



Safety Data Sheet

SECTION 1. IDENTIFICATION

Product Identifier:

Trade Name: Vacuum Gas Oil
Product Codes: Various
SDS Number: C-01-000
Synonyms: Vacuum Distillates, VGO, Cat Feed, Commodity Code 07-201
Product Family: Petroleum Hydrocarbons
Product Description: Heavy Fuel Oil Components
Date of first Issue: March 31, 2016

Version: 00
Supersedes date: N/A

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

Identified uses: Refinery intermediate
Uses advised against: None known

Details of the supplier of the safety data sheet

Company name: Axeon Refining, LLC
Address: 400 Grove Road
West Deptford, NJ 08066
Technical service: + 1-856-224-7409
24-Hour Contact: + 1-856-224-7415

CHEMTREC EMERGENCY Phone:

U.S. and Canada Only: + 1-800-424-9300
Outside U.S. and Canada: + 1-703-527-3887

SECTION 2: HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

Classification according to the OSHA Hazard Communication Standard (29 CFR 1910.1200)

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification: Acute Toxicity – Inhalation – Category 4
Carcinogenicity Toxicity – Category 1B
Reproductive Toxicity – Category 2
Specific Target Organ Toxicity – Repeated Exposure – Category 2
Aspiration Hazard – Category 1

Signal word: DANGER

SECTION 2: HAZARD(S) IDENTIFICATION

Hazard statement: Harmful if inhaled
Suspected of damaging the unborn child
May cause cancer
May cause damage to blood, thymus and liver through prolonged or repeated exposure.
May be fatal if swallowed and enters airways



Symbols:

Precautionary Statements

Prevention: Avoid breathing gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing, eye protection, face protection.

Response: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.
If exposed or concerned: Get medical advice/attention.
IF SWALLOWED: Immediately call poison center or doctor.
Do NOT induce vomiting.

Storage: Store locked up.

Disposal: Dispose of contents/container in accordance with local, regional, national, international regulations.

Hazards Not Otherwise Classified: None

Medical Conditions Aggravated by Overexposure	Individuals with chronic skin or respiratory problems may have these conditions aggravated by exposure to this product.
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SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component Name(s)	CAS Registry No.	Concentration (%)
Distillates (petroleum), petroleum residues vacuum*	68955-27-1	100

* A complex combination of hydrocarbons produced by the vacuum distillation of the residuum from the atmospheric distillation of crude oil.

This product contains polycyclic aromatic hydrocarbons and may release hydrogen sulfide gas when agitated.

SECTION 4: FIRST-AID MEASURES

<p>Take proper precautions to ensure your own health and safety before attempting rescue or providing first aid. For more specific information, refer to Exposure Controls and Personal Protection in Section 8 of this SDS.</p>	
Inhalation	Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell. Do not attempt to rescue the victim unless proper respiratory protection is worn.
Eye Contact	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower eyelids. Remove contact lenses if worn. Seek medical attention if irritation persists.
Skin Contact	Remove contaminated clothing as soon as possible. Wash exposed skin thoroughly with soap and water. If irritation develops, consult a physician. Contaminated clothing should be promptly laundered before reuse. Contaminated leather goods should be discarded.
Ingestion	Immediately call poison center or doctor. Do NOT induce vomiting. Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema/hemorrhage, which can be fatal. If swallowed give milk or water to drink and telephone for medical advice. If medical advice cannot be obtained, take the victim to the closest medical emergency center or hospital.
Most Important Symptoms and Effects Both Acute and Delayed	<p>Breathing of fumes may cause central nervous system (CNS) effects and be moderately toxic to internal organs. Signs and symptoms of CNS effects include one or more of the following: dizziness, headache, loss of appetite, weakness and loss of coordination. This product may also cause respiratory irritation and chemical pneumonitis when inhaled. Signs and symptoms of respiratory irritation and pneumonitis may include coughing, shortness of breath, bronchial irritation, chest discomfort and diminished pulmonary function. Dermal exposure may produce mild transient skin irritation. This product is not expected to cause prolonged or significant eye irritation. Typical signs and symptoms from ingestion include gastro-intestinal disturbances, vomiting and diarrhea, headache, and tiredness. This product may present a moderate aspiration hazard.</p> <p>Prolonged or repeated dermal exposure may cause skin cancer. Repeated and prolonged dermal exposure may also cause drying, cracking, dermatitis, or folliculitis.</p>
Indication of Any Immediate Medical Attention and Special Treatment Needed	IF SWALLOWED: Immediately call poison center or doctor. Do NOT induce vomiting.
Notes to Physician	Dilute with milk, water or demulcents and remove by lavage to extent possible. The Saybolt viscosity of this material is approximately 350 SUS at 100°F, thus aspiration into the lungs following ingestion is unlikely to occur. Remove all residues as this product contains potential human carcinogens.
Emergency Procedures	Because hydrogen sulfide inhalation can be fatal, rescuers must wear positive pressure full face piece, and/or self-contained or supplied air NIOSH approved respirators before attempting the rescue.

SECTION 5: FIRE-FIGHTING MEASURES

Clear fire area of all non-emergency personnel	
Flammability	Material is classified as a NFPA Class III B combustible liquid. Store distant from fire and ignition sources.
Extinguishing Media	Suitable extinguishing media are CO ₂ , dry chemical, and foam. Water or foam may cause frothing. No unsuitable extinguishing media are specified.

SECTION 5: FIRE-FIGHTING MEASURES

Specific Hazards Arising from the Chemical	May release hydrogen sulfide gas when agitated. Overheating or incomplete combustion may result in carbon dioxide, carbon monoxide, acrid fumes of decomposition and oxides of sulfur. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulfur oxides, and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.
Special Protective Equipment for Fire Fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Use full protective equipment and self-contained breathing apparatus (SCBA) for fires in enclosed areas. Decontaminate emergency personnel and equipment with soap and water. Avoid inhalation of fumes.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Take proper precautions to ensure your own health and safety before attempting spill control or clean-up. For more specific information, refer to Exposure Controls and Personal Protection in Section 8 and Disposal Considerations in Section 13 of this SDS.	
Personal Precautions	Keep unnecessary personnel away. Avoid breathing gas/mist/vapors/spray. Wear protective gloves, protective clothing, eye protection, face protection. Do not touch or walk through spilled material. Stay upwind and away from spill. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. If inhaled, remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if they feel unwell. If swallowed, immediately call poison center or doctor. If exposed or concerned, get medical advice/attention.
Environmental	This product is very toxic to aquatic life with long lasting effects. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
Clean Up Methods	For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For large spills (> 1 drum), transfer by mechanical means to a labeled container such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
Additional Advice	It is the responsibility of the user to determine if the material is a hazardous waste at the time of disposal. Check prior to disposing to ensure compliance with all applicable laws and regulations. RCRA Hotline Number: 800-424-9346

SECTION 7: HANDLING AND STORAGE


Handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing, eye protection, face protection. Avoid breathing gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area.
Storage	Material is classified as a NFPA Class III B combustible liquid. Store distant from fire and ignition sources.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Use process enclosures, local exhaust ventilation, or other controls to maintain airborne levels below recommended exposure limits (see below). Ensure that an emergency eye wash station and a safety shower are located near the work-station.
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Occupational Exposure Guidelines

Substance	Applicable Workplace Exposure Levels
Distillates (petroleum), petroleum residues vacuum	
OSHA PEL	None established
ACGIH TLV	None established
NIOSH REL	None established

Exposure Controls	The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances.
Appropriate Measures	Use adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended.
Respiratory Protection	Normally none is required. However, if high vapor pressure concentrations or mists are expected, use only NIOSH/MSHA approved organic respirator self-contained breathing apparatus.
Eye Protection	Use chemical splash goggles if splashing is anticipated.
Skin Protection	Body covering protection should be worn when handling liquid. Use protective covering and gloves made of Buna-N and Poly-D.
Monitoring Methods	Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods, http://www.cdc.gov/niosh/nmam/nmamenu.html . Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods, http://www.osha-slc.gov/dts/sltc/methods/toc.html .
Personal Protection in Case of a Large Spill	
	
	If garments become soaked with hydrocarbon liquids, they must be immediately changed. Shower with soap and water to remove hydrocarbon residues from the skin. Wash exposed skin with soap and water to remove residues. Material is potential carcinogen.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid	Specific Gravity	0.91-0.93 (H ₂ O = 1)
Appearance	Straw colored to dark brown	Density, kg/L @15°C	Not available
Odor	Petroleum odor	Water Solubility	Not soluble
Odor Threshold	Not available	pH	Not available
Melting Point/Freezing Point	Not available	Flammability	NFPA Class IIIB
Vapor Pressure	<0.01 (mmHg, 15°C)	Flammability limit-lower%	Not available
Vapor Density (Air = 1)	>1	Flammability limit-upper%	Not available
Boiling Point (760 mmHg)	>249°C (>480°F) (wide range)	Evaporation Rate	Not applicable
Flash Point, COC	>149°C (>300°F)	Percent Volatile	None
Auto-ignition temperature	~370°C (~700°F)	Decomposition Temperature	Not available
Viscosity (poise @ 25°C)	Not available	Partition Coefficient	Not available

SECTION 10: STABILITY AND REACTIVITY

Reactivity	None known.
Stability	This material is stable under normal conditions.
Possibility of Hazardous Reactions	Hazardous polymerization will not occur.
Conditions to Avoid	Avoid heat, sparks, open flames and excessive heat.
Materials to Avoid	Strong oxidizers
Hazardous Decomposition Products	May release hydrogen sulfide gas when agitated. Overheating or incomplete combustion may result in carbon dioxide, carbon monoxide, acrid fumes of decomposition and oxides of sulfur. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulfur oxides, and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

SECTION 11: TOXICOLOGICAL INFORMATION

General information on likely routes of exposure:

This product may be encountered via dermal contact, eye contact, inhalation, and ingestion.

SECTION 11: TOXICOLOGICAL INFORMATION

Vacuum Gas Oil is a member of the Heavy Fuel Oil Components (HFO) category. Toxicological data are representative of the HFO category of chemicals and is considered representative of Vacuum Gas Oil.

Acute Toxicity:

Product/Ingredient name	Result	Species	Dose	Exposure
Distillates (petroleum), petroleum residues vacuum (as Heavy Fuel Oil Components)	LD ₅₀	Rat	> 5000 mg/kg bw	Oral
	LD ₅₀	Rabbit	> 2000 mg/kg bw	Dermal
	LC ₅₀	Rat	4 mg/L	Inhalation

Skin Corrosion/Irritation	HFO substances caused no more than moderate irritation in non-guideline rabbit skin irritation studies. Upon repeated exposure, some HFO substances may cause skin dryness or cracking. There was no evidence of skin corrosion.
Serious Eye Damage/Irritation	The effects of HFO substances on the eye have been investigated in rabbits using a number of samples. None of the samples tested showed more than transient, fully reversible eye irritation
Respiratory or Skin Sensitization	HFO substances showed no evidence of skin sensitization in the guinea pig using a closed patch technique (Buehler method). There are no reports available to indicate a potential to cause respiratory sensitization.
Mutagenicity	HFO substances are not regarded as mutagens. In general, <i>in vitro</i> studies on HFO substances showed evidence of mutagenic activity whereas <i>in vivo</i> studies showed no activity.
Carcinogenicity	The carcinogenic potential of HFO substances has been investigated in animals following dermal exposure. These data indicate that HFO substances are carcinogenic. The International Agency for Research on Cancer (IARC) has classified vacuum distillates as 'possibly carcinogenic to humans' (Group 2a).
Reproductive Toxicity	Results of developmental and reproductive toxicity studies on HFO substances showed evidence of developmental toxicity.
STOT – Single Exposure	Acute exposure studies show no evidence of systemic toxicity.
STOT – Repeated Exposure	Data on repeat dose toxicity following dermal exposure to HFO substances indicate a potential to cause systemic injury, with the blood, thymus and liver being key target tissues.

SECTION 11: TOXICOLOGICAL INFORMATION

Aspiration Hazard	Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
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SECTION 12: ECOLOGICAL INFORMATION

Vacuum Gas Oil is a member of the Heavy Fuel Oil Components (HFO) category. Toxicological data are representative of the HFO category of chemicals and is considered representative of Vacuum Gas Oil.	
Aquatic Toxicity	Acute aquatic toxicity studies with fish, invertebrates and algae on samples of HFO substances show variable acute toxicity, with the most sensitive species (algae) giving values less than 1 mg/l. These tests were carried out on water accommodated fractions. Chronic aquatic toxicity studies on <i>Daphnia magna</i> exposed to samples of HFO substances show variable chronic toxicity, with a lowest NOEL value of 0.1 mg/l.
Mobility	No data were identified.
Persistent and Degradability	HFO substances are hydrocarbon substances of unknown or variable composition, complex reaction products or biological materials (UVCBs). Based on compositional information available and measured or predicted data, key constituents are not expected to meet the criteria for ready degradability but are inherently biodegradable.
Bioaccumulative Potential	Constituents of HFO substances show measured or predicted values for log K _{ow} ranging from 4 to greater than 6 and are thus considered potentially bioaccumulative.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal	The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of federal, provincial and local regulations. Consult appropriate Federal, State and Local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this product.
Material Disposal	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains, or in water courses. Waste product should not be allowed to contaminate soil or water. Consult appropriate Federal, State and Local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this product.

SECTION 14: TRANSPORT INFORMATION

The shipping description below may not represent requirements for all modes of transportation, shipping methods or locations outside of the United States.
UN Number: Not applicable – Not dangerous for transport Proper Shipping Name: Not applicable Class/Division: Not applicable Packing Group: Not applicable Environmental Hazards: Not applicable Transport in Bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not relevant for ground transportation. Special Precautions: None identified

SECTION 15: REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

The SDS has been prepared to meet the US OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200).

USA Federal Regulations

29 CFR 1910.1200 Hazard Communication Standard (HCS): Hazardous
TSCA – U.S. Inventory (TSCA 8b) Compliant

Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 313- Toxic Chemicals:

The product is believed to contain the following components in concentrations above *de minimis* levels that are listed as toxic chemicals in 40 CFR Part 372 pursuant to the requirements of Section 313 of SARA:

Components	CAS Nos.	Concentration %
Polycyclic aromatic hydrocarbons	N/A	Impurity*

* Not eligible for *de minimis* exemption except for the purposes of supplier notification requirement

Section 311/312 – Hazard Categories:

This product meets the criteria of one or more of the Hazard Categories as defined by 40 CFR Part 370 as established by Sections 311 and 312 of SARA:

Acute (Immediate Health Hazard)	<u>Yes</u>	Sudden Release of Pressure Hazard	<u>No</u>
Chronic (Delayed Health Hazard)	<u>Yes</u>	Reactive Hazard	<u>No</u>
Fire Hazard	<u>No</u>		

Section 302- Extremely Hazardous Substances:

This product may contain the following chemical components in concentrations greater than one percent that are listed as Extremely Hazardous Substances in 40 CFR Part 355 as established by Section 302 of SARA

Components	CAS Nos.	Concentration %	RQ (lb)	TPQ (lb)
Hydrogen sulfide	7783-06-4	Not detected	100	500

Clean Water Act (CWA):

Pursuant to Section 311(b) (4) of the CWA, discharge of crude oil and petroleum products in any kind to surface waters must be immediately reported to the National Response Center: (800) 424-8802.

SECTION 15: REGULATORY INFORMATION

Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA) – Hazardous Substances:


The following chemical components are identified as Hazardous Substances in 40 CFR Part 302 as require by Section 102(a) of CERCLA. As defined in CERCLA, the term “Hazardous Substance” does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance.

Components	CAS Nos.	Concentration %	RQ (lb)
Hydrogen sulfide	7783-06-4	Not detected	100
Polycyclic organic matter* / Polynuclear aromatic hydrocarbons	N/A	Impurity	No RQ Established

* Polycyclic organic matter Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 °C.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	
Polycyclic organic matter	Listed
US States Right to Know	
Hydrogen sulfide	Massachusetts, New Jersey, Pennsylvania
Polycyclic aromatic hydrocarbons	New Jersey
Polynuclear aromatic hydrocarbons	Pennsylvania
California Proposition 65	
None listed	

SECTION 16: OTHER INFORMATION

Label Requirements		
	<p>DANGER Harmful if inhaled Suspected of damaging the unborn child May cause cancer May cause damage to blood, thymus and liver through prolonged or repeated exposure. May be fatal if swallowed and enters airways Avoid breathing gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing, eye protection, face protection. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell. If exposed or concerned: Get medical advice/attention. IF SWALLOWED: Immediately call poison center or doctor. Do NOT induce vomiting. Store locked up. Dispose of contents/container in accordance with local, regional, national, international regulations.</p>	
	Hazardous Material Information System	Health hazard: 2* Flammability: 1 Physical hazards: 0 Customer is responsible for determining the PPE for this material.
	National Fire Protection Association (USA)	Health hazard: 2 Fire: 1 Reactivity: 0 Customer is responsible for determining the PPE for this material.

ABBREVIATIONS

ACGIH: American Conference of Governmental Industrial Hygienists
CNS: Central Nervous System
IARC: International Agency for Research on Cancer
LC₅₀: Lethal Concentration, 50%
LD₅₀: Lethal Dose, 50%
NIOSH: National Institute of Occupational Safety and Health
NFPA: National Fire Protection Association
OEL: Occupational Exposure Limits
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limits
STEL: Short-Term Exposure Limits
TLV: Threshold Limit Value
TWA: Time Weight Average

DISCLAIMER OF LIABILITY

VACUUM GAS OIL

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