

1 - PRODUCT IDENTIFICATION

Product name:	ALBACORA LESTE PETROLEUM 20 ° API
Main recommended uses for substance or mixture:	Intended for use in refineries to obtain derivative products, such as gasoline, diesel, lubricants, naphtha, aviation kerosene, among others.
Company name:	Petro Rio Jaguar Petróleo SA
Address:	Praia de Botafogo, 370 - 13th floor - Botafogo, Rio de Janeiro - RJ, 22250-040
Emergency telephone:	0800 718 8800

2 - IDENTIFICATION OF HAZARDS

Product hazard classification:	Flammable liquid – Category 1 Skin corrosion/irritation - Category 3 Serious eye damage/irritation - Category 2B Germ cell mutagenicity - Category 2 Carcinogenicity - Category 1B Reproductive toxicity - Category 2 Specific target organ toxicity - Single exposure - Category 3 Specific target organ toxicity - Repeated exposure - Category 1 Hazardous to aquatic life – Acute - Category 3 Hazardous to aquatic life – Chronic - Category 3
Classification system used:	Standard ABNT-NBR 14725. Globally Harmonized System for the Classification and Labeling of Chemicals, UN.
Other hazards that do not result in	Vapors may form explosive mixtures when coming into contact with ambient

in classification: air.

APPROPRIATE LABELLING ELEMENTS

Pictograms:



Signal word: DANGER

Hazard statements:

- Extremely flammable liquid and vapors.
- Causes moderate skin irritation.
- Causes eye irritation.
- Harmful if inhaled.
- Suspected of causing genetic defects.
- May cause cancer upon entering body through skin.
- Suspected of impairing fertility or development of the fetus.
- May cause respiratory tract irritation.
- May cause drowsiness or dizziness.
- Causes damage to lungs, blood, liver, and thymus due to repeated or prolonged exposure.
- Harmful to aquatic life, with prolonged effects.

Hazard statements:

IN CASE OF CONTACT WITH EYES: Rinse carefully with water for several minutes. If the affected person uses contact lenses, remove them if possible. Continue rinsing.

IF INHALED: Move the person to a well-ventilated area and keep them at rest in a position that does not hinder their breathing.

IN CASE OF exposure or suspected exposure: Consult a physician.

In case of skin irritation: Consult a physician. If eye irritation persists: consult a physician.

In case of fire: Use foam for hydrocarbons, water mist, chemical powder, and carbon dioxide (CO₂).

3 - COMPOSITION AND INFORMATION ON INGREDIENTS

>>> PETROLEUM-BASED SUBSTANCE

Common chemical or technical name: Crude Oil.

Petroleum-based Substance Group: ALBACORA LESTE - PETROLEUM - 20° API

Crude oils are composed of paraffinic, naphthenic (cycloparaffinic) and aromatic hydrocarbons. Products are identified based on the predominant proportion that presents a similarity with hydrocarbon molecules. This category includes light, medium and heavy oil, as well as oils extracted from asphalt sands.

CAS Registration Number: 8002-05-9

Impurities contributing to the product's hazard level:

This product contains a variable mixture of hydrocarbons and may contain varying amounts of organic and inorganic contaminants.

Component	Concentration	CAS N°
Sulfur	0.585 (% m/m)	7704-34-9
Vanadium	17 (ppm)	7440-62-2
Nickel	10 (ppm)	7440-02-0

4 - FIRST AID MEASURES

Inhalation:

Move the affected person to a well-ventilated area and keep them at rest in a position that does not hinder their breathing. If they continue to feel unwell, contact a TOXICOLOGICAL INFORMATION CENTER or physician. Bring this SDS together with the person when receiving medical attention.

Skin contact:

Wash exposed skin with enough water to remove the material. In case of skin irritation: Consult a physician. Bring this SDS together with the person when receiving medical attention.

Eye contact:

Rinse thoroughly with water for several minutes.

If the affected person uses contact lenses, remove them if possible. Continue rinsing. If eye irritation persists: consult a physician. Bring this SDS together with the person when receiving medical attention.

Ingestion:

Do not induce vomiting. Never administer any substance to an unconscious person orally. Rinse the victim's mouth with plenty of water. If they continue to feel unwell, contact a TOXICOLOGICAL INFORMATION CENTER or physician. Bring this SDS together with the person when receiving medical attention.

Key symptoms and effects, whether acute or delayed:

Causes moderate skin irritation with redness and dryness, as well as eye irritation with redness and tearing. A single exposure event may cause respiratory tract irritation with coughing, sneezing and shortness of breath and drowsiness or dizziness with headache, dizziness, a sensation of intoxication and loss of consciousness. Repeated or prolonged exposure damages the lungs, blood, liver, and thymus.

Notes for physicians:

Avoid contact with the product when providing medical services to the affected person. If necessary, treatment of symptoms must include, in particular, supportive measures such as correction of hydroelectrolytic and metabolic disorders, as well as respiratory assistance. In case of contact with skin, do not apply friction to the affected area.

5 - FIRE PREVENTION MEASURES

Extinguishing media:

Suitable media: Compatible with hydrocarbon foam, water mist, chemical powder and carbon dioxide (CO₂).

Not recommended: Spraying water directly on burning liquid.

Specific hazards associated with mixture or substance:

Combustion of the chemical product or its packaging can cause irritating and toxic gases such as monoxide and carbon dioxide to form. Very dangerous when exposed to excessive heat or other sources of ignition such as: sparks, open flames or flames from matches and cigarettes, welding operations, pilot lights and electric motors. May accumulate static load during flow or agitation. Vapors from the heated liquid may ignite due to static discharge. Vapors are denser than air and tend to accumulate in low or confined areas such as culverts, basement areas, etc. These vapors can travel over large distances, causing a regression in flames or new fire outbreaks in both open and confined environments. Containers may explode if heated.

Protective measures for

Respiratory protective equipment (self-contained breathing apparatus-

firefighting team:

SCBA) with positive pressure and full protective clothing. Containers and tanks involved in the fire must be cooled using water mist.

6 - CONTROL MEASURES FOR ACCIDENTAL RELEASE

Personal precautions

Personnel that are not part of the emergency services:

Isolate release from sources of ignition. Prevent sparks or flames. Do not smoke. Evacuate the area within a 50-meter radius. Do not touch damaged containers or spilled materials without wearing proper clothing. Avoid inhalation, contact with eyes and skin. Use personal protective equipment as described in section 8.

Emergency service personnel:

Wear complete PPEs, with protective glasses or face shield protecting against splashes, PVC protective gloves and an apron. The material used must be waterproof. In case of large leaks, with extensive exposure, it is recommended that a protective mask with a filter protecting against vapors and organic mists be used.

Environmental precautions:

Avoid the release of product into water waters and sewer networks. Dilution water originating from firefighting efforts may cause pollution.

Methods and materials used for containment and clean up:

Use water mist or vapor suppressing foam to reduce the dispersion of vapors. Use natural or spill containment barriers. Collect spilled product and dispose of them in proper containers. Adsorb the remaining product using dry sand, earth, vermiculite, or any other inert material. Place the adsorbed material in appropriate containers and move them to a safe location. Dispose of the product according to Section 13 of this SDS.

- Differences in actions taken between large and small-scale releases:

There is no distinction made between actions taken for large and small-scale releases of the product.

7 - HANDLING AND STORAGE

APPROPRIATE TECHNICAL MEASURES FOR HANDLING

- **Precautions for safe handling:** Handle in a well-ventilated area or area offering a general local ventilation/exhaust system. Prevent vapors and mists from forming. Avoid exposure to the product. Avoid contact with incompatible materials. Use personal protective equipment as described in section 8.

- Hygiene measures: Wash hands and face thoroughly after handling and before eating, drinking, smoking, or using the washroom. Contaminated clothing must be replaced and washed before being reused. Remove contaminated clothing and protective equipment before entering dining areas.

Conditions for safe storage, including any incompatibilities

Prevention of fires and explosions: Keep away from sources of heat, sparks, open flames, and hot surfaces. Do not smoke. Keep the container tightly closed. Ground the container and vessel used to receive the product during transfer. Non-sparking tools must be exclusively used with the product. Prevent electrostatic charges from accumulating. Use explosion-proof electrical, ventilation and lighting equipment.

Suitable conditions: Keep the product in a cool, dry, and well-ventilated area away from heat and ignition sources. The location at which the product is stored must be fitted with a waterproof floor and containment basin used to hold the product in case of accident release. Keep containers tightly closed and properly identified. Keep product away from incompatible materials. It is not necessary to add stabilizers and antioxidants to ensure product durability.

Packaging materials: Similar to the product's original packaging.

8 - CONTROL OF EXPOSURE AND PERSONAL PROTECTION

Control parameters

- Occupational exposure limits:

Chemical or common name	TLV – TWA (ACGIH, 2017)
Nickel, elemental metals	1.5 mg/m ³ (f)

Nickel, soluble inorganic compounds	0.1 mg/m ³ (1)
Nickel, insoluble organic compounds	0.2 mg/m ³ (1)

(1): Inhalable fraction.

- Biological indicators: Not established.

Other limits and values: - Nickel metal and other compounds:
IDLH (NIOSH, 2010): 10 mg Ni/m³

Engineering control measures: Provide mechanical ventilation and a direct exhaust system to the outside environment. These measures help to reduce exposure to the product. Ensure that atmospheric concentrations of product constituents remain below indicated occupational exposure limits.

Personal protection measures

- Eye protection: Safety glasses or face shield protecting against splashes.

-Skin and body protection: PVC protective gloves and apron. Materials used must be impermeable.

Use PVC protective gloves, closed-toe safety boots and Flash Fire (FR) protective clothing when handling the product.

-Respiratory protection: It is recommended that a respirator with a filter protecting against organic vapors and mists be used for average exposures exceeding half the TLV-TWA. In cases in which exposure exceeds 3 times the TLV-TWA value, use a self-contained breath apparatus (SCBA) with an air supply and full facepiece operated in positive pressure mode.

Follow guidelines provided under Respiratory Prevention Program (PPR), 4th ed. São Paulo: Fundacentro, 2016.

Thermal hazards: Product does not present thermal hazards.

9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, shape and color): Variable liquid dark at room temperature.

Odor and odor limits:	Characteristic.
pH:	Not applicable.
Melting/ freezing point:	Not available.
Initial boiling point and boiling temperature range:	32 - 400 °C to 1 atm
Flash point:	< 23°C
Evaporation rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower/upper limit for flammability or explosivity:	Not available.
Vapor pressure:	Not available.
Vapor density:	Not available.
Relative density:	0.70 – 0.98 at 15°C
Solubility:	Insoluble in water. Soluble in organic solvents.
Partition coefficient – n - octanol/water:	Log Kow: 2 - 6
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	103.2 cSt at 40°C 62.01 cSt at 50°C
Other information:	Specific gravity: 0.9328 kg/L at 15/4°C Pour point: -42°C

10 - STABILITY AND REACTIVITY

Stability and reactivity: Product stable under standard temperature and pressure conditions.

Possibility of hazardous reactions:	There are no known hazardous reactions concerning the product.
Conditions to avoid	High temperatures. Sources of ignition and contact with incompatible materials.
Incompatible materials:	Strong oxidizing agents.
Hazardous decomposition products:	Fumes and smoke released during combustion. When heated the product may release hydrogen sulfide.

11 - TOXICOLOGICAL INFORMATION

Acute toxicity:	Product not classified as presenting acute oral and dermal toxicity. LD ₅₀ (oral, rats): > 5000 mg/kg LD ₅₀ (dermal, rats): > 2000 mg/kg
Skin corrosion/irritation:	Causes moderate skin irritation with redness and dryness.
Serious eye damage/irritation:	Causes eye irritation with redness and tearing.
Respiratory or skin sensitization:	Repeated or prolonged exposure may cause dermatitis, degreasing and follicular inflammation. The product is not expected to cause respiratory sensitization.
Germ cell mutagenicity:	Suspected of causing genetic defects. In vivo studies have provided evidence of the induction of chromosomal aberrations in rats. In vitro studies were positive in bacteria with regards to mutagenicity. However, studies were negative in testing for chromosomal anomaly in breast cells.
Carcinogenicity:	May cause cancer when entering body through skin Studies in rats have offered evidence of the presence of skin tumors when coming into contact with product through repeated and prolonged exposure.
Reproductive toxicity:	Suspected of impairing fertility or development of the fetus. Studies in rats have presented signs of reproductive damage with death of the fetus, reduced maternal and fetal weight, delayed bone growth and increased occurrence of resorption.

Specific target organ toxicity single - exposure:	May cause irritation of airways with coughing, sneezing and shortness of breath. May cause drowsiness or vertigo with headache, dizziness, a sensation of intoxication and loss of consciousness. Ingestion may cause gastrointestinal disorders as well as nausea and vomiting.
Specific target organ toxicity repeated - exposure:	Chronic inhalation results in bronchitis with coughing, sneezing and shortness of breath. Repeated or prolonged exposure causes damage to the lungs, blood, liver, and thymus.
Aspiration hazard:	The product is not expected to present an aspiration hazard due to its viscosity. However, in high concentrations, it may be harmful if swallowed and is able to penetrate the airways with chemical pneumonia.

12 - ECOLOGICAL INFORMATION

Environmental effects, behavior, and product impacts

Ecotoxicity:	Harmful to aquatic life, with prolonged effects. CL ₅₀ (<i>Oncorhynchus mykiss</i> , 96h): 21 mg/L
Persistence and degradability:	Due to the absence of data, it is expected that the product is persistent in nature and will not degrade quickly.
Bioaccumulative potential:	A high bioaccumulative potential is expected in aquatic organisms. Log Kow: 2– 6
Mobility in soil:	Not determined.
Other adverse effects:	The release of large amounts of the product can result in undesirable environmental effects, such as decreased availability of oxygen in aquatic environments due to the formation of an oily layer on the water’s surface, the developing of coating and subsequent suffocation of animals.

13 - CONSIDERATIONS REGARDING DISPOSAL

Recommended disposal methods

- _ **Product:**
The product must be disposed of as hazardous waste in accordance with local legislation. Handling and disposal must be specifically evaluated for each product. Federal, state, and municipal legislation must be consulted, including: Federal Law No.12.305, of August 2, 2010 (National Solid Waste Policy).
- _ **Leftover product:**
Keep leftover product in its original packaging, properly closed and inside metal drums that are properly closed in accordance with applicable laws. Disposal must be carried out as established for the product. Processing in cement plants and incineration are recommended.
- _ **Used packaging:**
Never reuse empty packaging as it may contain remains of the product and must be kept closed and sent to be destroyed at an appropriate location. In this case, it is recommended that product remains be sent for recovery of drums or incineration.

14 - INFORMATION ON TRANSPORT

National and international regulations

Land Transport

Resolution No. 5232 of December 14, 2016 from the National Land Transport Agency (ANTT), *Approved Complementary Instructions to Regulations for the Transport of Hazardous Products by Land and its respective modifications.*

UN Number:	1267
Proper name for shipment:	CRUDE OIL Main
Risk class/subclass:	3
Subsidiary risk class/ subclass:	NA
Risk number:	33
Packaging group:	I

Transport on waterways

DPC - Directorate of Ports and Coasts (Transport in Brazil's jurisdictional waters)

Maritime Authority Standards (NORMAM)

NORMAM 01/DPC: Vessels Used in Open Sea Navigation

NORMAM 02/DPC: Vessels Used in Inland Navigation

IMO – “*International Maritime Organization*”

International Maritime Dangerous Goods Code (IMDG Code).

UN Number: 1267

Proper shipping name: PETROLEUM CRUDE OIL

Risk class/subclass
3

Subsidiary risk class/ subclass: NA

Packaging group: I

EmS: F-E, S-E

Risk to the environment: The product is not considered to be a marine pollutant.

ANAC - National Civil Aviation Agency - Resolution No.129 of December 8, 2009.

RBAC NO.175 (BRAZILIAN CIVIL AVIATION REGULATION) - TRANSPORT OF DANGEROUS ITEMS USING CIVIL AIRCRAFT.

IS NO. 175-001 SUPPLEMENTARY INSTRUCTION - IS ICAO – “*International Civil Aviation Organization*” Doc 9284-NA/905

IATA - “*International Air Transport Association*”

Dangerous Goods Regulation (DGR).

UN Number: 1267

Proper shipping name: PETROLEUM CRUDE OIL

Risk class/subclass: 3

Subsidiary risk class/ subclass: NA

Packaging group: I

15 - INFORMATION ON REGULATIONS**Regulations: Federal**

Decree No. 2.657, of July 3, 1998

ABNT-NBR Standard 14725.

MTE Ordinance No. 704 of May 28, 2015 - Amends Regulatory Standard No. 26

16 - OTHER INFORMATION

This SDS was prepared based on current knowledge regarding proper handling of the product under normal conditions of use, according to the application specified on the product's packaging. Users are responsible for any other form of use of the product that involves its combination with other materials, in addition to forms of use other than those indicated.

Please be advised that handling any chemical substance requires that users have prior knowledge of the associated hazards. In the workplace, the company using the product is responsible for providing employees and contractors with training regarding possible risks arising from exposure to the chemical.

Legends and abbreviations:**ACGIH** - *American Conference of Governmental Industrial Hygienists***CAS** - *Chemical Abstracts***Service LC₅₀** - *Lethal***Concentration 50% LD₅₀** - *Lethal Dose 50%***IDLH** - *Immediately Dangerous to Life or Health***NA** - *Not applicable***NIOSH** - *National Institute for Occupational Safety and Health***UN** - *United Nations***TLV** - *Threshold Limit Value***TWA** - *Time Weighted Average*