


**GS 칼텍스**

# Material Safety Data Sheet (MSDS)

Product	Benzene		
CAS No.	KE No.	UN No.	EC No.
71-43-2	KE-02150	1114	200-753-7
Number	Date of preparation	Date of preparation	Department of Team
AR0001	2008-07-25	2019-06-28	Safety / Health Planning Team

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

Substance name : Benzene [AR0001]  
 EC No. : 200-753-7  
 REACH Registration No. : 01-2119447106-44-0071  
 CAS No. : 71-43-2

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

#### 1.2.1. Relevant identified uses

- Not available

#### 1.2.2. Uses advised against

- Not available

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

Manufacturer/Supplier : GS Caltex Corporation  
 Address : 508 Nonhyun-ro, Gangnam-gu, Seoul, Korea

### 1.4. Emergency telephone number

EU-wide emergency number : 112  
 See section 16.6 for the list of telephone number of National Helpdesks in the European Economic Area.

## SECTION 2: HAZARD IDENTIFICATION

### 2.1. Classification of the substance/mixture

#### 2.1.1. Classification according to Regulation (EC) No 1272/2008 [CLP]

- Flammable liquids : Category2, H225
- Skin corrosion/irritation : Category2, H315
- Serious eye damage/irritation : Category2, H319
- Germ cell mutagenicity : Category1B, H340
- Carcinogenicity : Category1A, H350
- Specific target organ toxicity(Repeated exposure) : Category1, H372
- Aspiration hazard : Category1, H304
- Chronic aquatic toxicity : Category2, H411

### 2.2. Label elements

#### 2.2.1. Labelling according to Regulation (EC) No 1272/2008 [CLP]

\* Hazard Pictogram(s)



\* **Signal word** : Danger

\* **Hazard statement(s)**

- H225 Highly flammable liquid and vapour
- 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 through prolonged or repeated exposure (Refer Section SDS 11)
- H411 Toxic to aquatic life with long lasting effects

\* **Precautionary statement(s)**

**1) 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/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

**2) Response**

- P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P303+P361+P353 IF ON SKIN (or hair): Remove/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.
- P314 Get medical advice/attention if you feel unwell.
- P321 Specific treatment
- 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 Suitable extinguishing media for extinction(Refer Section MSDS 5).
- P391 Collect spillage.

**3) Storage**

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

**4) Disposal**

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

### 2.3. Other hazards

- Not available

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

Name	EC No.	CAS No.	REACH registration No.	% [weight]	Classification [1272/2008/EC]

Benzene	200-753-7	71-43-2	-	100	Carc. 1A, H350 Muta. 1B, H340 Eye Irrit. 2, H319 Flam. Liq. 2, H225 STOT RE 1, H372 Skin Irrit. 2, H315 Asp. Tox. 1, H304
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### 3.2. Mixtures

- Not applicable

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

#### General

- No general information.

#### Inhalation

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

#### Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Remove contaminated clothing, shoes and isolate.
- Wash thoroughly after handling.
- Wear gloves when washing the patient, and please avoid contact with contaminated clothing.

#### Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Remove contact lenses if worn.

#### Ingestion

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.
- If swallowed, large amounts of water to drink and do not induce vomiting.

### 4.2. Most important symptoms and effects, both acute and delayed

- Not available

### 4.3. Indication of any immediate medical attention and special treatment needed

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing media

#### Suitable extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray

#### Unsuitable extinguishing media

- Avoid use of water jet for extinguishing

### 5.2. Special hazards arising from the substance or mixture

**Hazardous combustion products**

- Not available

**5.3. Advice for firefighters**

- Move containers from fire area, if you can do without the risk.
- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Keep containers cool with water spray.
- Use fire fighting procedures suitable for surrounding area.
- Vapor or gas is burned at distant ignition sources can be spread quickly.
- Due to the extremely low flash point, irrigating fire extinguishing may be less effective when put out a fire.

**SECTION 6: ACCIDENTAL RELEASE MEASURES****6.1. Personal Precautions, protective equipment and emergency procedures****6.1.1. For non-emergency personnel**

- Protective equipment: Wear proper protective equipment.
- Emergency procedures: Not applicable
- If required, notify relevant authorities according to all applicable regulations.

**6.1.2. For emergency responders**

- Ventilate closed spaces before entering.
- Must work against the wind, let the upwind people to evacuate.
- Move container to safe area from the leak area.
- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away, isolate hazard area and deny entry.

**6.2. Environmental precautions**

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.
- Avoid dispersal of spilt material and runoff and contact with waterways, drains and sewers. If large spills, advise emergency services.

**6.3. Methods and material for containment and cleaning up****6.3.1. For containment**

- Clean up all spills immediately.
- Control personal contact by using protective equipment.
- Prevent, by any means available, spillage from entering drains or water course.
- No smoking, flame or ignition sources.

**6.3.2. For cleaning up**

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.
- Do not use plastic containers.
- Prevent the influx to waterways, sewers, basements or confined spaces.
- Spilled material should be treated as a potential risk of waste collected.

**6.3.3. Other information**

- Slippery when spilt.

#### 6.4. Reference to other sections

- See Section 7 for information on safe handling.
- See Section 8 for information on personal protection equipment.
- See Section 13 for information on disposal.

### SECTION 7: HANDLING AND STORAGE

#### 7.1. Precautions for safe handling

- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Refer to Engineering controls and personal protective equipment.
- Dealing only with a well-ventilated place.
- Operators should wear antistatic footwear and clothing.
- Do not inhale the steam prolonged or repeated.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Contaminated work clothing should not be allowed out of the workplace.

#### 7.2. Conditions for safe storage, including any incompatibilities

- Do not use damaged containers.
- Do not apply direct heat.
- Do not apply any physical shock to container.
- No open fire.
- Prevent static electricity and keep away from combustible materials or heat sources.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.
- Store away from water and sewer.

#### 7.3. Specific end use(s)

- See Section 1 for information on 1.2 Relevant identified uses.

### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1. Control parameters

##### 8.1.1. Occupational exposure limits

###### European Union (EU) Commission Directive 2006/15/EC (IOELVs)

- Not available

###### European Union (EU) Commission Directive 2006/15/EC (IOELVs) - Skin

- Not available

##### 8.1.2. Recommended Monitoring Procedures

- 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.

##### 8.1.3. DNEL/PNEC - Values

- Not available

#### 8.2. Exposure controls

##### 8.2.1. Appropriate engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

##### 8.2.2. Individual protection measures, such as personal protective equipment

###### Hand protection

- Wear appropriate chemical resistant glove.

###### Eye protection

- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.

- Provide an emergency eye wash station and quick drench shower in the immediate work area.

#### Respiratory Protection

- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.
- For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.

#### Skin protection

- Wear appropriate chemical resistant protective clothing.

### 8.2.3 Environmental exposure controls

- Do not let product enter drains. For ecological information refer to section 12.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

Appearance(State)	Liquid
Appearance(Color)	pale yellow
Odor	aromatic smell
Odor threshold	4.68 ppm
pH	Not available
Melting point/Freezing point	5.5 °C
Initial boiling point and boiling range	80.1 °C
Flash point	-11 °C
Evaporation rate	Not available
Flammability(solid, gas)	Not available
Upper/Lower Flammability or explosive limits	7.8 / 1.2 %
Vapour pressure	94.8 mmHg (25°C)
Vapour density	2.8 (air=1)
Relative density	0.88 (water=1)
Solubility	0.18 g/100mℓ (25°C)
Partition coefficient of n-octanol/water	2.13
Autoignition temperature	498 °C
Decomposition temperature	Not available
Viscosity	0.604 cP (25°C)
Explosive properties	Not available
Oxidising properties	Not available

### 9.2. Other information

- Not available

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

- Product is stable or unstable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

### 10.2. Chemical Stability

- This material is stable under recommended storage and handling conditions.

### 10.3. Possibility of hazardous reactions

- Cylinders exposed to fire may vent and release flammable gas.

**10.4. Conditions to avoid**

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.

**10.5. Incompatible materials**

- Not available

**10.6. Hazardous decomposition products**

- May emit flammable vapour if involved in fire.

**SECTION 11: TOXICOLOGICAL INFORMATION****11.1. Acute toxicity**

- **Oral**
  - Not available
- **Dermal**
  - Not available
- **Inhalation**
  - Not available

**11.2. Skin corrosion/irritation**

- Causes skin irritation

**11.3. Serious eye damage/irritation**

- Causes serious eye irritation

**11.4. Respiratory sensitization**

- Not available

**11.5. Skin sensitization**

- Not available

**11.6. Germ cell mutagenicity**

- May cause genetic defects

**11.7. Carcinogenicity**

- **IARC**
  - [Benzene] : Group 1
- **OSHA**
  - [Benzene] : Applicable
- **ACGIH**
  - [Benzene] : A1
- **NTP**
  - [Benzene] : K
- **EU CLP**
  - Not available

**11.8. Reproductive toxicity**

- Not available

**11.9. Specific target organ toxicity(single exposure):**

- Not available

**11.10. Specific target organ toxicity(repeated exposure):**

- Causes damage to organs through prolonged or repeated exposure

**11.11. Aspiration hazard**

- May be fatal if swallowed and enters airways

**SECTION 12: ECOLOGICAL INFORMATION****12.1. Toxicity****12.1.1. Fish**

- Not available

**12.1.2. Invertebrate**

- Not available

**12.1.3. Algae**

- Not available

**12.2. Persistence and degradability****12.2.1. Persistence**

- Not available

**12.2.2. Degradability**

- Not available

**12.3. Bioaccumulative potential****12.3.1. Bioaccumulation**

- Not available

**12.3.2. Biodegradability**

- Not available

**12.4. Mobility in soil**

- Not available

**12.5. Results of PBT and vPvB assessment**

- Not available

**12.6. Other adverse effects**

- Toxic to aquatic life with long lasting effects

**SECTION 13: DISPOSAL CONSIDERATIONS****13.1. Waste treatment methods**

- Since more than two kinds of designated waste is mixed, it is difficult to treat separately, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.
- Incinerate the oil by separating the oil and water
- The remainder of the water after separation will be processed in a water pollution prevention facilities.
- Do incineration or stabilization of the residue after disposal as the method of evaporation and concentration.
- Do incineration of the residue after disposal as the method of agglomeration and precipitation.
- Take care of incinerate or stabilization after treatment, purified by means of Separation•distillation•extractio•filtration•pyrolysis
- The user of this product must dispose by oneself or entrust it to a waste disposer, a person who recycles other's waste or establishes and operates waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

**SECTION 14: TRANSPORT INFORMATION****14.1. UN No.****14.1.1. UN No. (ADR/RID/ADN)**

- 1114

**14.1.2. UN No. (IMDG CODE/IATA DGR)**

- 1114

**14.1.3. UN No. (ICAO)**

- 1114

**14.2. UN proper shipping name**

- BENZENE

**14.3. Transport hazard class(es)**

**14.3.1. ADR/RID/ADN Class**

- 3

**14.3.2. ADR/RID/ADN Class**

- Class : 3, BENZENE

**14.3.3. ADR Label No.**

- 3

**14.3.4. IMDG Class**

- 3

**14.3.5. ICAO Class/Division**

- 3

**14.3.6. Transport Labels**



**14.4. Packing group**

**14.4.1. ADR/RID/ADN Packing group**

- II

**14.4.2. IMDG Packing group**

- II

**14.4.3. ICAO Packing group**

- II

**14.5. Environmental hazards**

- Applicable

**14.6. Special precautions for user**

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-D (Flammable liquids)
- Emergency Action Code : 3WE
- Hazard No.(ADR) : 33
- Tunnel Restriction Code : 2 (D/E)

**14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

- Not applicable

**SECTION 15: REGULATORY INFORMATION****15.1. Safety, health and environmental regulation / legislation specific for the substance or mixture****15.1.1. Europe regulatory****15.1.1.1 REACH Restricted substance under REACH**

- Applicable (Benzene)

**15.1.1.2 REACH Substances subject to authorization under REACH**

- Not applicable

**15.1.1.3 REACH SVHC**

- Not applicable

**15.1.1.4 Europe PBT**

- Not applicable

**15.1.1.5 European Union (EU) Transport of Dangerous Goods by Road - Dangerous Goods List**

- Not applicable

**15.2. Chemical Safety Assessment**

- Not conducted

**SECTION 16: OTHER INFORMATION****16.1. Indication of changes**

- The Safety Data Sheet has been reviewed and the data therein were revised and laid out according the requirements of the Commission Regulation (EC) No. 1907/2006

**16.2. Abbreviations and acronyms**

- 1272/2008 CLP : Classification, Labelling and Packaging regulation.
- REACH : Registration, Evaluation and authorisation of chemical substances.
- DNEL : Derive no effects level
- PNEC : Predicted no effect concentration

**16.3. Key literature references and sources for data**

- This Safety Data Sheet was compiled with data and information from the following sources: RTECS, ECOSAR, HSDB, SIDS SIAP, ChemWATCH, CESAR, Chemical DB

**16.4. Classification procedure**

- The mixture classification has been derived based on the classification of the individual components in accordance with the rules set out in Regulation (EC) No 1272/2008 (CLP) as well as the translation tables in Annex VII to the same regulation.

**16.5. Training advice**

- Not applicable

**16.6. Further information**

- The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.
- This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only.
- It should not therefore be construed as guaranteeing any specific property of the product.
- Contact National Helpdesks, List of Telephone Numbers : AUSTRIA (Vienna Wien) +43 1 515 61 0, BELGIUM (Brussels Bruxelles) +32 070 245 245, BULGARIA (Sofia) +359 2 9888 205, Croatia +385 1 2348 342 CZECH REPUBLIC (Prague Praha) +420 224 919 293 or +420 224 915 402, DENMARK (Copenhagen) 82 12 12 12, ESTONIA (Tallinn) 112, FINLAND (Helsinki) +358 9 471 977, FRANCE (Paris) +33 1 45 42 59 59, GERMANY (Berlin) +49 30 19240, GREECE (Athens Athinai) +30 210 77 93 777, HUNGARY (Budapest) +36 80 201 199, ICELAND (Reykjavik) +354 543 2222 or 112, IRELAND (Dublin) +353 1 8379964 or +353 1 809 2166, ITALY (Rome) +39 06 305 4343, LATVIA (Riga) 112 or +371 6704 2473, LITHUANIA (Vilnius) +370 5 236 20 52 or +370 687 53378, Luxembourg +352 70 245 245, MALTA +356 2122 4071, NETHERLANDS (Bilthoven) +31 30 274 88 88, NORWAY (Oslo) 22 591300, POLAND (Gdansk) +48 58301 65 16 or +48 58 349 2831, PORTUGAL (Lisbon Lisboa) 808 250 143, ROMANIA (Bucharest) +40 21 3183606 SLOVAKIA (Bratislava) +421 2 54 77 4166, SLOVENIA (Ljubljana) + 386 41 650 500, SPAIN +34 91 562 04 20 (spanish language) or +34 91 768 98 00 (You can request to be served in English), SWEDEN (Stockholm) 112 or +46 10 456 6700 (mon-fri 9.00-17.00), UNITED KINGDOM (London) 112 or 0845 4647 (NHS Direct).