
|--|-------------------|------------|------------------|
| disodium decyl (sulphonatophenoxy) benzenesulphonate | -                 | -          | Not readily      |

**Bio accumulative potential**

Not available

**Mobility in soil**Soil/water partition coefficient ( $K_{oc}$ )

Not available

**Other adverse effects**

Not available

**Section 13. Disposal Considerations****Disposal methods**

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should 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 spilled material and runoff and contact with soil, waterways, drains and sewers.

**Section 14. Transport Information**

|                                   | DOT Classification                              | IMDG                      | IATA                      |
|-----------------------------------|---|---------------------------|---------------------------|
| <b>UN number</b>                  | UN1824  | UN1824                    | UN1824                    |
| <b>UN proper shipping name</b>    | Sodium hydroxide solution RQ (sodium hydroxide) | Sodium Hydroxide Solution | Sodium hydroxide solution |
| <b>Transport hazard class(es)</b> | 8   | 8                         | 8                         |
| <b>Packing group</b>              | II  | II                        | II                        |
| <b>Environmental hazards</b>      | No.   | No.                       | No.                       |

|                               |  |  |   |
|-------------------------------|--|--|---|
| <b>Additional information</b> | <b>Reportable quantity</b><br>3333.3 lbs / 1513.3 kg<br>[303.55gal / 1149.1 L]<br>Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.<br><br><b>Limited quantity</b><br>Yes.<br><br><b>Packaging instruction Passenger aircraft</b><br>Quantity limitation: 1 L<br><br><b>Cargo aircraft</b><br>Quantity limitation: 30 L<br><br><b>Special Provisions</b><br>B2, IB2, N34, T7, TP2 | <b>Emergency schedules</b><br>F-A, S-B | <b>Passenger and cargo aircraft</b><br>Quantity limitation: 1 L<br>Packaging instructions: 851<br><br><b>Cargo aircraft only</b><br>Quantity limitation: 30 L<br>Packaging instructions: 855<br><br><b>Limited quantities—Passenger aircraft</b><br>Quantity limitation: 0.5 L<br>Packaging instructions: Y840<br><br><b>Special provisions</b><br>A3, A803 |
|-------------------------------|--|--|---|

**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 73/78 and the IBC Code**

Not available.

**Section 15. Regulatory Information**

|   |  |
|---|--|
| U.S. Federal regulations                                      | United States inventory (TSCA 8b): All components are listed or exempted.<br>Clean Water Act (CWA) 311: sodium hydroxide<br>Not listed |
| Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) | Not listed   |
| Clean Air Act Section 602 Class I Substances                  | Not listed   |
| 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   |

**SARA302/304**

**Composition/information on ingredients**

No products were found.

SARA 304 RQ

Not applicable.

**SARA311/312**

Classification

Immediate (acute) health hazard

**Composition/information on ingredients**

| Name                                       | %            | Fire hazard | Sudden release of pressure | Reactive | Immediate (acute) health hazard | Delayed (chronic) health hazard |
|--|--------------|-------------|----------------------------|----------|---------------------------------|---------------------------------|
| sodium hydroxide disodium                  | 10-30<br>1-5 | No          | No                         | No       | Yes                             | No                              |
| decyl(sulphonatophenoxy) benzenesulphonate |              | No          | No                         | No       | Yes                             | No                              |

**SARA 313**

Not applicable

**State Regulations**

Massachusetts

The following components are listed: Sodium hydroxide

New York

The following components are listed: Sodium hydroxide

New Jersey

The following components are listed: Sodium hydroxide, caustic soda

Pennsylvania

The following components are listed: sodium hydroxide (NA(OH))

California Prop65

None of the components are listed

**Section 16. Other Information****Hazardous Material Information (USA)**

|                  |   |   |
|------------------|---|---|
| Health           | * | 3 |
| Flammability     |   | 0 |
| Physical hazards |   | 0 |

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.

1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

**National Fire Protection Association (USA)**

|        |   |                        |
|--------|---|------------------------|
| Health |  | Flammability           |
|        |   | Instability/Reactivity |
|        |   | Special                |

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

### History

|                                |            |
|--------------------------------|------------|
| Date of Issue/Date of Revision | 04/10/2017 |
| Date of Previous Issue         | 05/14/2015 |
| Version                        | 2          |

### Key to abbreviations

ATE = Acute Toxicity Estimate  
BCF = Bioconcentration Factor  
GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
IATA = International Air Transport Association  
IBC = Intermediate Bulk Container  
IMDG = International Maritime Dangerous Goods  
LogPow = logarithm of the octanol/water partition coefficient  
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations

### References

HCS (U.S.A.)- Hazard Communication Standard  
International transport regulations

### Disclaimer

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