



## 1. Product and company identification

<b>Product name</b>	VACUUM TOWER BOTTOMS
<b>MSDS #</b>	0000001731
<b>Historic MSDS #:</b>	03282 (Amoco); 1071 (BP)
<b>Code</b>	0000001731
<b>Synonyms</b>	Vacuum Tower Resid, Vacuum Tower Residuum, Vacuum Residuum, Vacuum Resid, and Coker Feed
<b>Supplier</b>	BP Products North America Inc. 150 West Warrenville Road Naperville, Illinois 60563-8460 USA
<b>EMERGENCY HEALTH INFORMATION:</b>	1 (800) 447-8735  Outside the US: +1 703-527-3887 (CHEMTREC)
<b>EMERGENCY SPILL INFORMATION:</b>	1 (800) 424-9300 CHEMTREC (USA)
<b>OTHER PRODUCT INFORMATION</b>	1 (866) 4 BP - MSDS (866-427-6737 Toll Free - North America) email: bpcares@bp.com

## 2. Hazards identification

<b>Physical state</b>	Viscous liquid.
<b>Color</b>	Brown. and Black. (Dark.)
<b>Emergency overview</b>	WARNING !  VAPOR MAY CONTAIN HYDROGEN SULFIDE (H <sub>2</sub> S) GAS WHICH CAN BE HARMFUL OR FATAL IF INHALED. MAY CAUSE RESPIRATORY TRACT AND EYE IRRITATION. HEATED MATERIAL CAN CAUSE THERMAL BURNS.  Avoid contact with eyes, skin and clothing. Do not breathe vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
<b>Routes of entry</b>	Dermal contact. Eye contact. Inhalation. Ingestion.
<b>Potential health effects</b>	
<b>Eyes</b>	Heated material can cause thermal burns. Vapors may cause irritation.
<b>Skin</b>	Heated material can cause thermal burns. Material may cause slight irritation on prolonged or repeated contact.
<b>Inhalation</b>	May cause respiratory tract irritation. Vapors containing hydrogen sulfide may accumulate during storage or transport. See toxicological information (section 11).
<b>Ingestion</b>	No significant health hazards identified.
<b>See toxicological information (section 11)</b>	

**Product name** VACUUM TOWER BOTTOMS

**Product code** 0000001731

**Page:** 1/7

**Version** 3      **Date of issue** 10/09/2009.

**Format** US-COMP

**Language** ENGLISH.

(US-COMP)

(ENGLISH)

### 3. Composition/information on ingredients

Ingredient name	CAS #	%
Residues (petroleum), vacuum	64741-56-6	100
Contains: Hydrogen Sulfide	7783-06-4	< 5

### 4. First aid measures

<b>Eye contact</b>	Hot material: Flush eyes with plenty of water for at least 15 minutes. Seek medical assistance for mechanical removal of this material from the eye. The use of flush fluid, other than water, is not recommended. Cold material: flush eyes with plenty of water.
<b>Skin contact</b>	Hot material: Immediately flush with cool water for at least 15 minutes. Get immediate medical attention. Cold material: Clean exposed skin with waterless hand cleaner.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
<b>Ingestion</b>	Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

### 5. Fire-fighting measures

<b>Flammability of the product</b>	May be combustible at high temperature.
<b>Flash point</b>	Open cup: >230°C (>446°F) [ASTM D-92 Cleveland]
<b>Fire/explosion hazards</b>	Not available.
<b>Unusual fire/explosion hazards</b>	If hydrogen sulfide is present, the flammable limits can be from 4.3 to 45.5% by volume and its presence may promote the formation of pyrophoric iron compounds.
<b>Extinguishing media</b>	
<b>Suitable</b>	In case of fire, use water fog, foam, dry chemicals, or carbon dioxide.
<b>Not suitable</b>	Do not use water jet.
<b>Fire-fighting procedures</b>	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
<b>Hazardous combustion products</b>	Potential combustion products - hydrogen sulfide & oxides of carbon and sulfur. (When heated above 54°C / 130F). Hydrogen Sulfide (H <sub>2</sub> S), sulfur oxides (SO <sub>2</sub> , SO <sub>3</sub> etc.), carbon oxides (CO, CO <sub>2</sub> ) (carbon monoxide, carbon dioxide).
<b>Protective clothing (fire)</b>	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

### 6. Accidental release measures

<b>Environmental precautions</b>	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
<b>Personal protection in case of a large spill</b>	Chemical splash goggles. Full suit. Vapor respirator. Boots. Gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.  CAUTION: The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of air-purifying respirator.

#### Methods for cleaning up

<b>Product name</b> VACUUM TOWER BOTTOMS	<b>Product code</b> 0000001731	<b>Page:</b> 2/7	
<b>Version</b> 3	<b>Date of issue</b> 10/09/2009.	<b>Format</b> US-COMP	<b>Language</b> ENGLISH.
		<b>(US-COMP)</b>	<b>(ENGLISH)</b>

### Large spill

Stop leak if without risk. Eliminate all ignition sources. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

### Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

## 7. Handling and storage

### Handling

Avoid contact with skin and clothing. Avoid contact with eyes. Do not breathe vapor or mist. Use only with adequate ventilation. Put on appropriate personal protective equipment (see section 8).

Asphalt products should not be overheated during handling and storage. Recommended storage and plant mixing temperatures are grade specific. For guidance see Best Management Practices To Minimize Emissions During HMA Construction, published by the Asphalt Pavement Environmental Council.

Operating temperatures should be kept as low as possible to minimize fume generation. As a general rule, asphalt temperature should be kept in the range 130C to 200C and never exceed the industry recommended maximum safe working temperature of 230C. At temperatures above 230C, significant decomposition can occur, with an increased risk of generating flammable/hazardous atmospheres. If exposure to asphalt fume generated at temperatures above 200C cannot be precluded, skin and inhalation exposure should be avoided by ensuring adequate workplace ventilation and, if necessary, the use of appropriate personal protective equipment.

### Storage

Keep container tightly closed. Keep container in a cool, well-ventilated area. Outside or detached storage is preferred. Empty containers may contain harmful, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose of containers unless adequate precautions are taken against these hazards.

### Other information

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## 8. Exposure controls/personal protection

### Occupational exposure limits

#### Ingredient name

#### Occupational exposure limits

Residues (petroleum), vacuum

**ACGIH TLV (United States, 1/2007).**  
TWA: 0.5 mg/m<sup>3</sup> 8 hour(s). Form: Asphalt Fume  
**NIOSH REL (United States, 12/2001).**  
CEIL: 5 mg/m<sup>3</sup> 15 minute(s). Form: Asphalt Fume

Hydrogen Sulfide

**ACGIH TLV (United States, 1/2007).**  
STEL: 21 mg/m<sup>3</sup> 15 minute(s).  
STEL: 15 ppm 15 minute(s).  
TWA: 14 mg/m<sup>3</sup> 8 hour(s).  
TWA: 10 ppm 8 hour(s).  
**NIOSH REL (United States, 12/2001).**  
CEIL: 15 mg/m<sup>3</sup> 10 minute(s).  
CEIL: 10 ppm 10 minute(s).  
**OSHA PEL Z2 (United States, 11/2006).**  
AMP: 50 ppm 10 minute(s).  
CEIL: 20 ppm

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

**Some states may enforce more stringent exposure limits.**

### Control Measures

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

<b>Product name</b> VACUUM TOWER BOTTOMS	<b>Product code</b> 0000001731	<b>Page:</b> 3/7
<b>Version</b> 3	<b>Date of issue</b> 10/09/2009.	<b>Format</b> US-COMP
	<b>(US-COMP)</b>	<b>Language</b> ENGLISH.
		<b>(ENGLISH)</b>

## Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

## Personal protection

### Eyes

Do not get in eyes. Hot material: Chemical splash goggles. Cold material: None required; however, use of protective eye wear is good industrial practice.

### Skin and body

Avoid contact with skin and clothing. Thermal resistant clothing will be required when handling hot products. Wear clothing and footwear that cannot be penetrated by chemicals or oil. Wash thoroughly after handling.

### Respiratory

Use only with adequate ventilation. Avoid breathing vapor or mist. Air supplied respiratory protection should be worn whenever it is required for the worker's face to be within 3 feet of an open hatch. If operating conditions cause high vapor concentrations or the TLV is exceeded, use NIOSH-certified, supplied-air respirator.

### Hands

Thermal resistant clothing will be required when handling hot products. Wear gloves that cannot be penetrated by chemicals or oil.

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Consult your supervisor or S.O.P. for special handling instructions.

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## 9. Physical and chemical properties

### Physical state

Viscous liquid.

### Color

Brown. and Black. (Dark.)

### Odor

Amine. Characteristic. Petroleum

### Flash point

Open cup: >230°C (>446°F) [ASTM D-92 Cleveland]

### Specific gravity

<1 at Handling temperature; (>1 Ambient temperature)

### Density

1020 to 1040 kg/m<sup>3</sup> (1.02 to 1.04 g/cm<sup>3</sup>) at Ambient temperature

### Viscosity

Dynamic: 150 Pa·s (150000 cP) at 60°C

### Vapor pressure

<0.013 kPa (<0.1 mm Hg)

### Solubility

Very slightly soluble in water

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## 10. Stability and reactivity

### Stability and reactivity

The product is stable. Hydrogen sulfide and other toxic vapors are given off when heated.

### Conditions to avoid

Keep away from heat, sparks and flame. Keep away from sources of ignition.

### Incompatibility with various substances

Reactive or incompatible with the following materials: oxidizing materials, reducing materials and acids, halogenated compounds.

### Hazardous decomposition products

Hydrogen Sulfide (H<sub>2</sub>S), carbon oxides (CO, CO<sub>2</sub>) (carbon monoxide, carbon dioxide), sulfur oxides (SO<sub>2</sub>, SO<sub>3</sub> etc.)

### Hazardous polymerization

Under normal conditions of storage and use, hazardous polymerization will not occur.

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## 11. Toxicological information

### Classification

#### Product/ingredient name

IARC

NTP

OSHA

Asphalt

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**Product name** VACUUM TOWER BOTTOMS

**Product code** 0000001731

**Page:** 4/7

**Version** 3 **Date of issue** 10/09/2009.

**Format** US-COMP

**Language** ENGLISH.

(US-COMP)

(ENGLISH)

## Other Toxicity Data

Hydrogen sulfide (H<sub>2</sub>S) gas may accumulate in storage tanks of bulk transport compartments containing this material. Contact with eyes causes painful conjunctivitis, sensitivity to light, tearing and clouding of vision. Inhalation of low concentrations causes a runny nose with a loss of sense of smell, labored breathing and shortness of breath. Direct contact with skin causes pain and redness. Other symptoms of exposure include profuse salivation, nausea, vomiting, diarrhea, giddiness, headache, dizziness, confusion, rapid breathing, rapid heart rate, sweating, weakness, sudden collapse, unconsciousness and death due to respiratory paralysis. Cardiac neurological effects have also been reported. Prolonged breathing (greater than one hour) of concentrations of H<sub>2</sub>S around 50 ppm can produce eye and respiratory tract irritation. Levels of 250 to 600 ppm will result in fluid in the lungs, and concentrations around 1,000 ppm will cause unconsciousness and death in a short period of time. Since the sense of smell rapidly becomes insensitive to this toxic, colorless gas, odor cannot be relied upon as an indicator of concentrations of the gas. Always exercise caution when working around closed containers.

Asphalt fume condensate generated under laboratory conditions has produced positive results in the Ames mutagenicity test. However, asphalt fume condensate collected in the field under actual field conditions has tested negative.

Laboratory-generated asphalt fume condensate has been shown to produce skin tumors in mice when applied to their skin repeatedly for prolonged periods of time over the entire course of their lifetime. The fume condensate used in these studies was generated using unrealistically high temperatures and vacuum conditions.

Further studies have shown that the chemical composition and physical properties of laboratory-generated fume differ markedly from the composition and properties of fume generated in the field under actual workplace conditions. These differences indicate that the health hazards attributed to laboratory-generated fume are not representative of actual workplace hazards.

There is no evidence that neat asphalt is carcinogenic. Therefore, intermittent or occasional skin contact with petroleum asphalt is not expected to have serious health effects as long as good personal hygiene measures, such as those outlined in this material safety data sheet, are followed.

No carcinogenic effects have been observed in laboratory animals during lifetime inhalation studies with asphalt aerosol or fume. Chronic inflammatory changes to the respiratory tract have been observed in exposed animals. These changes include bronchitis, pneumonitis, and pulmonary congestion, which are similar to the inflammatory effects seen following chronic inhalation exposure to other types of non-specific respiratory irritants.

Health monitoring studies of lung cancer among asphalt workers have yielded contradictory results. While some studies are negative, others are positive but confounded by worker co-exposure to other potential lung carcinogens such as cigarette smoke and coal tar.

The International Agency for Research on Cancer (IARC) has concluded that there is inadequate evidence to classify asphalt as carcinogenic to humans.

## Other information

### Potential chronic health effects

#### Carcinogenicity

No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer (IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).

#### Medical conditions aggravated by over-exposure

Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

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## 12. Ecological information

### Ecotoxicity

No testing has been performed by the manufacturer.

**Product name** VACUUM TOWER BOTTOMS

**Product code** 0000001731

**Page:** 5/7

**Version** 3 **Date of issue** 10/09/2009.

**Format** US-COMP

**Language** ENGLISH.

(US-COMP)

(ENGLISH)

## 13. Disposal considerations

### Waste information

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal**

## 14. Transport information

### International transport regulations

Regulatory information	UN number	Proper shipping name	Class	Packing group	Additional information
<b>DOT Classification</b>	UN3257	Elevated temperature liquid, n.o.s.	9	III	<b>Remarks</b> Forbidden: Passenger and Cargo Aircraft
<b>TDG Classification</b>	UN3257	Elevated temperature liquid, n.o.s.	9	III	<b>Remarks</b> Forbidden : Passenger and Cargo Aircraft
<b>IMDG Classification</b>	UN3257	Elevated temperature liquid, n.o.s.	9	III	<b>Remarks</b> IMDG Page : 9027-1
<b>IATA/ICAO Classification</b>	UN3257	Elevated temperature liquid, n.o.s.	9	III	<b>Remarks</b> Forbidden : Passenger and Cargo Aircraft  Note : Not regulated temperature < 100 C (212 F)

## 15. Regulatory information

### U.S. Federal Regulations

#### United States inventory (TSCA 8b)

**United States inventory (TSCA 8b):** All components are listed or exempted.

TSCA 12(b) one-time export: Naphthalene

**SARA 302/304/311/312 extremely hazardous substances:** Hydrogen Sulfide

**SARA 302/304 emergency planning and notification:** Hydrogen Sulfide

**SARA 302/304/311/312 hazardous chemicals:** Hydrogen Sulfide; Asphalt

**SARA 311/312 MSDS distribution - chemical inventory - hazard identification:** VACUUM TOWER BOTTOMS: Immediate (acute) health hazard

#### SARA 313

	Product name	CAS number	Concentration
<b>Form R - Reporting requirements</b>	Hydrogen Sulfide	7783-06-4	0 - 5
<b>Supplier notification</b>	Hydrogen Sulfide	7783-06-4	0 - 5
<b>CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):</b>	CERCLA: Hazardous substances.: Hydrogen Sulfide: 100 lbs. (45.4 kg)		

**Product name** VACUUM TOWER BOTTOMS

**Product code** 0000001731

**Page:** 6/7

**Version** 3 **Date of issue** 10/09/2009.

**Format** US-COMP  
(US-COMP)

**Language** ENGLISH.  
(ENGLISH)

## State regulations

### Massachusetts Substances

**Massachusetts Substances:** The following components are listed: HYDROGEN SULFIDE; ASPHALT FUMES

### New Jersey Hazardous Substances

**New Jersey Hazardous Substances:** The following components are listed: HYDROGEN SULFIDE; ASPHALT FUMES

### Pennsylvania RTK Hazardous Substances

**Pennsylvania RTK Hazardous Substances:** The following components are listed: HYDROGEN SULFIDE (H<sub>2</sub>S); ASPHALT

### California Prop. 65

**WARNING:** This product contains a chemical known to the State of California to cause cancer. Naphthalene

## Inventories

### Canada inventory

**Canada inventory:** All components are listed or exempted.

### Europe inventory

**Europe inventory:** All components are listed or exempted.

### Australia inventory (AICS)

**Australia inventory (AICS):** All components are listed or exempted.

### China inventory (IECSC)

**China inventory (IECSC):** All components are listed or exempted.

### Japan inventory (ENCS)

**Japan inventory (ENCS):** All components are listed or exempted.

### Korea inventory (KECI)

**Korea inventory (KECI):** All components are listed or exempted.

### Philippines inventory (PICCS)

**Philippines inventory (PICCS):** All components are listed or exempted.

## 16. Other information

### Label requirements

WARNING !

VAPOR MAY CONTAIN HYDROGEN SULFIDE (H<sub>2</sub>S) GAS WHICH CAN BE HARMFUL OR FATAL IF INHALED.  
MAY CAUSE RESPIRATORY TRACT AND EYE IRRITATION.  
HEATED MATERIAL CAN CAUSE THERMAL BURNS.

### HMIS® Rating :

**Health** 2  
**Flammability** 1  
**Physical Hazard** 0  
**Personal protection** X

**National Fire Protection Association (U.S.A.)**



### History

#### Personal protection

10/09/2009.

#### Date of previous issue

05/06/2008.

#### Prepared by

Product Stewardship

### Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from us.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.

**Product name** VACUUM TOWER BOTTOMS

**Product code** 0000001731

**Page:** 7/7

**Version** 3 **Date of issue** 10/09/2009.

**Format** US-COMP  
(US-COMP)

**Language** ENGLISH.  
(ENGLISH)