SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

Commercial name	: Residue Oil
Others name	: No. 6 Fuel Oil, Marine Fuel Oil, Slurry Oil, Heavy Gas Oil, Clarified Oil, Asphalt Feed Stock, Resid
Purpose	: Fuel for engines, blend component, heating fuel
CAS number	: 68476-33-5
UN number	: 3082
EC number	: 270-675-6
Emergency phone number	: On site at NSRP: 02378738541/ Ext: 6700 or 6701
Manufacturer and address	: Nghi Son Refinery and Petrochemical LLC Nghi Son Economic Zone, Hai Yen commune, Nghi Son district, Thanh Hoa province, Vietnam. Contact: +84(0) 237 8738 540 Fax: +84(0) 237 8738 542

SECTION 2: HAZARD IDENTIFICATION

GHS Classification:

Flammable liquid	: Level 4
Skin irritation	: Level 1
Inhalation hazard	: Level 4
Toxic to reproductive	: Level 2
Genetic mutation	: Level 1B
Cause cancer	: Level 1B
Toxic to organs – single exposure	: Level 3
Acute toxic to aquatic life	: Level 1
Chronic toxic to aquatic life	: Level 1

Pictogram:

Signal word: Danger

Hazard statements

H227	: Combustible Liquid
H304	: May be fatal if swallowed and enters airways
H315	: Causes skin irritation
H317	: May cause an allergic skin reaction
H319	: Causes serious eye irritation
H332	: Harmful if inhaled
H335	: May cause respiratory irritation
H336	: May cause drowsiness or dizziness
H350	: May cause cancer
H361	: Suspected of damaging fertility or unborn child

H373	: May cause damage to organs through prolonged or repeated exposure
H400	: Very toxic to aquatic life
H410	: Very toxic to aquatic life with long lasting effects
Prevention precautionary statements	
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
P260	: Do not breathe mist/vapors
P263	: Avoid contact during pregnancy and while nursing
P264	: Wash 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.
Response precautionary statements	
P301+P310	: If swallowed: Immediately call a poison center/ doctor
P370+P378	: In case of fire: Use appropriate firefighting media to extinguish.
Storage precautionary statements	
P403+P235	: Store in a well-ventilated place. Keep cool
P405	: Store locked up
Disposal precautionary statement	
P501	: Dispose of container in accordance with local/ regional/ national/ international regulations.
Other Hazards	: Contact with hot material can cause thermal burns. This material may contain or liberate hydrogen sulfide, a poisonous gas with the smell of rotten eggs. Hydrogen sulfide and other hazardous vapors may evolve and collect in the headspace of storage tanks or other enclosed vessels. The smell disappears rapidly because of olfactory fatigue so odor may not be a reliable indicator of exposure. Effects of overexposure include irritation of the eyes, nose, throat and respiratory tract, blurred vision, photophobia (light sensitivity) and pulmonary edema (fluid accumulation in lungs). Severe exposures can result in nausea, vomiting, muscle weakness or convulsions, respiratory failure and death.

SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical name	CAS number	Content (% volume)
Fuel Oil No. 6	68476-33-5	0 - 100
Vacuum Tower Bottoms	64741-56-6	50 - 100
Catalytic Cracked Clarified Oil	64741-62-4	0 - 100
Straight Run Middle Distillate	64741-44-2	0 - 50

Light Catalytic Cracked Distillate	64741-59-9	0 - 50
Light Vacuum Residues	68512-62-9	0 - 50
Heavy Catalytic Cracked Distillate	64741-61-3	0- 50
Petroleum Residues Vacuum Distillate	68955-27-1	0 - 100
Ethyl Benzene	100-41-4	< 1
Hydrogen Sulfide	7783-06-4	<0.1 - 3
Naphthalene	91-20-3	< 2
Polycyclic Aromatic Hydrocarbons	Mixture	< 10

SECTION 4: FIRST-AID MEASURES

Eye contact : Remove victim to fresh air. Take off lens if it easy to do. Rinse eye with plenty of water at least 15 minutes. Get medical attention.

Skin contact : Take off immediately contaminated clothing. Rinse damaged skin by water and soap at least 15 minutes. Thoroughly washing the contaminated clothing and shoes before reuse.

Inhalation contact : Remove victim to fresh air, keep comfortable breathing. Loosen up the neck, tie or belt. If stop breathing, or unusual breathing, immediately take the artificial respiration (shall be implemented by trained staff of first aid). Immediately get the medical attention.

Ingestion contact : Thoroughly rinse mouth by water. Do not induce vomiting, it might cause the complication of lung unless have the instruction of medical. If vomit occurs, keep the head at low point to prevent the reflux to lung. Do not put anything to mouth while unconscious statement. Get medical attention.

Most Important Symptoms and Effects **Acute:** Respiratory irritation, headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Ingestion can cause irritation of the digestive tract, nausea, diarrhea and vomiting

Delayed: Dry skin and possible irritation with repeated or prolonged exposure

Potential Chronic Health Effects : Chronic effects of overexposure are similar to acute effects including central nervous system (CNS) effects and CNS depression. Effects of overexposure may also include irritation of the digestive tract, irritation of the respiratory tract, nausea, and skin dermatitis.

Notes to Physician : This material may contain or liberate hydrogen sulfide. In high doses, hydrogen sulfide may produce pulmonary edema and respiratory depression or paralysis. The first priority in treatment should be providing adequate ventilation and administering 100% oxygen.

SECTION 5: FIRE-FIGHTING MEASURES

Flammability Classification : OSHA Classification (29 CFR 1910.1200): Combustible Liquid NFPA Class-IIIA or IIIB Moderately or Slightly Combustible Liquid NFPA Ratings: Health: 1, Flammability: 2, Reactivity: 0

Flash Point	: >60°C, >150°F (ASTM D-92)
Flammable Limits	: Lower Limit: 0.6% Upper Limit: 6.0%
Auto ignition Temperature	: 260-340°C, 500-650°F
Toxic chemical might be produced	: Highly dependent on combustion conditions. Fume, smoke, carbon monoxide, carbon dioxide, sulfur and nitrogen oxides, aldehydes and unburned hydrocarbons
Suitable fire-fighting media	: CO_2, dry chemical, fog water.
Hazard can be produced while fire occurs	: This material is combustible and can be ignited by heat, sparks, flames or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment and electronic devices such as cell phones, computers and calculators that have not been certified as intrinsically safe). Vapors are heavier than air and can accumulate in low areas. May create vapor/air explosion hazard indoors, in confined spaces, outdoors or in sewers. Vapors may travel considerable distances to a remote source of ignition where they can ignite, flash back or explode. Product can accumulate a static charge that may cause a fire or explosion. A product container, if not properly cooled, can rupture in the heat of a fire. If stored under heat for extended periods for significantly agitated, this material might evolve or release hydrogen sulfide, a flammable and toxic gas, which can raise and widen this material's actually flammability limits and significantly lower its auto ignition temperature.
PPE, Protective media	: Stationary extinguish equipment, Rescue truck vehicle, dry vehicle, CO_2 extinguisher. Suit enough personal protective equipment and respirator or self-apparatus respirator SCBA.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PPE and response guidance	: Using PPE appropriately (see section 8). Isolate incident area. Evacuate unauthorized persons. Inform to emergency response team. Checking the explosive gas concentration surrounding area.
Precautionary, prevention for environment	: Discharge into the environment must be avoided. Prevent chemical permeate in ground. If river, lake, sewer been contaminated, announce immediately to local authorities.
Measures, hygiene materials after incident	: Avoid breath product vapour. Evacuate staff to safely area. Remove any ignition, spark, fire source.

SECTION 7: HANDLING AND STORAGE

Measures and applied conditions while handle chemical	: Avoid keep under sunshine. Avoid breathing mist, dust, vapour of product. No smoking- no naked flame. Checking the electrical static. Do not try eat or swallow. Eating, smoking in working, handle, storage area are prohibited. Avoid to chemical enter environment. Suite enough PPE while handle chemical. Rinse and hygiene thoroughly after complete working.

Measures and applied conditions while store chemical	: Keep away from spark, ignition, and flammable source. Close the container tightly. Store in well-ventilation, avoid sunshine. Labeling clearly, do not remove label of container. Empty container have a part of explosive vapour. Do not impact to container. Do not weld, cut, drill, grind container. Use safety container. Install automatic fire alarm. Comply with safety regulations of local authorities.

SECTION 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

Control parameters

Standard	Amounts	Value
ACGIH	TLV-TWA	0.2 mg/m^3
OSHA PEL	PEL-TWA	0.2 mg/m^3

Personal protective media

Eye protection	: Wear anti-chemical glass
Glove protection	: Wear anti-chemical glove
Body protection	: Wear suitable PPE
Inhalation protection	: Wear organic vapour respirator in case of concentration exceed the exposure limit value as per commended practice.
Personal Protection	: Shower shall be nearly placed working area. Take good personal hygiene. Avoid skin contact chemical with a long time or repeat. Thoroughly rinse hand before eat, drink, smoke. Do not use strong bleach to wash the contaminated clothing. Take off immediately contaminated clothing and thoroughly wash before reuse.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: Liquid
Boiling point (°C)	: >155
Color	: Black liquid
Pour point (°C)	: 21
Odor	: Asphalt-like, sulfurous odor possible
Flash point °C	: >60
Vapour pressure (37.8°C) (kPa)	: Negligible
Auto-ignition point (°C)	: 260-340
Vapour density relative (Air =1)	: > 1
Lower explosion limit	: 0.6
Upper explosion limit	: 6.0
Solubility	: Slightly Soluble
pH	: Neutral
Specific gravity (15.6°C/ 15.6°C)	: 0.95 ~ 1.01
Sulfur content (wt%)	: 4.29

SECTION 10: STABILITY AND REACTIVITY

Reactivity	: Not chemically reactive
Stability	: This product is stable under conditions that have been recommended

Dangerous reaction	: Corrosion, explosion, react with ambient environment. Produce carbon monoxide while fired
Decomposition reaction and its products	: Release heat while igniting and produce carbon monoxide, carbon dioxide, sulfur and nitrogen oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Mouth route	: LD_{50}: ≥ 5000 mg/kg
	: Animal: Rat
Inhalation route	: LC_{50}: ≥ 1 mg/l
	: Animal: Rat
Skin route	: LD_{50}: ≥ 2000 mg/kg
	: Animal: Rat
Chronic effect to human	: May cause cancer. Cancer risk depending to exposure limit value and concentrations of chemical.
Other toxicity	: Not available

SECTION 12: ECOLOGICAL INFORMATION

Biodegradable level	: This material is not readily biodegradable. Some constituents are inherently biodegradable while the higher molecular weight components are persistent in water. The individual hydrocarbon components of this material are differentially soluble in water with aromatic hydrocarbons tending to be more water soluble than aliphatic hydrocarbons. If spilled, any lighter components will generally evaporate but depending on local environmental conditions (temperature, wind, soil type, mixing or wave action in water, etc), photo-oxidation and biodegradation, the remainder may become dispersed in the water column or absorbed to soil or sediment. Because of their differential solubility, the occurrence of hydrocarbons in groundwater will be at different proportions than the parent material. Under anaerobic conditions, such as in anoxic sediments, rates of biodegradation are negligible.
Bioaccumulation	: Contains components with the potential to bioaccumulate. The octanol water coefficient values measured for the hydrocarbon components of this material range from 2.7 to greater than 6, and therefore would be considered as having the potential to bioaccumulate.
Mobility in soil	: Some constituents may be mobile and contaminate groundwater.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal information	: Decree No. 12/2011/TT-BTNMT dated April 14, 2011 of Ministry of Natural Resources and Environment regulated hazardous waste management.
Hazardous classification of waste	: Hazardous waste code: 170602. Main hazardous property: C, Đ, ĐS(*) under Decree No. 12/2011/TT-BTNMT dated April 14, 2011 of Ministry of Natural Resources and Environment regulated hazardous waste management.
Disposal measures	: Burning method

SECTION 14: TRANSPORT INFORMATION

Vietnam Regulations of Hazardous Goods Transportation:

Decree No. 104/2009/ND-CP dated 9 October 2009: Specifying and Providing Guidelines for Implementation of Certain Articles of the Law on Chemicals.

Goods name: : Residue Oil
UN number: : 3082
Type: : 3

Decree No.29/2005/ND-CP dated 10 March 2005 NĐ-CP regulate the List of Dangerous Goods and the Transport of Dangerous Goods on inland waterways

Goods name: : Residue Oil
UN number: : 3082
Type: : 3
Transport vehicle: : Vessel

International Regulations of Hazardous Goods Transportation:

European Regulations of Hazardous Goods Transportation by roadway

Goods name: : Residue Oil
UN number: : 3082
Hazard Class/Division : 9
Packing group: : III

International Civil Aviation Organization / International Air Transport Association (ICAO/IATA)

Goods name: : Residue Oil
UN number: : 3082
Hazard Class/Division : 9
Packing group: : III

International Maritime Dangerous Goods regulations

Goods name: : Residue Oil
UN number: : 3082
Hazard Class/Division : 9
Marine Pollutant : Yes

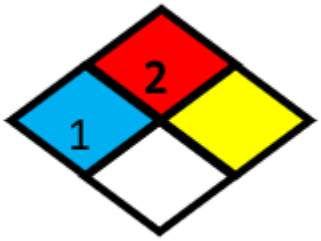
SECTION 15: REGULATORY INFORMATION

Vietnam regulations

Law No. 06/2007/QH12 : Chemical Law
Law No. 27/2001/QH10 : Firefighting Law
Law No. 52/2005/Q11 : Law of Environmental Protection
Law No. 10/2012/QH13 : Labour Law
Decree No. 113/2017/NĐ-CP **:** Specifying and Providing Guidelines for Implementation of Certain Articles of the Law on Chemicals.
Decree No. 104/2009/NĐ-CP : Providing for the List of Dangerous Goods and the Transport of Dangerous Goods by road motor vehicles

Circular No. 32/2017/TT-BCT	: Specifying and Providing Guidelines for Implementations of Certain Articles of the Law on Chemicals and the Government's Decree No. 113/2017/ND-CP dated October 9, 2017 Specifying and Providing Guidelines for Implementation of Certain Articles of the Law on Chemicals.
Circular No. 44/2012/TT-BCT	: Regulation on List of Dangerous Industrial Goods with packaging required during Transportation and Transportation of Dangerous Industrial Goods by roadway, railway and inland waterway motor vehicles.
TCVN 5507:2002	: Hazardous chemicals- Code of practice for safety in production, commerce, use, handling and transportation.
International Regulations	: Not available

SECTION 16: OTHER INFORMATION



Health hazard: 1
Flammable hazard: 2
Reactive hazard: 0

National Fire Protection Association (NFPA)

Note

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. Therefore, it should not be considered a warranty or quality specification of product.