Basekim
Chemical Production Co.Ltd

MATERIAL SAFETY DATA SHEET (MSDS)

Bitumen VG 40 – Viscosity Grade Bitumen
Product Name: Bitumen VG 40
Product Type: Viscosity Grade Paving Bitumen
Synonyms: Asphalt VG 40, Paving Grade Bitumen, Petroleum Bitumen
CAS Number: 8052-42-4
EC Number: 232-490-9
HS Code: 2713.20
Recommended Use: Road construction, asphalt paving, heavy-duty pavements, highways, airport runways and industrial asphalt applications.

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1. Identification of the Substance

Chemical Name: Petroleum Bitumen
Commercial Grade: VG 40
Chemical Family: Petroleum Hydrocarbon
Physical Form: Semi-solid/solid at ambient temperature
Intended Use: Binder for asphalt mixtures and other paving and industrial applications.

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2. Hazard Identification

Bitumen VG 40 is generally stable under normal ambient storage conditions. The principal occupational hazards arise when the product is **heated for handling and application**.

Main Hazards

- Hot or molten bitumen can cause **severe thermal burns**.
- Fumes generated during heating may irritate the **eyes and respiratory system**.
- Prolonged or excessive exposure to bitumen fumes should be avoided.
- Hydrogen sulfide (H_2S) may accumulate in the vapor space of heated bitumen storage tanks.
- Hot bitumen contacting water can cause rapid expansion, foaming and potentially violent splashing.
- Product is combustible at sufficiently high temperatures.

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3. Composition / Information on Ingredients

Component	CAS No.	EC No.	Concentration
Petroleum Bitumen / Asphalt	8052-42-4	232-490-9	Approx. 100%

Bitumen is a complex mixture of high-molecular-weight petroleum hydrocarbons.

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4. First-Aid Measures

Inhalation

Move the affected person to fresh air. Keep at rest and comfortable for breathing. If coughing, breathing difficulty or irritation persists, obtain medical attention.

Skin Contact – Cold Product

Wash thoroughly with soap and water. Remove contaminated clothing.

Skin Contact – Hot/Molten Bitumen

Immediately cool the affected area with plenty of clean, cool running water for at least 10–20 minutes.

Do not attempt to remove solidified bitumen from the skin.

Seek immediate medical attention for thermal burns.

Eye Contact

Flush carefully with clean water for several minutes. Remove contact lenses if easily possible. If hot bitumen enters the eye or irritation persists, obtain immediate medical attention.

Ingestion

Ingestion is unlikely under normal industrial conditions. Rinse mouth. Do not induce vomiting unless instructed by medical personnel. Obtain medical advice if significant quantities have been swallowed.

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5. Fire-Fighting Measures

Suitable Extinguishing Media

- Dry chemical powder
- Carbon dioxide (CO_2)
- Foam
- Water fog/spray for cooling exposed containers

Specific Hazards

Combustion or thermal decomposition may produce:

- Carbon monoxide (CO)
- Carbon dioxide (CO_2)
- Hydrocarbon fumes
- Sulfur-containing gases
- Smoke and irritating decomposition products

Firefighter Protection

Wear appropriate protective clothing and self-contained breathing apparatus (SCBA) where required.

Do not direct a strong water jet onto hot or molten bitumen, as violent splashing or boil-over may occur.

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6. Accidental Release Measures

Personal Precautions

Keep unauthorized personnel away. Avoid contact with hot material and avoid inhalation of fumes. Use appropriate PPE.

Environmental Precautions

Prevent the product from entering drains, waterways, soil or sewer systems.

Cleanup

For molten material, allow the bitumen to cool and solidify where safe to do so. Mechanically collect the solidified product and place it in suitable containers for recovery or disposal.

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7. Handling and Storage

Handling

- Avoid direct skin and eye contact.
- Minimize exposure to fumes generated during heating.
- Provide adequate ventilation around heated-bitumen operations.
- Avoid overheating.
- Keep water away from hot bitumen.
- Exercise particular caution when filling tanks that may contain water or moisture.
- Do not eat, drink or smoke in handling areas.

Storage

Store in properly designed bitumen tanks or suitable containers.

- Keep away from strong oxidizing agents.
- Prevent water contamination.
- Avoid unnecessary overheating.
- Ensure adequate tank ventilation.
- Treat tank headspaces as potentially hazardous because hydrogen sulfide may accumulate.

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8. Exposure Controls / Personal Protection

Occupational Exposure

Exposure to bitumen fumes should be minimized through good engineering controls and ventilation.

NIOSH has recommended a **15-minute ceiling of 5 mg/m³ for asphalt fumes**. Applicable occupational exposure limits may vary by jurisdiction.

Personal Protective Equipment

Eye/Face Protection:

Chemical safety goggles and face shield when handling hot material.

Hand Protection:

Heat-resistant, impervious gloves suitable for handling hot bitumen.

Body Protection:

Long sleeves, protective clothing and heat-resistant safety footwear.

Respiratory Protection:

Normally not required where adequate ventilation controls fume concentrations. Use suitable respiratory protection where ventilation is insufficient or occupational exposure limits may be exceeded.

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9. Physical and Chemical Properties

Property	Typical Information
Appearance	Black to dark brown semi-solid
Odor	Characteristic petroleum/asphalt odor
Physical State at Ambient Temperature	Semi-solid / solid
Solubility in Water	Insoluble

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Property	Typical Information
pH	Not applicable
Relative Density	Typically >1 at ambient temperature
Flammability	Combustible when sufficiently heated
Vapor Pressure	Very low at ambient temperature
Viscosity Grade	VG 40
Flash Point	Typically above 220°C (COC)*

*Exact physical properties, including flash point, should be taken from the producer's Certificate of Analysis or product specification because values may vary by refinery and batch.

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10. Stability and Reactivity

Chemical Stability: Stable under recommended storage and handling conditions.

Conditions to Avoid:

- Excessive heating
- Open flames
- Ignition sources
- Contact of water with molten bitumen

Incompatible Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, sulfur compounds, smoke and hydrocarbon decomposition products may form during combustion.

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11. Toxicological Information

Acute Effects

Inhalation: Heated bitumen fumes may cause respiratory irritation, coughing, headache or discomfort at excessive concentrations.

Skin: Cold product may cause irritation after prolonged contact. Hot product causes severe thermal burns.

Eyes: Fumes may cause irritation. Direct contact with hot product may cause serious thermal injury.

Ingestion: Low likelihood of exposure during normal industrial use.

Chronic Exposure

Repeated occupational exposure to bitumen fumes should be minimized. Good industrial hygiene, temperature control and adequate ventilation are recommended.

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12. Ecological Information

Bitumen has very low water solubility and is generally considered to have low mobility in soil. Nevertheless:

- Avoid uncontrolled release into the environment.
- Prevent entry into waterways and drainage systems.
- Collect spills mechanically after cooling and solidification.
- Dispose of contaminated material according to applicable regulations.

13. Disposal Considerations

Recover or recycle unused material whenever practical.
Dispose of bitumen waste and contaminated packaging through an authorized waste-management facility in accordance with local, national and international regulations.
Do not discharge molten or liquid bitumen into drains, waterways or soil.

14. Transport Information

Transportation classification depends significantly on the **temperature and physical condition** of the bitumen during shipment.
Cold or solid bitumen may not be regulated as dangerous goods in many jurisdictions.
When transported hot at elevated temperature, applicable dangerous-goods requirements for elevated-temperature substances may apply.
The shipper should determine the correct:

- UN number
- Proper Shipping Name
- Hazard class
- Packing requirements
- Marine pollution status

based on the actual transport temperature, mode of transport and applicable ADR/RID, IMDG or other transport regulations.

15. Regulatory Information

Bitumen VG 40 should be handled in accordance with applicable occupational health, environmental, chemical and transportation regulations in the country where it is manufactured, stored, transported and used.
CAS No.: **8052-42-4**
EC No.: **232-490-9**

16. Other Information

This Material Safety Data Sheet provides general health, safety, handling, storage and environmental information for **Bitumen VG 40**.
The information is intended as guidance for professional and industrial users. Actual physical properties and regulatory classifications may vary depending on crude source, refinery process, additives, operating temperature and destination-country regulations.
Users should review the supplier's current product specification, Certificate of Analysis and applicable local regulations before handling or transporting the material.
Product: Bitumen VG 40
Document: Material Safety Data Sheet (MSDS/SDS)
CAS No.: 8052-42-4
Recommended Applications: Heavy-duty asphalt pavements, highways, intersections, airport pavements and road construction.