

MATERIAL SAFETY DATA SHEET

UNLEADED GASOLINE WITH 5% ETHANOL

CAS number: 8006-61-9

UN number: 1203



I. PRODUCT AND COMPANY IDENTIFICATION

Product name: Unleaded gasoline E5.

Trade name: Gasoline E5 RON 92.

Synonyms (not scientific name): Gasoline.

Supplier's name, address	Contact, Routine inquiries
VIETNAM NATIONAL PETROLEUM GROUP PETROLIMEX N°1-Kham Thien Str.-Dong Da Dist.-Hanoi	Vietnam National Petroleum Group N°1-Kham Thien Str.- Dong Da Dist.-Hanoi Tel. 04 38512 603 Fax. 04 38512 902

Manufacturer's name and address:

Intended use: fuel for various type of internal combustion engine.

II. HAZARDS IDENTIFICATION

1. Hazard classification: NFPA: Health: 3, Flammable: 3, Reactivity: 0.

2. Warning statement:

- The gasoline E5 RON 92 is a highly flammable product when exposed to fire source at normal temperature.

- The gasoline E5 RON 92 may cause irritation and inhibition to the nervous system or skin burn in case of direct, repeated and prolonged contact.

- **Precaution when getting in contact with, storing, using:** The gasoline E5 RON 92 evaporates at normal temperature, is stored in liquid form in specialized container, absolutely needs to be kept away from heat source, sparks, open flames and children's reach. The unleaded gasoline should be stored in a well-ventilated space. Use suitable protection equipment when getting in contact with the unleaded gasoline. To avoid fire or explosion, dissipate electrostatic during transfer by grounding the containers and equipment before transferring the product.

3. Health effects:

Eyes: May cause irritation and damage to the eye.

Inhalation: The gasoline's vapor may irritate the respiratory system. Inhaling a highly

concentrated gasoline's vapor may cause chest tightness, nausea, shortness of breath, arrhythmia, headache. Avoid direct inhalation of the gasoline's vapor.

Skin: Repeated and prolonged contact may cause skin's irritation and blister.

Ingestion: May cause nausea, chest tightness, headache, shortness of breath, feeling of drunkenness, confusion, dizziness, hemorrhagic pneumonia, loss of sensation.

Acute effect: Getting into contact with n-pentan with lower concentration rate than 5000 ppm for 10 minutes do not show any sign of poisoning, but with higher concentration rate than 5000 ppm will irritate nose and throat, headache, light-headedness, tiredness, shortness of breath. With very high concentration rate may cause nausea, loss of balance, continuous sensation of gasoline's odour and shortness of breath.

III. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	CAS Number	Chemical Structure	Concentration (% volume, max)
1. Ethanol	64-17-5	C ₂ H ₅ OH	4-5
2. Benzen	71-43-2	C ₆ H ₆	2,5
3. Aren			40

IV. FIRST AID MEASURES

1. Eyes contact:

Take the victim to a safe, well-ventilated space with fresh air. Use clean water to rinse eyes for at least 15 minutes, then get immediate medical attention.

2. Skin contact:

Remove contaminated clothes and shoes. Use water and soap to wash the part of skin exposed to the gasoline. In case of allergic or if the skin is seriously damaged, get immediate medical attention.

3. Inhalation:

Take the victim to a safe, well-ventilated space with fresh air. In case of difficulty breathing, CPR, respiratory aids measures must be applied. Get immediate medical attention.

4. Ingestion:

Do not induce vomiting because it might lead to serious lung injuries and complications. May use activated carbon (1g/kg body's weight). Get immediate medical attention.

V. FIRE FIGHTING MEASURES

1. Flammable classification:

The gasoline E5 RON 92 is highly flammable. Its flash point $\leq -43^{\circ}\text{C}$. Lower explosive limit (LEL): 1,2%. Upper explosive limit (UEL): 7,6%.

2. Hazadous combustion products: The unleaded gasoline upon combusted will produce:

CO_x, SO_x, NO_x, Hydrocarbon.

3. Causes of fire: Fire sparks, electrostatic, high temperature, collision, friction spark, open flames.

4. Suitable fire extinguishing agents and guidance of fire fighting methods, others measures:

- **Fire extinguishing agents:** Use fire extinguisher and specialized fire fighting equipment, CO₂, sand, fire blanket; use water spray to cool down the fire-exposed surfaces of surroundings containers and equipment.

- **Fire fighting methods:** Take initial emergency response to isolate, extinguish the fire.

+ Cut off the power source related to the fire.

+ Prioritize in rescuing victims, preventing and isolating the gasoline's source of leakage, if possible remove others nearby containers and equipment.

+ Use fire extinguisher, sand, fire blanket to extinguish the small fire.

+ Do not use water to extinguish, only use water spray to cool down the fire-exposed surfaces of surroundings containers and equipment.

+ Call and inform the Fire service to ask for assistance.

5. Required equipment, protection gears in case of fire:

- **Fire fighting equipment:** Fixed fire fighting equipment, fire truck, dry powder wheeled fire extinguisher ≥ 25kg, CO₂ extinguisher, powder extinguisher 6-10kg, sand, buckets, fire blanket etc.

- **Protection equipment:** Flame resistant clothing, protection helmet with eye protection, gloves etc.

6. Special attention notice:

The gasoline's vapor is highly flammable, heavier than air and can move far away from the leaked source. If encountered with a fire source may cause fire outbreak to the leaked source.

VI. ACCIDENTAL RELEASE MEASURES

1. Small spill:

- Looking for a way to contain the source of spillage, leakage. Evacuate the incident zone.

- Isolate the area affected by the spill, leak. Assign supervision and warn others about said area.

- Forbid any fire source, fire spark in case of spill, leak.

- Use sand, rag, oil sorbents to clean up the affected area as quickly as possible, then collect into specialized container for proper disposal.

- Prevent the gasoline from leaking into the drainage system.

2. Large spill:

- Looking for a way to cut off power source, cease all operation of transferring gasoline.

- Isolate the area affected by the spill, leak. Prepare the fire prevention and fire fighting plan, methods.

- Utilize protection plan for the incident zone, prevent the gasoline from spreading and deploy recovery measures accordingly to the oil spill response plan of the company.
- Inform the authorities for assistance to handle the incident.

VII. HANDLING AND STORAGE

1. Handling:

- Open the container slowly to release the internal pressure.
- Only transfer gasoline using specialized containers. To avoid fire or explosion, dissipate electrostatic during transfer by grounding the containers and equipment before transferring the product.
- During transferring the gasoline to/from transportation vehicles, it is strictly forbidden to: start the vehicle's engine, check the power source, maintain and clean the vehicle.
- Forbidden of fire, smoke, usage of portable electrical, communication devices that are not explosion proof in hazardous areas.
- Prevent the spill, leak, drop of the gasoline.
- Do not use gasoline to clean up, do not ingest gasoline.
- Use protection equipment when getting into contact with the gasoline. Wash hands and clean up after contact.

2. Storage:

- Store gasoline in specialized equipment, keep the containers closed. Store in cool, well-ventilated area.
- Prevent the container from strong impact, separate from heat source, fire spark and strong oxidants.
- Install the automatic fire alarm system.
- Comply with the Government's requirements on fire protection and fire fighting, environment protection, oil spill prevention when operating petroleum facilities.
- Fire fighting equipment must be fully equipped following the Government's requirements when handling, transferring, storing the gasoline.

VIII. EXPOSURE CONTROL AND PERSONAL PROTECTION

1. Parameter control:

Components	CAS number	Type of exposure	Parameter of control	Standard
Benzene (C ₆ H ₆)	71-43-2	Respiration	2,5 ppm	ACGIH
Ethanol (C ₂ H ₅ OH)	64-17-5	Respiration	1000 ppm	ACGIH

2. Exposure control:

- Ensure natural ventilation or use explosion-proof equipment to keep the storage zone, loading and unloading station well-ventilated.
- Install anti-lightning, anti-static equipment, explosion-proof electrical system at the storage, operation, transportation zone following the Government's requirements.

3. Personal protection for working:

- Eye protection: Specialized protection equipment is not required. Goggles are recommended in necessity case.
- Body protection: Use protective clothing.
- Skin protection: Use protective gloves.

4. Personal protection for responding incident:

- The oil spill response team, fire fighting team must be equipped with specialized tool and equipment when approaching and handling the incident.

5. Sanitation measures:

- Wash hands with soap and clean up after getting into contact with gasoline.

IX. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid	Boiling point (°C): 30-215°C
Colour: Pure, clear, yellow or green depend on gasoline's type	Melting point (°C): Not available
Odour: Characteristic odour of Gasoline	Flash point (°C): -40°C
Evaporating pressure (at 37,8 °C), kPa: 43-75	Kindling point (°C): 246-280 °C
Vapor density (Air = 1): 3-4	Upper flammable, explosive limit (% Substance with air): 7,6
Solubility rate in water: Not available	Lower flammable, explosive limit (% Substance with air): 1,2
pH: Not available	Evaporation rate (kg/l): 0,70
Mass density (kg/m ³): Report	Other properties: Standard 06:2015/PLX
Ethanol's content rate (% volume): 4-5	

X. STABILITY AND REACTIVITY

1. Stability:

- Is stable under normal conditions and stored at normal temperature and pressure.
- Avoid any heat source, open flames, high energy ignition source, electrostatic and strong oxidants.

2. Reactivity:

- Able to dissolve different type of solvents.
- Do not generate polymerization.
- Products of combustion: CO_x, SO_x, NO_x, Hydrocarbon

XI. TOXICOLOGICAL INFORMATION

- Acute poisoning via ingestion to human: LDLO 50 mg/kg.
- Cause slight irritation to rabbit's skin at concentration rate of 20mg for 24h.

- Inhibit mice's ADN if ingested with a dose of 20mg/kg.

XII. ECOLOGICAL INFORMATION

- Toxicity to aquatic ecosystem: Prolonged influence to aquatic animal.
- Air environment: Natural evaporation characteristic.

XIII. DISPOSAL INFORMATION

- Do not put into pond, lake, drainage and sewage system.
- The disposal process must follow the procedure and general standard about chemical's disposal specified in the Law on Environment protection, assuring the safety for human and environment.

XIV. TRANSPORT INFORMATION

- UN number: 1203.
- Decree N°104/2009/NĐ-CP dated 09/11/2009 of the Government providing the list of dangerous goods and the transport of dangerous goods by road motor vehicles.
- Decree N°29/2005/NĐ-CP dated 10/03/2005 of the Government providing the list of dangerous goods and the transport of dangerous goods by inland waterway.
- USA, DOT Shipping Description: Gasoline, 3, UN 1203, II.
- IMO/IMDG Shipping Description: Gasoline, 3, UN 1203, II.
- IATA/ICAO: Motor spirit, UN 1203, flammable liquids, class 3, packing group II.

XV. REGULATORY INFORMATION

1. Declaration and registration's status worldwide:

- United nations, EC, International organizations of production, trade, products and oil's transportation from USA, UK, Korea, etc. have legal regulation on MSDS's declaration.

2. Classification of dangers according to declared, registered nation:

- EU category of danger: Extremely flammable, carcinogenic category. Risk phrases: R12, R45, R65, R38, R67, R51/53. Safety phrases: S2, S53, S45, S23, S24, S29, S43, S62, S61.
- WHMIS classification:
 - Class B, division 2: flammable liquids.
 - Class D, division 2, subdivision A: very toxic material carcinogenicity.
 - Class D, division 2, subdivision B: toxic material skin or eye irritation.

XVI. OTHER INFORMATION

Date of compilation: 1st April 2020.

Name of organization, individual responsible for drafting:

VIETNAM NATIONAL PETROLEUM GROUP (PETROLIMEX)

DISCLAIMER FOR USER:

- The information and recommendations in this Material Data Safety Sheet are, to the best knowledge and belief, accurate and reliable as of the date issued, and must be used to apply methods preventing risk, accident.

- Dangerous chemical presented in this sheet might have others dangerous properties under the control of the user.

- **Petrolimex shall not be held responsible for any damage resulting from abnormal use of the recommendations presented in this Material Data Safety Sheet.**