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

1.1 Product identifier

Product name: Avgas UL91

 CAS No.:
 86290-81-5

 EC No.:
 289-220-8

 Index No.:
 649-378-00-4

REACH Registration No.: 01-2119471335-39-XXXX

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

Identified use(s): Aviation fuel.

Uses advised against: Follow supplier's recommendations on correct use of the

product.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:JS Union Oils & Trading Inc.

1C Victoneta Avenue, Potrero Malabon City, Philippines 1475

Telephone: +63 02 8855 4681

E-mail: admin@jsoils.com

1.4 Emergency telephone number

In case of emergency, call: +63 998 846 2627 (24 hours, 7 days)

SECTION 2: Hazard Identification

2.1 Classification of the substance or mixture

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

Flam. Liq. 2; H225 Asp. Tox. 1; H304 Skin Irrit. 2; H315 STOT SE 3; H336 Repr. 2; H361d

Aquatic Chronic 2; H411

2.2 Label elements

2.2.1. Label 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.

H336: May cause drowsiness or dizziness.
H361d: Suspected of damaging the unborn child.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement(s): 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/bond container and receiving equipment.

P241: Use explosion proof electrical equipment.

P242: Use only non-sparking tools.

P243: Take precautionary measures against static discharge.

P261: Avoid breathing fume/vapours/spray. P264: Wash hands thoroughly after handling.

P271: Use only outdoors or in a well-ventilated area.

P273: Avoid release to the environment.

P280: Wear protective gloves/protective clothing/eye

protection/face protection.

P301 + P310: IF SWALLOWED: Immediately call a POISON

CENTER or doctor/physician.

P303 + P361 + P353: IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with

water/shower

P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312: Call a POISON CENTER/doctor if you feel unwell.

P331: Do NOT induce vomiting.

P332 + P313: If skin irritation occurs: Get medical advice. P362 + P364: Take off immediately all contaminated clothing

and wash it before reuse.

P370 + P378: In case of fire: Use foam, carbon dioxide, dry

powder or water fog to extinguish.

P391: Collect spillage.

P403 + P235: Store in a well-ventilated place. Keep cool.

P405: Store locked up.

P501: Dispose of contents/container to approved disposal

facility.

Supplemental Hazard information (EU):

None.

2.3 Other hazards

Vapours are heavier than air and may travel along the floor and accumulate in the bottom of containers. Vapours may be ignited by a spark, a hot surface or an ember. Vapours may form explosive mixtures with air.

SECTION 3: Composition/Information on Ingredients

3.1 Substances

Chemical name	% w/w	CAS No.	EC No.	Index No.	Classification (Regulation (EC) No. 1272/2008 (CLP))*
Gasoline REACH: 01- 2119471335-39-XXXX	99-100	86290-81-5	289-220-8	649-378-00-4	Flam. Liq. 2; H225 Asp. Tox. 1; H304 Skin Irrit. 2; H315 STOT SE 3; H336 Repr. 2; H361d Aquatic Chronic 2; H411

^{*} The harmonised classification as a carcinogen and mutagen does not apply as the substance contains less than 0.1% w/w benzene.

UVCB Substance - contains benzene <0.1%; n-hexane AND/OR toluene ≥3%.

See Section 16 for full description of H statements.

SECTION 4: First Aid Measures

INHALATION: Remove person to fresh air and keep comfortable for

breathing. Keep warm and at rest. If symptoms persist,

obtain medical attention.

SKIN CONTACT: Remove contaminated clothing immediately. Wash with

plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash all contaminated clothing

before reuse.

EYE CONTACT: Rinse eyes immediately with plenty of water, making sure to

rinse under eyelids. Continue to rinse for at least 15 minutes. Remove any contact lenses if present and easy to do so. If

symptoms persist, obtain medical attention.

INGESTION: Obtain medical attention immediately. Do not induce

vomiting. Do not give anything by mouth because of risk of material entering the lungs and causing lung damage. If person is drowsy or unconscious and vomiting, place on left side with head down. If possible, do not leave unattended

and observe closely for adequacy of breathing.

4.2 Most important symptoms and effects, both acute and delayed:

Skin contact causes irritation, redness and pain. Eye contact may cause slight irritation, watering, redness and pain. Inhalation of vapours may cause drowsiness or dizziness. If swallowed, aspiration into lungs may result in vomiting or chemical pneumonia.

4.3 Indication of any immediate medical attention and special treatments needed:

In case of accident or if you feel unwell, seek medical advice immediately. If swallowed, patient should be monitored for signs of breathing difficulty as effects of aspiration may be delayed for up to 48 hours. If breathing is laboured, oxygen should be administered by qualified personnel.

SECTION 5: Fire-fighting Measures

5.1 Extinguishing Media

Suitable extinguishing media: Foam; water mist or water fog; dry powder; CO₂; sand or

earth may be used for small fires only.

Unsuitable extinguishing media: Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Highly flammable liquid and vapour: Vapour may form explosive mixture with air. Vapour is heavier than air and may accumulate in confined spaces. Vapours may travel considerable distances to ignition sources where they can ignite, flash back or explode. The product will float on surface water and can reignite. Containers exposed to heat may burst due to increase in pressure.

Combustion may liberate toxic fumes: Carbon monoxide, carbon dioxide, various hydrocarbons.

5.3 Advice for fire-fighters

A self-contained breathing apparatus and suitable protective clothing should be worn in fire conditions. Keep fire exposed containers cool by spraying with water. Do not allow product or run-off to enter drains, sewers or watercourses.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Eliminate all potential sources of ignition. No smoking. Ventilate the area well; vapour may create an explosive atmosphere. Vapour is heavier than air and will collect in low-lying areas – beware of pits and confined spaces. Take precautionary measures against static discharge. Use only non-sparking tools. Use explosion-proof electrical, ventilating and lighting equipment.

Keep upwind. Ensure adequate ventilation. Avoid inhalation of vapours. Avoid contact with skin and eyes. Wear suitable personal protective equipment. Wear appropriate respirator when ventilation is inadequate (see Section 8).

6.1.2 For emergency responders

Keep unnecessary personnel away. Wear suitable protective clothing (see Section 8). Contaminated clothing should be thoroughly cleaned.

6.2 Environmental precautions

Stop leak if safe to do so. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body. If spill occurs on water notify the appropriate authorities and advise shipping of any hazard.

6.3 Methods and materials for containment and clearing up

6.3.1 For containment

Stop the leak if it is safe to do so. Contain the spillage with vermiculite, sand, earth or any suitable non-combustible material.

6.3.2 For cleaning up

Use sand, earth or any suitable non-combustible adsorbent material. Using non-sparking tools transfer the contaminated adsorbent material into a container for disposal. For spillages on water, remove using appropriate methods such as skimming, booms or absorbents. For spillages onto soil, remove contaminated soil for remediation or disposal in accordance with local regulations.

Waste containers used should be plastic-lined sealable drums. Containers should be sealed before being disposed of via an authorised waste disposal contractor.

6.3.3 Other advice

None.

6.4 Reference to other sections

See Section 8 for personal protective equipment. See Section 13 for waste disposal.

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Highly flammable liquid and vapour: Vapour may form explosive mixture with air. Vapour is heavier than air and may accumulate in confined spaces. Vapours may travel considerable distances to ignition sources where they can ignite, flash back or explode. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical, ventilating and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices, etc.) in or around any fuelling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Provide adequate ventilation, including local extraction, to ensure occupational exposure limits are not exceeded. Avoid breathing vapours/spray. Avoid contact with skin and eyes. Wear suitable personal protective equipment (see Section 8). Avoid release to the environment.

Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Take off immediately all contaminated clothing and wash it before reuse. Contaminated clothing should be thoroughly cleaned or disposed of as hazardous waste.

Product transfer

It is dangerous and/or unlawful to put gasoline into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapour and cause fire. Place container on ground when filling and keep nozzle in contact with container.

Be aware of handling operations that may give rise to accumulation of static charges. These include, but are not limited to, pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations and mechanical movement. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/s until fill pipe submerged to twice its diameter, then ≤ 7 m/s). Do NOT use compressed air for filling, discharging or handling operations. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care.

Ensure electrical continuity by bonding all equipment. Avoid splash filling. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes. Even with proper grounding and bonding this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air/vapour mixtures can occur.

Tank cleaning

Cleaning, inspection and maintenance of storage tanks is a specialist operation that requires the implementation of strict procedures and precautions. These include issue of work permits, gas-freeing of tanks, using a manned safety harness, lifelines and wearing air-supplied breathing apparatus. Prior to entry and while cleaning is underway, the atmosphere within the tank must be monitored using an oxygen meter and explosimeter. Additional precautions are required where the tank may have previously contained the product.

7.2 Conditions for safe storage, including any incompatibilities

Keep away from heat and sources of ignition. Keep away from direct sunlight. Store locked up in a well-ventilated place. Keep container tightly closed and keep cool. Empty containers retain product residue and can be hazardous.

Keep away from oxidising agents and reducing agents.

This product must never be stored in buildings occupied by people. Drums and small containers should be stored in well-ventilated areas, flameproof cabinets or stores. Keep in a bunded area with a sealed floor to provide containment against spillage. Stack drums to a height not exceeding three metres without the use of racking. Seek specialist advice for the design, construction and operation of bulk storage facilities.

Recommended storage container materials

For containers or container linings use mild steel or stainless steel. Aluminium may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE), polypropylene (PP), and Viton (FKM) which have specifically tested for compatibility with the product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

Drums must be earthed and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters.

Unsuitable storage container materials

Synthetic materials such as plastics and fiberglass may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene. However, some may be suitable for glove materials.

7.3 Specific end uses(s)

Refer to supplemental exposure scenarios attached or 'aviation fuel'.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control parameters

Workplace exposure limits

None assigned.

DNEL Industry – inhalation; short-term systemic effects: 1300 mg/m³

Industry – inhalation; short-term local effects: 1100 mg/m³ Industry – inhalation; long-term local effects: 840 mg/m³

Consumer – inhalation; short-term systemic effects: 1200 mg/m³
Consumer – inhalation; short-term local effects: 640 mg/m³
Consumer – inhalation; long-term local effects: 180 mg/m³
Industry – dermal; long-term local effects: 23.4 mg/kg/day

PNEC No PNEC available.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Provide adequate ventilation; local extraction may be required. Eye wash and quick-drench shower facilities should be available in the work area. Contaminated clothing and shoes should be thoroughly washed before reuse.

8.2.2 Personal protection

Eye protection: Chemical splash goggles or safety glasses with side shields

giving complete protection to eyes. (EN 166).

Hand protection: Chemical-resistant gloves. (EN 374). Suitable glove material:

nitrile or neoprene or PVC. Contact glove supplier to confirm suitable glove material, thickness and breakthrough times.

Other: Long sleeve protective clothing. Plastic apron. Rubber boots.

Respiratory protection: If ventilation is inadequate, wear a positive pressure air-

purifying respirator (EN 140) with a Type A/P2 filter or better suitable for organic gases and vapours with a boiling point

above 65°C. (EN 14387).

8.2.3 Environmental exposure controls

Inform environmental manager of all incidents involving this product.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Data given below are typical values

Appearance:Clear, colourless liquidOdour:Pungent, hydrocarbon

Odour threshold:

pH:

Not available

Not applicable

Melting/freezing point: < -60°C

Initial boiling point and boiling range: 36 - 167°C @760 mm Hg

Flash point: < -30°C PMCC
Evaporation rate: Not determined

Flammability (solid; gas): Not applicable

Upper/lower flammability or explosive limits: 1.4% – 7.6% (v/v in air)

Vapour pressure: 46.5 kPa (37.8°C)

Vapour density: Not available.

Relative density: 0.715 @ 15°C (Water = 1)

Solubility(ies): Soluble in organic solvents.

Partition coefficient: n-octanol/water: Substance is a hydrocarbon UVCB, standard tests for this

endpoint are intended for single substances and are not

appropriate for this complex substance.

Auto-ignition temperature: 300°C

Decomposition temperature:Not determined. **Viscosity:**0.75 cSt @ 20°C

Explosive properties: May form explosive mixtures with air.

Oxidising properties: Not oxidising.

9.2 Other information

None

SECTION 10: Stability and Reactivity

10.1 Reactivity Reacts with strong oxidising agents.

10.2 Chemical stability Stable at normal ambient temperatures and when used as

recommended.

10.3 Possibility of hazardous reactions No hazardous reactions expected during normal use.

10.4 Conditions to avoid Keep away from sources of ignition, hot surfaces, direct

sunlight. Prevent accumulation of vapours. Prevent contact

with incompatible materials.

10.5 Incompatible materials Strong oxidising agents.

10.6 Hazardous decomposition products Combustion may liberate toxic fumes: Carbon monoxide,

carbon dioxide, various hydrocarbons.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Acute toxicity LD_{50} (oral/rat): > 5000 mg/kg, OECD 401 – not classified

LD₅₀ (dermal/rabbit): > 2000 mg/kg, OECD 402 – not

classified

Inhalation - not classified

Skin corrosion/irritation Causes skin irritation - OECD 404.

Serious eye damage/irritation The product is not classified as an eye irritant - OECD 405.

Skin sensitisation The product is not classified as a skin sensitiser - OECD 406.

Respiratory sensitisationThe product is not classified as a respiratory sensitiser.

Germ cell mutagenicity The product is not classified as mutagenic - method similar to

OECD 471 and OECD guideline 475.

Carcinogenicity The product is not classified as carcinogenic - OECD 453 and

method equivalent to OECD 451.

Reproductive toxicity

Fertility: Two-generation study – NOAEC ≥20,000 mg/m³, inhalation,

rat F1 - OECD 416.

Development: NOAEL: 23,900 mg/m³, inhalation, rat - OECD 414.

> It should be noted that, although the data do not support classification for reproductive toxicity potential according to EU Regulation (EC no. 1272/2008), there is a regulatory requirement to classify, as reprotoxic, gasoline and naphtha

streams containing >3% toluene and /or n-hexane.

If inhaled, may cause drowsiness or dizziness.

Specific Target Organ Toxicity -

single exposure

Specific Target Organ Toxicity -

NOAEL ~3,750 mg/kg, dermal - OECD TG 410 under repeated exposure occlusive conditions.

Aspiration hazard May be fatal if swallowed and enters airways. Risk of

aspiration into lungs resulting in chemical pneumonia.

Information on likely routes of exposure

Inhalation Vapours in high concentrations are anaesthetic. Symptoms

following overexposure may include the following: headache;

fatigue; dizziness; central nervous system depression.

Skin contact Irritating to skin, not a skin sensitiser.

Eye contact No specific health hazards known.

Ingestion May be fatal if swallowed and enters airways. Risk of

aspiration into lungs resulting in chemical pneumonia.

Symptoms related to the physical, chemical and

toxicological characteristics

Skin contact causes irritation, redness and pain. Inhalation of vapours may cause drowsiness or dizziness. If swallowed.

aspiration into lungs may result in chemical pneumonia.

Mixture versus substance information No data available.

SECTION 12: Ecological Information

12.1 **Toxicity**

Toxic to aquatic life with long lasting effects.

Fish: LC50 96hrs: 10 mg/l (Onchorhynchus mykiss) - OECD

203

Aquatic invertebrates: EC50 48hrs: 4.5 mg/l (Daphnia

magna) - OECD 202

Aquatic plants: EC50 72hrs: 3.1 mg/l (Selenastrum

capricornutum) - OECD 201

Microorganisms: LL50 72 hrs: 15.41 mg/l (Tetrahymena

pyriformis) - QSAR modelled data

Fish early life stage: NOELR 21 days: 2.6 mg/l - read across

from Daphnia magna reproduction test

Aquatic invertebrates: NOELR 21 days: 2.6 mg/l - (Daphnia

magna) OECD 211

12.2 Persistence and degradability
 This product is considered inherently biodegradable. Water: degradation 94% - 25 days.

 12.3 Bioaccumulative potential
 The substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.

 12.4 Mobility in soil
 The substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.

12.5 Results of PBT and vPvB

assessment

The substance is not classified as PBT or vPvB according to

current EU criteria.

12.6 Other adverse effects None known.

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

To be disposed of as hazardous waste. Disposal should be in accordance with local, state or national legislation.

Contaminated adsorbent must be removed in sealed, plastic lined drums and disposed of via an authorised waste disposal contractor. Empty containers retain product residue and can be hazardous. Do not empty into drains; dispose of this material and its container in a safe way.

Suggested EU Waste Code: 13 07 02* (Petrol). Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport Information

Environmental hazards

14.5

ADR		
14.1	UN Number	1203
14.2	UN Proper shipping name	MOTOR SPIRIT or GASOLINE or PETROL
14.3	Transport hazard class(es)	3
14.4	Packing group	II
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.
ADN		
14.1	UN Number	1203
14.2	UN Proper shipping name	MOTOR SPIRIT or GASOLINE or PETROL
14.3	Transport hazard class(es)	3
14.4	Packing group	II
14.5	Environmental hazards	Yes
14.6	Special precautions for the user	Read SDS and supplier instructions on correct use of the product.
RID		
14.1	UN Number	1203
14.2	UN Proper shipping name	MOTOR SPIRIT or GASOLINE or PETROL
14.3	Transport hazard class(es)	3
14.4	Packing group	II

Yes

14.6 Special precautions for the user

Read SDS and supplier instructions on correct use of the

product.

IATA/ICAO

14.1	UN Number	1203

14.2 UN Proper shipping name MOTOR SPIRIT or GASOLINE or PETROL

14.3 Transport hazard class(es)
14.4 Packing group
14.5 Environmental hazards
3
II
Yes

14.6 Special precautions for the user Read SDS and supplier instructions on correct use of the

product.

IMDG

14.1 UN Number 1203

14.2 UN Proper shipping name MOTOR SPIRIT or GASOLINE or PETROL

14.3 Transport hazard class(es)14.4 Packing group

14.5 Environmental hazards Marine pollutant.

14.6 Special precautions for the user Read SDS and supplier instructions on correct use of the

product.

14.7 Transport in bulk according to Annex II of

MARPOL 73/78 and the IBC code Applicable to this product.

SECTION 15: Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This Safety Data Sheet was prepared in accordance with EC Regulation (EC) No. 1907/2006 as amended. The product has been classified in accordance with Regulation (EC) No. 1272/2008 (CLP), Directive 67/548/EEC & Directive 1999/45/EC.

Toluene is included in CoRAP list of substances.

15.2 Chemical Safety Assessment

A chemical safety assessment has been carried out on this product.

SECTION 16: Other Information

Full text of relevant H-statements:

H225: Highly flammable liquid and vapour.

H304: May be fatal if swallowed and enters airways.

H315: Causes skin irritation.

H336: May cause drowsiness or dizziness. H361d: Suspected of damaging the unborn child. H411: Toxic to aquatic life with long lasting effects.

Abbreviations:

CAS: Chemical Abstracts Service; EC50: Effective Concentration 50% LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

LL50: Lethal Loading rate 50%

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Safety Data Sheet Avgas UL91

PBT: Persistent, Bioaccumulative and Toxic.

PMCC: Pensky-Martens closed cup

UVCB: Substance of Unknown or Variable composition, Complex reaction products or Biological materials

vPvB: Very Persistent and Very Bioaccumulative

References:

Supplier's Safety Data Sheet
ECHA disseminated REACH dossiers
ECHA Classification and Labelling Inventory
Regulation (EC) No. 1272/2008 of the European Parliament and of the council.

Further information:

This safety data sheet contains important information to ensure the safe storage, handling and use of this product, it does not however constitute an assessment of workplace risks.

Users are advised to refer to relevant legislation, approved codes of practice and guidance available from the Health & Safety Executive (website: http://www.hse.gov.uk) and to the IP Codes of Practice available from the Energy Institute (website: http://www.energyinst.org.uk).

Disclaimer:

The above information is based on our current knowledge of the product. The purpose of this data sheet is to describe the product in terms of its safety and environmental requirements. It is the user's responsibility to satisfy themselves as to the application of this information and/or recommendations for their own use.

Version history:

Version: 1.0

Issue date: 08/11/2016

Previous Version: Issue date of previous version: -

Sections changed from previous version: New SDS