

SAFETY DATA SHEET

CRUDE OIL — PETROLEUM (LIGHT / MEDIUM / HEAVY GRADES)

GHS Compliant • Petroleum Product • Revision 3.0 • Issue Date: 18 April 2026

■ **H2S HAZARD:** Crude oil, particularly sour crude, may contain hydrogen sulphide (H2S) — a highly toxic gas (IDLH: 100 ppm). H2S causes rapid olfactory fatigue; do NOT rely on smell for detection. Gas detection equipment is mandatory. Ensure adequate ventilation at all times during handling, sampling, and transfer operations.

SECTION 1 — IDENTIFICATION

Product Name:	Crude Oil — Petroleum (Light / Medium / Heavy Grades)
Trade Names:	Crude Petroleum, Sweet Crude, Sour Crude, Light Crude Oil, Heavy Crude Oil, WTI, Brent, Murban, ESPO, Arab Light/Medium/Heavy, Sokol, Urals, Minas, Tapis
CAS Number:	8002-05-9 (Petroleum, crude)
EC Number:	232-298-5
UN Number:	UN 1267 (flash point < 60°C) / UN 3494 (sour crude, flash point < 60°C)
Intended Use:	Feedstock for petroleum refining, production of refined petroleum products (gasoline, diesel, jet fuel, naphtha, fuel oil, lubricants, petrochemical feedstocks). International seaborne trade.
Restrictions:	For industrial use only. Requires licensed petroleum handling facilities, terminals, and refineries.
Supplier:	Canven Group PLT C-6-2, Megan Avenue 1, No.189, Jalan Tun Razak, 50400 Kuala Lumpur, Malaysia contact@canvengroup.com +60124997937
Emergency Contact:	CHEMTREC International: +1-703-527-3887 (24hr, collect calls accepted) Malaysia Emergency: 999 DOSH: 03-8000 8000

SECTION 2 — HAZARD IDENTIFICATION

■ Flame Flammable Liquid Cat.3 H226	■ Skull Acute Tox. H2S content H330/H331	■ Exclamation Skin/Eye Irritant H315/H319	■ Environment Aquatic Hazard H411	■ Health Carcinogen Benzene H350
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Signal Word:	DANGER
Hazard Statements:	H226 — Flammable liquid and vapour H304 — May be fatal if swallowed and enters airways (aspiration hazard) H315 — Causes skin irritation H319 — Causes serious eye irritation H332 — Harmful if inhaled (vapours) H350 — May cause cancer (benzene content, inhalation route) H361 — Suspected of damaging fertility or the unborn child H373 — May cause damage to organs through prolonged exposure H410/H411 — Toxic to aquatic life with long-lasting effects H2S (sour crude): H330 — Fatal if inhaled H331 — Toxic if inhaled
Precautionary Stmts:	P210 — Keep away from heat, sparks, open flames. No smoking. P260 — Do not breathe vapours/mists. P271 — Use only in well-ventilated areas. P273 — Avoid release to the environment. P280 — Wear protective gloves, eye/face protection. P301+P330+P331 — IF SWALLOWED: Do NOT induce vomiting. P370+P378 — In case of fire: use dry chemical/CO2/foam. P391 — Collect spillage.
Additional Hazards:	BENZENE: Present at 0.1–2% in many crude grades. Benzene is a known human carcinogen (IARC Group 1). Prolonged inhalation exposure must be avoided. Biological monitoring recommended for tank gaugers, samplers, and terminal operators. NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM): Some crude oils may contain NORM (Ra-226, Pb-210). Scale deposits in processing equipment may require NORM survey before maintenance.

SECTION 3 — COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS No.	Typical wt%	Note
Petroleum hydrocarbons (C1–C50+)	8002-05-9	~95–99%	Complex mixture of alkanes, cycloalkanes, aromatics
Benzene (C6H6)	71-43-2	0.1 – 2.0%	IARC Group 1 carcinogen. OEL: 0.5 ppm TWA (EU)
Toluene / Xylenes	108-88-3 / 1330-20-7	0.5 – 5%	Neurotoxic at high concentrations
Hydrogen Sulphide (H2S)	7783-06-4	0 – 5,000 ppm (grade dependent)	Sweet crude: <0.5% S Sour crude: >0.5% S
Sulphur compounds	Various	0.1 – 5% S	Mercaptans, thiophenes, sulphides
Naphthalene	91-20-3	0 – 1%	Possible carcinogen (IARC Group 2B)
Paraffin wax	8002-74-2	0 – 20%	Higher in waxy crudes (e.g. ESPO, Sokol)
Water / BS&W;	7732-18-5	0.1 – 3%	Controlled per sales specification (typically <0.5%)

Note: Exact composition varies significantly by origin, grade, and field. Refer to Certificate of Quality (COQ) / Assay Report from cargo origin for specific composition. API gravity range: 10° (extra heavy) to 45°+ (light condensate).

SECTION 4 — FIRST AID MEASURES

Inhalation:	Remove to fresh air. If H2S exposure suspected, treat as chemical emergency — call emergency services immediately. Do NOT enter H2S atmosphere without SCBA. Administer oxygen if available. If not breathing, apply CPR. Monitor for pulmonary oedema (delayed onset).
Skin Contact:	Remove contaminated clothing immediately. Wash affected area with soap and water for at least 15 minutes. If irritation persists, seek medical attention. Prolonged skin contact with crude oil may cause dermatitis. Note: crude oil is a potential skin carcinogen with repeated, prolonged exposure.
Eye Contact:	Flush immediately with large amounts of water for at least 15 minutes, holding eyelids open. Seek immediate medical attention if irritation or pain persists.
Ingestion:	Do NOT induce vomiting — aspiration hazard (H304). If swallowed, seek immediate medical attention. Keep patient calm and at rest. Gastric lavage only under medical supervision.
Notes to Doctor:	H2S poisoning: treat with 100% oxygen. Consider hydroxocobalamin or sodium thiosulphate antidote protocol for severe H2S exposure. Benzene exposure: blood count monitoring. Monitor for chemical pneumonitis if aspiration suspected.

SECTION 5 — FIRE-FIGHTING MEASURES

Extinguishing Media:	Foam (AFFF or protein foam) — preferred for large tank fires. Dry chemical powder, CO2 for small fires. Water spray/fog to cool surrounding vessels and structures. Do NOT use water jet on burning crude oil — boilover risk.
Special Fire Hazards:	BOILOVER: Water in crude oil storage tanks may cause violent boilover when fire reaches the water layer — producing eruption of burning oil. Maintain 300m+ exclusion zone for large tank fires. Vapours are heavier than air and may travel to distant ignition sources. Combustion produces toxic smoke (CO, CO2, SO2, H2S, particulates).
Fire-Fighting Procedure:	Evacuate area. Alert terminal emergency response team. Use foam monitors from maximum safe distance. Cool adjacent tanks with water to prevent spread. Wear full fire-fighting PPE and SCBA. Do NOT fight tank fires without specialist training and equipment.
HAZCHEM Code:	3Z (light sweet) / 3WE (sour crude)
ERG Guide No.:	128 (flammable liquids — non-polar)

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Eliminate ignition sources. Wear chemical splash goggles, chemical resistant gloves, coverall. For sour crude spills: wear H2S monitor and have SCBA on standby. Prevent vapour accumulation in low-lying areas. Establish exclusion zones.
Environmental Precautions:	MAJOR SPILL HAZARD. Crude oil is toxic to aquatic life (H411). Prevent entry into waterways, drains, and soil. Notify relevant authorities immediately (APMM, DOE Malaysia, port authority). Deploy oil booms if marine spill occurs. MARPOL ANNEX I compliance mandatory for vessel spills.
Containment & Cleanup:	Contain spill with sand, earth, or spill berms. Absorb small spills with vermiculite, dry sand, or proprietary absorbents. Collect in labelled, sealed containers for disposal. For large spills: engage certified oil spill response contractor. Do NOT wash spill to drains or waterways.
MARPOL / OPA 90:	Vessel spills must be reported per MARPOL Annex I. Activate Shipboard Oil Pollution Emergency Plan (SOPEP). Terminal spills: activate Oil Spill Contingency Plan (OSCP).

SECTION 7 — HANDLING AND STORAGE

Handling:	Bond and earth all transfer equipment to prevent static build-up. Maintain maximum transfer velocity of 1 m/s during initial filling until outlet is submerged (static electricity). Use explosion-proof equipment. Conduct H2S monitoring before opening any hatch, manway, or connection. Permit-to-work system mandatory for confined space entry into crude oil tanks. Comply with IP Model Code of Safe Practice (Part 1 — Petroleum Storage).
Storage:	Fixed-roof or floating-roof tanks per API 650 / API 620. Floating roof tanks preferred for light crude (vapour control). Temperature: maintain above pour point for waxy crudes. Segregate sour crude from sweet crude. Tank breathing/venting: comply with local vapour emission regulations. Regular tank bottom water draw-off to prevent microbial growth and corrosion (MIC).
Pour Point Management:	Waxy crudes (ESPO, Sokol, Minas): heat tracing or insulation required to maintain flowability. Monitor cloud point and pour point per cargo COQ.
Incompatibilities:	Strong oxidising agents. Avoid contact with halogens, nitric acid, peroxides. Incompatible with strong acids and bases.

SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION

Substance	OEL TWA	OEL STEL / Ceiling	IDLH	Basis
Petroleum vapour (total hydrocarbon)	300 ppm	—	—	UK WEL / ACGIH
Benzene	0.5 ppm (EU) 1 ppm (OSHA)	2.5 ppm STEL (EU)	500 ppm	IARC Grp 1 carcinogen
H2S	1 ppm TWA	5 ppm STEL Ceiling: 10 ppm	100 ppm	ACGIH TLV
Toluene	50 ppm TWA	100 ppm STEL	500 ppm	ACGIH TLV
Naphthalene	10 ppm TWA	15 ppm STEL	250 ppm	ACGIH TLV

Engineering Controls:	Continuous H2S and LEL gas monitoring with audible/visual alarms. Forced ventilation in enclosed areas. Vapour recovery systems on tank vents. Explosion-proof electrical equipment (ATEX Zone 1). Enclosed sampling systems where possible.
Respiratory Protection:	SCBA mandatory for: tank entry, gauging sour crude, responding to H2S alarm. Air-purifying respirator (OV cartridge) for routine monitoring in well-ventilated areas with <10 ppm H2S. Biological monitoring for benzene exposure recommended.
Hand Protection:	Chemical-resistant gloves (nitrile or neoprene, minimum 0.3mm). For prolonged immersion: butyl rubber gloves.
Eye / Face Protection:	Chemical splash goggles. Full face shield for transfer operations.
Body Protection:	Chemical-resistant coverall. Safety boots (antistatic). Fire-resistant (FR) clothing where ignition risk exists. No synthetic fabrics in explosive atmospheres.

Skin Protection Note:

Crude oil is a potential occupational skin carcinogen with repeated, prolonged skin contact. Barrier creams and regular skin inspection recommended for frequent handlers.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Property	Light Sweet (e.g. Murban, Tapis)	Medium Sour (e.g. Arab Medium)	Heavy Sour (e.g. Arab Heavy)
API Gravity	38°–45° API	28°–33° API	< 28° API
Sulphur Content	< 0.5% wt (sweet)	1.5–2.5% wt (sour)	2.5–4.0% wt (sour)
Flash Point	–10°C to +30°C	+30°C to +60°C	+30°C to +80°C
Pour Point	–20°C to +10°C	–5°C to +20°C	+15°C to +40°C
Viscosity @ 40°C	2–10 cSt	15–50 cSt	100–1000 cSt
Vapour Pressure @ 37.8°C	0.3–0.8 bar	0.1–0.3 bar	< 0.1 bar
H2S Content	< 10 ppm	50–500 ppm	200–5000 ppm
Colour	Light amber / pale	Dark amber / brown	Dark brown / black

Physical State: Liquid at ambient temperature (light/medium grades). May be semi-solid or require heating (heavy/extra-heavy grades).

Odour: Characteristic petroleum odour. Sour crude: strong H2S smell (do NOT rely on smell — olfactory fatigue occurs rapidly at >100 ppm H2S).

Auto-Ignition Temp.: 230°C – 400°C (grade dependent)

Flammable Limits: LEL: ~1% v/v | UEL: ~10% v/v (vapour in air)

Solubility in Water: Practically insoluble. Forms stable emulsions. Disperses as sheen on water surface.

Specific Gravity: 0.80 – 0.95 (light to heavy grade)

SECTION 10 — STABILITY AND REACTIVITY

Stability: Stable under normal storage and transport conditions.

Conditions to Avoid: Heat, open flames, ignition sources, static electricity, mixing with strong oxidising agents.

Incompatible Materials: Strong oxidising agents (nitric acid, peroxides, chlorine). Avoid contact with reactive metals (sodium, potassium) and strong acids or bases.

Hazardous Decomposition: Combustion produces: CO, CO2, SO2, NOx, H2S, soot/particulates. Incomplete combustion may produce PAHs (polycyclic aromatic hydrocarbons).

Pyrophoricity: Iron sulphide (FeS) scale in crude oil tanks and pipelines may be pyrophoric when exposed to air. Risk assessment required before tank cleaning or maintenance on sour service equipment.

SECTION 11 — TOXICOLOGICAL INFORMATION

Acute Toxicity: LD50 (oral, rat): > 5,000 mg/kg (crude oil). LC50 (rat, inhalation, 4h): > 10 mg/L (vapour). Primary acute risk is from H2S in sour crude.

H2S Acute Toxicity: H2S LC50 (rat, inhalation, 1h): 444 ppm. At 200 ppm: pulmonary oedema, rapid unconsciousness. At 500–1000 ppm: immediate collapse, death within minutes.

Benzene (Carcinogen): IARC Group 1 — known human carcinogen. Causes leukaemia with prolonged occupational exposure. No safe threshold established. ALARA principle applies.

Skin / Dermal: Crude oil causes skin defatting and dermatitis with prolonged contact. Potential occupational skin carcinogen (PAH content) with repeated exposure.

Aspiration Hazard: H304 — May be fatal if swallowed and enters airways. Risk of chemical pneumonitis. Do NOT induce vomiting.

Reproductive Toxicity: H361 — Benzene component: suspected reproductive toxicant. Avoid exposure during pregnancy.

NORM: Naturally Occurring Radioactive Material may be present in crude from certain fields (e.g. North Sea, some Middle East). Refer to field-specific NORM assessment. Scale deposits require special handling.

SECTION 12 — ECOLOGICAL INFORMATION

Ecotoxicity:	H411 — Toxic to aquatic life with long-lasting effects. LC50 (fish, 96h): 1–100 mg/L (grade dependent). EC50 (algae): 1–10 mg/L. NOEC (Daphnia): < 1 mg/L.
Marine Pollution:	Crude oil is a major marine pollutant. Designated as MARPOL Annex I substance. Oil sheen on water at concentrations as low as 0.01 mg/L. Oil spills cause long-term damage to marine ecosystems.
Persistence:	Crude oil components vary widely. Light fractions evaporate rapidly. Heavy fractions (asphaltenes, resins) persist in marine/soil environment for years to decades. PAHs are resistant to biodegradation.
Bioaccumulation:	High bioaccumulation potential for PAH components. Log Kow: benzene 2.13 naphthalene 3.37 PAHs > 4.0
Soil Mobility:	Light fractions: high mobility in soil (leaching risk to groundwater). Heavy fractions: low mobility but persistent surface contamination.

SECTION 13 — DISPOSAL CONSIDERATIONS

Disposal Method:	Do not discharge to drains, waterways, or soil. Crude oil waste must be handled by licensed waste contractors. Off-spec crude may be suitable for blending or reprocessing. Tank bottoms / sludge: classified as hazardous waste (H3, H14). Comply with local environmental regulations (DOE Malaysia, Environmental Quality Act 1974).
Waste Code (EU):	13 05 02* (sludges from oil/water separators) 05 01 03* (tank bottom sludges)
MARPOL:	Oily water and oil residues from vessels: discharge per MARPOL Annex I. Use port reception facilities. Record in Oil Record Book.

SECTION 14 — TRANSPORT INFORMATION

Regulation	Class	UN No.	Proper Shipping Name	PG	Special Prov.
IMDG (Sea)	3	UN 1267	Petroleum crude oil (flash point < 60°C)	I/II/III	MARPOL Cat. X IBC Code applies
IMDG Sour Crude	3 + 6.1	UN 3494	Petroleum crude oil, sour (flash point < 60°C, toxic)	I/II	Toxic by inhalation (H2S). Special stowage.
IATA (Air)	3	UN 1267	Petroleum crude oil	III	Max. 60L (cargo aircraft only) Most grades forbidden.
ADR/RID (Road/Rail)	3	UN 1267	Petroleum crude oil	I/II/III	Tank code: L4BH Special Prov: 640D

Marine Pollutant:	YES — MARPOL Annex I. Mark with marine pollutant symbol.
EmS Code (IMDG):	F-E, S-E
IBC Code:	Chapter 17 applies to bulk liquid chemical tankers. Crude oil tankers (VLCC, Suezmax, Aframax): comply with MARPOL Annex I, SOLAS, and ISM Code. SOPEP mandatory.
Vessel Classes:	VLCC: 200,000–320,000 DWT Suezmax: 120,000–200,000 DWT Aframax: 80,000–120,000 DWT Panamax: 60,000–80,000 DWT Handysize: 25,000–60,000 DWT

SECTION 15 — REGULATORY INFORMATION

EU / UK:	CLP Regulation (EC) 1272/2008. REACH: crude oil registered. EU ETS applicable to refineries. Seveso III Directive may apply to large storage facilities.
USA:	OSHA HazCom 2012. EPA SPCC (Spill Prevention, Control and Countermeasure) plans required for facilities >1,320 gallons. OPA 90 (Oil Pollution Act) for spill liability. TSCA listed.

Malaysia:	Petroleum Development Act 1974 (PETRONAS jurisdiction). Environmental Quality Act 1974. Occupational Safety and Health Act 1994. Petroleum (Safety Measures) Act 1984. APMM (Malaysian Maritime Enforcement Agency) for marine transport.
China:	IECSC registered. GB 17914 (flammable liquid storage). MEE regulations for hazardous chemical storage. Customs declaration as HS 2709.00 (crude petroleum).
India:	Petroleum Act 1934. PESO licence for petroleum storage. Environment Protection Act 1986.
IMO / MARPOL:	MARPOL Annex I (prevention of oil pollution from ships). SOLAS Chapter VI (carriage of cargo). ISM Code. ISPS Code for terminal security. ISGOTT (International Safety Guide for Oil Tankers and Terminals) — industry best practice.
HS Code:	2709.00.00 — Petroleum oils and oils obtained from bituminous minerals, crude

SECTION 16 — OTHER INFORMATION

Revision History:	Version 3.0 — Full revision per GHS Rev.9, EU CLP 10th ATP, and IOGP Life-Saving Rules 2023
Issue Date:	18 April 2026
Prepared By:	HSE / Product Stewardship — Canven Group PLT
Key Standards Referenced:	ISGOTT 6th Edition (2020); API RP 2003 (static electricity); IP Model Code of Safe Practice Part 1; NFPA 30; API 650 (tank design); ACGIH TLVs & BEIs 2024; IOGP Report 636 (Life-Saving Rules); MARPOL Annex I (2021 consolidation); IMO IBC Code 2020 Edition; IMDG Code Amendment 41-22
Abbreviations:	COQ — Certificate of Quality BS&W; — Basic Sediment & Water SOPEP — Shipboard Oil Pollution Emergency Plan NORM — Naturally Occurring Radioactive Material MIC — Microbially Influenced Corrosion PAH — Polycyclic Aromatic Hydrocarbon VLCC — Very Large Crude Carrier API — American Petroleum Institute ALARA — As Low As Reasonably Achievable
Full Text of H-Statements:	H226 — Flammable liquid and vapour H304 — May be fatal if swallowed and enters airways H315 — Causes skin irritation H319 — Causes serious eye irritation H332 — Harmful if inhaled H350 — May cause cancer H361 — Suspected of damaging fertility H373 — May cause damage to organs (prolonged exposure) H411 — Toxic to aquatic life with long-lasting effects
Disclaimer:	This Safety Data Sheet has been prepared in good faith based on available scientific and regulatory data. Properties shown are typical ranges — actual cargo properties per Certificate of Quality (COQ) from loading port. This document does not constitute a product specification or offer to sell. Canven Group PLT accepts no liability for use of this document without verification against cargo-specific COQ.

Prepared in accordance with GHS (Globally Harmonized System) Rev.9, EU Regulation 1272/2008 (CLP), OSHA HazCom 2012 (29 CFR 1910.1200), and ISO 11014:2009. Format compliant with REACH Annex II (Commission Regulation EU 2020/878). This document supersedes all previous versions.