

Material Safety Data Sheet

This document is prepared under article 41 of occupational safety and health regulation

Section 1 – Chemical Product and Company Identification

Product Name: BITUMEN

Synonyms: Petroleum Bitumen, Asphalt

Product Use: Mainly used for road paving applications

Chemical Family: Mixture

Manufacturer /Supplier/ Distributor information

Daesan Chemical Co., Ltd.

Head Office: 12, Yeongdong-daero 86-gil, Gangnam-gu, Seoul, Korea

Daesan Factory: 413-111, Jugyeop-ro, Daesan-eup, Seosan-si, Chungcheongnam-do, Korea

Emergency response number: +82-2-508-8474 (*prepared by: Matt H. W. Son)

Section 2 - Composition, Information on Ingredients

Components	Common name	CAS No.	PCT(Wt)(%)
Bitumen	Asphalt	8052-42-4	100

Section 3 – Hazards Identification

Emergency overview:

A black or dark brown highly viscous liquid. Heated bitumen can cause severe skin burns and eye injury. Eye, skin, gastrointestinal, and respiratory tract irritation can occur. Poisonous hydrogen sulfide gas may accumulate in confined spaces.

Route of entry: Skin contact, Eye contact, Inhalation, Ingestion

Effects of Acute Exposure:

Eye Contact: Hot bitumen and bitumen fumes may cause severe irritation and burns. Cold bitumen may cause slight irritation. Bitumen dust may cause irritation characterized by burning, redness, swelling and watering.

Skin Contact: Hot bitumen and bitumen fumes may cause moderate to severe irritation and burns. Cold bitumen may cause moderate irritation. Bitumen dust may cause irritation characterized by redness and occasional drying and peeling.

Ingestion: Irritation of gastrointestinal tract, vomiting and a danger of aspiration. Aspiration can develop into potentially fatal chemical pneumonitis.

Inhalation: Bitumen fumes may cause moderate to severe irritation of the nose, throat and respiratory tract. May cause headache, nausea, sore throat, nasal congestion, dizziness and nervousness. Confined spaces may accumulate hydrogen sulfide gas. Hydrogen sulfide may cause respiratory tract irritation, nausea, headache, dizziness, pulmonary edema, and loss of consciousness, brain damage and death.

Effects of Chronic Exposure:

Eyes: Effects not reported.

Skin: Repeated exposure to hot bitumen or bitumen fumes may cause inflammation of the skin, acne like lesions, development of horny growths on the skin, darkening of the skin and sensitization of the skin to light. Bitumen may cause hair loss, dryness, scaling, and dermatitis. May aggravate existing skin conditions. Bitumen contains chemicals that may have a carcinogenic potential.

Ingestion: Effects not reported.

Inhalation: Prolonged exposure to bitumen fumes may cause inflammation of the lungs and mucous membranes of the nose and throat. May cause chronic bronchitis, pulmonary congestion, laryngitis, hoarseness, coughing,

fatigue and atrophy and/or death of the epithelium. May aggravate existing respiratory conditions.

***Additional health hazards:** See TOXICOLOGICAL INFORMATION, Section 11

Other hazard information not included in hazard classification:

Chemical name \ NFPA code	Health	Flammability	Reactivity
Bitumen (0~4)	2	2	1

* NFPA (Code) Rating: 0-Minimal 1-Slight 2-Moderate 3-Serious 4-Servere

Other Health Warnings:

Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks, which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized. Personnel with pre-existing central nervous system disease, skin disorders, chronic respiratory diseases should avoid exposure to this product.

Section 4 – First Aid Measures

Eye contact:

Immediately flush eyes with water for at least 15 minutes. If irritation persists, seek medical attention.

Skin contact: Remove contaminated clothing. Use a light mineral oil (e.g. baby oil) to help remove bitumen from the skin. Wash affected area with soap and water. Avoid abrading the skin during washing. If irritation persists, seek medical attention.

Inhalation: DO NOT INDUCE VOMITING BECAUSE OF DANGER OF ASPIRATING LIQUID INTO LUNGS. If spontaneous vomiting occurs, monitor for breathing difficulty. Get immediate medical attention.

Ingestion: Move victim to uncontaminated area. If breathing has stopped, trained personnel should begin artificial respiration or if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Oxygen may be beneficial if administered by a person trained in its use, preferably on a physician's advice.

Note to Physicians: In all cases, seek medical attention.

Section 5 – Fire Fighting Measures

Flash Point: 320 °C

Flammable Limits (% by volume): Upper - 7.0 Lower - 2.0

Auto-Ignition Temperature: N/A

Extinguishing Media:

Proper extinguishing media: Dry chemical, CO₂, water, regulatory foam.

Improper extinguishing media: N/A

Fire Fighting Procedures:

DO NOT USE WATER on a bitumen tank fire; it may cause violent eruption and spreading of burning bitumen. Hot material may ignite flammable mixtures (liquids) on contact. Material will not burn unless preheated. Exposed firefighters must wear full bunker gear, including a NIOSH approved positive pressure self-contained breathing apparatus with full-face mask. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure build-up, which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure.

Section 6 – Accidental Release Measures

Health considerations and protective equipment: Do not contact with heat, sparks and other sources of ignition.

Stop spill if you can do it without risk. Water spray may reduce vapor.

Environmental considerations: Store away from water way and sewer.

Spill clean-up procedures: Small spill. Absorb the spill material using sand or other noncombustible. Take up and put into properly labeled containers for disposal. Large spill. Dike far ahead of liquid spill for later disposal. Eliminate all ignition sources (no smoking or flames, sparks). Keep unnecessary personnel away and isolate dangerous area.

Section 7 – Handling and Storage

Safe handling procedures: asphalt may be transported warm. During storage, transit and cooling of asphalt, hydrogen sulphide may accumulate in enclosed spaces such as tank cars. Open tank car hatches with caution. Maintain same precautions when gauging and sampling. Use in a well ventilated area. Protective equipment during handling. Avoid breathing vapors. Avoid contact with skin, eyes and Wear suitable clothing. Keep away from heat, sparks, and open flames. Avoid contact with incompatible materials. Wash thoroughly after handling. Empty containers retain residue (liquid and /or vapors) and can be dangerous. Do not reuse containers without commercial cleaning and/or reconditioning

Storage requirements: store in a cool, dry well-ventilated area. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking in the area.

Incompatible materials: Water; Bases; Reducing agents; Strong oxidizers (e.g. Chlorine, Peroxides, etc.)

Special packaging materials: Always keep in containers made of the same material as the supply containers.

Section 8 – Exposure Controls Personal Protection

Exposure limits value

Korea regulation: TWA: 5 mg/m³, STEL: N/A

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Biological exposure limit: N/A

Engineering controls: Provide local exhaust ventilation in a workstation location and keep up proper control wind velocity. Check the suitable of exposure limits.

Personnel Protective Equipment:

Gloves: Acrylonitrile latex. Change if contaminated.

Respirator: NIOSH approved air purifying organic vapour.

Eyes: Safety glasses, boondoggles, or faceshield.

Clothing: Coveralls, apron as required.

Footwear:

Section 9 – Physical and Chemical Properties

- 1) Appearance: Black or brownish, tarry texture
- 2) Odour: Solvent-like odour
- 3) Physical state: Viscous liquid
- 4) pH: N/A
- 5) Vapor pressure: N/A
- 6) Vapor density: > 1
- 7) Boiling point: > 404 °C
- 8) Melting point: > 42 °C
- 9) Melting/Freezing point: N/A
- 10) Specific gravity: 1.04
- 11) Solubility: insoluble in water
- 12) Volatility: N/A

- 13) Upper flammable limit (% by vol.): N/A
- 14) Intoxicating limit: N/A
- 15) Vapor rate: N/A
- 16) Flash point: 320 °C

Section 10 – Stability and Reactivity

Stability: Stable under normal conditions.

Hazardous reactivity: Do not occur polymerization

Conditions to avoid: Avoid heat, sparks, open flames, or other sources of ignition. Container may rupture or explosive by heat. Store away from water way and sewer.

Incompatibility: Oxidizing agents, halogen, and combustible material.

Hazardous decomposition products: Carbon oxides, Sulfur oxides.

Section 11 – Toxicological Information

Exposure route information:

Inhalation: irritation

Oral: irritation, nausea

Skin: irritation, tumor (chronic exposure)

Eye: irritation

Acute and chronic effects by short term or long term exposure

Acute toxicity

Oral: not applicable / LD50 >5g/kg (rats)

Dermal: not applicable / LD50 >5g/kg (rabbits)

Inhalation: N/A

Skin corrosion/irritation Cat 2

Serious eye damage/ eye irritation not applicable

Respiratory sensitization: N/A

Skin sensitization: N/A

Carcinogenicity: Cat 2 (IARC: animal Group2B, human Group3 / ACGIH: A4)

Germ cell mutagenicity: N/A

Reproductive toxicity: N/A

Specific target organ toxicity single exposure: N/A

Specific target organ toxicity repeated exposure: N/A

Aspiration hazard N/A

Standard of numeric value of toxicity: N/A

Section 12 – Ecological Information

Aquatic/terrestrial toxicity:

Fish: N/A

Crustacea: N/A

Algae: N/A

Persistence and biodegradation:

Persistence: N/A

Biodegradation: N/A

Bioaccumulation:

Biodegradation: N/A

Bioaccumulation: BCF: N/A

Mobility in soul: N/A

Other hazardous information: N/A

Section 13 – Disposal Considerations

Disposal: Dispose in according to Waste management.

Precaution:

Should be dispose with authorized waste disposal company.

Do not dispose or incinerate without warning.

Check the direction, if this material was involved in waste management regulation.

Section 14 – Transport Information

UN No: N/A

Proper shipping name: Bitumen

Class or division: N/A

Packing group: N/A

Marine pollutant: N/A

Special safety response for transportation or transportation measure

Fire schedule EmS No: N/A

Spillage schedule EmS No: N/A

Section 15 – Regulatory Information

Korea occupational safety and health regulation in Korea: Listed (exposure limit chemical)

Hazardous chemical management regulation in Korea: Not listed.

Hazardous chemical safety management regulation in Korea: Special combustible, flammable solid.

Waste management regulation in Korea:

Handle under article 12, regulations relative to the application 6, addendum 4 of a waste management law

Other in KOREA and except KOREA regulation:

Persistent organic. Pollutants management regulation: Not listed.

EU classification:

Classification: N/A

Risk phrases: N/A

Safety phrases: N/A

U.S.A management information:

OSHA regulation (29CFR1910.119): Not listed

CERCLA 103 regulation (40CFR302.4): Not listed

SARA 302 regulation (40CFR355.30): Not listed

SARA 304 regulation (40CFR355.40): Not listed

SARA 311/ 312 regulation (40CFR370.21):

Acute: No

Chronic: No

Reactivity: No

Sudden release of pressure: No

States regulation:

California Prop. 65:

Bitumen, extracts of steam-refined and air refined

Cancer (01.01.1990)

Toxic Substance Control Act:

Toxic Substance Control Act (TSCA): listed.

TSCA 12(b) export notification: Not listed.

Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade: Not listed
Stockholm Convention on Persistent Organic Pollutants (POPs): Not listed
Mont- real Protocol on Substances that Delete the Ozone Layer: Not listed

Section 17 – Other Information

REFERENCES:

KOSHA CODE W-05-2007 [Guideline for MSDS preparation, 2007. 11]
Globally harmonizing system of classification and labeling of chemicals. [The joint committee with government of GHS: registration No. 11-1410119-000032-01]
Revised notification of classification, labeling and MSDS of chemicals. [The ministry of labor notification No.2008-1]
MSDS offered by KOSHA KISCO-NET.

Other: chemical analysis database.

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1st rev., 1997.4.17

2nd rev., 2002.10.28

3rd rev., 2007.1.5

4th rev., 2008.3.26

5th rev., 2009.1.28

6th rev., 2013.1.29

Other

This MSDS should be delivered to all users after reading the direction thoroughly.

Do not understand as only limiting warranty for specific property and suitability or quality of product.