Material Safety Data Sheet

Issue Date: July, 2021

Section-1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1 Identification of the substance/preparation:

Commercial name: Indane

Chemical name: Liquefied Petroleum Gas

Synonyms: Liquefied Petroleum Gas

1.2 Use of the substance /preparation: Heat Generation

1.3 MANUFACTURER & SUPPLIER: Indian Oil Corporation Limited

MANUFACTURER'S NAME :- INDIAN OIL CORPORATION LTD.

ADDRESS:- Marketing Division, G 9, Ali Yavar Jung Marg, Bandra (East), Mumbai 400 051	**TELEPHONE NUMBER** 1800 2333 555
	DATE PREPARED: 23.06.2021
	VERSION NUMBER: 01

Section 2 – HAZARD IDENTIFICATION

Hazard Category: HAZCHEM CODE 2WE		
Health	**Environmental**	**Physical**
Carcinogenicity – NA Mutagenicity – Non Mutagenic	Aquatic toxicity- Category- NIL	Flammable– Category 3

NA: Not available

GHS Category table for reference:

Study/hazard statement	Category 1	Category 2	Category 3	Category 4	Category 5
Acute Oral LD_{50}	< 5 mg/kg; Fatal if swallowed	> 5 < 50 mg/kg; Fatal if swallowed	> 50 < 300 mg/kg; Toxic if swallowed	> 300 < 2000 mg/kg; Harmful if swallowed	> 2000 <5000mg/kg; May be harmful if swallowed
Acute Dermal LD_{50}	< 50 mg/kg; Fatal in contact with skin	> 50 < 200 mg/kg; Fatal in contact with skin	> 200 < 1000 mg/kg; Toxic in contact with skin	> 1000 < 2000 mg/kg; Harmful in contact with skin	> 2000 < 5000 mg/kg; May be harmful in contact with skin
Acute Inhalation	Fatal if inhaled	Fatal if inhaled	Toxic if inhaled	Harmful if inhaled	See footnote below this table
Dust LC_{50}	< 0.05 mg/L	> 0.05 < 0.5 mg/L	> 0.5 < 1.0 mg/L	> 1.0 < 5 mg/L	
Gases LC_{50}	< 100 ppm/V	> 100 < 500 ppm/V	> 500 < 2500 ppm/V	>2500 < 20000 ppm/V	
Vapors LC_{50}	<0.5 mg/L	>0.5 < 2.0 mg/L	> 2.0 < 10 mg/L	> 10 < 20 mg/L	
Flammable liquids	Flash point < 23 ^{0}C and initial boiling point < 35 ^{0}C Extremely flammable liquid and vapor	Flash point < 23 ^{0}C and initial boiling point > 35 ^{0}C Highly flammable liquid and vapor	Flash point > 23 ^{0}C<60 ^{0}C Flammable liquid and vapor	Flash point > 60 ^{0}C<93 ^{0}C Combustible liquid	Not Applicable

Note: Gases concentration are expressed in parts per million per volume (ppmV).

NOTE 1: Category 5 is for mixtures which are of relatively low acute toxicity but which under certain circumstances may pose a hazard to vulnerable populations. These mixtures are anticipated to have an oral or dermal LD_{50} value in the range of 2000-5000 mg/kg bodyweight or equivalent dose for other routes of exposure. In light of animal welfare considerations, testing in animals in Category 5 ranges is discouraged and should only be considered when there is a strong likelihood that results of such testing would have a direct relevance for protecting human health.

NOTE 2: These values are designed to be used in the calculation of the ATE for classification of a mixture based on its ingredients and do not represent test results. The values are conservatively set at the lower end of the range of Categories 1 and 2, and at a point approximately 1/10th from the lower end of the range for Categories 3 – 5.

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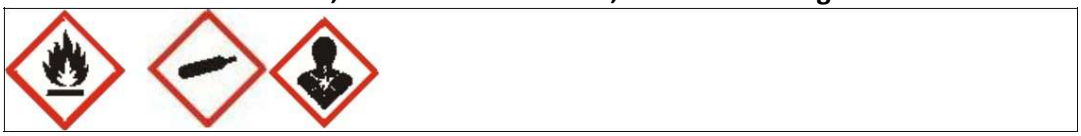
GHS Label: GHS02: Flame, GHS 04: Pressure Gas, GHS08: Carcinogen.



Signal Word: Danger.

Details of statements:

Hazard	H220: Extremely flammable gas.
Statements	H350: May cause cancer
	H340: May cause genetic defects
Precautionary	P 103: Read label before use.
Statement	P201: Obtain special instructions before use.
Prevention	P202: Do not handle until all safety precautions have been read and understood.
	P210: Keep away from heat/sparks/open flames/hot surfaces* No smoking.
	P281: Use personal protective equipment as required.
Precautionary	P308: IF ON CLOTHING:
Statement	P313: Get medical advice/attention.
Response	P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
	P381: Eliminate all ignition sources if safe to do so.
Precautionary	P 403: Store in a well-ventilated place.
Statement	P405: Store locked up.
Storage	
Precautionary	Follow local regulation
Statement	
Disposal	

Data reference: Official Journal of the European Union regarding EU GHS

Route of entry:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
Yes	Yes	Yes	Yes	Yes

2.1 Health hazards:

Source	NTP listed?	IARC cancer review group?	OSHA Regulated?
Carcinogenicity	Yes	Yes	Yes

DATA REFERENCE: Toxic release inventory (TRI) basis of Occupational Safety and Health Administration (OSHA) carcinogen, National Toxicological program (NTP), International Agency for Research on Cancer (IARC), http://toxnet.nlm.nih.gov/cgi-bin/sis/search.

Inhalation: Severely irritating if inhaled and acute exposure may be fatal.
Ingestion: May be fatal if swallowed.
Skin contact: Highly irritating to skin. May cause allergic skin reaction.
Eye contact: Highly corrosive to eyes.
Chronic exposure: Weakness, coughing, laboured breathing, headache Confusion nausea/vomiting convulsions heart rate and pulse variations coma respiratory failure **Aggravations to pre existing conditions:** Those with history of lung diseases, or skin problems may be more susceptible to the effects of this substance.

2.2 Information pertaining to particular dangers for human:

Toxic substance with carcinogenic and mutagenic effects. High vapour concentrations irritate respiratory system and eyes and may lead to fast coma and death.

2.3 Information pertaining to particular dangers for the environment: NA

2.4 Other adverse effects:

Highly flammable and easily ignitable substance. Danger of ignition at normal temperature. Readily evaporates and vapours form with air toxic and explosive mixtures heavier than air. Mixtures keep above ground and after ignition they spread fast into far distances. Ignition possible when exposed to hot surfaces, sparks, naked flames and by electrostatic discharges too. The substance is practically insoluble in water, floats on the water level and forms toxic and explosive mixtures above the water level.

Section 3 – COMPOSITION & INFORMATION ON INGREDIENTS

Ingredients	CAS No.	Percentage
Petroleum gases liquefied	68476-85-7	0-100%
Petroleum gases liquefied, sweetened	68476-86-8	0-100%
Gases (petroleum), catalytic cracked overheads	68409-99-4	0-100%

Data reference: http://ecb.jrc.ec.europa.eu/esis/

Section 4 – FIRST AIDMEASURES

4.1 General advice

IMMEDIATE MEDICAL ATTENTION IS REQUIRED AFTER INHALATION OR AFTER SWALLOWING.

In case of health troubles or doubts, seek medical advice immediately and show this Material Safety Data Sheet.

Ensure activity of vitally important functions until the arrival of the doctor (artificial respiration, inhalation of oxygen, heart massage). If patient is unconscious, or in case of danger of blackout, transport patient in a stabilized position. In case of first degree burns (painful redness), and second degree burns (painful blisters), cool the affected area with cold running water for a long time. In case of third degree burns (redness, cracking pale skin, usually without pain), do not cool affected skin, dress the area with sterile dry gauze only.

4.2 Inhalation

Remove patient to fresh air, keep him warm and in order to rest quietly. Avoid walking. Seek medical advice.

SYMPTOMS AND EFFECTS: irritation, headache, dizziness, weakness, stupefaction, irritant coughing, convulsions, unconsciousness, possible respiratory inhibition or arrest.

4.3 Skin contact

Immediately take off all contaminated clothing and footwear. Flush effected area with copious quantities of water. Seek medical advice.

SYMPTOMS AND EFFECTS: mild irritation, degreasing, absorption, blistering.

4.4 Eye contact

Immediately flush eyes with clean lukewarm water and continue flushing for at least 15 minutes – keep the eyelids widely apart and flush thoroughly with mild water stream from the inner to the outer. Seek medical advice.

SYMPTOMS AND EFFECTS: severe irritation, cornea damage.

4.5 Swallowing

If patient is conscious and without convulsion, immediately try to induce vomiting. Never give anything by mouth to an unconscious person, just put patient into a stabilized position. Seek medical advice immediately.

SYMPTOMS AND EFFECTS: nausea, vomiting, convulsions, irregular heartbeat.

Section 5 – FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media

Foam, Dry chemical powder, CO2. Cool containers which are not on fire with water spray.

5.2 Extinguishing media to be avoided : Water.

5.3 Caution about specific danger in case of fire and fire- fighting procedures

Danger of violent reaction or explosion. Vapours may travel considerable far distances and cause subsequent ignition. Vapours are heavier than air, may cumulate along the ground and in enclosed spaces – danger of explosion. When burning, it emits carbon monoxide, carbon dioxide and irritant fumes. Containers with the substance exposed to excessive heat may explode.

5.4 Special protective equipment for fire-fighters

Wear full protective fire-resistant clothing and self-contained breathing apparatus.

Section 6 –ACCIDENTAL RELEASE MEASURES

6.1 Person-related safety precautions

Isolate hazard area. Evacuate all unauthorized personnel not participating in rescue operations from the area. Avoid entry into danger area. Remove all possible sources of ignition. Stop traffic and switch off the motors of the engines. Do not smoke and do not handle with naked flame. Use explosion-proof lamps and non-sparking tools. Avoid contact with the substance. Apply recommended full protective personal equipment.

6.2 Precautions for protection of the environment

Prevent from further leaks of substance. Do not allow substance to enter soil, water and sewage systems. In case of substance discharge to water courses or water containers, inform water consumers immediately, stop service and exploitation of water.

6.3 Recommended methods for cleaning and disposal

Pump off substance safely, soak up residues with compatible porous material and forward for disposal in closed containers. Dispose off under valid legal waste regulations.

Section 7 –HANDLING AND STORAGE

7.1 Information for safe handling

Observe all fire-fighting measures (no smoking, do not handle with naked flame and remove all possible sources of ignition). Take precautionary measures against static discharges. Wear recommended personal protective equipment and observe instructions to prevent possible contact of substance with skin and eyes and inhalation. Avoid leak to environment.

7.2 Information for storage

Storerooms should meet the requirements for the fire safety of constructions and electrical facilities and should be in conformity with valid regulations. Store in cool, well-ventilated place with effective exhaust, away from heat and all sources of ignition. Store in tightly closed container. Do not store together with oxidizing agents. Take precautionary measures against static discharges. Avoid leak to environment.

7.3 Information for specific use : Not applicable.

Section 8 –EXPOSURE CONTROL & PERSONAL PROTECTION

8.1 Occupational Exposure Limits:

Material	Type	ppm	mg/m3
Indane LPG	TWA	800	1900
	STEL	1000	NA

NA: Data not available

DATA REFERENCE: http://ecb.jrc.ec.europa.eu/esis/index.php?PGM=ein

8.2 Occupational exposure controls

Collective protection measures: General and local ventilation, effective exhaust.
Individual protection measures: Personal protective equipment (PPE) for the protection of eyes, hands and skin corresponding with the performed labour has to be kept at disposition for the employees. In cases, where the workplace exposure control limits cannot be observed with the help of technical equipment or where it is not possible to ensure that the respiratory system exposure does not represent a health hazard for the personnel, adequate respiratory protection

have to be kept at disposition. In the case of continuous use of this equipment during constant work, safety breaks have to be scheduled, if the PPE-character requires this. All PPE have to be kept in disposable state and the damaged or contaminated equipment has to be replaced immediately.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

HANDS	EYES	BODY	RESPIRATORY
			

Respiratory protection: If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-face piece respirator, airline hood, or full face piece self-contained breathing apparatus. Protective mask with canister A (brown coloured, protecting against organic vapours), self-contained breathing apparatus.

Eye protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick- drench facilities in work area.

Hand protection: Wear gloves of impervious material.

Body protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Protective coverall antistatic design recommended, impervious when handling big amounts (nitrile rubber), sealed leather footwear (free from synthetic adhesives)

Hygiene Measures: Wash hands, forearms and face thoroughly after handling. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

8.3 Environmental exposure controls

Proceed in accordance with valid air and water legislative regulations. **Engineering measures:** Use only with adequate ventilation. If user operations generate dust, fumes, vapor ormist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Section 9 –PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquefied Gas
Odour	20 ppm (max) Mercaptan added as an odouriser
Solubility in water	Negligible
Max Vapor pressure in Kpa at 40Deg, gauge	1050
Liquid Density @15degC (Kg/M3)	510-580
Specific Gravity of Gaseous Phase air=1	1.75
Boiling point at 1.013bar (Deg C)	0 to -18
Flash point Deg C (Closed Cup)	-76
Auto Ignition Temp Deg C	410 to 580
Explosive limit in Air %	1.8-9.5

Section 10 –CHEMICAL STABILITY AND REACTIVITY INFORMATION

10.1 Conditions to avoid

Concentrations within the explosion limits, sources of ignition, high temperature, sun radiation.

10.2 Material to avoid

Explosive reaction with chlorine (on light), with acid.

10.3 Hazardous decomposition products

Thermal decomposition generates carbon monoxide and carbon dioxide.

Section 11 –TOXICOLOGICAL INFORMATION

11.1 Acute effects

Acute intoxication leads to central nervous system attenuation and narcotic effects occur.

Acute toxicity data:

Parameter	Route	Species	Values	Exposure period
LC_{50}	Inhalation	Rat	800000 ppm	15 minutes

11.2 Repeated dose toxicity

Chronic effects cause bone marrow damage, haemopoiesis disorder and may develop leukaemia.

11.3 Sensitisation

May cause skin allergy.

11.4 CMR effects (carcinogenicity, mutagenicity, toxicity for reproduction)

Indane LPG is Non Mutagenic in Bacterial reverse mutation test (AMES TEST)

11.5 Toxicokinetics, metabolism, distribution: Not applicable.

Section 12 –ECOLOGICAL INFORMATION

12.1 Ecotoxicity data:

Parameter	Route	Species	Values	Exposure period
LC_{50}	Inhalation	Fish	≥100 mg/Litre of water	96 hours

1

2.2 Mobility: NA

12.3 Persistence and degradability : NA

12.4 Bioaccumulative potential: NA

12.5 Results of PBT assessment Persistence and Degradation: NA.

12.6 Other adverse effects

Environmental Fate: NA

Section 13– DISPOSAL CONSIDERATION

Local Legislation: Disposal should be in accordance with applicable regional, national, and local laws and regulations. This product should not be dumped, spilled, rinsed or washed into sewers or public waterways.

13.1 Recommended disposal methods for the substance / preparation

Product reuse or disposal in accordance with valid waste legislative regulations.

13.2 Recommended disposal methods for contaminated packaging Product is transported in tank-vehicles, cylinders and by means of pipeline.

13.3 Waste management measures that control exposure of humans and environment

Proceed in accordance with valid health, air and water local legislative regulations.

13.4 Waste regulation

Follow local regulation.

Section 14– TRANSPORT INFORMATION

14.1 International Transport Regulation:
ADR/RID (Road/Rail), IMDG (Sea) and ICAO/IATA (Air)

Proper Shipping Name: Indane LPG
Hazard Class: 2.1, Liquefied Petroleum Gas
UN Number: 1075
Packing Group: II
Emergency Action Code: 2WE

14.2 Special transport precautionary measures NA

Section 15– REGULATORY INFORMATION

MSDS format on a 16 Section based on guidance provided in: Indian Regulation:
Manufacture, Storage and Import of Hazardous Chemicals Rule, 1989. The Factories Act 1948
International Regulations:
European SDS Directive, ANSI MSDS Standard, ISO 11014-1 1994, WHMIS Requirements
United States
Hazard Communication Standard
Canada
Hazardous Products Act and Controlled Products Regulations
Europe
Dangerous Substance and Preparations Directives
Australia
National Model Regulations for the Control of Workplace Hazardous Substances
The Globally Harmonized System of Classification and Labeling of Chemicals endorsed by The UN Economic and Social Council
*RISK PHRASES: R12 Extremely flammable, R45 may cause cancer, R46 May cause heritable genetic damage. *SAFETY PHRASES: S45 In case of accident or if you feel unwell, seek medical advice immediately, S53 Avoid exposure – obtain special instruction before use. May cause cancer, flammable, Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. *These standard risk and safety phrases for use when interpreting Material Safety data Sheets are derived from the European Union Regulation, CHIP Regulations - Chemicals (Hazard Information and Packaging for Supply). They are required to be used in Materials Safety Data Sheets to identify potential hazards and offer safe handling advice.

Section 16 – OTHER INFORMATION

Training instructions: Personnel handling the product has to be acquainted demonstrably with its hazardous properties, with health and environmental protection principles related to the product and first aid

principles. Local bodies involved (Applicable only with in India): Local District Authority and Local Disaster management Group

Sources of data used to compile the Material Safety Data Sheet

Data compilation reference: National Institute for Occupational Safety and Health guide to chemical hazards and International Chemical Safety Cards *(WHO/IPCS/ILO) and http://toxnet.nlm.nih.gov/cgi-bin/sis/search, http://webnet3.oecd.org/eChemPortal/Results2.aspx?SubstanceId=169630, . http://ecb.jrc.ec.europa.eu/esis/index.php?PGM=ein, http://www.cdc.gov/niosh/npg/npgd0049.html, Official Journal of the European Union regarding EU GHS*

MSDS Revision Status: NIL

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