

SDS(Safety Data Sheet)

Product	Jet A-1 Fuel		
MSDS Number	List No.	Issuing date	Last revised date
-	PD1047	2008-07-25	2024-01-17

1. IDENTIFICATION

1) Product name

Jet A-1 Fuel

2) Recommended use of the chemical and restriction on use

- Recommended use Fuels and additives
- Restrictions on use Do not use for any other purpose.

3) Details of the supplier of the safety data sheet

○ Manufacturer

- Company name GS Caltex Corporation
- Address GS Tower, 508, Nonhyeon-ro, Gangnam-gu, Seoul, Korea
- Emergency telephone number 1544-5151

2. HAZARDS IDENTIFICATION

1) Classification of the product

- FLAMMABLE LIQUIDS : Category 3
- SKIN CORROSION/IRRITATION : Category 2
- CARCINOGENICITY : Category 2
- ASPIRATION HAZARD : Category 1

2) Label elements

○ Hazard pictograms



○ Signal word

Danger

○ Hazard statements

- H226 Flammable liquid and vapour.
- H304 May be fatal if swallowed and enters airways.
- H315 Causes skin irritation.
- H351 Suspected of causing cancer.

○ Precautionary statements

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, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P233 Keep container tightly closed.
- P240 Ground and bond container and receiving equipment.
- P241 Use explosion-proof [electrical/ventilating/lighting] equipment.
- P242 Use non-sparking tools.
- P243 Take precautionary measures against static discharge.
- P264 Wash ... thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

2) Response

- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P302 + P352 IF ON SKIN: Wash with plenty of water/cleansing agent.
- P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P308 + P313 IF exposed or concerned: Get medical advice/attention.
- P321 Specific treatment (see section 5).
- P331 Do not induce vomiting.
- P332 + P313 If skin irritation occurs: Get medical advice/attention.
- P362 + P364 Take off contaminated clothing and wash it before reuse.
- P370 + P378 In case of fire: Use manufacturer/supplier or the competent authority to specify appropriate media for extinction.

3) Storage

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

4) Disposal

- P501 Dispose of contents/container to

3) Other hazards

○ Product NFPA Level

(※ 0-Lack, 1-Low, 2-Moderate, 3-High, 4-Very High)

Product name	Health	Flammable	Reaction
Jet A-1 Fuel	2	2	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	Trade names and Synonyms	CAS No.	EC No.	Contain Ratio(%)
Kerosine	Kerosine (petroleum)	8008-20-6	232-366-4	100

4. FIRST AID MEASURES

1) Eye contact

- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes.
- If eye irritation persists: Get medical advice/attention.

2) Skin contact

- In case of contact with substance, immediately flush skin with running water for at

least 20 minutes.

- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- If skin irritation occurs: Get medical advice/attention.
- Take off immediately all contaminated clothing and wash it before reuse.

3) Inhalation

- Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
- IF exposed or concerned: Get medical advice/attention.
- Do not induce vomiting.

4) Ingestion

- Do not use mouth-to-mouth method if victim ingested the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

5) Indication of any immediate medical attention and special treatment needed

- Exposures require specialized first aid with contact and medical follow-up.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

1) Suitable (and unsuitable) extinguishing media

- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Use dry sand or earth to smother fire.
- For mixtures containing alcohol or polar solvent: Alcohol-resistant foam
- Direct water (Unsuitable extinguishing media)

2) Special hazards arising from the substance or mixture

- Can form explosive mixtures at temperatures at or above the flashpoint.
- Fire may produce irritating, corrosive and/or toxic gases.
- Flammable liquid and vapour.
- Heating may cause a fire or explosion.

3) Special protective equipment and precautions for firefighters

- Rescuers should put on appropriate protective gear.
- Fire involving Tanks: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
- Eliminate all ignition sources if safe to do so.

6. ACCIDENTAL RELEASE MEASURES

- 1) **Health considerations and** - Clean up spills immediately, observing precautions in Protective Equipment section.

- protective equipment**
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
 - All equipment used when handling the product must be grounded.
 - Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
 - Please note that materials and conditions to be avoided.

- 2) Environmental precautions**
- Large spill: Prevent entry into waterways, sewers, basements or confined areas.

- 3) Methods and material for containment and cleaning up**
- Dike and collect water used to fight fire.
 - Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
 - Absorb the liquid and scrub the area with detergent and water.
 - Large Spill: Dike far ahead of liquid spill for later disposal.

7. HANDLING AND STORAGE

- 1) Precautions for safe handling**
- Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition.
 - Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
 - Avoid prolonged or repeated contact with skin.
 - Avoid breathing vapors from heated material.
 - All equipment used when handling the product must be grounded.
 - Please note that materials and conditions to be avoided.
 - Handling refer to engineering control/personal protection section.
 - Wash thoroughly after handling.
 - Use only outdoors or in a well-ventilated area.

- 2) Conditions for safe storage (including any incompatibilities)**
- Please note that materials and conditions to be avoided.
 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 - Store in a well-ventilated place. Keep container tightly closed.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

1) Control parameters

Chemical name	Exposure limits	ACGIH TLV	OSHA PEL	Biological limit values(BLV)
Kerosine	TWA : 200 mg/m ³	Not available	Not available	Not available

2) Appropriate engineering controls

- Install local exhaust ventilation system.
- Check legal suitability of exposure level.

3) Personal protection equipment

- **Respiratory protection**
 - If exposure concentration of the material is lower than 100 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate material ; such
 - If exposure concentration of the particle material is lower than 250 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate material
 - If exposure concentration of the particle material is lower than 500 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate materia
 - If exposure concentration of the particle material is lower than 10000 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate mater
 - If exposure concentration of the material is lower than 100000 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposed particulate material ; su
 - If exposure concentration of the material exceeds the permitted exposure standards, Wear European Standard EN 149 approved full or half face piece (with goggles) respireatory protective equipment.

- **Eye protection**
 - An eye wash unit and safety shower station should be available nearby work place.
 - Wear breathable safety goggles to protect from vapour state organic material causing eye irritation or other disorder.

- **Hand protection**
 - Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

- **Body protection**
 - Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Item	Input Value
Apperance	Liquid
Color	No Data
Smell	등유냄새
Smell Threshold	No Data
pH (Numerical value)	No Data
Melting/Freezing Point	-50 °C
Boilling Point	170 ~ 300 °C

Flash Point	38 °C
Evaporating Rate	No Data
Flammability(Solid, Gas)	No Data
Explosibility Range	LEL: 0.6 %, UEL: 4.5 %
Steam Pressure	5 mmHg (at 38°C)
Solubility	No Data
Vapor Density	4.5
Specific Gravity	0.77 ~ 0.84
Distribution Coefficient	No Data
Selfignition Temperature	220 °C
Pyrolysis Temperature	No Data
Viscosity	1.3 mm ² /s (at 40°C)
Molecular Weight	No Data

10. STABILITY AND REACTIVITY

- 1) Chemical Stability and hazardous reactivity**
 - Can form explosive mixtures at temperatures at or above the flashpoint.
 - HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
 - Fire may produce irritating, corrosive and/or toxic gases.
- 2) Conditions to avoid**
 - Ignition source(heat, spark, flame, friction, shock, contamination)
- 3) Incompatible materials**
 - Combustibles
- 4) Hazardous decomposition products**
 - During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

11. TOXICOLOGICAL INFORMATION

1) Information on the likely routes of exposures

- Inhalation**
 - No inhalation effects through respiratory system.
- Skin contact**
 - Causes skin irritation.
 - Absorbable through the skin
- Eye contact**
 - Causes serious eye irritation.
 - Possible exposure through the eye
- Ingestion**
 - May be fatal if swallowed and enters airways.
 - Absorbable through the inhalation

2) Health hazard information

○ Acute toxicity

* Oral - Not classified (ATEmix > 2000 mg/kg)

- Kerosine : rat(male/female); LD50 > 5000 mg/kg bw, no deaths (OECD TG 420, GLP) (read across: 68333-23-3) (ECHA)

* Dermal - Not classified (ATEmix > 2000 mg/kg)

- Kerosine : rabbit(male/female); LD50 > 2000 mg/kg bw, no deaths (OECD TG 402, GLP) (read across: 68333-23-3) (ECHA)

* Inhalation(Gas) - Not applicable

- Kerosine : Not applicable

* Inhalation(Vapour) - Not classified (ATEmix > 20 mg/L)

- Kerosine : rat(male/female); inhalation: vapour; LC50 > 5.28 mg/L air /4h, no deaths (OECD TG 403, GLP) (ECHA)

* Inhalation(Dust, mist) - Not classified (ATEmix > 5 mg/L)

- Kerosine : Not available

○ Skin corrosion/Irritation : Category 2 (SKIN IRRITATION Cat.2)

- Kerosine : rabbit; irritating (GLP) (read across: Kerosine/heating oil (F-76-01)) (ECHA)

○ Serious eye damage/irritation : Not classified

- Kerosine : rabbit; not irritating (EPA OTS 798.4500, GLP) (read across: 68333-23-3) (ECHA)

○ Respiratory sensitization : Not classified

- Kerosine : Not available

○ Skin sensitization : Not classified

- Kerosine : guinea pig; not sensitising (OECD TG 406, GLP) (read across: 68333-23-3) (ECHA)

○ Carcinogenicity : Category 2

- Kerosine : ACGIH : A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

○ Germ cell mutagenicity : Not classified

- Kerosine : In Vitro Bacterial Reverse Mutation Assay : negative (OECD TG 471) (ECHA), In Vitro Sister Chromatid Exchange Assay in Mammalian Cells : negative (OECD TG 479, GLP) (read across: 64742-81-0) (ECHA)

In vivo Rodent Dominant Lethal Test : negative (OECD TG 478) (ECHA)

○ Reproductive toxicity : Not classified

- Kerosine : rat(male/female); One-Generation Reproduction Toxicity Study; The reproduction NOAEL was 3000 and 1500 mg/kg/day in males and females, respectively. (the highest tested) (OECD TG 415, GLP) (read across: JP-8 jet fuel) (ECHA)
rat; 500, 1000, 1500, or 2000 mg/kg/day; It can be concluded that the test substance is not toxic to development. (OECD TG 414) (read across: JP-8 jet fuel) (ECHA)

○ Specific target organ toxicity (single exposure) : Not classified

- Kerosine : oral; rat(male/female); All of the study animals exhibited one or more of the following clinical signs: nasal discharge, ocular discharge, abnormal stools, lethargy, stained coat, and alopecia. LD50 > 5000 mg/kg bw, no deaths (OECD TG 420, GLP) (read across: 68333-23-3) (ECHA)
dermal; rabbit(male/female); At necropsy, dermal irritation at the test site was

the only abnormal observation. LD50 > 2000 mg/kg bw, no deaths (OECD TG 402, GLP) (read across: 68333-23-3) (ECHA)

inhalation: vapour; rat(male/female); no significant histological alternations were seen. LC50 > 5.28 mg/L air /4h, no deaths (OECD TG 403, GLP) (ECHA)

○ Specific target organ toxicity (repeated exposure) : Not classified

- Kerosine : oral; rat(male/female); 90 days; 750, 1500, or 3000 mg/kg/day(m), 325, 750, or 1500 mg/kg/day(f); The study LOAEL for systemic effects is 1500 mg/kg/day and the NOAEL for systemic effects is 750 mg/kg/day, based on reduced body weight in dams and in pups. (OECD TG 408, GLP) (read across: JP-8 jet fuel) (ECHA)

○ Aspiration hazard : Category 1

- Kerosine : 2.4 cSt at 40°C (ECHA) & hydrocarbons

12. ECOLOGICAL INFORMATION

1) Ecotoxicity

- Acute toxicity : Not classified (ATEmix>1mg/L)

- Chronic toxicity : Not classified

○ Acute (short-term) aquatic hazard:

Fish

- Kerosine : No toxic effect observed within the range of water solubility(0.0037 mg/L). (EPISUITE) (ECHA)

Invertebrates

- Kerosine : No toxic effect observed within the range of water solubility(0.0037 mg/L). (EPISUITE) (ECHA)

Aquatic algae

- Kerosine : No toxic effect observed within the range of water solubility(0.0037 mg/L). (EPISUITE) (ECHA)

○ Chronic (Long-term) aquatic hazard:

Fish

- Kerosine : Not available

Invertebrates

- Kerosine : No toxic effect observed within the range of water solubility(0.0037 mg/L). (EPISUITE) (ECHA)

Aquatic algae

- Kerosine : Not available

2) Persistence and degradability

○ Persistence

- Kerosine : log Kow = 6.10 (exp.) (EPISUITE)

○ Degradability

- Kerosine : Not available

3) Bioaccumulative potential

○ Bioaccumulation

- Kerosine : BCF = 207.7 (estimated) (EPISUITE)

○ Biodegradation

- Kerosine : Kerosines are readily to inherently biodegradable. (ECHA)

4) Mobility in soil

- Kerosine : Koc = 196700 (EPISUITE)

5) Hazard to the ozone layer

- Kerosine : Not applicable

6) Other adverse effects

- Kerosine : Not classified

13. DISPOSAL CONSIDERATIONS

1) Disposal methods

- Waste must be disposed of in accordance with federal, state and local environmental control regulation.

2) Special precaution for disposal

- Consider the required attentions in accordance with waste treatment management regulation.

14. TRANSPORT INFORMATION

1) UN No.

- 1863

2) Proper shipping name

- FUEL, AVIATION, TURBINE ENGINE

3) Transport hazard class(es)

- 3

4) Packing group

- III

5) Marine pollutant

-

6) Special safety response for transportation or transportation measure

- Types of Emergency Measures in Case of Fire : F-E
- Types of Emergency Measures in Leakage : S-E

15. REGULATORY INFORMATION

EINECS(or ELINCS)

- Kerosine : European EINECS phase-in substance

EU CLP (CLASSIFICATION) - PRODUCT : Not applicable

- Kerosine : Not applicable

Substances restricted under REACH

- Kerosine : Not applicable

Substances subject to authorization under REACH

REACH SVHC List

Korea

Occupational Safety and Health Act

- Kerosine : Substance subject to occupational exposure limits, Substance subject to submission of process

safety reports

K-REACH

- Kerosine : Not applicable

Chemical Control Act in Korea

- Kerosine : Not applicable

Safety Control of Dangerous Substances Act

- Kerosine : Dangerous substance

U.S.A

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

- Kerosine : Not applicable

CERCLA Designation of hazardous substances (40 CFR 302.4)

- Kerosine : Not applicable

CERCLA Section 302 regulation

- Kerosine : Not applicable

CERCLA Section 304 regulation

- Kerosine : Not applicable

CERCLA Section 313 regulation

- Kerosine : Not applicable

Interntional Convention on Environment

Rotterdam Convention list

- Kerosine : Not applicable

Stockholm Convention list

- Kerosine : Not applicable

Montreal Protocol list

- Kerosine : Not applicable

National Inventory

Korea

- Kerosine : Not applicable

U.S.A

- Kerosine : US TSCA phase-in substance

China

- Kerosine : China phase-in substance

Japan

- Kerosine : Japan ENCS phase-in substance

16. OTHER INFORMATION

1) Reference

- Sources of information used in preparing this SDS included one or more of the following: Internal technical data, data from OECD eChemPortal, ECHA, NITE, TOXNET, IPCS and KOSHA search results.

2) Issue Date

- 2008-07-25

3) Revision number and Last date revised

Number of revised

- 7

○ **Date of last revision**

- 2024-01-11

○ **Last Revision History**

- We have reviewed the ingredient content and revised the 9. PHYSICAL AND CHEMICAL PROPERTIES sections.
No changes to the hazard classification.

4) Other

- The information contained in the Safety Data Sheet is at the date of its issuance to the best of our knowledge correct according to the data available to us. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.