SAFETY DATA SHEET

Full Range Reformate
Version 1.3
Revision Date 2015-09-13

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product information
Product Name : Full Range Reformate
Material : 1020465, 1029587, 1029586

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:
Health: 866.442.9628 (North America)
1.832.813.4984 (International)

Transport:
North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : SDS@CPChem.com
Website : www.CPChem.com

SECTION 2: Hazards identification

Classification of the substance or mixture
This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Emergency Overview

Danger
Form: Liquid  Physical state: Liquid  Color: Clear  Odor: Mildly unpleasant

OSHA Hazards: Flammable Liquid, Moderate skin irritant, Moderate eye irritant, Carcinogen, Aspiration hazard, Target Organ Effects, Mutagen

Classification
Flammable liquids, Category 1
Skin irritation, Category 2
Eye irritation, Category 2A
Germ cell mutagenicity, Category 1B

MSDS Number:100000014584  1/14
Carcinogenicity, Category 1A
Specific target organ systemic toxicity - repeated exposure, Category 1, Blood
Aspiration hazard, Category 1

Labeling

Symbol(s):

Signal Word: Danger

Hazard Statements:
H224: Extremely flammable liquid and vapor.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H340: May cause genetic defects.
H350: May cause cancer.
H372: Causes damage to organs (Blood) through prolonged or repeated exposure.

Precautionary Statements:

Prevention:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/fume/gas/mist/vapor/spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P331 Do NOT induce vomiting.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
**Full Range Reformate**

**Storage:**
P403 + P235  Store in a well-ventilated place. Keep cool.
P405  Store locked up.

**Disposal:**
P501  Dispose of contents/ container to an approved waste disposal plant.

**Potential Health Effects**

**Physical Hazards:** Mechanical processing may form combustible dust concentrations in air and thermal processing at elevated temperatures may generate simple hydrocarbons and carbon oxides.

**Carcinogenicity:**

**IARC**
Group 1: Carcinogenic to humans
Benzene  71-43-2

**NTP**
Known to be human carcinogen
Benzene  71-43-2

**ACGIH**
Confirmed human carcinogen
Benzene  71-43-2

**SECTION 3: Composition/information on ingredients**

**Synonyms:**
Heavy Catalytic Reformed Naphtha
Heavy Reformate Naphtha
Reformate Splitter Bottoms (RSB)
Platformer Stabilizer Feed

**Molecular formula:**
UVCB

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reformate Naphtha, Full Range C4-C12</td>
<td>68955-35-1</td>
<td>100</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>1 - 15</td>
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</tbody>
</table>

**SECTION 4: First aid measures**

**General advice:** Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

**If inhaled:** Consult a physician after significant exposure. If unconscious place in recovery position and seek medical advice.

**In case of skin contact:** If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

**In case of eye contact:** Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while
If swallowed : Keep respiratory tract clear. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point : < -40 °C (< -40 °F)  
Method: Tagliabue Open Cup

Autoignition temperature : No data available

Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.

Unsuitable extinguishing media : High volume water jet.

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

Fire and explosion protection : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Hazardous decomposition products : Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions : Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up : Contain spillage, and then collect with non-combustible
Additional advice: Prevent spreading over a wide area (e.g. by containment or oil barriers). Refer to section 15 for specific national regulation. Make sure that there is a sufficient amount of neutralizing/absorbent material near the storage area.

SECTION 7: Handling and storage

Handling

Advice on safe handling: Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion: Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers: No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

Ingredients with workplace control parameters

US

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Basis</th>
<th>Value</th>
<th>Control parameters</th>
<th>Note</th>
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<td>ACGIH</td>
<td>TWA</td>
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<td>BEI, A1, Skin</td>
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<td>ACGIH</td>
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<td>OSHA Z-1-A</td>
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<td>BEI, A1, Skin</td>
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<td>OSHA Z-1-A</td>
<td>CEIL</td>
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<td></td>
<td>OSHA Z-2</td>
<td>Peak</td>
<td>50 ppm,</td>
<td>(a)</td>
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<td></td>
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<td>TWA</td>
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<td>STEL</td>
<td>5 ppm,</td>
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<td></td>
<td>OSHA CARC</td>
<td>PEL</td>
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<tr>
<td></td>
<td>OSHA CARC</td>
<td>STEL</td>
<td>5 ppm,</td>
<td></td>
</tr>
</tbody>
</table>

(a) This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1029.
A1 Confirmed human carcinogen
BEI Substances for which there is a Biological Exposure Index or Indices (see BEI® section)
Skin Danger of cutaneous absorption

Engineering measures

MSDS Number: 100000014584

5/14
Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

Respiratory protection: Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection: The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection: Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.

Hygiene measures: When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

**SECTION 9: Physical and chemical properties**

**Information on basic physical and chemical properties**

**Appearance**

Form: Liquid
Physical state: Liquid
Color: Clear
Odor: Mildly unpleasant

**Safety data**

Flash point: < -40 °C (< -40 °F)
Method: Tagliabue Open Cup

Lower explosion limit: No data available
Full Range Reformate

Upper explosion limit : No data available
Oxidizing properties : no
Autoignition temperature : No data available
Molecular formula : UVCB
Molecular weight : Not applicable
pH : Not applicable
Freezing point : No data available
Boiling point/boiling range : 32 °C (90 °F)
Vapor pressure : 7.00 - 14.50 PSI
at 38 °C (100 °F)
Relative density : 0.739
at 20 °C (68 °F)
Density : 743 - 803 g/l
Water solubility : Negligible
Viscosity, kinematic : No data available
Relative vapor density : 1
(Air = 1.0)
Evaporation rate : > 1
Percent volatile : > 99 %

SECTION 10: Stability and reactivity

Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid : Heat, flames and sparks.
Materials to avoid : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous decomposition products : Carbon oxides
Other data : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Full Range Reformate
Acute oral toxicity : LD50 Oral: > 5,000 mg/kg
Species: Rat
Method: Acute toxicity estimate

Full Range Reformate
Acute dermal toxicity : LD50: > 2,000 mg/kg
Species: Rabbit
Method: Acute toxicity estimate

Full Range Reformate
Skin irritation : May cause skin irritation in susceptible persons.

Full Range Reformate
Eye irritation : May irritate eyes.

Sensitization
Reformate Naphtha, Full Range C4-C12 : Did not cause sensitization on laboratory animals.
Benzene : Did not cause sensitization on laboratory animals.

Repeated dose toxicity
Benzene : Species: Rat, female
Sex: female
Application Route: oral gavage
Dose: 0, 25, 50, 100 mg/kg
Exposure time: 103 wk
Number of exposures: 5 d/wk
NOEL: < 25 mg/kg
Lowest observable effect level: 25 mg/kg
Full Range Reformate

Species: Rat, male
Sex: male
Application Route: oral gavage
Dose: 0, 50, 100, 200 mg/kg
Exposure time: 103 wk
Number of exposures: 5 d/wk
NOEL: < 50 mg/kg
Lowest observable effect level: 50 mg/kg

Species: Mouse
Application Route: oral gavage
Dose: 0, 25, 50, 100 mg/kg
Exposure time: 103 wk
NOEL: < 25 mg/kg

Carcinogenicity

Benzene

Species: Rat
Sex: female
Dose: 0, 25, 50, 250 mg/kg
Exposure time: 103 wks
Number of exposures: daily, 5 days/week
Test substance: yes
Remarks: zymbal gland carcinomas, squamous cell papillomas

Species: Rat
Sex: male
Dose: 0, 50, 100, 200 mg/kg
Exposure time: 103 wks
Number of exposures: daily, 5 days/week
Test substance: yes
Remarks: zymbal gland carcinomas, squamous cell papillomas

Species: Mouse
Sex: male and female
Dose: 25, 50, 100 mg/kg
Exposure time: 103 wks
Number of exposures: daily, 5 days/week
Test substance: yes
Remarks: Clear evidence of multiple organ carcinogenicity.

Full Range Reformate

Aspiration toxicity

May be fatal if swallowed and enters airways.
Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effects

Reformate Naphtha, Full Range C4-C12

Carcinogenicity: Possible human carcinogen
Mutagenicity: In vivo tests showed mutagenic effects

Benzene

Carcinogenicity: Human carcinogen.
Mutagenicity: In vivo tests showed mutagenic effects
Teratogenicity: Did not show teratogenic effects in animal experiments.
Reproductive toxicity: Animal testing did not show any effects
**Full Range Reformate**

**Full Range Reformate**
**Further information** : Solvents may degrease the skin.

**SECTION 12: Ecological information**

**Toxicity to fish**

Benzene  
: LC50: 5.3 mg/l  
: Exposure time: 96 h  
: Species: Oncorhynchus mykiss (rainbow trout)  
: flow-through test  
: Test substance: yes  
: Method: OECD Test Guideline 203

**Toxicity to daphnia and other aquatic invertebrates**

Benzene  
: EC50: 10 mg/l  
: Exposure time: 48 h  
: Species: Daphnia magna (Water flea)  
: static test  
: Test substance: yes  
: Method: OECD Test Guideline 202

**Toxicity to algae**

Benzene  
: ErC50: 100 mg/l  
: Exposure time: 72 h  
: Species: Pseudokirchneriella subcapitata (green algae)  
: Test substance: yes  
: Method: OECD Test Guideline 201

**Elimination information (persistence and degradability)**

Biodegradability  
: Not applicable

**Ecotoxicology Assessment**

Acute aquatic toxicity  
: Harmful to aquatic life.

Chronic aquatic toxicity  
Benzene  
: Harmful to aquatic life with long lasting effects.

**Results of PBT assessment**

Benzene  
: This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Additional ecological information**  
: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Harmful to aquatic life.
SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped. Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, I

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, I, (< -40 °C)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, I

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN1268, PETROLEUM PRODUCTS, N.O.S., 3, I, (D/E)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN1268, PETROLEUM PRODUCTS, N.O.S., 3, I

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN1268, PETROLEUM PRODUCTS, N.O.S., 3, I
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

National legislation

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

CERCLA Reportable Quantity : 67 lbs
Benzene

SARA 302 Threshold Planning Quantity : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Ingredients : The following components are subject to reporting levels established by SARA Title III, Section 313:
Benzene - 71-43-2

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Pennsylvania Right To Know
Full Range Reformate

SAFETY DATA SHEET

Version 1.3
Revision Date 2015-09-13

MSSD Number:100000014584

New Jersey Right To Know

Ingredients: Benzene - 71-43-2

California Prop. 65
Ingredients: WARNING! This product contains a chemical known in the State of California to cause cancer.

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Notification status
Europe REACH: Not in compliance with the inventory
Switzerland CH INV: On the inventory, or in compliance with the inventory
United States of America TSCA: On the inventory, or in compliance with the inventory
Canada DSL: On the inventory, or in compliance with the inventory
Australia AICS: On the inventory, or in compliance with the inventory
New Zealand NZIoC: Not in compliance with the inventory
Japan ENCS: Not in compliance with the inventory
Korea KECI: On the inventory, or in compliance with the inventory
Philippines PICCS: Not in compliance with the inventory
Australia AICS: On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification
Health Hazard: 2
Fire Hazard: 4
Reactivity Hazard: 0

Further information
Legacy SDS Number: 627490

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
<table>
<thead>
<tr>
<th>Key or legend to abbreviations and acronyms used in the safety data sheet</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
</tr>
<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
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<tr>
<td>CNS</td>
<td>Central Nervous System</td>
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<td>CAS</td>
<td>Chemical Abstract Service</td>
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<td>EC50</td>
<td>Effective Concentration</td>
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<td>EC50</td>
<td>Effective Concentration 50%</td>
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<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
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<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
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<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
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<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
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<td>GHS</td>
<td>Globally Harmonized System</td>
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<td>&gt;=</td>
<td>Greater Than or Equal To</td>
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<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<td>IECSC</td>
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<td>LC50</td>
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<td>LD50</td>
<td>Lethal Dose 50%</td>
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<td>Lowest Observed Adverse Effect Level</td>
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<td>National Fire Protection Agency</td>
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<td>Resource Conservation Recovery Act</td>
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<td>Toxic Substance Control Act</td>
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<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
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<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
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