



# MATERIAL SAFETY DATA SHEET



## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT IDENTIFIER:** Caustic Washed Naphtha

**GENERAL USE:** It is used primarily in blending with gasoline, resins, solvent for asphalt, road tars, pitches, cleaning compounds, etc.

**PRODUCT DESCRIPTION:** A white to straw colored, mobile, flammable or combustible liquid with an aromatic odor.

**MANUFACTURER:**  
Dakota Gasification Company  
420 County Road 26  
Beulah, North Dakota 58523-9400  
(701) 873-6677

**EMERGENCY TELEPHONE NUMBERS:**  
Dakota Gasification (701) 873-6600  
CHEMTREC (800) 424-9300

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>INGREDIENTS</u>	<u>Typical WT. %</u>	<u>CAS Registry #</u>
Benzene	44%	71-43-2
Toluene	17%	108-88-3
Paraffins and Isoparaffins	4.5%	8002-74-2
Xylenes	3.1%	(mixture)
Olefins	8.6%	Not Established (mixture)
Acetone	2-8%	67-64-1
Methyl Ethyl Ketone	2-5%	78-93-3

### OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200): EXPOSURE LIMITS 8 hrs. TWA (ppm)

	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Naphtha	100 ppm	400 ppm
Benzene	1 ppm	0.5 ppm
Toluene	200 ppm/300 ppm Ceiling	20 ppm
Paraffins and Isoparaffins	Not Established	2 mg/m <sup>3</sup>
Xylenes	100 ppm	100 ppm
Olefins	Not Established	Not Established
Acetone	1000 ppm	500 ppm
Methyl Ethyl Ketone	200 ppm	200 ppm/300 ppm STEL

## 3. HAZARDS IDENTIFICATION / EMERGENCY OVERVIEW:

Routes of Entry: (Benzene) is absorbed rapidly by inhalation and ingestion, and slowly through intact skin. (Benzene) Exposure to high vapor concentrations such as 3000 ppm or above may cause acute poisoning characterized by narcotic action on the central nervous system. The anesthetic action of benzene is similar to that of other anesthetic gases, consisting of a preliminary stage of excitation followed by depression. If exposure is continued, death through respiratory failure may result.

**POTENTIAL HEALTH EFFECTS: (Are noted for individual ingredients)**

- EYE CONTACT:** (*Benzene*) High concentrations of benzene vapor can cause eye irritation, but inflammation is generally slight. When splashed in the eyes, benzene may cause burning pain and sloughing of the eye surface.
- SKIN CONTACT:** (*Benzene*) Benzene can cause skin irritation and defatting, particularly after prolonged or repeated contact with the liquid. Redness of the skin and blisters may occur. The liquid is a mild skin irritant with slow skin absorption. Victims whose clothing or skin is contaminated with liquid benzene can secondarily contaminate response personnel by direct contact or through off-gassing vapor.
- INHALATION:** (*Benzene*) Acute exposure to benzene vapor may irritate the mucous membranes of the respiratory tract. With massive exposure, accumulation of fluid in the lungs and respiratory failure may ensue. Pulmonary aspiration of toxic vomitus or ingested benzene may cause inflammation of the lungs. Blood in the urine and protein in the urine can occur after massive inhalation. These effects usually are reversible if exposure is terminated.
- INGESTION:** (*Benzene*) Acute toxic effects from ingestion of benzene. If swallowed, benzene can irritate the stomach, causing nausea, vomiting, and diarrhea. The estimated lethal dose is 100ml, although as little as 15 ml of benzene has caused death. This is approximately 260 ml of naphtha. Benzene vapor may also off-gas from the toxic vomitus of victims who have ingested benzene.
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**4. FIRST AID MEASURES**

- EYES:** The chemical must be removed from the eye(s) quickly. Remove the victim from the source of contamination and take him to the nearest eyewash, shower, or other source of clean water. Gently rinse the affected eye(s) with clean, lukewarm water for at least 15 minutes. Have the victim lie or sit down and tilt his head back. Hold the eyelid(s) open and pour water slowly over the eyeball(s) at the inner corners, letting the water run out of the outer corners.  
Ask the victim to look up, down and side to side as you rinse in order to better reach all parts of the eye(s). Seek medical attention immediately. **DO NOT** let the victim rub his eye(s); do not let the victim keep his eyes tightly shut; do not introduce oil or ointment into the eye(s) without medical advice; do not use hot water.
- SKIN:** The chemical must be removed from contact with the skin as quickly as possible. Remove the victim from the source of contamination. Remove clothing, shoes, socks, and jewelry from the affected areas. Be careful not to get the chemical on your skin or clothing. Wash the affected area under tepid (moderately warm) running water using a mild soap. Dry the skin gently with a clean, soft towel. Notify a physician, emergency room, or poison control center and inform them of the nature of the substance and the accident. Keep the victim quiet and arrange to have someone stay with him until medical assistance is available.  
**Special Warning:** These chemicals vaporize easily and present an inhalation hazard as well. Many of them are flammable and explosive. Dispose of contaminated clothing with care.

#### FIRST AID MEASURES (Continued):

- INHALATION:** **If the victim is unconscious but breathing:** Lay him on his back. If he is vomiting, turn his head to the side. Clear and open his airway and loosen tight clothing. If available, give him oxygen to breathe. Keep him warm and quiet. Check his pulse periodically and be ready to administer CPR. Do not leave him unattended. Do not give an unconscious person anything to drink. Call for medical assistance. **If the victim is conscious but coughing or short of breath:** Lay the victim down, cover with a blanket, and keep him quiet. Loosen tight clothing. Give him oxygen to breathe until help arrives. Check his pulse periodically. Do not leave him unattended. Call for medical assistance. **If the victim is conscious and not coughing or short of breath:** Lay him down, cover with a blanket, and keep him quiet. Loosen tight clothing. Check his pulse periodically. Do not leave him unattended. Call for medical assistance. Never enter a confined space to rescue a victim without the proper personal protective equipment and stand-by person(s) outside.
- INGESTION:** It is important to trap the chemical in the stomach and prevent further injury caused by vomiting. Remove the victim from the contaminated area to a quiet, well ventilated area, away from any fire or smoke. Call a poison control center, inform them of the chemical swallowed, and follow their advice. Call the Emergency medical service and arrange for transport. **If the victim stops breathing:** Wipe away any remaining material off the lips. Clear the airway and administer mouth to mouth respiration. Avoid inhaling the exhaled air of the victim. **If the victim's face is blue or if respiration is labored:** Check the airway for obstruction. Give him oxygen to breathe by mask if available. **If the victim has a seizure or convulsion:** Do not attempt to restrain him but position him in such a way that he will not injure himself. Watch for airway obstruction and try to reposition the head if it occurs. After the convulsion, place the victim on his side. **If the victim is unconscious:** Lay him on his left side and loosen his collar and belt. **If the victim is conscious:** Loosen tight clothing around the neck and waist. Have him rinse his mouth several times with cold water and spit out. Give him a mixture of 2 tablespoons of activated charcoal mixed in 8 oz. of water to drink. Keep the victim warm. **Seek medical assistance immediately.** **DO NOT** give an unconscious person or a convulsing person anything to drink. **DO NOT** induce vomiting; do not give the victim any oils; do not give the victim any alcohol, drugs, or stimulants like coffee or tea; do not give sodium bicarbonate or carbonate drinks; do not force a hard object between the victim's teeth during a convulsion. There is no antidote for benzene. Treatment consists of supportive measures.

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#### 5. FIRE FIGHTING MEASURES

FLASH POINT: 12°F

AUTO-IGNITION TEMPERATURE: Could be as low as 531°F

**FIRE AND EXPLOSION HAZARDS:** The data listed for flashpoint, upper explosive limit, and lower explosive limit is published data for a few of the ingredients contained in this mixture. These are to be understood as examples only. The product itself may have different values. Benzene vapors are heavier than air and may travel considerable distances to a source of ignition and flash back. Vessels containing this material may build up pressure when temperatures are elevated such as during a fire. Isolate for ½ mile in all directions if tank, rail car, or tank truck is involved in fire.

UPPER EXPLOSIVE / FIRE LIMITS: 7.1% (Benzene)

LOWER EXPLOSIVE / FIRE LIMITS: 1.3% (Benzene)

EXTINGUISHING MEDIA: Foam, Carbon Dioxide, Dry Chemical. Water spray may not be effective as an extinguishing agent. However, it may be used to keep fire-exposed containers cool.

SPECIAL FIRE FIGHTING PROCEDURES: **Small fires:** Dry chemical, CO<sub>2</sub>, water spray, or foam. **Large fires:** Water spray, fog, or foam. Move containers from fire area if this can be done safely. Cool containers that have been exposed to heat. For massive fires in cargo areas use unmanned hose holders or monitor nozzles. If impossible, withdraw from area. Withdraw immediately in the event of rising sound from venting safety device or any discoloration of tank due to fire. Firefighters should wear a self-contained positive pressure breathing apparatus, and full protective clothing for fire fighting. Keep out of low areas. Stay upwind.

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#### 6. ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURES: Keep ignition sources away. Dike material with sand or other absorbent material. Measure hydrocarbon content of the air before sending any worker into a spill area. Stop leak at the source if this can be done without risk to personnel. Knock down vapors with water fog. Do not let liquids get into sewer systems. Small spills can be taken up with sand or other noncombustible absorbent material and placed into containers for later disposal. Provide personnel with proper personal protective equipment and respiratory equipment. Keep unnecessary people away; isolate hazard area and deny entry. Isolate for ½ mile in all directions if tank, rail car, or tank truck is involved in fire.

WASTE DISPOSAL METHOD: Follow all local, state, federal, or other applicable regulations.

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#### 7. HANDLING AND STORAGE

STORAGE TEMPERATURE: Ambient or room temperature.

SHELF LIFE: Indefinite.

SPECIAL SENSITIVITY: Not noted.

HANDLING / STORAGE PRECAUTIONS: Store at ambient temperature. Avoid ignition source. Prevent venting. If venting occurs, provide adequate ventilation.

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#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

RECOMMENDED WORK / HYGIENE PROCEDURES: Provide impervious clothing to prevent skin contact and skin absorption. Eye protection is required. All measures necessary to prevent inhalation (the most common entry route) are required.

EYE PROTECTION REQUIREMENTS: Goggles and or faceshield - depending on potential for splash.

HAND PROTECTION REQUIREMENTS: Impervious material (PVA, Nitrile).  
PROTECTIVE CLOTHING REQUIREMENTS: Impervious clothing that will prevent skin contact.  
RESPIRATORY REQUIREMENTS: Half mask air purifying respirator with organic vapor cartridge:  
Upper Limit - less than 10 ppm.  
Full face piece respirator with organic vapor cartridge:  
Upper Limit - less than 50 ppm.  
Supplied air respirator with full facepiece in positive pressure mode:  
Upper Limit - less than 1000 ppm.  
Self-contained breathing apparatus with full facepiece in positive pressure mode or full facepiece positive pressure supplies air respirator with auxiliary self-contained air supplied.  
Upper Limit - greater than 1000 ppm unknown concentration.  
WASH REQUIREMENTS: Remove contaminated clothing immediately. Wash with soap and water. Wash before eating, smoking, and using restroom facilities.  
VENTILATION REQUIREMENTS: Local: Prevent concentrations of vapors greater than the permissible exposure limits: 1 ppm.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Yellow to straw colored liquid  
ODOR: Aromatic odor, sweet, pungent. A component such as methyl mercaptan has an odor threshold of 0.00054 ppm; naphthalene has an odor threshold of 0.038 ppm, benzene has an odor threshold of 1.5-4.5 ppm.  
PHYSICAL STATE: Liquid.  
pH: 7  
VAPOR PRESSURE: 75 mmHg at 78°F  
VAPOR DENSITY: 3.0 (air = 1)  
MELTING POINT: -42°F  
BOILING POINT: 176°F  
SPECIFIC GRAVITY: 0.82 - 0.84 (water = 1)  
EVAPORATION RATE: Greater than one (Butyl acetate = 1).  
PERCENT VOLATILES: Essentially 100%  
BULK DENSITY: 6.9 lbs per gallon  
SOLUBILITY IN WATER: 0.18% (Benzene)  
SOLVENT SOLUBILITY: Soluble in most organic hydrocarbon solvent.  
MOLECULAR WEIGHT: Unable to determine, complex mixture (Benzene)-78.12  
CHEMICAL FORMULA: Not noted.

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## 10. STABILITY AND REACTIVITY

INSTABILITY CONDITIONS: Not noted.  
INCOMPATIBILITIES: Strong oxidizers, nitrates, chlorine, and bromine with iron.  
DECOMPOSITION: Carbon monoxide.  
HAZARDOUS POLYMERIZATION: Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

ROUTES OF ENTRY: Skin absorption; Inhalation; Skin contact; Eye contact.  
(Benzene): Poisoning occurs most commonly via inhalation of the vapor, although benzene can penetrate the skin and cause poisoning. Locally, benzene has a comparatively strong irritating effect, producing skin irritation and burning. In more severe cases, edema and even blistering will occur.  
EFFECTS OF ACUTE EXPOSURE: Exposure to high vapor concentrations such as 3000 ppm or above may

cause acute poisoning characterized by narcotic action on the central nervous system.

The anesthetic action of benzene is similar to that of other anesthetic gases, consisting of a preliminary stage of excitation followed by depression and if exposure is continued, death through respiratory failure. In acute poisoning, the worker becomes confused and dizzy, complains of tightening of the leg muscles and of pressure over the forehead, then passes into a stage of excitement. If allowed to remain exposed, the victim quickly becomes stupefied and lapses into coma. In non-fatal cases, recovery is usually complete with no permanent disability.

Breathless, irritable, euphoric or giddy. Irritations of eyes, nose and respiratory tract. Headache, dizzy, nauseated, or intoxicated. Severe exposures may lead to convulsions and loss of consciousness. Skin can become red, dry, scaly, and fissured. Persons can become sensitized from skin contact. Eye tissue may be damaged. Generally, the more serious the

SYMPTOMS: exposure, the more severe the symptoms.

EYE EFFECTS: Eye LC<sub>50</sub> (Benzene) 2 mg/24H rabbit

SKIN EFFECTS: Dermal LD<sub>50</sub> (Benzene) 15 mg/24H rabbit

ACUTE ORAL EFFECTS: Oral LD<sub>50</sub> (Benzene) 18250 mg/kg muskrat

ACUTE INHALATION LC<sub>50</sub> (Benzene) TCL<sub>0</sub> 150 ppm human  
EFFECTS:

CHRONIC EFFECTS / (Benzene) This agent is considered to be a carcinogen by IARC, NTP, and  
CARCINOGENICITY: OSHA. There is a great individual variation in the signs and symptoms of chronic benzene poisoning. In chronic poisoning, the onset is slow with the symptoms vague. Fatigue, headache, dizziness, nausea, and loss of appetite, loss of weight and weakness are common complaints in early cases. The chronic, rather than the acute form of benzene poisoning are important in industry. Benzene is a recognized leukemogen. There is no specific blood picture occurring in cases of chronic benzol poisoning. The bone marrow may be hypoplastic, normal, or hyperplastic, the changes reflected in the peripheral blood. Anemia, leucopenia, macrocytosis, reticulocytosis, thrombocytopenia, high color index, and prolonged bleeding time may be present.

Benzene has a definite cumulative action, but exposure to a relatively high concentration is not serious from the point of view of causing damage to the blood forming system, provided the exposure is not repeated. On the other hand, daily exposure for a protracted period of time to concentrations above the established OSHA TLV's may cause damage.

ORGANS AFFECTED BY LONG-TERM EXPOSURE: Bone Marrow. Specific tests for the presence of benzene in blood generally are not useful to the doctor. Phenol, a breakdown product of benzene, can be measured in urine if the benzene exposure was high. Other tests may show whether injury has occurred in the heart, kidneys, blood, or nervous system. Testing is not needed in every case.

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## 12. ECOLOGICAL INFORMATION

The most significant source for release of benzene to the environment is from the combustion of

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gasoline. Chemical degradation reactions, primarily the reaction with the hydroxy radical, limit the atmospheric residence time of benzene to only a few days and possibly only a few hours if the hydroxy radical is sufficiently high. Biodegradation, principally aerobic, is the most important environmental fate mechanism for water and soil associated benzene. For benzene released to the air some washout in rainwater is anticipated. Benzene released to the soil can be transported to the air through volatilization, to surface water through runoff, and to groundwater as a result of leaching. Benzene is considered biodegradable.

**13. DISPOSAL CONSIDERATIONS**

Recycling/reuse of all naphtha residuals is recommended. Discarded or spill cleanup materials may be considered hazardous waste as defined under RCRA 40 CFR 261.24 (Benzene D018). Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

**14. TRANSPORTATION INFORMATION**

D.O.T. SHIPPING NAME: Coal Tar Distillate  
 D.O.T. HAZARD CLASS: Flammable Liquid, 3  
 U.N. NUMBER: UN 1136  
 D.O.T. PLACARD: Flammable Liquid  
 D.O.T. LABEL CODE: Flammable Liquid  
 PACKAGING CLASSIFICATION: Packing Group II  
 D.O.T. REPORTABLE QUANTITY: (Benzene) 10 lbs.-Approximately 3 gallons of product.

**15. REGULATORY REGULATIONS**

EPA DETERMINATIONS  
 CERCLA, 40 CFR 302

This product contains the following hazardous substances which, when released in quantities equal to or exceeding the Reportable Quantity, triggers National Response Center notification requirements.

HAZARDOUS SUBSTANCE	REPORTABLE QUANTITY	PRODUCT SPILL QUANTITIES to Reach RQ
Benzene	10 pounds	3 gallons
Toluene	1000 pounds	850 gallons
Xylenes	100 pounds	450 gallons
Acetone	5000 pounds	9,500 gallons
Methyl Ethyl Ketone	5000 pounds	15,000 gallons

SUPERFUND AMENDMENTS and REAUTHORIZATION ACT OF 1986,  
 TITLE III - SECTIONS 302, 304, 311, 312, 313

**SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)**

The material does not contain extremely hazardous substances at greater than 1.0% concentrations. However, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

**SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)**

The material should be reported under the following EPA Hazard Categories.

4	Immediate (Acute Health Hazard)
4	Delayed (Chronic Health Hazard)

4	Fire
	Sudden Release of Pressure
	Reactive

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material contains the following chemicals at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and is subject to toxic chemical release reporting requirements.

Toxic Chemicals: Benzene  
Toluene  
Naphthalene  
Xylenes  
Acetone  
Methyl Ethyl Ketone  
Methyl Mercaptan  
Acetaldehyde  
Methanol

Toxic Substances Control Act (TSCA) (40 CFR 710)

The material is a mixture as defined by TSCA. The chemical ingredients in this material are in Section 8(b) Chemical Substance Inventory (40 CFR 710) and/or are otherwise in compliance with TSCA. Acetone is subject to a TSCA Section 4 Test Rule.

LIABILITY DISCLAIMER

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct since it was obtained from sources we believe are reliable. However no representation, guarantees, or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material, or the results to be obtained from the use thereof. User assumes all risks and liability of any use, processing or handling of any material, variations in methods, conditions and equipment used to store, handle, or process the material and hazards connected with the use of the material are solely the responsibility of the user and remain at his sole discretion.

Compliance with all applicable federal, state, and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe work place to examine all aspects of its operation and to determine if or where precautions, in addition to those described herein, are required.