Material Safety Data Sheet
(MSDS)

Product	Automotive Butane (winter)		
CAS No.	**RTECS No.**	**UN No.**	**EC No.**
106-97-8	EJ4200000	1011	203-448-7
List No.	**Date of preparation**	**Date of preparation**	**Department of Team**
PD1180	2016-10-24	2019-11-01	Safety / Health Planning Team

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

1.1. Product identifier

Trade name/designation : Automotive Butane (Winter) [PD1180]

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

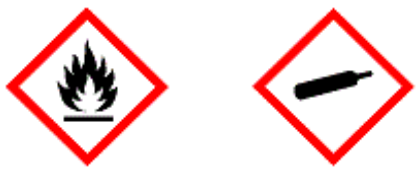
2.1.1. Classification according to Regulation (EC) No 1272/2008 [CLP]

- Flammable gases : Category1, H220
- Gases under pressure : Liquefied gas, H280

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)**

- H220 Extremely flammable gas
- H280 Compressed gas ; Contains gas under pressure; may explode if heated

*** Precautionary statement(s)**

1) Prevention

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

2) Response

- P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
- P381 Eliminate all ignition sources if safe to do so.

3) Storage

- P403 Store in a well-ventilated place.
- P410+P403 Protect from sunlight. Store in a well-ventilated place.

4) Disposal

- Not applicable

2.3. Other hazards

- Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

- Not applicable

3.2. Mixtures

Name	EC No.	CAS No.	REACH registration No.	% [weight]	Classification [1272/2008/EC]
Butane	203-448-7	106-97-8	-	>60	Press. Gas, H280 Flam. Gas 1, H220
Petroleum gases, liquefied	270-704-2	68476-85-7	-	30~40	Press. Gas, H280 Flam. Gas 1, H220

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.

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.

Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.

Ingestion

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.

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.

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

- high-pressure gas; May explode when heated.

5.3. Advice for firefighters

- 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.
- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Avoid inhalation of materials or combustion by-products.
- Do not approach the tank surrounded by fire until it is extinguished.
- Keep containers cool with water spray.
- Use fire fighting procedures suitable for surrounding area.
- Leaking gas fire: do not extinguish, unless leak can be stopped safely.
- Remove sources of ignition.

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

- Must work against the wind, let the upwind people to evacuate.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Handle the damaged containers or spilled material after wearing appropriate protective equipment

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

- Don't use a brush or compressed air for cleaning surfaces or clothing.
- Clear spills immediately
- Clear area of personnel and move up wind.

6.3.2. For cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notify the central and local government if the emission reach the standard threshold.
- Disposal of waste shall be in compliance with the Wastes Control?Act
- Appropriate container for disposal of spilled material 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.
- Get the manual before use.
- Operators should wear antistatic footwear and clothing.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Handling only authorized person.

7.2. Conditions for safe storage, including any incompatibilities

- Check regularly for leaks.
- Do not use damaged containers.
- Do not apply direct heat.
- Do not apply any physical shock to container.
- Keep sealed when not in use.
- Store in well ventilated area.

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 vaporcartridge(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)	Gas
Appearance(Color)	Transparent
Odor	Petrochemical Odor
Odor threshold	Not available
pH	Not available
Melting point/Freezing point	-138℃
Initial boiling point and boiling range	-0.5 ℃
Flash point	-60 ℃
Evaporation rate	Not available
Flammability(solid, gas)	Not available
Upper/Lower Flammability or explosive limits	UEL : 8.4% LEL : 1.8%
Vapour pressure	1.3 Mpa @40℃
Vapour density	Not available
Relative density	Not available
Solubility	Not available
Partition coefficient of n-octanol/water	Not available
Autoignition temperature	365 ℃
Decomposition temperature	Not available
Viscosity	Not available
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

- high-pressure gas; May explode when heated.
- May form explosive mixture.

10.3. Possibility of hazardous reactions

- Contact with other combustible material may cause fire.
- 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

- Not available

11.3. Serious eye damage/irritation

- [Butane] not irritating (HSDB)

11.4. Respiratory sensitization

- Not available

11.5. Skin sensitization

- Not available

11.6. Germ cell mutagenicity

- [Petroleum gases, liquefied] : EU CLP 1272/2008 : Muta. 1B (Note K : The classification as a carcinogen or mutagen need not apply if it can be shown that the substance contains less than 0.1% w/w 1,3-butadiene. This note applies only to certain complex oil-derived substances in Part 3.)

11.7. Carcinogenicity

- IARC

- Not available

- OSHA

- Not available

- ACGIH

- Not available

- NTP

- Not available

- EU CLP

- [Petroleum gases, liquefied] : Carc. 1A (Note K : The classification as a carcinogen or mutagen need not apply if it can be shown that the substance contains less than 0.1% w/w 1,3-butadiene. This note applies only to certain complex oil-derived substances in Part 3.)

11.8. Reproductive toxicity

- Not available

11.9. Specific target organ toxicity(single exposure):

- Not available

11.10. Specific target organ toxicity(repeated exposure):

- Not available

11.11. Aspiration hazard

- Not available

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

12.1.1. Fish

- [Petroleum gases, liquefied] : 96h-LC50 = 11.406 mg/l (ECOSAR: neutral organics QSAR) (estimated) (ECHA)

12.1.2. Invertebrate

- [Petroleum gases, liquefied] : 48h-LC50(Daphnid) = 6.971 mg/l (ECOSAR: neutral organics QSAR) (estimated) (ECHA)

12.1.3. Algae

- [Petroleum gases, liquefied] : 96h-EC50(Alage) = 7.039 mg/l (ECOSAR: neutral organics QSAR) (estimated) (ECHA)

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

- Not available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- It shall be treated by incineration
- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act
- 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)

- 1011

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

- 1011

14.1.3. UN No. (ICAO)

- 1011

14.2. UN proper shipping name

- BUTANE SEE ALSO PETROLEUM GASES, LIQUEFIED

14.3. Transport hazard class(es)

14.3.1. ADR/RID/ADN Class

- 2

14.3.2. ADR/RID/ADN Class

- Class : 2, BUTANE

14.3.3. ADR Label No.

- 2.1

14.3.4. IMDG Class

- 2.1

14.3.5. ICAO Class/Division

- 2.1

14.3.6. Transport Labels



14.4. Packing group

14.4.1. ADR/RID/ADN Packing group

- Not applicable

14.4.2. IMDG Packing group

- Not applicable

14.4.3. ICAO Packing group

- Not available

14.5. Environmental hazards

- Not 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-D (Flammable gases)
- EmS SPILLAGE SCHEDULE : S-U (Gases (flammable, toxic or corrosive))
- Emergency Action Code : 2YE
- Hazard No.(ADR) : 23
- Tunnel Restriction Code : 2 (B/D)

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 (Butane)
- Applicable (Petroleum gases, liquefied)

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).