

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

**1.1 Identification of the substance/preparation:**

**Commercial name:** Linear Alkyl Benzene

**Chemical name:** Linear Alkyl Benzene (Benzene, C10-13-alkyl derivs)

**Synonyms:** Linear Alkyl Benzene, Benzene, C10-13-alkyl derivs.

1.2 Use of the substance /preparation: Surfactant intermediate for detergents.

**1.3 MANUFACTURER & SUPPLIER: Reliance Industries Limited**

**Emergency Coordination Centre contact details:**

Patalganga Mfg. Division MIDC, PO: Patalganga, 410220 Dist: Raigad	SSM Office	+91 2192-257600
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SSM: Site Shift Manager

**Section 2 – HAZARD IDENTIFICATION**

**2.1 Classification of the substance/preparation: Hazard class and category code.**

**GHS Category:**

Health	Environmental	Physical
Harmful on contact with skin and on ingestion	Aquatic Toxicity – Category- NA	Flammable – Category NA

NA: Not available

**GHS Category table for reference:**

Study/hazard statement	Category 1	Category 2	Category 3	Category 4	Category 5
Acute Oral LD50	≤ 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 LD50	≤ 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 Dust LC50 Gases LC50 Vapours LC50	≤ 0.05 mg/L ≤ 100 ppm/V ≤ 0.5 mg/L Fatal if inhaled	> 0.05 ≤ 0.5 mg/L > 100 ≤ 500 ppm/V > 0.5 ≤ 2.0 mg/L Fatal if inhaled	> 0.5 ≤ 1.0 mg/L > 500 ≤ 2500 ppm/V > 2.0 ≤ 10 mg/L Toxic if inhaled	> 1.0 ≤ 5 mg/L > 2500 ≤ 20000 ppm/V > 10 ≤ 20 mg/L Harmful if inhaled	See footnote below this table
Flammable liquids	Flash point < 23 degrees C and initial boiling point ≤ 35 degrees C. Extremely flammable liquid and vapour	Flash point < 23 degrees C and initial boiling point > 35 degrees C. Highly flammable liquid and vapour	Flash point ≥ 23 degrees C ≤ 60 degrees C. Flammable liquid and vapour	Flash point > 60 degrees C ≤ 93 degrees 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 LD50 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.

**GHS Category table for reference: Continued**

Study/hazard statement	Category 1	Category 2	Category 3
Eye Irritation	Effects on the cornea, iris or conjunctiva that are not expected to reverse or that have not fully reversed within 21 days. Causes severe eye damage.	2A: Effects on the cornea, iris or conjunctiva that fully reverse within 21 days. Causes severe eye irritation. 2B : Effects on the cornea, iris or conjunctiva that fully reverse within 7 days. Causes eye irritation.	Not applicable
Skin Irritation	Destruction of skin tissue, with sub categorization based on exposure of up to 3 minutes (A), 1 hour (B), or 4 hours (C). Causes severe skin burns and eye damage.	Mean value of $\geq 2.3 > 4.0$ for erythema / eschar or edema in at least 2 of 3 tested animals from gradings at 24, 48, and 72 hours (or on 3 consecutive days after onset if reactions are delayed); inflammation that persists to end of the (normally 14-day) observation period. Causes skin irritation.	Mean value of $\geq 1.5 < 2.3$ for erythema / eschar or edema in at least 2 of 3 tested animals from gradings at 24, 48, and 72 hours (or on 3 consecutive days after onset if reactions are delayed). Causes mild skin irritation.
Environment: Acute Toxicity Category	96 hr LC <sub>50</sub> (fish) $\leq 1$ mg/L 48 hr EC <sub>50</sub> (crustacea) $\leq 1$ mg/L, 72/96 hr ErC <sub>50</sub> (aquatic plants) $\leq 1$ mg/L Very toxic to aquatic life	96 hr LC <sub>50</sub> (fish) $> 1 \leq 10$ mg/L 48 hr EC <sub>50</sub> (crustacea) $> 1 \leq 10$ mg/L 72/96 hr ErC <sub>50</sub> (aquatic plants) $> 1 \leq 10$ mg/L Toxic to aquatic life	96 hr LC <sub>50</sub> (fish) $> 10 \leq 100$ mg/L 48 hr EC <sub>50</sub> (crustacea) $> 10 \leq 100$ mg/L 72/96 hr ErC <sub>50</sub> (aquatic plants) $> 10 \leq 100$ mg/L Harmful to aquatic life
Flammable Aerosol	Extremely flammable aerosol	Flammable aerosol	Not Applicable
Flammable solids	Using the burning rate test, substances or mixtures other than metal powders: (a) wetted zone does not stop fire and (b) burning time $< 45$ seconds or burning rate $> 2.2$ mm/second Using the burning rate test, metal powders that have burning time $\leq 5$ minutes Flammable solid	Using the burning rate test, substances or mixtures other than metal powders: (a) wetted zone does not stop fire for at least 4 minutes and (b) burning time $< 45$ seconds or burning rate $> 2.2$ mm/second Using the burning rate test, metal powders that have burning time $> 5 \leq 10$ minutes Flammable solid	Not Applicable
Flammable gases	Gases, which at 20 degrees C and a standard pressure of 101.3 kPa: (a) are ignitable when in a mixture of 13% or less by volume in air; or (b) have a flammable range with air of at least 12 percentage points regardless of the lower flammable limit. Extremely flammable gas	Gases, other than those of category 1, which, at 20 degrees C and a standard pressure of 101.3 kPa, have a flammable range while mixed in air. Flammable gas	Not Applicable

**GHS Label:** None

None

**Signal word:** None

**Details of statements:**

Hazard Statements	None.
Precautionary Statement Prevention	None
Precautionary Statement Response	P391 Collect spillage
Precautionary Statement Storage	No storage statements
Precautionary Statement Disposal	Follow local regulation

**2.2 Information pertaining to particular dangers for human:**

No specific hazards are encountered under normal use condition. The product may cause slight irritation to eyes and skin after prolonged and repeated contact, this product has a low vapour pressure therefore it is not an inhalation hazard.

If product is heated, vaporization can occur. Eye, skin, and upper respiratory irritation may occur.

**2.3 Information pertaining to particular dangers for the environment:**

NA

**2.4 Other adverse effects:**

Ignition possible when exposed to hot surfaces, sparks, naked flames and by electrostatic discharges too.

**Route of entry:**

Those with history of lung diseases, or skin problems may be more susceptible to the effect of this material.

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

**DATA REFERENCE:** <http://toxnet.nlm.nih.gov/cgi-bin/sis/search>.

**Health hazards:**

Source	NTP listed?	IARC cancer review group?	OSHA Regulated?
Carcinogenicity	No	No	No

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>.

**Section 3 – COMPOSITION & INFORMATION ON INGREDIENTS**

Ingredients / Hazardous	CAS No.	EC No.	Percentage
Linear alkyl benzene/No	67774-74-7	267-051-0	>98.50 %
Paraffin Content	64771-72-8	265-233-4	<0.20%

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

**Section 4 – FIRST AID MEASURES**

**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.

**4.2 Inhalation**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**4.3 Skin contact**

Wash skin with water upon contact. Remove contaminated clothing. If irritation persists, get medical attention. Wash clothing before reuse.

**4.4 Eye contact**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

**4.5 Swallowing**

If swallowed, do NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

## Section 5 – FIRE FIGHTING MEASURES

**5.1 Suitable extinguishing media:** Foam, Dry chemical powder, CO<sub>2</sub>.  
Cool containers 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**

Do not empty into drains. 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**

Wear protective clothing and equipment. 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.

### **6.2 Precautions for protection of the environment**

Prevent from further leaks of substance. Dike flow of spilled material using soil or sandbags to minimize contamination of drains, surface and ground waters.

### **6.3 Recommended methods for cleaning and disposal**

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.

### **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.

Take precautionary measures against static discharges.

### **7.3 Information for specific use**

Detergent intermediate – follow bulk handling and storage procedures as noted above.

**Section 8 – EXPOSURE CONTROL & PERSONAL PROTECTION**

**8.1 Occupational Exposure Limits: NA**

NA: Data not available

Provide adequate ventilation when using the material and follow the principles of good occupational hygiene to control personal exposure.

**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 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.

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.

Hygiene Measures: Wash hands, forearms and face thoroughly after handling. Appropriate techniques should be used to remove potentially contaminated clothing.

**8.3 Environmental exposure controls**

Proceed in accordance with valid air and water legislative regulations.

Engineering measures: If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended limits.

**Section 9 – PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	Clear Colourless liquid
Odour	Odourless
Solubility in water	Slightly soluble
Relative Density (H <sub>2</sub> O=1)	0.858 – 0.868 @ 15.5 °C
Boiling Point °C	278 – 314 °C
Melting Point °C	< -70°C
Relative Vapour Density (Air=1)	8.4
Flash point °C	140°C
Auto ignition °C	NA
Vapour pressure (hPa) @ 25 °C	0.013
Molecular weight	239-245
Explosive limits in air % by volume	NA
pH	NA
Viscosity cst @37.7 °C	4.4
Pour point °C	<-50
Evaporation rate (water=1)	NA
Octanol/water partition coefficient log Kow	7.5 – 9.12 @ 25 °C
% volatile	NA

NA: NOT AVAILABLE

DATA 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://ptcl.chem.ox.ac.uk/"

**Section 10 – CHEMICAL STABILITY AND REACTIVITY INFORMATION**

**10.1 Conditions to avoid**

Prolonged exposure of containers or tank cars to heat or fire may cause the material to expand with possible container rupture

**10.2 Material to avoid**

Very dangerous fire hazard when exposed to oxidizers

**10.3 Hazardous decomposition products**

Thermal decomposition generates carbon monoxide and carbon dioxide.

**Polymerization:** NA

**Section 11 – TOXICOLOGICAL INFORMATION**

**11.1 Acute effects**

Product irritates eyes and skin.

Acute toxicity data:

Parameter	Route	Species	Values	Exposure period
LD <sub>50</sub>	Oral	Rat	>5000 mg/kg	Not applicable

**Data Reference** :( [http://europa.eu/geninfo/legal\\_notices\\_en.htm](http://europa.eu/geninfo/legal_notices_en.htm)).

**11.2 Repeated dose toxicity**

Chronic effects cause mild irritation

**11.3 Sensitisation**

May cause mild skin irritation.

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

Not a carcinogen, mutagenic

**11.5 Toxicokinetics, metabolism, distribution**

Not applicable.

**Section 12 – ECOLOGICAL INFORMATION**

**12.1 Ecotoxicity data:** NA

**12.3 Persistence and degradability:** Substance is biodegradable

**12.4 Bioaccumulative potential:** NA

**12.5 Results of PBT assessment Persistence and Degradation:** NA.

**12.6 Other adverse effects:** NA

Environmental Fate: The product is sparingly soluble in water. Liquid with moderate volatility. It is expected to have high mobility in soil, Volatilization from water surfaces is expected.

**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.

**13.3 Waste management measures that control exposure of humans and environment**

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

**13.4 Waste regulation:** Follow local regulation.

**Section 14– TRANSPORT INFORMATION**

**International Transport Regulation:**

**ADR/RID (Road/Rail), IMDG (Sea) and ICAO/IATA (Air)**

**14.1**

**Proper Shipping Name:** Linear Alkyl Benzene

**UN Number:** Not applicable

**14.2 Special transport precautionary measures**

Not applicable.

**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: NA.

\*SAFETY PHRASES: NA.

\*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 properties, with health and environmental protection principles related to the product and first aid principles.

Tremcard details/Reference: Refer Section 14

Local bodies involved (Applicable only with in India): Local District Authority and Local Crisis 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>

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Dec. 21, 2011	Section 14	Sep. 01, 2011

**This MSDS is issued by the Centre for HSE Excellence, Reliance Industries Limited**

**Contact Details: For any enquiry/comment regarding this Material Safety Data Sheet, kindly contact the Centre for HSE Excellence at [HSE.ExcellenceCentre@ril.com](mailto:HSE.ExcellenceCentre@ril.com)**

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End of MSDS