

MATERIAL SAFETY DATA SHEET

(As per Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989)

FOR

PKGM-1 BLOCK (Ravva Field)

Vedanta Limited (Division Cairn Oil & Gas)

**S.Yanam, Uppalaguptam Mandal, East Godavari District – 533213,
Andhra Pradesh**

CRUDE OIL

MATERIAL SAFETY DATA SHEET

(As per Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989)

CRUDE OIL

Date of Revision: 15-04-2017

1. Product Identification

Product Name	Crude Oil
Synonyms: Product Description	Petroleum Oil, Crude A highly complex mixture of hydrocarbons, Containing variable amount of impurities such as nitrogen & Metals such as Iron, copper, nickel and Vanadium.
Appearance	Liquid with dark brown
Address	Ravva On-shore Terminal S-Ynam-533213, Uppalaguptam Mandal East Godavari District. Andhra Pradesh Phone no : 08856-306061

2. COMPOSITION & INFORMATION ON INGREDIENTS

Composition	CAS No	Wt. (%)	PEL	TLV	Other	Units
Crude Oil	8002-05-09	100	N/A	N/A		
Benzene	71-43-2	0.19	1	0.5	2.5-5STEL	ppm
Toluene	108-88-3	0.78	100	100	150STEL	ppm
Ortho-Xylene	1330-20-7	0.28	100	100	150STEL	ppm
Ethyl-Benzene	100-41-4	0.44	100	100	125STEL	ppm
1,2,4-Trimethylbenzene	25551-13-7	0.0	25	25		ppm
Hydrogen Sulphide	7783-06-4	0.0	10	10	15STEL	ppm
Polynuclear Aromatic	N/A	0.0	0.2	0.2		mg/m3



For Vedanta Limited
(Cairn Oil & Gas)

K. R. Hariprasad Reddy

Authorised Signatory

VEDANTA LIMITED

Cairn Oil & Gas: Ravva Onshore Terminal, Surasani Yanam 533 213, Uppalaguptam Mandal, East Godavari District
Andhra Pradesh, India | T: +91 8856 306050 | F: +91 8856 256601 | www.cairnindia.com

Registered Office: Vedanta Limited, 1st Floor, 'C' Wing, Unit 103, Corporate Avenue, Atul Projects, Chakala, Andheri (East), Mumbai-400093.
Maharashtra, India | T +91-22 664 34500 | F +91-22 664 34530 | www.vedantalimited.com

CIN: L13209MH1965PLC291394

3. HAZARD IDENTIFICATION

Note: The information provided in this section includes health hazard information on the product components

Potential Health Effects from Overexposure

Acute Effects

Eye

Slight to moderate eye irritation

Skin

Moderately irritating, cause's redness, drying of Skin

Inhalation

Will cause narcosis and/or Chemical Pneumonitis

Ingestion

Extremely irritating to throat and stomach, Excitation, loss of cyanosis, congestion and Capillary haemorrhaging of the lungs and Internal organs.

Chronic Effects

Skin Irritation

Long term, repeated Application of Crude to the skin resulted in a Statically significant increase in the incidence of Skin tumours. Crude Oil Contains Benzene which Can Causes degeneration in blood forming Organs leading to anaemia which may further Degrade to leukaemia

Additional Medical and Toxicological Information

May aggravate pre-existing dermatitis may Cause blood forming disorders. Or lead to Kidney or liver dysfunction.

4. FIRST AID MEASURES

Eye Contact

Flush thoroughly with large amounts of water for at least 15 minutes including under the eyelids. Get Medical attention.

Skin Contact

Remove contaminated clothing. Wash affected area with soap and water. If irritation persists get medical attention.

Inhalation

Remove to fresh air. If breathing has stopped, apply artificial respiration. Get Medical attention.

Ingestion

Do not induce vomiting. If spontaneous vomiting occurs hold the victims head lower than their hips to prevent aspiration



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5. FIRE FIGHTING MEASURES

Flash Point
Flammable Limits in Air, % by Volume
Extinguishing Media
NFPA Hazard Ratings (Crude Petroleum)
General Hazard

Protective Equipment for fire-fighting

Firefighting Instruction

< -24°C

Lower: 1% & Upper: 15%

Dry chemical, Foam & Carbon Dioxide
Health-1, Flammability-3 & Reactivity-0
Flowing crude oil can be ignited by self-generated static electricity containers should be bonded and grounded Runoff to sewer may create fire or explosion hazard well downstream from the source

Firefighters should wear self-contained breathing apparatus and full protective clothing Use a smothering technique for extinguishing fire of this flammable liquid. Do not use a forced water stream directly on crude oil fires. Fire fighters should wear self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Environmental Precautions
Spillage

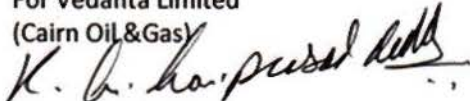
Remove source of heat or ignition including internal combustion engines and power tools. Clean up spill but do not flush to sewer or surface water ventilate area and avoid breathing vapours and mists.

Clean up spill but do not flush to sewer Or surface water

Note: Ventilate area and avoid breathing vapours or Mists



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7. HANDLING AND STORAGE:

Handling

Store in tightly closed containers in a dry cool Place, away from source or heat or ignition Ground and bond all transfer and storage Equipment to prevent static sparks and equip with self-closing valves, Pressure vacuum bungs And flammable arrestors. Empty containers may Contain residue and can be dangerous do not Pressurize, cut, Weld, Braze, solder drill, Grind or expose such containers to Heat, flame, sparks or other source of ignition

8. EXPOSURE CONTROL AND PERSONAL PROTECTION:

Eye Protection

Remove contact lenses and wear chemical safety glasses or goggles where contact with liquid or mist may occur

Skin Protection

Wear insulating gloves and protective clothing. Wash with soap and water before eating, drinking or smoking. Launder contaminated clothing before reuse

Inhalation

Approved respiratory protection should be used

Ventilation

Provide adequate general and local ventilation To maintain airborne chemical concentrations Below applicable exposure limits and to Prevent accumulation of flammable vapours And formation of Explosive atmospheres. To Prevent formation of oxygen deficient Atmosphere especially in confined spaces

9. PHYSICAL & CHEMICAL PROPERTIES:

Physical State	Liquid
Colour	Dark Brown
Odour	Acrid, Sweet
Density at 15°C	0.80 – 0.85
Reid Vapour Pressure	5.0 to 8.0 psi
Kinematic Viscosity @ 40°C	4.35mm ² /S (cSt)
pH	N/A
% Solubility in Water @ 37.77°C	0.01 – 0.05
Evaporation Rate	0.1 – 1.0
%Volatile by volume	20 - 100



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10. STABILITY & REACTIVITY:

Stability	Stable under normal conditions of use
Hazardous Polymerization	Will not occur
Conditions to avoid	Strong oxidizing agents, heat, sparks, flame and build-up of static electricity
Hazardous Decomposition Products	CO, CO ₂ & SO ₂ and Hydrocarbons.

11. TOXICOLOGICAL INFORMATION:

No data Available

12. ECOLOGICAL INFORMATION:

No data Available

13. DISPOSAL CONSIDERATIONS:

Product Disposal	Dispose through a licensed waste disposal company. Follow Federal, State and Local regulations
Container Disposal	N/A

14. TRANSPORT INFORMATION (AS PER IATA REGULATION):

UN Proper shipping Name	Petroleum Crude Oil
Un Number	UN 1267
UN Hazard Class	3 (Flammable Liquid)
UN Packing Group	PG II

15. REGULATORY INFORMATION

EPA SARA TITLE III

Section 302 EPCRA Extremely Hazardous Substances (EHS)

Product Component	CAS No	Wt%	RQ, lb	TPQ, lb
Hydrogen Sulphide	7783-06-4	0.0	--	---



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Section 304 CERCLA Hazardous Substances

Product Component	CAS No	Wt%	RQ, lb
Benzene	71-43-2	0.19	10
Toluene	108-88-3	0.78	1000
Xylene	1330-20-7	0.28	100
Ethyl Benzene	100-41-4	0.44	1000
Hydrogen Sulphide	7783-06-4	0.0	---

Section 311/312 Hazard Categorization

Acute	Chronic	Fire	Pressure	Reactive
X	X			

Section 313 EPCRA Toxic Substances

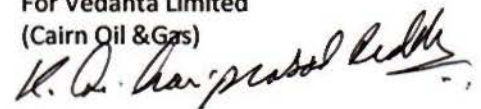
Product Component	CAS No	Wt %
Benzene	71-43-2	0.19
Toluene	108-88-3	0.78
Ortho-Xylene	1330-20-7	0.28
Ethyl-Benzene	100-41-4	0.44
Hydrogen Sulphide	7783-06-4	0.0

Key RQ = Reportable Quantity

TPQ = Threshold Planning Quantity of EHS



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NATURAL GAS

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1. CHEMICAL IDENTITY :

NATURAL GAS

Chemical Name : Natural Gas Formula : Mixture of CH ₄ , C ₂ H ₆ , C ₃ H ₈ etc	Synonyms : Natural gas C.A.S. No. : 74-82-8 (Methane)
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2. PHYSICAL / CHEMICAL DATA :

Boiling Point : -161.5° C Melting Point : -182.2° C Vapour Density : 0.6 Specific Gravity : 0.6-0.7	Physical State : gas Vapour Pressure : gas Solubility in Water : Negligible	Appearance: Colour less gas. Odour : Odour less in natural state Others : No Corrosive : No
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3. FIRE / EXPLOSION HAZARD DATA :

Flammability Limits : LEL : 5% UEL : 17% Flash Point (°C) : -180 Auto ignition Temperature (°C): 482 Hazardous Combustion products : CO ₂ , CO etc	Explosion sensitivity to impact : Yes Explosion sensitivity to Static Electricity : Yes Hazardous Polymerisation : No Combustible Liquid : Yes
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4. REACTIVITY DATA :

Chemical Stability : Stable. Incompatibility : Avoid strong oxidising materials.

5. HEALTH HAZARD DATA :

Routes of entry : Inhalation. Effects : Chest congestion, head ache, cough, breathing difficulty. Simple Asphixiant. Emergency Treatment : If inhaled move to fresh air. Give CPR if not breathing. TLV-TWA : Not Established.

6. PREVENTIVE MEASURES :

Flammable gas. Inhalation may cause central nervous system failure. Cause flash fire. Gas reduces oxygen available for breathing. Personal Protective Equipment: goggles, boots, coveralls & SCBA while working in inconvenient concentrations. Handling & Storage precautions: Store away from the ignition sources. Waste disposable method: Vent to atmosphere.

7. EMERGENCY / FIRST AID MEASURES :

FIRE : Fire extinguishing media = Dry chemical, foam or carbon dioxide (CO ₂), water fog. Special Procedures = Keep the containers cool by spraying water if exposed to fire or heat. EXPOSURE : First Aid Measures = Fresh Air and artificial respiration and send to doctor Antidotes = Not available. SPILLS : Steps to be taken = Ventilation.

8. ADDITIONAL INFORMATION / REFERENCES :

Extremely flammable gas. Vapour accumulation could flash and/or explode, if in contact with ignition source. Pressurised containers may explode if exposed to high temperatures. Fire fighting includes shutting down the source of gas, cool surrounding area until the gas is turned off with water.
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9. MANUFACTURES / SUPPLIERS DATA :

Name of the firm : Vedanta Limited Address : S-yanam Telephone No./ Telex :	UN No. HAZCHEM Code : Label : 2.1
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10. DISCLAIMER : As per MSIHC Rules 1989.