Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Product Name: Asphalt

Other Name: -

Name of manufacturer or supplier: TENOIT CO., LTD.

Company address：Room 4,5FL.,No.109,Sec.6,Mingquan East Road, Taipei, Taiwan

EMERGENCY TELEPHONE NUMBER：TEL (886) 2 8792-2185 8792-2187

FAX (886) 2 8792-2151

Section 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Mixture: Chemical properties:

Chinese and English names of the Hazardous ingredients	Concentration or concentration ranges (%)
柏油 (Asphalt) 8052-42-4	＞99

Section 3 - HAZARDS IDENTIFICATION

Product hazard class: Flammable liquids Category 2; Skin corrosion/irritation Category 2; Serious eye damage/irritation Category 2; Aspiration hazard Category 1; Hazardous substance to aquatic environment Category 2 (chronic toxicity)

Label content:

1. Symbolic representations: —
2. Signal words: —
3. Hazard statements: —
4. Precautions to hazards: (1) Place at a well-ventilated place; (2) Wear a pair of eyeshades/a face mask; (3) Keep away from elevated temperature; (4) Place at a locked place; (5) Don’t take any food or drinks when use; (6) Take off the clothes immediately if contaminated; (7) Wear proper protective clothing.

Other hazards:-

Section 4 - FIRST AID MEASURES

The first aid measures for different exposure routes:

Inhalation: If it is safe to enter into the fire locale, move the victim to a place having fresh air from the exposure area. If needed, carry out rescue breathing on him/her with a bag valve mask or similar equipment. Keep his/her body warm and have him/her lie still and rest. Send him/her to hospital for treatment immediately.

Skin contact: Cool the affected area by soaking or immersing it into water immediately till curing of asphalt. Remove the asphalt from the affected skin immediately. After applying dressing, bind up the wound with dry sterile bandage and send the victim to hospital for treatment immediately.

Eye contact: Flush the affected eye with a large amount of water for more than 15 minutes under a tap or at an eye rinser while opening the upper eyelid and rotating the eyeball slowly, till no remaining chemical. Send the victim to hospital for treatment immediately.

Ingestion: Don’t induce the victim to vomit or take any drink if loss of consciousness. When he/she is vomiting, keep his/her head lower than his/her stern. If he/she is unconscious, put his/her head to one side. If needed, send him/her to hospital for treatment.

The most important symptoms and hazardous effects: no valid information available.

The protection of first aidersl:

1. Wear protective clothing to protect against contacting contaminants.
2. Wear chemical goggles.

Notes to physicians: If inhaled, consider helping the victim with his/her breathing with oxygen.

Section 5 - FIRE FIGHTING MEASURES

Suitable fire extinguishing media: In case of fire, use dry powder (ABC or BC), carbon dioxide, water, foam. In case of heavy fire, use foam or a large amount of fine water mist.

Specific hazards may be encountered during fire-fighting: Minor fire hazard.

Specific fire-fighting methods:

1. The fire fighter must use protective equipment and a respirator, and stand windward to extinguish the fire.
2. If no danger will be caused when entering into the fire locale, remove the asphalt container from the fire locale, cool the containers in the vicinity with water mist to avoid explosion due to pressure increase till the fire is put out. When spraying water, be cautious to stay far away from the storage tank.
3. When putting out a fire at storage area: Put out the fire with the automatic sprinkling device or water branches and cool the containers with water mist till extinguishment. It impossible to put out the fire in such a way, take the following precautions: Have the unnecessary people evacuated from and isolate the fire locale, don't allow any people unconcerned to go inside, leave the fire locale immediately when noise made by the safety venting device becomes loud or color of the storage tank changes due to the fire.
   Fire on a large vessel, train or tank truck: Springing up radius: 800 meters (1/2 mile).

Special equipment for the protection of firefighters:
Protective clothing and air-supplied or self-contained respirators for fire fighting. Don't enter into a confined space if proper protective equipment or personal self-contained respirator has not been used.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid heat, flame, spark and other inflammable substances, use personal protective equipment, stand windward and don't enter into a low-lying area.

Environmental precautions:
If no danger is present, shut off the leakage source, remove the fire source, reduce the vapor amount with water mist, have the people unconcerned evacuated immediately, isolate the hazardous area and don't allow any people unconcerned to go inside. Before entering into a confined space, first well ventilate the area and consult the precautions related to exposure control/personal protection, and take further prevention actions including those against pollution to the surrounding air.

Methods for cleaning up:

1. Minor leakage: Absorb the leakage with sand or other non-combustible substances.

2. Heavy leakage: Embank the leaking area and dispose the leakage later. If possible, remove the contaminated soil. Heavy leakage shall be disposed according to "the Remedial Institution of Soil and Groundwater Pollution" and the relevant regulations.

Section 7 - HANDLING AND STORAGE

Handling: Its vapor may be sucked into the lung through inhalation. Don't cause the eyes and skin etc. contact its vapor. As described under "Precautions against Exposure" below, use personal protective equipment or coat, and clean thoroughly after operation.

Storage:

1. No open flames at the storage tank and operation place. Keep away from any flame, spark or heat source.
2. Store it separately from any incompatible material.
3. Store it at a cool, dry and well-ventilated place.
4. Protect the container and pipeline against any impact or damage; keep away from inflammables.
5. Store it inside an acceptable safe container.
6. Only have a limited amount in store, keep the container closed tight when not use.
7. Empty the container which has hazardous vapor inside.
8. Handle/dispose it in accordance with the latest version of "Storage and Disposal Regulations for Industrial Wastes and Facility Standard"

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering control: Provide a local ventilation system. Measures against explosion must be taken on all the ventilation devices to ensure that the recommended exposure limit not be exceeded.

Control parameters:

Hazardous Ingredient	8 hours time weighted average exposure limits (TWA)	Short-term Exposure limits(STEL)	Maximum exposure limits(CEILING)	Biological standards
Oil mist drop (Mineralogical)	5 mg/m^3	10 mg/m^3	-	-

Personal protective equipment:

1. Respiratory protection: Use approved respirators against organic vapor at the area where oxygen concentration is above 18 % if at 1~10 times of permitted concentration. In case of emergency at a higher or unknown concentration, use positive-pressure fully-covered air-supplied respirators or any other proper emergency respiration devices.
2. Hand protection: Wear proper protective gloves against chemicals.
3. Eye protection: Wear anti-splashing safety goggles. Provide emergency eye rinsers in the immediate vicinity of the operation area.
4. Skin and body protection: Wear proper clothing against chemicals.

Hygiene measures:
1. Check the safety goggles, protective gloves and clothing against chemicals and respirators for any damages.
2. After work, take off and wash the working suit, wash face and hands with soap and clean water.
3. Take more nutrients rich in vitamins and minerals and have physical examinations regularly.
4. Take less cigarettes and wine, and do physical exercise frequently.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color etc.): 1. Liquid 2. Brown or black	Odor: Special charred smell.	
Odor threshold: -	Melting point: about＞90 ℃	pH value: -
Flammability (solid, gas): -	Boiling point/range: about＞371 ℃	
Decomposition temperature: -	Flash point:about 204 ℃(399 ℉)Test method:Closed cup	
Vapor density (air=1): -	Explosion limits: -	
Density: 1.03 (specific gravity)	Auto-ignition temperature:about 485 ℃ (905℉)	
Octanol-water partition coefficient (logKow):-	Vapor pressure: -	
Solubility: insoluble in water	Evaporation rate: -	

Section 10 - STABILITY AND REACTIVITY

Stability: stable at ambient temperature and atmospheric pressure.

Possible hazardous reactions under specific conditions: No polymerization reaction.

Conditions to avoid: Avoid heat sources, flame, spark and other fire sources. Protect against inhalation of its gas or combustion products. Possibly cause cracking or explosion if the container encounters heat or fire source. Keep away from water sources and sewages.

Materials to avoid : Halogen, combustibles.

Hazardous decomposition products: Generate various decomposition products in case of thermal decomposition.

Section 11 - TOXICOLOGICAL INFORMATION

Routes of exposure: inhalation, skin, eye

Symptoms: -

Acute toxicity:
Ingestion: May cause nausea and irritation to the stomach and intestines.
Inhalation: May cause irritation to the mucous membrane if inhalation of asphalt fumes. When heated, hydrogen sulfide and acute toxicity inflammable gases will be released and accumulate in the confined space. Hydrogen sulfide has an extreme irritation effect, causes obfuscation, jerkiness or even loss of life within 30 minutes at concentration 500~1000 ppm. At a higher concentration, it causes respiratory tract paralysis and asphyxia death.
Skin contact: May cause irritation to the skin if exposure to the fume generated from hot asphalt. May cause burn in case of direct contact with hot asphalt.
Eye contact: May cause irritation to the eyes if exposure to the fume generated from hot asphalt. May cause burn in case of direct contact with hot asphalt.

Chronic toxicity or long-term toxicity:

Ingestion: Cause pyloric obstruction due to stone-like calculus generated from accumulation of indigestible substances.
Inhalation: A laboratory mouse may suffer from hyperaemia, acute bronchitis, pneumonia, bronchial extension, fester, skin atrophy and necrosis.
Skin contact: May cause dermatitis, acne or mild cornification if extended or repeated to the fume from hot asphalt. May cause photo sensitizing effect and melanosis when asphalt boils and releases green-yellow fume.
Eye contact: May cause conjunctivitis if extended or repeated to the fume from hot asphalt.

Section 12 - ECOLOGICAL INFORMATION

Ecological toxicity:
1. LC50 (fish):-
2. EC50 (aquatic invertebrates): -

Persistence and degradability: -

Bioaccumulative potential: -

Mobility in soil: -

Other adverse effects: -

Section 13 - DISPOSAL CONSIDERATIONS

Waste disposal:
1. Place the contaminated materials into a disposable container, dispose them in accordance with the laws and regulations, and communicate with the local authority responsible for environmental protection to approve the clearance of such materials.
2. Dispose in accordance with the latest version of "Waste Clearance Act" and other related environmental protection regulations.

Section 14 - TRANSPORT INFORMATION

United Nation number: UN1999
UN Proper shipping name: Asphalt
Transport hazard class: Category 3
Packing group: Ⅲ
Marine pollutant (Yes/No): No

Section 15 - REGULATORY INFORMATION

International Shipping Rules:
The contents described below may not be all applied to shipping, refer to U.S. DOT 49CFR 172.101 or applicable regulations for dangerous goods as well as additional description (such as technical name) and special methods or the requirements for shipping of a certain amount of goods etc..
1. DOT Shipping Name: Asphalt.
2. DOT Hazard Class: Classified as Class III.
3. DOT Identification Code: UN1999.
4. DOT Marking Requirement: Inflammable liquid.
5. DOT Packing Group: Ⅲ.

Applicable regulations:
1. Rules of Labor EHS Facilities;
2. Rules of Dangerous Goods and Hazardous Material Labeling and Identification;

3. Rules of Preventions for Organic Solvent Poisoning; 4. Permitted Hazardous Material Contents in the Atmosphere of Labor Working Environment; 5. Rules of Road Traffic Safety; 6. Waste Clearance Act; 7. Storage and Disposal Regulations for Industrial Wastes and Facility Standard; 8. Administrative Regulations for Hazardous Goods on Road Transport; 9. Law of Air Pollution Control; Remedial Institution of Soil and Groundwater Pollution.

Section 16- OTHER INFORMATION

Literature references	1. Marathon Petroleum Company MSDS ID NO.: 0126MAR019; 2. The Agency for Toxic Substances and Disease Registry (ATSDR); 3. Kenya Sheel Ltd.; 4. Chevron Chemical Co. OGA 558W; 5. OHS 33796, 25150, 24130, 10950, 10680, 17260, 16810, 18210, 02610; GHS website by Council of Labor Affairs, EY.

Remark: Throughout this MSDS, "-" used stands for "relevant information is not available currently" and "/" "this column is not suitable to this material".

Disclaimer :The information contained herein is based upon data believed to be reliable and reflects our best professional judgment. It is the responsibility of the user to etermine the suitability of the material for their purpose. No warranty is expressed or implied, is given.

Name：Asphalt

Hazardous ingredients：Asphalt

Signal words: －

Hazard statements: －

Precautions to hazards:

1. Place at a well-ventilated place .
2. Wear a pair of eyeshades/a face mask.
3. Keep away from elevated temperature.
4. Place at a locked place.
5. Don’ t take any food or drinks when use.
6. Take off the clothes immediately if contaminated.
7. Wear proper protective clothing.

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※For more detail information, please refer to the Material Safety Data Sheet.