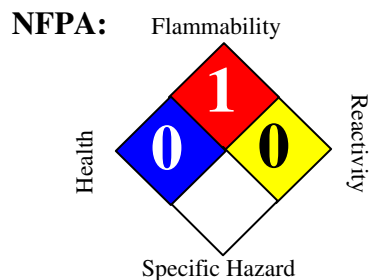


Material Safety Data Sheet

Petroleum Coke



HMIS III:

HEALTH	0
FLAMMABILITY	1
PHYSICAL	0

0 = Insignificant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	: Petroleum Coke		
Synonyms	: Green Coke, Uncalcined Coke, Thermocracked Coke, Fuel Grade Coke, 888100004472		
MSDS Number	: 888100004472	Version	: 1.18
Product Use Description	: Fuel		
Company	: For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259		
Tesoro Call Center	: (877) 783-7676	Chemtrec (Emergency Contact)	: (800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Regulatory status	: This material may be considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200) This MSDS should be retained and available for employees and other users of the product.
Signal Word	: WARNING
Hazard Summary	: In very large quantities, spontaneous heating and combustion may occur. Excessive inhalation of dust may cause mouth, nose and/or throat irritation. Excessive skin contact with the product may cause irritation such as from abrasive (rubbing) action. May form combustible or explosive dust concentration in air during processing.

Potential Health Effects

Eyes	: May cause irritation, experienced as mild discomfort and seen as slight excess redness of the eye.
Skin	: Brief contact may cause slight irritation.
Ingestion	: Low order of oral toxicity. Ingestion is considered unlikely. However, good personal hygiene such as washing hands and face after handling or contacting material before eating, drinking or smoking should be practiced to minimize ingestion of this product.
Inhalation	: Inhalation of excessive dust concentrations may be irritating to the upper respiratory system.

- Chronic Exposure** : Repeated chronic inhalation exposure may cause impaired lung function. There is no evidence that such exposures cause pneumoconiosis, carcinogenicity, or other chronic health effects.
- Aggravated Medical Condition** : Persons with preexisting respiratory disease, such as asthma, may have symptoms aggravated by dust exposure.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Coke (Petroleum)	64741-79-3	100%

SECTION 4. FIRST AID MEASURES

- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.
- Skin contact** : Take off all contaminated clothing immediately. Wash off with soap and plenty of water. Wash contaminated clothing before re-use. Seek medical advice if symptoms persist or develop.
- Eye contact** : Remove contact lenses. Immediately flush eyes thoroughly with warm water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Seek medical advice.
- Ingestion** : Ingestion is considered unlikely. However, inhalation procedures should be followed if this happens. Drink 1 or 2 glasses of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical attention.
- Notes to physician** : Symptoms: Vomiting, Diarrhea, Pain

SECTION 5. FIRE-FIGHTING MEASURES

- Form** : Solid
- Flash point** : Not determined
- Auto Ignition temperature** : 670 °C (1,238 °F)
- Lower explosive limit** : 15 to 1000 g/m³
- Upper explosive limit** : Not determined
- Suitable extinguishing media** : Water spray, Dry chemical, Foam, Carbon dioxide blanket, A solid stream of water may scatter and spread the fire.
- Specific hazards during fire fighting** : Product will burn. In very large quantities, spontaneous heating and combustion may occur. Fire will produce dense black smoke containing hazardous combustion products (see Section 10).
- Special protective equipment for fire-fighters** : Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-

demand self-contained breathing apparatus with full facepiece and full protective clothing.

Further information : Large fires are best extinguished with water. Surfactant (foam or soap) in water may be effective in reaching deep, smoldering fires (such as in coke pile).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : ACTIVATE FACILITY'S SPILL CONTINGENCY OR EMERGENCY RESPONSE PLAN if applicable. Ventilate the area. Evacuate personnel to safe areas.

Environmental precautions : Prevent further leakage or spillage. Should not be released into the environment. Do not allow material to contaminate ground water system. In case of accident or road spill notify CHEMTREC (800) 424-9300. U.S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard toll free number (800) 424-8802.

Methods for cleaning up : Carefully vacuum, shovel, scoop or sweep up into a waste container for reclamation or disposal. Water fog may be necessary to minimize dust generation. Respiratory protection is recommended where visible dust may be generated.

SECTION 7. HANDLING AND STORAGE

Handling : Minimize physical contact with the product. Avoid conditions which create dust. Do not breathe vapors or dust. Avoid dispersal of coke dust into air such as cleaning dusty surfaces with compressed air.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition. No smoking near areas where material is stored or used. Ground and bond containers during product transfers to reduce the possibility of static-initiated fire or explosion.

Dust explosion class : High concentrations of airborne petroleum coke dusts may be ignited by contact with heated surface. Airborne coke dust is primarily a fire hazard, but explosion may be possible.

Requirements for storage areas and containers : Avoid generation and accumulation of dust when handling this material. Refer to NFPA 654 Standard for Prevention of Fire & Dust Explosions.

Other data : Stable under recommended storage conditions.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

List	Components	CAS-No.	Type:	Value
OSHA	Petroleum Coke	64741-79-3	TWA	15mg/m3 (total dust) 5 mg/m3 (respirable dust)
ACGIH	Petroleum Coke	64741-79-3	TL	10 mg/m3 (total dust) 3 mg/m3 (respirable dust)
OSHA	Coal Tar Pitch Volatiles Benzene Soluble Fraction	65996-93-2	TWA	0.2 mg/m3
ACGIH	Coal Tar Pitch Volatiles Benzene Soluble Fraction	65996-93-2	TLV	0.2 mg/m3

NOTE: Limits shown for guidance only. Follow applicable regulations.

- Engineering measures** : Use adequate ventilation to keep dust concentrations of this product below occupational exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Dust control equipment such as local exhaust ventilation or material transport systems handling coke should contain explosion relief vents or explosion suppression systems.
- Eye protection** : Indirect vented, dust-tight goggles are recommended if dust is generated when handling this product.
- Hand protection** : Work gloves are recommended if needed to prevent repeated or prolonged skin contact.
- Skin and body protection** : Disposable clothing such as Tyvek® (DuPont) may be warranted to minimize skin and clothing contamination, depending on the work to be performed. Flame resistant clothing such as Nomex ® is recommended in areas where material is stored or handled.
- Respiratory protection** : A NIOSH/ MSHA-approved air-purifying respirator with particulate classification N-95 or greater filter cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection. Use a NIOSH/ MSHA-approved positive-pressure supplied-air respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.
- Hygiene measures** : Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. When using do not eat, drink or smoke. Promptly remove contaminated clothing and launder before reuse.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Form** : Solid
- Appearance** : Black
- Odor** : Hydrocarbon
- Flash point** : Not determined
- Auto Ignition temperature** : 670 °C (1,238 °F)
- Thermal decomposition** : No decomposition if stored and applied as directed.
- Lower explosive limit** : 15 to 1000 g/m³
- Upper explosive limit** : Not determined
- pH** : Not applicable
- Freezing point** : No data available
- Vapor Pressure** : Not applicable
- Specific gravity** : > 1.0 (H2O=1)

Density	: No data available
Water solubility	: Insoluble
Viscosity, kinematic	: No data available
Percent Volatiles	: 2 to 12%
Kst	: 47 to 74 bar m/s
MIE	: >1000 mJ

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	: No special storage requirements are necessary. Avoid creating dusty conditions. Minimize physical contact with the product.
Materials to avoid	: Strong acids. Strong Oxidizers.
Hazardous decomposition products	: In case of fire hazardous decomposition products may be produced such as: Carbon oxides. Hydrocarbons. Smoke.
Thermal decomposition	: No decomposition if stored and applied as directed.
Hazardous reactions	: Keep away from oxidizing agents, and acidic or alkaline products. Note: Stable under recommended storage conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Carcinogenicity

NTP	: No component of this product which is present at levels greater than or equal to 0.1 % is identified as a known or anticipated carcinogen by NTP.
IARC	: No component of this product which is present at levels greater than or equal to 0.1 % is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	: No component of this product which is present at levels greater than or equal to 0.1 % is identified as a carcinogen or potential carcinogen by OSHA.
CA Prop 65	: This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.
Acute oral toxicity	: LD50 rat Dose: > 2,000 mg/kg The toxicological data has been taken from products of similar composition.
Acute dermal toxicity	: LD50 rabbit Dose: > 2,000 mg/kg The toxicological data has been taken from products of similar composition.
Acute inhalation toxicity	: No data available
Skin irritation	: May cause eye/skin irritation.
Eye irritation	: Mechanical irritation is possible.
Further information	: Repeated inhalation of the petroleum coke dust (10.2 and 30.7 mg/m ³) over a two-year period resulted in lung damage typical of high dust exposure including inflammation and scarring in rats. Similar exposures in monkeys did not produce similar lung effects. There was no observation of a carcinogenic effect at any dose following a lifetime exposure. There is no evidence of pneumoconiosis or

carcinogenicity in human health studies. 24 months of exposure in monkeys and rats to either 10.2 or 30.7 mg/m³ of coke dust resulted in lung accumulation of dust. There was no associated tissue abnormality in monkeys. A low level inflammatory response developed in the rat lung at 10.2 mg/m³ and more significant inflammatory changes occurred in the rat lung at 30.7 mg/m³. There was no evidence of carcinogenicity in either species. Mouse skin painting bioassay negative.

SECTION 12. ECOLOGICAL INFORMATION

Additional ecological information : Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal : Dispose of container and unused contents in accordance with federal, state and local requirements. Product is suitable for burning for fuel value in compliance with applicable laws and regulations. RCRA: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity. The unused product is not formulated with substances covered by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

SECTION 14. TRANSPORT INFORMATION

CFR : Not regulated by USA DOT 49 CFR.
ICAO/IATA : Not regulated by ICAO/IATA.

SECTION 15. REGULATORY INFORMATION

U.S. FEDERAL, STATE AND LOCAL REGULATORY INFORMATION

Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/local reporting requirements. This product and/or its constituents may also be subject to other regulations at the state and/or local level. Consult those regulations applicable to your facility/operation.

OSHA Hazards : Spontaneous Combustion Hazard.
 TSCA Status : On TSCA Inventory
 DSL Status : All components of this product are on the Canadian DSL list.
 SARA 311/312 Hazards : No SARA Hazards

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIROMENT)

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

