

SAFETY DATA SHEET



Revision Date 11-Jul-2018

SDS Number 888100004794

Revision Number 3

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

Product Name Gas Oil, Virgin

Synonyms Straight Run, Virgin Gas Oil, VGO, FCC Charge, Desulfurized Gas Oil, GAS OIL, Vacuum Straight Run, Hydrodesulfurized Gas Oil, Cutter Stock, Light Coker Gas Oil, Light Thermocracked Distillate (C10-C22), RS201, RS307

Recommended Use Fuel
Uses advised against All others

Manufacturer Tesoro Refining & Marketing Co.
19100 Ridgewood Parkway
San Antonio, TX 78259

Emergency Telephone Chemtrec: 1-800-424-9300
Tesoro Call Center: 1-877-783-7676

E-mail address ProductStewardship@TSOCORP.com

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 4
Acute Oral Toxicity	Category 4
Acute dermal toxicity	Category 3
Serious eye damage/eye irritation	Category 2B
Carcinogenicity	Category 1B
Chronic Aquatic Toxicity	Category 2
Aspiration toxicity	Category 1

Label elements

Danger

Combustible liquid
Harmful if swallowed
Toxic in contact with skin
Causes skin irritation
Causes eye irritation
May cause cancer
Toxic to aquatic life with long lasting effects
May be fatal if swallowed and enters airways



Appearance Liquid

Physical State @20°C Liquid

Odor Characteristic petroleum or kerosene-like

Precautionary Statements - Prevention

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Use personal protective equipment as required
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Avoid release to the environment
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention
 Specific treatment (see .? on this label)
 Specific treatment (see .? on this label)
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 If eye irritation persists: Get medical advice/attention
 IF ON SKIN: Wash with plenty of soap and water
 Call a POISON CENTER or doctor/physician if you feel unwell
 Remove/Take off immediately all contaminated clothing
 Wash contaminated clothing before reuse
 If skin irritation occurs: Get medical advice/attention
 Rinse mouth
 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
 Do NOT induce vomiting
 In case of fire: Use CO2, dry chemical, or foam for extinction
 Collect spillage

Precautionary Statements - Storage

Store locked up
 Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

Causes mild skin irritation. Toxic to aquatic life.

3. COMPOSITION/INFORMATION ON INGREDIENTS

General Composition Statement Gas oils are variable and complex substances of hydrocarbons, predominantly having carbon chains from C9 to C30, containing variable amounts of alkanes, cycloalkanes, olefins, and aromatics.

Chemical Name	CAS-No	Percent
Residues (petroleum), heavy coker gas oil	68478-17-1	0-100
Gas oils (petroleum), straight-run	64741-43-1	0-100
Distillates (petroleum), light thermal cracked; Cracked gasoil	64741-82-8	0-100

Polycyclic Aromatic Hydrocarbons	130498-29-2	0-7
Sulfur	7704-34-9	0-3
Naphthalene,2-Methyl-	91-57-6	0-1
Phenanthrene	85-01-8	0-0.2

4. FIRST AID MEASURES

Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required. Remove from exposure, lie down. In case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt, seek medical advice. Never give anything by mouth to an unconscious person. Take off all contaminated clothing immediately and thoroughly wash material from skin.
Inhalation	Remove from exposure, lie down. If breathing has stopped, give artificial respiration. Get medical attention immediately. If breathing is difficult, administer oxygen. If symptoms persist, call a physician.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical advice/attention.
Ingestion	Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.
Self-protection of the first aider	Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Wear personal protective clothing (see section 8). Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

Most important symptoms and effects, both acute and delayed

Symptoms	Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Prolonged contact may cause redness and irritation. Hydrogen sulfide can cause respiratory paralysis and death, depending on concentration and duration of exposure. The "rotten egg" odor of hydrogen sulfide is not a reliable indicator of exposure, since olfactory fatigue (loss of smell) will occur.
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Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

Small Fire	Any extinguisher suitable for Class B fires, dry chemical, CO ₂ , foam (AFFF/ATC), or water spray can be used.
Large Fire	Water spray, fog or alcohol-resistant foam. CAUTION: Use of water spray when fighting fire may be inefficient. Cool containers with flooding quantities of water until well after fire is out.
Unsuitable extinguishing media	Do not use straight streams.
Specific hazards arising from the chemical	Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray.

Hazardous combustion products Smoke, CO, and other products of incomplete combustion.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge Yes.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn.

Further information

ALWAYS stay away from tanks engulfed in fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. Do not direct water at source of leak or safety devices; icing may occur. Cool containers with flooding quantities of water until well after fire is out. Do not allow run-off from fire-fighting to enter drains or water courses.

NFPA **Health hazards** 0 **Flammability** 2 **Stability** 0 **Physical and chemical properties** -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Take precautionary measures against static discharges. Do not touch or walk through spilled material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protection equipment. Do not breathe vapor or mist. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Take precautionary measures against static discharges. Use with local exhaust ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Take off contaminated clothing and wash before reuse.

Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulator), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static initiated fire or explosion during transfer, storage or handling, include but are not limited to these examples: (1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquid and vapors that are static accumulators.

(2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel or diesel) is loaded into tanks previously containing low flash point products (such as gasoline or naphtha). (3) Storage tank level floats must be effectively bonded. For more information on precautions to prevent static-initiated fire or explosion, see NFPA 77 Recommended Practice on Static Electricity and API Recommended Practice 2003 Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Keep out of the reach of children. Store locked up.

Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks". Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL
Naphthalene,2-Methyl- 91-57-6	TWA: 0.5 ppm S*	-
Phenanthrene 85-01-8	-	TWA: 0.2 mg/m ³

S* - Potential exposure by cutaneous route

NOTE: Limits shown for guidance only. For additional information, OSHA's 1989 air contaminants standard exposure limits provided even though the limits were vacated in 1992. State, local or other agencies or advisory groups may have established more stringent limits. Follow applicable regulations.

Appropriate engineering controls

Engineering controls

Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection

Use goggles or face-shield where there is a possibility of splashing.

Hand Protection

Wear suitable gloves. Polyvinyl alcohol. Nitrile rubber. Neoprene gloves. Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves.

Skin and body protection

Wear suitable protective clothing.

Respiratory protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Use a NIOSH approved respirator when there is a potential for airborne concentrations to exceed occupational exposure limits. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2, NIOSH Respirator Decision Logic, and the respirator manufacturer for additional guidance on respiratory protection selection. A Self-Contained Breathing

Apparatus (SCBA) should be used for fire fighting. Use a NIOSH approved positive-pressure supplied air respirator if there is a potential for uncontrolled release, exposure levels are unknown, in oxygen deficient (less than 19.5% oxygen), or any other circumstance where an air-purifying respirator may not provide adequate protection.

General hygiene considerations

Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State @20°C	Liquid
Appearance	Liquid
Odor	Characteristic petroleum or kerosene-like
Color	Yellow Brown
Odor threshold	No data available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	Not applicable	
Melting point / freezing point	-26 °C / -15 °F	Gel point can be about -15°F; freezing requires laboratory conditions
Boiling range	175 - 175 to 390 °C	
Flash point	> 61 °C / 142 °F	
Evaporation rate	No data available	
Flammability (solid, gas)	Flammable vapor released by liquid upon heating	
Flammability Limit in Air %		
Upper flammability limit:	6.5	
Lower flammability limit:	1.0	
Vapor pressure	4	hPa @ 40°C
Vapor density	No data available	
Relative density	0.83	
Water solubility	Negligible	
Solubility in other solvents	No data available	
Partition coefficient	3.9 to 6	
Autoignition temperature	No data available	
Decomposition temperature	No data available	
Kinematic viscosity	3.35 cSt @ 40°C	
Dynamic viscosity	No data available	
Explosive properties	No data available	
Oxidizing properties	No data available	
Minimum Ignition Energy (mJ)	No data available	
K_{st} (bar.m/s)	No data available	
Softening point	No data available	
VOC Content (%)	No data available	
Density	No data available	
Bulk density	Not applicable	
Conductivity	Hydrocarbon liquids such as atmospheric gas oil without static dissipater additive may have conductivity below 1 picoSiemens per meter (pS/m). The highest electro-static ignition risks are associated with "ultra-low conductivities" below 5 pS/m. See Section 7 for sources of information on defining safe loading and handling procedures for low conductivity products	

10. STABILITY AND REACTIVITY

Reactivity	This product is non-reactive under normal conditions.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	None under normal processing.

Conditions to avoid Heat, flames and sparks.

Incompatible materials Oxidizing or reducing agents. Acids. Alkali.

Hazardous decomposition products None under normal use conditions.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation Specific test data for the substance or mixture is not available.

Eye contact Specific test data for the substance or mixture is not available.

Skin contact Specific test data for the substance or mixture is not available. Toxic in contact with skin. (based on components).

Ingestion Specific test data for the substance or mixture is not available. Harmful if swallowed. (based on components).

Information on toxicological effects

Symptoms No information available.

Numerical measures of toxicity

Acute toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral) 1,892.00 mg/kg
ATEmix (dermal) 986.00 mg/kg

Chemical Name	Oral LD50	LD50/dermal/rat - NO UNITS (Wizards mg/kg)	Inhalation LC50
Gas oils (petroleum), straight-run 64741-43-1	= 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	= 1.72 mg/L (Rat) 4 h
Distillates (petroleum), light thermal cracked; Cracked gasoil 64741-82-8	= 3200 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	= 4.65 mg/L (Rat) 4 h
Sulfur 7704-34-9	> 3000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 9.23 mg/L (Rat) 4 h
Naphthalene,2-Methyl- 91-57-6	= 1630 mg/kg (Rat)	-	-
Phenanthrene 85-01-8	= 1.8 g/kg (Rat)	-	-

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chemical Name

Gas oils (petroleum), straight-run

Gas oils and distillate fuels may be fatal if they are swallowed and enter the airway. If inhaled, short-term overexposure can cause disorientation, nausea, vomiting, signs of central nervous system effects such as headache or disorientation, immediate unconsciousness and death. In animal studies, gas oil streams and distillate fuels demonstrated minimal acute toxicity by the oral, dermal and inhalation routes, minimal eye irritation, moderate to severe skin irritation with 24 hours exposure, and no dermal sensitization. Generally, results suggest that the degree of toxicity is associated with the concentrations and ring distributions of aromatic constituents in the fuels. When dermal exposures last 24 hours or longer, moderate to severe skin irritation, but not sensitization, has been reported in animal studies. Repeated dermal exposures have been reported to

cause systemic effects in animals, including changes in liver and thymus weight and blood chemistry. Some gas oil streams and distillate fuels can cause gene mutations in studies using bacteria and animal tissue. Results of developmental studies with gas oils demonstrate that some gas oils induce developmental effects and others do not. Effects observed include reduced litter size through resorptions, lower body weights, and fetal malformations were reported for 2 members of the category. Studies in animals indicate that gas oils and distillate fuels are potential skin carcinogens after repeated skin application, but are not associated with tumors in other parts of the body (systemic tumors). The carcinogenicity of individual petroleum streams varies due to factors such as source and processing; IARC and ECHA C&L Inventory reports individually on the carcinogenicity of these substances.

Health hazard and classification information

Skin Corrosion/Irritation Category No information available.

Serious eye damage/eye irritation No information available.
No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Classification based on data available for ingredients. Contains a known or suspected carcinogen.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Phenanthrene 85-01-8	-	Group 3	-	-

Reproductive toxicity No information available.

Target Organ Systemic Toxicant - Single Exposure No information available.

Target Organ Systemic Toxicant - Repeated Exposure No information available.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Additional Ecological Information Release of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems. U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number to the U.S. Coast Guard National Response Center is (800) 424-8802

Marine pollutant.

Ecotoxicity Toxic to aquatic life with long lasting effects.

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Distillates (petroleum), light thermal cracked; Cracked gasoil 64741-82-8	-	7.3: 96 h Brachydanio rerio mg/L LC50 semi-static	-	-
Sulfur 7704-34-9	-	14: 96 h Lepomis macrochirus mg/L LC50 static 866: 96 h Brachydanio rerio mg/L LC50 static 180: 96 h	-	-

		Oncorhynchus mykiss mg/L LC50 static		
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Persistence and degradability No information available.

Bioaccumulation There is no data for this product.

Component Information

Chemical Name	Partition coefficient
Naphthalene,2-Methyl- 91-57-6	3.86
Phenanthrene 85-01-8	4.5

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Polycyclic Aromatic Hydrocarbons 130498-29-2	-	Included in waste stream: K022	-	-
Phenanthrene 85-01-8	-	Included in waste stream: F039	-	-

14. TRANSPORT INFORMATION

DOT

UN/ID no UN1993
Proper Shipping Name Flammable liquids, n.o.s.
Hazard Class 3
Packing group III
Special Provisions B1, B52, IB3, T4, TP1, TP29
Marine pollutant Marine pollutant.
Emergency Response Guide Number 128

TDG

UN/ID no UN1993
Proper Shipping Name Flammable liquid, n.o.s.
Hazard Class 3
Packing group III
Marine pollutant Marine pollutant.

MEX

UN/ID no UN1993
Proper Shipping Name Flammable liquid, n.o.s.
Hazard Class 3
Special Provisions 223, 224

Packing group III
UN/ID no UN 1993
Proper Shipping Name Flammable liquid, n.o.s.
Hazard Class 3
Packing group III
ERG Code 3L

IMDG

UN/ID no UN1993
Proper Shipping Name Flammable liquid, n.o.s.*
Hazard Class 3
Packing group III
EmS No. F-E, S-E
Special Provisions 223, 274, 955
Marine pollutant Marine pollutant

15. REGULATORY INFORMATION

International Inventories

TSCA Not Listed
DSL/NDSL Not Listed
ENCS Not Listed
IECSC Not Listed
KECL Not Listed
PICCS Not Listed
AICS Not Listed

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute health hazard Yes
Chronic Health Hazard Yes
Fire hazard Yes
Sudden release of pressure hazard No
Reactive Hazard No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Polycyclic Aromatic Hydrocarbons 130498-29-2	-	X	-	-
Phenanthrene 85-01-8	-	-	X	-

CERCLA

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil, fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

US State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations**US State Regulations**

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Polycyclic Aromatic Hydrocarbons 130498-29-2	X	-	X
Sulfur 7704-34-9	X	X	X
Naphthalene,2-Methyl- 91-57-6	X	-	-

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Revision Date 11-Jul-2018
Revision Note No information available.

Disclaimer

Tesoro Companies, Inc. (Tesoro) provides the information on this Safety Data Sheet (SDS) in order to meet its obligations under 29 CFR 1910.1200, and does not hereby make any guarantee of product specifications or suitability for any particular purpose. Tesoro does not assume any liability arising out of the use of Tesoro's product or the use of information provided on this SDS. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all relevant information in the format of this document, since additional information may be necessary under exceptional conditions of use, and since Tesoro prepared this SDS based on information available on the date of its publication.

1014, 1016, 2228, 2229

End of Safety Data Sheet