



Common Name: **ASPHALT, OXIDIZED**

Synonyms: Bitumens, Oxidized; Blown Asphalt

Chemical Name: Asphalt, Oxidized

Date: November 2007

CAS Number: 64742-93-4

RTK Substance Number: 3197

DOT Number: UN 1999 (Asphalt)

## Description and Use

**Asphalt, Oxidized** is the air-blown or air-refined type of *Bitumens* which are blackish-brown, cement-like solids, semi-solids or liquids. It is produced by blowing air through *Asphalt* at elevated temperatures. **Asphalt, Oxidized** is used in roofing, as undersealing for concrete pavements, for hydraulic applications, and in making paints.

## Reasons for Citation

- ▶ **Asphalt, Oxidized** is on the Right to Know Hazardous Substance List because it is cited by ACGIH, DOT, NIOSH, IARC, NFPA and EPA.
- ▶ This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

## FIRST AID

### Eye Contact

- ▶ Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while rinsing.

### Skin Contact

- ▶ Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water. Seek medical attention.

### Inhalation

- ▶ Remove the person from exposure.
- ▶ Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- ▶ Transfer promptly to a medical facility.

## EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NJDEP Hotline: 1-877-927-6337

National Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE BACK PAGE

## Hazard Summary

Hazard Rating	NJDOH	NFPA
HEALTH	3	0
FLAMMABILITY	1	1
REACTIVITY	0	0
CARCINOGEN COMBUSTIBLE POISONOUS GASES ARE PRODUCED IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- ▶ **Asphalt, Oxidized** can affect you when inhaled.
- ▶ **Asphalt, Oxidized** should be handled as a CARCINOGEN--WITH EXTREME CAUTION.
- ▶ **Asphalt, Oxidized fumes** can irritate the eyes on contact.
- ▶ Contact can cause severe skin irritation and burns, and can cause skin pigment change.
- ▶ Inhaling **Asphalt, Oxidized fumes** can irritate the nose, throat and lungs.
- ▶ Exposure to **Asphalt, Oxidized fumes** can cause headache, dizziness, nausea and vomiting.
- ▶ **Asphalt, Oxidized** is derived from the distillation of *Crude Oil* and is a mixture of *Petroleum Based Hydrocarbons*. For more information, consult the *Right to Know Hazardous Substance Fact Sheet on ASPHALT*.

## Workplace Exposure Limits

The following exposure limits are for *Asphalt fume*:

NIOSH: The recommended airborne exposure limit (REL) is **5 mg/m<sup>3</sup>**, which should not be exceeded during any 15-minute work period.

ACGIH: The threshold limit value (TLV) is **0.5 mg/m<sup>3</sup>** averaged over an 8-hour workshift (as the *Benzene inhalable* fraction of the *soluble aerosol*).

The following exposure limits are for *Hydrogen Sulfide* which may be released during use or storage:

NIOSH: The recommended airborne exposure limit (REL) is **10 ppm**, which should not be exceeded during any 10-minute work period.

ACGIH: The threshold limit value (TLV) is **1 ppm** averaged over an 8-hour workshift and **5 ppm** as a STEL (short-term exposure limit).

- ▶ **Asphalt, Oxidized** may be a CARCINOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

## Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ For each individual hazardous ingredient, read the New Jersey Department of Health Hazardous Substance Fact Sheet, available on the RTK website ([www.nj.gov/health/eoh/rtkweb](http://www.nj.gov/health/eoh/rtkweb)) or in your facility's RTK Central File or Hazard Communication Standard file.
- ▶ You have a right to this information under the New Jersey Worker and Community Right to Know Act, the Public Employees Occupational Safety and Health (PEOSH) Act if you are a public worker in New Jersey, and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PEOSH Hazard Communication Standard (N.J.A.C. 12:100-7) require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

## Health Hazard Information

### Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Asphalt, Oxidized**:

- ▶ **Asphalt, Oxidized fumes** can irritate the eyes on contact.
- ▶ Contact can cause severe skin irritation and burns, and may cause dermatitis and acne-like lesions.
- ▶ Inhaling **Asphalt, Oxidized fumes** can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
- ▶ Exposure to **Asphalt, Oxidized fumes** can cause headache, dizziness, nausea and vomiting.

### Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Asphalt, Oxidized** and can last for months or years:

#### Cancer Hazard

- ▶ **Asphalt, Oxidized** (specifically *extracts of steam-refined and air-refined Bitumens*) may be a CARCINOGEN in humans since it has been shown to cause skin cancer in animals.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen. Such substances may have the potential for causing reproductive damage in humans.

#### Reproductive Hazard

- ▶ According to the information presently available to the New Jersey Department of Health, **Asphalt, Oxidized** has not been tested for its ability to affect reproduction.

#### Other Effects

- ▶ Prolonged contact can cause skin pigment change which is made worse by sunlight exposure.
- ▶ **Asphalt, Oxidized** can irritate the lungs. Repeated exposure may cause bronchitis to develop with coughing, phlegm, and/or shortness of breath.

## Medical

### Medical Testing

Before beginning employment and at regular times after that, for frequent or potentially high exposures, the following are recommended:

- ▶ Lung function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

### Mixed Exposures

- ▶ Smoking can cause heart disease, lung cancer, emphysema, and other respiratory problems. It may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

## Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at [www.cdc.gov/niosh/topics/ctrlbanding/](http://www.cdc.gov/niosh/topics/ctrlbanding/).

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Get special training to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

## Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

### Gloves and Clothing

- ▶ Avoid skin contact with **Asphalt, Oxidized**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ Safety equipment manufacturers recommend *insulated Rubber* gloves and DuPont *Tychem® F*, *Responder®* and *CPF 2*, *CPF 3*, *CPF 4*; *ONESuit® Tec*; and *Kappler Zytron® 300* and *500* as protective materials for *Polynuclear Aromatics*.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

### Eye Protection

- ▶ Wear non-vented, impact resistant goggles when working with dust, fumes, gases, or vapors.
- ▶ Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
- ▶ Do not wear contact lenses when working with this substance.

### Respiratory Protection

**Improper use of respirators is dangerous.** Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ For field applications check with your supervisor and your safety equipment supplier regarding the appropriate respiratory equipment.
- ▶ Where the potential exists for exposure over **0.5 mg/m<sup>3</sup>** (as *Asphalt fumes*), use a NIOSH approved respirator with an organic vapor cartridge and particulate prefilters. Increased protection is obtained from full facepiece powered-air purifying respirators.
- ▶ If **Asphalt, Oxidized** is heated above 200°F (93.3°C) it may give off *Hydrogen Sulfide gas*. Where the potential exists for exposure over **1 ppm** of *Hydrogen Sulfide gas*, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- ▶ Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Asphalt, Oxidized**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- ▶ Consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- ▶ Where the potential exists for exposure over **5 mg/m<sup>3</sup>** (as *Asphalt fumes*), use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- ▶ Exposure to **100 ppm** (as *Hydrogen Sulfide gas*) is immediately dangerous to life and health. If the possibility of exposure above **100 ppm** (as *Hydrogen Sulfide gas*) exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ Use dry chemical, CO<sub>2</sub>, or foam as extinguishing agents.
- ▶ DO NOT use straight water streams. Water spray and foam must be applied carefully to avoid frothing.
- ▶ POISONOUS GASES ARE PRODUCED IN FIRE, including *Sulfur Oxides, Hydrogen Sulfide* and *Formaldehyde*.
- ▶ Use water spray to keep fire-exposed containers cool.
- ▶ DO NOT direct water directly into any container, vessel or tank containing HOT *Asphalt* as violent eruptions may occur.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Asphalt, Oxidized** is spilled or leaked, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ Absorb liquids in vermiculite, dry sand, earth, oil dry, or a similar material and deposit in sealed containers.
- ▶ Ventilate and wash area after clean-up is complete.
- ▶ It may be necessary to contain and dispose of **Asphalt, Oxidized** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Asphalt, Oxidized** you should be trained on its proper handling and storage.

- ▶ **Asphalt, Oxidized** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE).
- ▶ HOT **Asphalt, Oxidized** may ignite flammables on contact.
- ▶ Significant concentrations of *Hydrogen Sulfide gas* can occur and accumulate in storage tanks and bulk transport containers.
- ▶ Use only non-sparking tools and equipment, especially when opening and closing containers of **Asphalt, Oxidized**.

Occupational Health Information Resources

The New Jersey Department of Health offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

**For more information, please contact:**

New Jersey Department of Health  
 Right to Know  
 PO Box 368  
 Trenton, NJ 08625-0368  
 Phone: 609-984-2202  
 Fax: 609-984-7407  
 E-mail: [rtk@doh.state.nj.us](mailto:rtk@doh.state.nj.us)  
 Web address: <http://www.nj.gov/health/eoh/rtkweb>

***The Right to Know Hazardous Substance Fact Sheets are not intended to be copied and sold for commercial purposes.***

## GLOSSARY

**ACGIH** is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

**Acute Exposure Guideline Levels (AEGs)** are established by the EPA. They describe the risk to humans resulting from once-in-a-lifetime, or rare, exposure to airborne chemicals.

**Boiling point** is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

**CFR** is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

**DEP** is the New Jersey Department of Environmental Protection.

**DOT** is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

**EPA** is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

**ERG** is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

**Emergency Response Planning Guideline (ERPG)** values are intended to provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

**IARC** is the International Agency for Research on Cancer, a scientific group.

**Ionization Potential** is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

**IRIS** is the Integrated Risk Information System database maintained by federal EPA. The database contains information on human health effects that may result from exposure to various chemicals in the environment.

**LEL or Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

**mg/m<sup>3</sup>** means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

**NFPA** is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

**NIOSH** is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

**NTP** is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

**OSHA** is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

**PEOSHA** is the New Jersey Public Employees Occupational Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

**Permeated** is the movement of chemicals through protective materials.

**PIH** is a DOT designation for chemicals which are Poison Inhalation Hazards.

**ppm** means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

**STEL** is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

**UEL or Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

**Vapor Density** is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

Common Name: **ASPHALT, OXIDIZED**

Synonyms: Bitumens, Oxidized; Blown Asphalt

CAS No: 64742-93-4

Molecular Formula: Mixture

RTK Substance No: 3197

Description: Air-refined or air-blown type of *Bitumens* which are blackish-brown, cement-like solids, semi-solids or liquids depending on the formulation or mixture of Asphalt used

**HAZARD DATA**

Hazard Rating	Firefighting	Reactivity
<b>3 - Health</b> <b>1 - Fire</b> <b>0 - Reactivity</b> DOT#: UN 1999 ERG Guide #: 130 Hazard Class: 3 (Flammable)	Use dry chemical, CO <sub>2</sub> , or foam as extinguishing agents. DO NOT use straight water streams. Water spray and foam must be applied carefully to avoid frothing. POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Sulfur Oxides</i> , <i>Hydrogen Sulfide</i> and <i>Formaldehyde</i> . Use water spray to keep fire-exposed containers cool. DO NOT direct water directly into any container, vessel or tank containing HOT <i>Asphalt</i> as violent eruptions may occur.	<b>Asphalt, Oxidized</b> is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE). HOT <b>Asphalt, Oxidized</b> may ignite flammables on contact. Significant concentrations of <i>Hydrogen Sulfide</i> can occur and accumulate in storage tanks and bulk transport containers. Use only non-sparking tools and equipment, especially when opening and closing containers of <b>Asphalt, Oxidized</b> .

SPILL/LEAKS
<b>Isolation Distance:</b> Spills: 50 meters (150 feet) Fire: 800 meters (1/2 mile) Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers. Hot product can harm plant life. This chemical does not accumulate in the food chain or environment.

PHYSICAL PROPERTIES	
<b>Odor Threshold:</b>	Petroleum odor
<b>Flash Point:</b>	>400°F (204°C)
<b>LEL:</b>	0.9%
<b>UEL:</b>	7%
<b>Autoignition Temperature:</b>	905°F (485°C)
<b>Vapor Pressure:</b>	3 mm Hg at 68°F (20°C)
<b>Specific Gravity:</b>	0.95 to 1.1 (water = 1)
<b>Water Solubility:</b>	Insoluble
<b>Boiling Point:</b>	700°F (371°C)
<b>Melting Point:</b>	86°F to 266°F, (54°C to 173°C)

EXPOSURE LIMITS	
<b>NIOSH:</b>	5 mg/m <sup>3</sup> , 15-minute Ceiling (as <i>Asphalt fume</i> )
<b>ACGIH:</b>	0.5 mg/m <sup>3</sup> , 8-hr TWA (as <i>Asphalt fume</i> ) 1 ppm, 8-hr TWA; 5 ppm STEL (as <i>Hydrogen Sulfide</i> )
<b>IDLH:</b>	100 ppm (as <i>Hydrogen Sulfide</i> )

PROTECTIVE EQUIPMENT	
<b>Gloves:</b>	Insulated Rubber
<b>Coveralls:</b>	DuPont Tychem® F, Responder® and CPF 2, CPF 3, CPF 4; ONESuit® TEC; and Kappler Zytron® 300 and 500
<b>Boots:</b>	Insulated Rubber
<b>Respirator:</b>	>0.5 mg/m <sup>3</sup> (as <i>Asphalt fume</i> ) or >1 ppm <i>Hydrogen Sulfide gas</i> - Supplied air

HEALTH EFFECTS	
<b>Eyes:</b>	Irritation
<b>Skin:</b>	Irritation, severe burns, dermatitis and pigment change
<b>Acute:</b>	Nose, throat and lung irritation with coughing, wheezing and/or shortness of breath Headache, dizziness, nausea and vomiting
<b>Chronic:</b>	Cancer (skin) in animals. Bronchitis with cough, phlegm, and/or shortness of breath.

FIRST AID AND DECONTAMINATION	
<b>Remove</b> the person from exposure.	
<b>Immediately</b> flush with large amounts of water for at least 15 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing.	
<b>Quickly</b> remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water. Seek medical attention.	
<b>Begin</b> rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.	
<b>Transfer</b> promptly to a medical facility.	