

BITUMEN — PENETRATION GRADE PAVING BITUMEN

SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Product name	Bitumen, penetration grade (paving bitumen)
Synonyms	Asphalt; asphalt cement; straight-run bitumen; petroleum bitumen
Grades covered	BIT-60-70, BIT-80-100
CAS number	8052-42-4
EC / EINECS number	232-490-9
CLP Annex VI	Bitumen (straight-run, vacuum residue) is not listed as a hazardous substance. This Safety Data Sheet does not cover oxidised (air-blown) bitumen, CAS 64742-93-4, which is a different substance with a different hazard profile.
REACH registration	To be stated by the manufacturer or EU importer for material placed on the EU market.
Identified uses	Binder for hot mix asphalt and asphalt concrete in road, highway and airfield pavements; surface dressing and chip sealing; patching and maintenance mixes; waterproofing membranes and roofing felt; industrial sealing and coating compounds. Industrial and professional use only.
Uses advised against	Any consumer application. Any use involving dilution with solvent or cut-back diluent without a separate risk assessment (see Section 2.3).
Supplier	BHD Dış Ticaret A.Ş. Yeşilköy Mah. Atatürk Cad. No:10 A2 Blok D:182, İstanbul Dünya Ticaret Merkezi / İstanbul, Türkiye Tel: +90 212 485 50 69 sales@bhdtrade.com
Emergency telephone	[BHD 24-hour emergency number to be inserted] Türkiye: Zehir Danışma Merkezi 114 (national poison centre)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance

Regulation (EC) No 1272/2008 (CLP): not classified. Penetration grade paving bitumen does not meet the criteria for classification in any physical, health or environmental hazard class at ambient temperature.

The absence of a CLP classification does not make this product safe to handle. Bitumen is supplied and used hot, and every serious incident associated with it arises from temperature rather than from toxicity: thermal burns, steam eruption on contact with water, and hydrogen sulphide accumulation in tank head space. Sections 2.3, 4, 5 and 7 must be read before the product is heated, decanted or stored in bulk.

2.2 Label elements

No signal word, pictogram, hazard statement or precautionary statement is required under CLP for the substance as supplied. Where the product is transported at or above 100 °C it is subject to transport labelling as an elevated temperature substance (see Section 14).

2.3 Other hazards

Severe thermal burns. Bitumen is normally handled between 135 and 165 °C. It adheres to the skin and continues to transfer heat, producing deep burns. Bitumen stiffens as it cools; where it encircles a limb, tissue swelling can produce a tourniquet effect and restrict blood flow. This is the principal hazard of the product.

Steam eruption and boil-over. Contact between hot bitumen and water causes violent expansion, splashing and boil-over. Water must never be added to, or allowed to enter, hot bitumen or a bitumen tank.

Hydrogen sulphide. Hydrogen sulphide (H₂S) can accumulate in the head space of storage tanks and bulk transport compartments containing hot bitumen and can reach acutely toxic concentrations. The sense of smell cannot be relied upon to detect it: H₂S deadens the olfactory nerve at hazardous concentrations. Head space must be measured with a fixed or portable detector before opening or entering any such compartment.

Pyrophoric deposits and vapour space ignition. Deposits in the vapour space of large bitumen tanks can ignite at temperatures as low as approximately 175 °C, and pyrophoric iron sulphide commonly present in such tanks may ignite below that. An ignition source must be assumed to be present in any tank held above approximately 175 °C.

Combustible. Bitumen is not classified as flammable and is not easily ignited, but it is a hydrocarbon and will burn. Flash point min 230 °C; auto-ignition approximately 320 °C.

Static discharge. Electrostatic charge can accumulate during filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing and vacuum truck operations. Bonding and earthing are necessary but may not by themselves be sufficient.

Polycyclic aromatic compounds. Bitumen contains very low concentrations of polycyclic aromatic compounds. In undiluted bitumen these are not considered bio-available and there is no evidence that exposure to undiluted bitumen or its fume is harmful. **If the product is cut back or blended with a diluent** such that it has a low viscosity at ambient temperature, those compounds may become bio-available; such a blend requires its own assessment and Safety Data Sheet.

The substance does not meet the PBT or vPvB criteria of REACH Annex XIII.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Substance. A complex combination of high molecular weight hydrocarbons obtained as the residue from the vacuum distillation of crude oil. No additives. Grade is defined by penetration at 25 °C.

BHD grade	Penetration @25 °C (0.1 mm)	Softening point (°C)	Viscosity @60 °C (P)	Density @25 °C (kg/m ³)
BIT-60-70	60 - 70	min 46	1600 - 2400	1010 - 1060
BIT-80-100	80 - 100	min 42	800 - 1200	1010 - 1050

Hydrogen sulphide is not a constituent of the product but may be generated and accumulate in the head space above hot bitumen (see Section 2.3). Full specification limits are given in the grade Technical Data Sheet.

SECTION 4: FIRST AID MEASURES

Hot bitumen on skin	Immerse the affected area in cold water until the bitumen is thoroughly cooled. Do not attempt to remove the bitumen from the skin — it forms an airtight, sterile covering over the burn and separates with the scab as the burn heals; removal causes further tissue damage. All bitumen burns require medical attention. Where a limb is encircled, the adhering bitumen must be softened or split to prevent a tourniquet effect from tissue swelling. If the binder must be removed, slightly warmed medicinal liquid paraffin may be used — never a solvent.
Hot bitumen in eyes	Flush immediately with fresh water for at least 15 minutes, holding the eyelids open. Remove contact lenses if worn. Obtain immediate medical attention. Do not attempt to remove solidified material.
Cold product on skin	No specific measures required. Wash with soap and water. Do not use solvents to clean the skin; use vegetable or mineral oil followed by soap and water.
Inhalation of fume	Move the exposed person to fresh air. Give oxygen if breathing is difficult and artificial respiration if breathing has stopped. Obtain medical attention if breathing difficulty continues.

Hydrogen sulphide exposure	Do not attempt rescue without a supplied-air or self-contained breathing apparatus — rescuers are themselves overcome. Remove the casualty to fresh air, give oxygen or artificial respiration as required, and obtain immediate medical attention.
Ingestion	No specific measures required. Do not induce vomiting. Obtain medical advice.
Note to physician	Treat as a thermal burn; treatment is symptomatic. Adherent bitumen should be left in place until it can be dealt with under clinical conditions. Consider hydrogen sulphide exposure in any casualty recovered from a bitumen tank or compartment.

SECTION 5: FIREFIGHTING MEASURES

Suitable extinguishing media	Water fog, foam, dry chemical or carbon dioxide.
Unsuitable media	Solid water jet directed into hot bitumen — causes violent eruption and splattering of hot material.
Specific hazards	The material will burn although it is not easily ignited. Hot bitumen erupts violently on contact with water. Containers may rupture on heating. Do not enter an enclosed or confined fire space without full protective equipment including self-contained breathing apparatus.
Hazardous combustion products	Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, oxides of sulphur and unidentified organic compounds.
Protection for firefighters	Self-contained breathing apparatus and full protective clothing. Keep adjacent containers cool with water spray from a protected position, directing the spray onto the container and not into the product.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions	Eliminate all ignition sources in the vicinity. Wear the protective equipment specified in Section 8. Allow hot spilled material to cool and solidify before handling. Do not apply water to a hot spill.
Environmental precautions	Stop the source of release if this can be done without risk. Contain the release to prevent contamination of soil, surface water and groundwater. Prevent entry into drains and sewage systems. Report spills to the local authority as required.
Containment and cleaning	Apply non-combustible absorbent material, or pump where practicable. Remove contaminated soil where feasible. Collect into disposable containers and dispose of in accordance with Section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Temperature. The product is normally stored, transported and used between 135 and 165 °C. Hold at the lowest workable temperature for the application. An ignition source must be assumed present in any tank held above approximately 175 °C, where vapour space deposits and pyrophoric iron sulphide may ignite.

Water. Do not add water to hot bitumen and do not allow water to enter a bitumen tank, line or vessel. Steam generated eruptions may occur. Confirm that receiving vessels and lines are dry before transfer.

Venting and hydrogen sulphide. Store and transport only in properly vented containers. Measure the head space for hydrogen sulphide with a detector before opening or entering any tank or compartment that contains or has contained hot bitumen. Keep the face clear of tank and tank car openings. Monitoring is required where exposure may exceed one half of the occupational exposure standard.

Personal hygiene. Avoid contact of hot material with eyes, skin and clothing and do not breathe fume from heated material. Prohibit smoking, eating and drinking wherever skin contact with the product or with fume condensate is possible. Wash hands and face before smoking, eating or drinking. **Do not use solvents to**

clean the skin — use vegetable or mineral oil followed by a thorough wash with soap and water.

Static. Review all operations capable of generating or accumulating electrostatic charge — tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation and vacuum truck operations — and apply bonding, earthing and other appropriate mitigation.

7.2 Conditions for safe storage

Store packed product on level, dry ground under cover, protected from moisture, standing water and direct sunlight, and away from ignition sources and strong oxidising agents. Do not stack above the supplier-marked limit. Prolonged storage at elevated temperature hardens the binder and should be avoided.

Container warnings. Containers are not designed to hold pressure. Do not use pressure to empty a container: it may rupture with explosive force. Empty containers retain product residue and can be dangerous — do not pressurise, cut, weld, braze, solder, drill, grind or expose them to heat, flame, sparks, static electricity or any other ignition source. Empty containers must be completely drained, properly closed and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

ACGIH TLV-TWA (bitumen fume)	0.5 mg/m ³ (benzene-soluble aerosol, inhalable fraction). A value of 5 mg/m ³ for asphalt fume appears in older literature; apply the limit in force at the place of use.
Hydrogen sulphide (H2S)	ACGIH TLV-TWA 1 ppm; STEL 5 ppm. Immediately dangerous to life above approximately 100 ppm. Verify the national limit before use.
Türkiye	Verify the current national limit values for bitumen fume and for hydrogen sulphide before use.
DNEL / PNEC	To be taken from the manufacturer's REACH registration dossier where applicable.

8.2 Exposure controls

Engineering controls	Process enclosure, local exhaust ventilation or other engineering controls to hold airborne concentrations below the applicable exposure limit. Fixed or portable hydrogen sulphide detection at bulk storage and loading points.
Respiratory protection	Not normally required for packed product at ambient temperature. Where fume concentrations may exceed the limit, use an approved air-purifying respirator for organic vapours, dusts and mists. Where hydrogen sulphide may be present, or where concentrations are unknown, use a positive pressure air-supplying respirator — an air-purifying respirator does not protect against H2S.
Eye and face protection	Safety glasses with side shields as a minimum. Chemical goggles or a face shield wherever the material is heated or splashing is possible.
Hand protection	Heat-resistant gloves for hot product. Suggested glove materials for cold product include Viton and chlorinated or chlorosulphonated polyethylene.
Body protection	Insulated protective clothing covering the arms and legs wherever hot material is handled, with no gaps at cuffs or collar. Closed footwear; trousers worn outside boots so that splashes cannot enter.
Facilities	Cold running water immediately available at every point where hot bitumen is handled, for burn cooling. Washing facilities with skin cleanser, vegetable or mineral oil and soap.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

The values below are typical for the product family and do not constitute a specification. Grade specification limits are given in the Technical Data Sheet.

Appearance	Black semi-solid
Odour	Petroleum odour

pH	Not applicable
Penetration @25 °C	60 - 70 or 80 - 100 (0.1 mm), grade dependent (ASTM D-5)
Softening point	min 42 - 46 °C, grade dependent (ASTM D-36)
Flash point (open cup)	min 230 °C (ASTM D-92)
Auto-ignition temperature	Approximately 320 °C
Boiling range	320 - 470 °C
Density @25 °C	1010 - 1060 kg/m ³ (ASTM D-70)
Specific gravity @15.6 °C	1.00 - 1.18
Solubility in water	Insoluble
Solubility in trichloroethylene	min 99.0 %wt (ASTM D-4)
Vapour pressure	No data available; negligible at ambient temperature
Oxidising properties	None
Explosive properties	None

SECTION 10: STABILITY AND REACTIVITY

Reactivity / stability	Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Conditions to avoid	Contact of hot product with water. Storage above approximately 175 °C. Ignition sources and accumulation of electrostatic charge. Prolonged overheating, which hardens the binder.
Incompatible materials	Strong acids and strong oxidising agents such as chlorates, nitrates and peroxides.
Hazardous decomposition	None expected under normal conditions. Hydrogen sulphide may be generated and accumulate in tank head space above hot product. Thermal decomposition on combustion produces carbon monoxide, carbon dioxide, oxides of sulphur and organic compounds.
Hazardous polymerisation	Does not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute oral toxicity	Low. Not classified. Assessment based on data for the substance and for similar materials.
Acute dermal toxicity	Low. Not classified. Assessment based on data for the substance and for similar materials.
Acute inhalation toxicity	Low at ambient temperature. Fume from hot bitumen may irritate the eyes and the upper respiratory tract.
Skin irritation	Not classified as irritating. Contact with hot product causes thermal burns, which is a physical and not a toxicological effect.
Eye irritation	Not classified as irritating. Hot product causes thermal injury.
Sensitisation	Not classified as a skin sensitiser.
Carcinogenicity	Straight-run penetration grade bitumen is not classified. The product contains very low concentrations of polycyclic aromatic compounds which are not considered bio-available in undiluted bitumen, and there is no evidence that exposure to undiluted bitumen or its fume is harmful. Oxidised (air-blown) bitumen is a different substance and is assessed separately.

Hydrogen sulphide	Hydrogen sulphide is acutely toxic by inhalation and may be present in the head space above hot bitumen. Exposure above approximately 100 ppm is immediately dangerous to life; the substance deadens the sense of smell at hazardous concentrations.
Mutagenicity	No evidence of mutagenic activity for the undiluted substance.
Reproductive toxicity	No effects identified.

SECTION 12: ECOLOGICAL INFORMATION

Aquatic toxicity	Not expected to be harmful to aquatic organisms. The substance is insoluble in water and of very low bioavailability.
Persistence / degradability	Not expected to be readily biodegradable. Persistent in the environment.
Bioaccumulation	Not expected. High molecular weight and insolubility limit uptake.
Mobility in soil	Immobile. Adsorbs strongly to soil and remains at the point of release.
PBT / vPvB	Does not meet the criteria of REACH Annex XIII.
Other effects	Avoid contaminating soil and releasing the material into sewage and drainage systems or bodies of water. Solidified bitumen coats surfaces and blocks drainage.

SECTION 13: DISPOSAL CONSIDERATIONS

Allow hot material to cool and solidify before proceeding with disposal. Dispose of the product, contaminated absorbent and contaminated soil at an authorised waste disposal facility in accordance with national and local regulations — in Türkiye the Atık Yönetimi Yönetmeliği, in the EU by assigning the appropriate European Waste Catalogue code according to the process of origin. Recovery into asphalt production or incineration with energy recovery are suitable routes. Do not discharge into drains, sewers, soil or watercourses. Empty containers retain residue and are subject to the container warnings in Section 7.

SECTION 14: TRANSPORT INFORMATION

Transport classification depends on the temperature at which the product is carried, not on the product itself. Bitumen carried at or above 100 °C is a dangerous good; the same bitumen carried cold and solid in packages is not. Both cases are set out below — confirm which applies before shipping documents are raised.

14.1 Packed product at ambient temperature (jumbo bags, barrels)

Classification	Not classified as a dangerous good under ADR/RID, IMDG or ICAO/IATA.
UN number	None — not classified
Proper shipping name	Not classified. Declare as: bitumen, penetration grade, solid
Special precautions	Protect from heat during transport. Secure packages against movement.

14.2 Bulk product carried hot, at or above 100 °C

UN number	UN 3257
Proper shipping name	ELEVATED TEMPERATURE LIQUID, N.O.S. (contains bitumen / asphalt)
Transport hazard class	9 (miscellaneous dangerous substances)
Packing group	III
Road / rail (ADR/RID)	UN 3257, Class 9, PG III
Sea transport (IMDG)	UN 3257, Class 9, PG III
Air transport (ICAO/IATA)	Forbidden if offered at a temperature at or above 100 °C.
Marine pollutant	No

Special precautions	Elevated temperature substance marking is required. Consult the carrier and the applicable dangerous goods regulations for mode-specific and quantity-specific requirements before shipment.
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SECTION 15: REGULATORY INFORMATION

EU classification	Not classified as hazardous for supply under Regulation (EC) No 1272/2008 (CLP). No statutory supply label is required.
REACH	Registration is the responsibility of the manufacturer or EU importer. Obtain the registration number from the manufacturer for material placed on the EU market.
Türkiye	SEA Yönetmeliği and KKDIK Yönetmeliği apply. A Turkish-language Safety Data Sheet must be prepared and certified by a registered preparer (Güvenlik Bilgi Formu Hazırlayıcısı).
Occupational health	Work with hot bitumen is hot work for the purposes of workplace health and safety legislation. Tank and compartment entry is confined space entry and must be carried out under a permit system with atmospheric testing.
Scope limitation	This Safety Data Sheet covers straight-run penetration grade bitumen only. Oxidised (air-blown) bitumen, cut-back bitumen, bitumen emulsions and polymer modified binders are different products and require their own Safety Data Sheets.
Chemical safety assessment	Not performed by BHD. Refer to the manufacturer's dossier.

SECTION 16: OTHER INFORMATION

Points requiring particular attention

Three items on this Safety Data Sheet are commonly overlooked and account for most serious incidents involving this product. First, hot bitumen must never come into contact with water. Second, hydrogen sulphide accumulates in tank head space and cannot be detected by smell, so the atmosphere must be measured with an instrument before any tank or compartment is opened or entered. Third, an air-purifying respirator gives no protection against hydrogen sulphide; only a supplied-air or self-contained apparatus does.

Relationship to other BHD documents

This Safety Data Sheet covers the penetration grade bitumen grades listed in Section 1. Paraffin wax, slack wax, residue wax, petroleum jelly, liquid paraffin, polyethylene wax and carbon black are different products with different hazard profiles and are covered by separate Safety Data Sheets. Grade specification limits are given in the corresponding Technical Data Sheet, which forms part of the product documentation.

Abbreviations

ACGIH — American Conference of Governmental Industrial Hygienists; ADR — European Agreement concerning the International Carriage of Dangerous Goods by Road; ASTM — American Society for Testing and Materials; CLP — Classification, Labelling and Packaging; DNEL — Derived No-Effect Level; H₂S — hydrogen sulphide; IATA — International Air Transport Association; ICAO — International Civil Aviation Organization; IMDG — International Maritime Dangerous Goods Code; KKDIK — Turkish REACH; PAC — polycyclic aromatic compounds; PBT — Persistent, Bioaccumulative and Toxic; PG — packing group; PNEC — Predicted No-Effect Concentration; REACH — Registration, Evaluation, Authorisation and Restriction of Chemicals; RID — Regulations concerning the International Carriage of Dangerous Goods by Rail; SEA — Maddelerin ve Karışımların Sınıflandırılması, Etiketlenmesi ve Ambalajlanması; STEL — Short Term Exposure Limit; TLV — Threshold Limit Value; vPvB — very Persistent, very Bioaccumulative.

Revision status

Revision 1, August 2026 — first issue.

This Safety Data Sheet has been prepared from data supplied by the manufacturers and from publicly available information on penetration grade bitumen. The information relates to the product as supplied and does not constitute a guarantee of any specific property. It is the responsibility of the user to determine suitability and to comply with all applicable national and local legislation. For placing on the Turkish market this document must be issued in Turkish and certified by a registered Safety Data Sheet preparer.