



# ESTEEM INDUSTRIES PVT. LTD.

**UNIT I:** PLOT NO. 76-77, PISSURLEM INDUSTRIAL ESTATE, PISSURLEM, GOA 403530, INDIA.

**UNIT II:** PLOT NO. 1&3, GUT NO. 189/1,189/2,191/6,194, VILLAGE: ALONDE, TAL: VIKRAMGAD, DIST. PALGHAR (MAHARASHTRA) 401605. PALGHAR, MAHARASHTRA, INDIA.

**UNIT III:** GLOBAL R&D UNIT, PLOT # 005, MAPUSA INDUSTRIAL ESTATE, MAPUSA, BARDEZ, GOA 403507, INDIA.

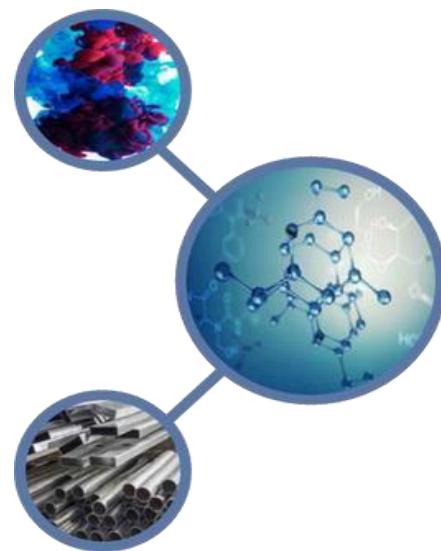
## GHG EMISSION REPORT FOR THE YEAR APRIL 2024 TO MARCH 2025

FORM NO : EIPL/SMS/ 037

ISSUE NO : 01

REV NO : 00

DATE : 23<sup>RD</sup> APRIL, 2025



PREPARED BY: S H MAPARI  
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DIRECTOR-MANUFACTURING & ENGINEERING



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## 1. EXECUTIVE SUMMARY

### 1.1 OVERVIEW OF ORGANIZATION AND REPORTING PERIOD

EPIL, INDIA, IS ENGAGED IN THE MANUFACTURE AND SUPPLY OF ETHOXYLATES, PROPOXYLATES, EO/PO BLOCK POLYMERS, EMULSIFIERS, SURFACTANTS, TEXTILE AND LEATHER CHEMICALS & AUXILIARIES, PAPER CHEMICALS AND COSMETIC CHEMICALS. THIS GREENHOUSE GAS (GHG) INVENTORY REPORT COVERS EPIL'S OPERATIONS FOR THE PERIOD 01 APRIL 2024 TO 31 MARCH 2025 (HEREAFTER "THE REPORTING YEAR"). THE REPORT IS PREPARED IN LINE WITH ISO 14064-1 AND THE GHG PROTOCOL CORPORATE ACCOUNTING AND REPORTING STANDARD, INTEGRATING ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) PRINCIPLES INTO EPIL'S BUSINESS STRATEGY.

### 1.2 KEY EMISSION RESULTS (tCO<sub>2</sub>E)

#### ORGANIZATIONAL BOUNDARIES

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#### CALCULATION PERIOD: APRIL 2024 TO MARCH 2025

ALL VALUES ARE IN MT CO<sub>2</sub> E

**GHG Emission Reporting Frequency: Annually**

EMISSIONS	CURRENT YEAR April 2024 to March 2025
Scope 1	1030.091
Scope 2	2244.334
Scope 3	13749.27
Scope 3 Upstream	8931.439
Scope 3 Downstream	4817.834
<b>Total GHG Emission</b>	<b>17023.695</b>



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### INDICATIVE INTENSITIES (ASSUMED FOR THIS REPORT):

- PRODUCTION VOLUME (ASSUMED): 40,000 T OF PRODUCT/YEAR
- EMPLOYEES (ASSUMED): 300
- GHG INTENSITY PER TONNE OF PRODUCT: -0.43 tCO<sub>2</sub>E/T PRODUCT
- GHG INTENSITY PER EMPLOYEE: -56.75 tCO<sub>2</sub>E/EMPLOYEE/YEAR

### 1.3 HIGHLIGHTS & REDUCTION ACHIEVEMENTS

- IMPLEMENTED BOILER AND FURNACE EFFICIENCY IMPROVEMENTS, REDUCING SPECIFIC FUEL CONSUMPTION PER TONNE OF PRODUCT PRODUCED.
- INCREASED THE SHARE OF LED LIGHTING AND IMPROVED POWER FACTOR CORRECTION, REDUCING ELECTRICITY CONSUMPTION PER TONNE OF PRODUCT.
- OPTIMIZED RAW MATERIAL LOGISTICS, IMPROVING TRUCK LOAD FACTORS AND REDUCING SCOPE 3 UPSTREAM TRANSPORT EMISSIONS.
- INTRODUCED BETTER PROCESS CONTROL AND HEAT RECOVERY IN SELECT PRODUCTION LINES, LEADING TO ENERGY SAVINGS.

## 2. INTRODUCTION

### 2.1 PURPOSE OF THE REPORT

THE PURPOSE OF THIS REPORT IS TO PRESENT A COMPREHENSIVE GHG INVENTORY OF EPIL'S OPERATIONS, COVERING DIRECT AND INDIRECT EMISSIONS, IN ACCORDANCE WITH ISO 14064-1 AND THE GHG PROTOCOL. IT PROVIDES A TRANSPARENT BASIS FOR MONITORING PERFORMANCE, SETTING REDUCTION TARGETS AND COMMUNICATING WITH STAKEHOLDERS.

### 2.2 INTENDED USERS

- EPIL's BOARD OF DIRECTORS AND SENIOR MANAGEMENT
- EMPLOYEES AND INTERNAL ESG/ESG STEERING COMMITTEES
- CUSTOMERS SEEKING CLIMATE-RELATED INFORMATION AND ECOVADIS/ESG DISCLOSURES
- REGULATORS, FINANCIAL INSTITUTIONS, RATING AGENCIES AND CERTIFICATION BODIES
- OTHER STAKEHOLDERS INTERESTED IN EPIL'S CLIMATE PERFORMANCE.



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### 2.3 REPORTING OBJECTIVES

- COMPLIANCE & CONFORMANCE:** ALIGN WITH ISO 14064-1 AND GHG PROTOCOL REQUIREMENTS FOR CORPORATE INVENTORIES.
- VOLUNTARY ESG & MARKET REQUIREMENTS:** RESPOND TO CUSTOMER, INVESTOR AND ECOVADIS REQUIREMENTS ON CLIMATE AND GHG DISCLOSURE.
- INTERNAL MANAGEMENT:** ESTABLISH A ROBUST BASELINE TO TRACK PROGRESS, PRIORITIZE REDUCTION INITIATIVES AND SUPPORT SCIENCE-ALIGNED TARGETS IN FUTURE.

## 3. ORGANIZATION DESCRIPTION

### 3.1 COMPANY PROFILE

EPIL IS AN INDIAN CHEMICAL MANUFACTURER PRODUCING ETHOXYLATES, PROPOXYLATES, EO/PO BLOCK POLYMERS, EMULSIFIERS, SURFACTANTS, TEXTILE AND LEATHER AUXILIARIES, PAPER CHEMICALS AND COSMETIC CHEMICALS. THESE PRODUCTS SERVE TEXTILE, LEATHER, PAPER, HOME & PERSONAL CARE AND INDUSTRIAL APPLICATIONS. EPIL INTEGRATES ESG PRINCIPLES INTO ITS OPERATIONS, FOCUSING ON RESOURCE EFFICIENCY, RESPONSIBLE SOURCING, WORKER WELLBEING AND CLIMATE ACTION.

### 3.2 ORGANIZATIONAL STRUCTURE

EPIL OPERATES AS A SINGLE LEGAL ENTITY WITH INTEGRATED MANUFACTURING, R&D, QUALITY CONTROL, WAREHOUSING AND ADMINISTRATION. THE GHG INVENTORY COVERS:

- MAIN MANUFACTURING PLANT AND ASSOCIATED UTILITIES
- IN-PLANT WAREHOUSES AND TANK FARMS
- CENTRAL R&D AND QUALITY LABORATORY
- ADMINISTRATIVE OFFICES LOCATED WITHIN/ADJACENT TO THE PLANT AREA.

### 3.3 OPERATIONS, FACILITIES AND BOUNDARIES

- RAW MATERIAL RECEIPT & STORAGE (BULK TANKS, DRUMS, BAGS)
- REACTION, BLENDING AND FORMULATION OF ETHOXYLATES, PROPOXYLATES AND SPECIALTY SURFACTANTS
- UTILITIES – BOILERS, DG SETS, COMPRESSORS, COOLING TOWERS, CHILLED WATER, PROCESS STEAM
- PACKAGING, WAREHOUSING AND DISPATCH OF FINISHED PRODUCTS
- SUPPORT FUNCTIONS – MAINTENANCE, R&D, QC, ADMINISTRATION AND EHS.



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## 4. REPORTING BOUNDARY

### 4.1 ORGANIZATIONAL BOUNDARY

EPIL HAS ADOPTED THE OPERATIONAL CONTROL APPROACH AS PER ISO 14064-1 AND GHG PROTOCOL. UNDER THIS APPROACH, EPIL ACCOUNTS FOR 100% OF EMISSIONS FROM OPERATIONS OVER WHICH IT HAS OPERATIONAL CONTROL, IRRESPECTIVE OF EQUITY SHARE.

### 4.2 OPERATIONAL BOUNDARY

- FUEL COMBUSTION IN BOILERS, THERMIC FLUID HEATERS, FURNACES AND DG SETS
- COMPANY-OWNED VEHICLES AND IN-PLANT MATERIAL HANDLING EQUIPMENT (E.G., FORKLIFTS)
- FUGITIVE EMISSIONS FROM REFRIGERANTS (HVAC EQUIPMENT, PROCESS CHILLERS)
- ANY RELEVANT PROCESS-RELATED EMISSIONS
- SCOPE 2 (ENERGY INDIRECT):
  - PURCHASED ELECTRICITY FROM THE REGIONAL GRID FOR MANUFACTURING, UTILITIES, OFFICES AND SUPPORT SERVICES.
  - (PURCHASED STEAM/HEAT/COOLING NOT APPLICABLE OR NOT MATERIAL IN THE CURRENT YEAR; TO BE REVIEWED ANNUALLY.)
- SCOPE 3 (OTHER INDIRECT):
  - UPSTREAM: PURCHASED RAW MATERIALS & PACKAGING, UPSTREAM FUEL & ENERGY, INBOUND LOGISTICS, CAPITAL GOODS, WASTE DISPOSAL, EMPLOYEE COMMUTING AND BUSINESS TRAVEL.
  - DOWNSTREAM: OUTBOUND DISTRIBUTION, DOWNSTREAM PROCESSING/USE OF PRODUCTS AND END-OF-LIFE TREATMENT OF SOLD PRODUCTS WHERE DATA IS AVAILABLE OR ESTIMATED.

### 4.3 ENTITIES AND LOCATIONS COVERED

- EPIL'S PRIMARY MANUFACTURING SITE IN INDIA, INCLUDING ALL PRODUCTION UNITS, UTILITIES AND ON-SITE WAREHOUSES.
- ADMINISTRATIVE AND SALES OFFICES LOCATED WITHIN THE SAME PREMISES ARE INCLUDED.
- THIRD-PARTY WAREHOUSE, CONTRACT MANUFACTURING OR INDEPENDENT DISTRIBUTION FACILITIES ARE COVERED UNDER SCOPE 3, NOT SCOPE 1 OR 2.



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## 5. REPORTING PERIOD

- **START DATE:** 01 APRIL 2024
- **END DATE:** 31 MARCH 2025
- **FREQUENCY OF REPORTING:** ANNUALLY (WITH THE INTENT TO PREPARE A GHG INVENTORY EACH FINANCIAL YEAR, SUBJECT TO REVIEW BY MANAGEMENT).

## 6. GHG ACCOUNTING METHODOLOGY

### 6.1 STANDARDS FOLLOWED

**ISO 14064-1:2018** – SPECIFICATION WITH GUIDANCE AT THE ORGANIZATION LEVEL FOR QUANTIFICATION AND REPORTING OF GREENHOUSE GAS EMISSIONS AND REMOVALS. **GHG PROTOCOL – CORPORATE ACCOUNTING AND REPORTING STANDARD (WRI/WBCSD)**. **GHG PROTOCOL – CORPORATE VALUE CHAIN (SCOPE 3) STANDARD FOR UPSTREAM AND DOWNSTREAM EMISSIONS (WHERE APPLICABLE)**.

### 6.2 CALCULATION APPROACH

**GHG EMISSIONS (tCO<sub>2</sub>E) = ACTIVITY DATA × EMISSION FACTOR × (UNIT CONVERSION / 1,000)**

- ACTIVITY DATA INCLUDES QUANTITIES OF FUELS, ELECTRICITY, MATERIALS, DISTANCES TRAVELED, WASTE QUANTITIES ETC.
- EMISSION FACTORS ARE TAKEN FROM RECOGNIZED SOURCES (SEE SECTION 10).
- GLOBAL WARMING POTENTIALS (GWPs) ARE ALIGNED WITH THE CHOSEN ASSESSMENT BASIS (IPCC AR5/AR6 – TO BE FINALIZED AND DOCUMENTED IN THE APPENDICES).

### 6.3 TOOLS OR SOFTWARE USED

- EPIL USES INTERNAL EXCEL-BASED GHG CALCULATION MODELS FOR FUEL, ELECTRICITY, TRANSPORT AND MATERIAL USAGE.
- WHERE NECESSARY, EMISSION FACTOR DATABASES AND SUPPLIER-SPECIFIC INFORMATION HAVE BEEN INCORPORATED.
- ALL CALCULATIONS ARE REVIEWED BY THE ESG/ENVIRONMENT TEAM AND CROSS-CHECKED AGAINST UTILITY AND PRODUCTION RECORDS.



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## 7. EMISSION SOURCES IDENTIFICATION

### 7.1 LIST OF DIRECT AND INDIRECT SOURCES

#### ♣ DIRECT (SCOPE 1):

- HSD / FO / NATURAL GAS CONSUMPTION IN BOILERS, THERMIC FLUID HEATERS AND PROCESS FURNACES
- DIESEL CONSUMPTION IN DG SETS
- DIESEL/PETROL IN COMPANY-OWNED VEHICLES AND FORKLIFTS
- REFRIGERANT LEAKAGES FROM HVAC AND PROCESS COOLING.

#### ♣ INDIRECT (SCOPE 2):

- PURCHASED GRID ELECTRICITY FOR MANUFACTURING, UTILITIES AND OFFICES.

#### ♣ OTHER INDIRECT (SCOPE 3):

- PURCHASED RAW MATERIALS AND PACKAGING (CHEMICAL INTERMEDIATES, SOLVENTS, AUXILIARIES, DRUMS,)
- INBOUND AND OUTBOUND LOGISTICS (ROAD AND, WHERE RELEVANT, SEA/RAIL)
- WASTE DISPOSAL AND TREATMENT (HAZARDOUS AND NON-HAZARDOUS)
- EMPLOYEE COMMUTING AND BUSINESS TRAVEL (ROAD AND AIR)
- DOWNSTREAM HANDLING, PROCESSING AND END-OF-LIFE OF SOLD PRODUCTS (ESTIMATED WHERE POSSIBLE).

### 7.2 MAPPING OF SOURCES IN FACILITIES

TYPE OF FUEL OR ENERGY USED METERING OR CONSUMPTION RECORDS ALLOCATION TO RELEVANT SCOPE (1, 2 OR 3).

### 7.3 SCOPE CATEGORIZATION

EACH SOURCE IS CATEGORISED ACCORDING TO THE GHG PROTOCOL SCOPE DEFINITIONS, ENSURING COMPLETENESS AND AVOIDING DOUBLE COUNTING.

## 8. GHG SCOPE CLASSIFICATION

### 8.1 SCOPE 1 – DIRECT EMISSIONS

- STATIONARY COMBUSTION
- BOILERS, THERMIC FLUID HEATERS, HOT OIL SYSTEMS AND FURNACES USING HSD/FO/NATURAL GAS.
- DG SETS USED FOR BACKUP POWER.
- MOBILE COMBUSTION
- COMPANY-OWNED TRUCKS, CARS AND IN-PLANT VEHICLES (FORKLIFTS, MATERIAL HANDLERS).
- FUGITIVE EMISSIONS



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- REFRIGERANT LEAKAGE FROM HVAC UNITS AND PROCESS CHILLERS (E.G., HFC-134A, R-410A).
- PROCESS EMISSIONS
- NO SIGNIFICANT PROCESS GHG EMISSIONS (E.G., FROM CHEMICAL REACTIONS RELEASING CO<sub>2</sub>) WERE IDENTIFIED FOR THIS REPORTING PERIOD. THIS WILL BE PERIODICALLY RE-ASSESSED.

### GAS-WISE BREAKUP FOR SCOPE 1 (IN tCO<sub>2</sub>E):

GAS	EMISSIONS (tCO <sub>2</sub> E)
CO <sub>2</sub>	1015.091
CH <sub>4</sub>	8.000
N <sub>2</sub> O	7.000
<b>TOTAL</b>	<b>1030.091</b>

### 8.2 SCOPE 2 – INDIRECT ENERGY EMISSIONS

SCOPE 2 EMISSIONS (2,244.334 tCO<sub>2</sub>E) ARISE FROM PURCHASED ELECTRICITY FROM THE REGIONAL GRID. PRODUCTION LINES (REACTORS, MIXERS, PUMPS, AGITATORS) UTILITIES (COMPRESSORS, COOLING TOWERS, CHILLED WATER SYSTEMS) LIGHTING AND HVAC SYSTEMS. ADMINISTRATIVE AND SUPPORT FUNCTIONS. NO PURCHASED STEAM, HEAT OR COOLING FROM THIRD PARTIES IS REPORTED IN THE CURRENT YEAR. IF SUCH ARRANGEMENTS ARISE IN FUTURE, THEY WILL BE INTEGRATED INTO SCOPE 2.

### 8.3 SCOPE 3 – OTHER INDIRECT EMISSIONS

#### ❖ UPSTREAM (8,931.439 tCO<sub>2</sub>E)

- PURCHASED GOODS AND SERVICES (RAW MATERIALS, SOLVENTS, AUXILIARIES, PACKAGING).
- FUEL AND ENERGY-RELATED ACTIVITIES (WELL-TO-TANK AND TRANSMISSION LOSSES).
- UPSTREAM TRANSPORTATION AND DISTRIBUTION (INBOUND LOGISTICS).
- WASTE GENERATED IN OPERATIONS (HAZARDOUS AND NON-HAZARDOUS WASTE DISPOSAL).
- EMPLOYEE COMMUTING.
- BUSINESS TRAVEL (ROAD AND AIR).
- CAPITAL GOODS (WHERE DATA IS AVAILABLE OR ESTIMATED).

#### ❖ DOWNSTREAM (4,817.834 tCO<sub>2</sub>E)

- DOWNSTREAM TRANSPORTATION AND DISTRIBUTION (OUTBOUND LOGISTICS TO CUSTOMERS).
- PROCESSING/USE OF SOLD PRODUCTS (WHERE RELEVANT, BASED ON REASONABLE ASSUMPTIONS).
- END-OF-LIFE TREATMENT OF SOLD PRODUCTS AND PACKAGING (WHERE DATA IS AVAILABLE).



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## 9. GHG DATA COLLECTION & QUALITY

### 9.1 DATA SOURCES & COLLECTION METHOD

- FUEL PURCHASE RECORDS, TANK DIP CHARTS, DG RUNNING LOGS AND BOILER LOGS.
- ELECTRICITY BILLS AND INTERNAL SUB-METER READINGS.
- MATERIAL PURCHASE RECORDS FROM ERP/PROCUREMENT SYSTEMS.
- TRANSPORT LOGS, DELIVERY CHALLANS, AND FREIGHT INVOICES.
- WASTE MANIFESTS AND DISPOSAL CERTIFICATES FROM AUTHORIZED VENDORS.
- HR RECORDS AND SURVEYS FOR EMPLOYEE COMMUTING PATTERNS.
- TRAVEL CLAIMS AND AGENCY INVOICES FOR BUSINESS TRAVEL.

### 9.2 ACCURACY, COMPLETENESS AND RELIABILITY

WHERE PRIMARY METERED DATA IS AVAILABLE (FUEL, ELECTRICITY), ACCURACY IS HIGH. FOR CERTAIN SCOPE 3 CATEGORIES, ESTIMATED OR SPEND-BASED DATA AND INDUSTRY-AVERAGE EMISSION FACTORS ARE USED, INTRODUCING HIGHER UNCERTAINTY. CROSS-CHECKS ARE PERFORMED BETWEEN UTILITY BILLS, PRODUCTION RECORDS AND FINANCIAL ACCOUNTS TO ENSURE COMPLETENESS.

### 9.3 DATA MANAGEMENT PROCEDURE & CONTROLS

- EPIIL MAINTAINS A GHG DATA COLLECTION TEMPLATE COORDINATED BY THE ESG/ENVIRONMENT FUNCTION.
- DATA OWNERS (MAINTENANCE, UTILITY, STORES, HR, FINANCE) PROVIDE VALIDATED DATA ANNUALLY.
- MANAGEMENT REVIEWS THE CONSOLIDATED INVENTORY BEFORE APPROVAL AND EXTERNAL USE.

## 10. EMISSION FACTORS

### 10.1 SOURCE OF EMISSION FACTORS

- IPCC GUIDELINES FOR NATIONAL GHG INVENTORIES (FOR FUEL COMBUSTION)
- NATIONAL/REGIONAL GRID EMISSION FACTORS (INDIA GRID FACTOR FOR ELECTRICITY)
- GHG PROTOCOL & RECOGNIZED LCI DATABASES FOR MATERIAL AND TRANSPORT FACTORS
- VENDOR/SUPPLIER-SPECIFIC DATA, WHERE AVAILABLE.



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## 10.2 UNITS AND JUSTIFICATION

- EMISSION FACTORS ARE TYPICALLY EXPRESSED AS KG CO<sub>2</sub>E PER UNIT OF ACTIVITY (E.G., KG CO<sub>2</sub>E/LITRE FUEL, KG CO<sub>2</sub>E/kWh, KG CO<sub>2</sub>E/TONNE-KM, KG CO<sub>2</sub>E/KG PRODUCT).
- PREFERENCE IS GIVEN TO COUNTRY-SPECIFIC OR SECTOR-SPECIFIC FACTORS WHERE AVAILABLE, OTHERWISE IPCC DEFAULT FACTORS ARE USED.
- GWP<sub>s</sub> USED TO CONVERT CH<sub>4</sub> AND N<sub>2</sub>O TO CO<sub>2</sub>E ARE CLEARLY DOCUMENTED IN THE APPENDIX.

## 11. CALCULATION RESULTS

### 11.1 TOTAL GHG EMISSIONS BY SCOPE

SCOPE	EMISSIONS (tCO <sub>2</sub> E)
SCOPE 1 – DIRECT	1,030.091
SCOPE 2 – INDIRECT (ENERGY)	2,244.334
SCOPE 3 – OTHER INDIRECT	13,749.270
<b>TOTAL</b>	<b>17,023.695</b>

### 11.2 EMISSION BREAKDOWN BY SOURCE (ILLUSTRATIVE)

MAJOR SOURCE CATEGORY	SCOPE	EMISSIONS (tCO <sub>2</sub> E)	SHARE OF TOTAL (%)
BOILER & FURNACE FUEL	1	-700	-4.1
DG SET FUEL	1	-250	-1.5
COMPANY VEHICLES & FUGITIVE	1	-80	-0.5
PURCHASED ELECTRICITY	2	2,244.334	-13.2
RAW MATERIALS & PACKAGING	3 UP	MAJOR SHARE	—
UPSTREAM LOGISTICS & WASTE	3 UP	BALANCE	—
DOWNSTREAM LOGISTICS & USE/END-OF-LIFE	3 DOWN	4,817.834	-28.3



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**UNIT II:** PLOT NO. 1&3, GUT NO. 189/1,189/2,191/6,6194, VILLAGE: ALONDE, TAL: VIKRAMGAD, DIST. PALGHAR (MAHARASHTRA) 401605. PALGHAR, MAHARASHTRA, INDIA.  
**UNIT III:** GLOBAL R&D UNIT, PLOT # 005, MAPUSA INDUSTRIAL ESTATE, MAPUSA, BARDEZ, GOA 403507, INDIA.

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### 11.3 EMISSION INTENSITY INDICATORS

INDICATOR	VALUE	COMMENT
TOTAL GHG / TONNE OF PRODUCT	-0.43 tCO <sub>2</sub> E/T	17,023.695 / 40,000
SCOPE 1+2 / TONNE OF PRODUCT	-0.082 tCO <sub>2</sub> E/T	(1,030.091 + 2,244.334)/40,000
TOTAL GHG / EMPLOYEE	-56.75 tCO <sub>2</sub> E	17,023.695 / 300

### 12. BASE YEAR & TREND ANALYSIS

#### 12.1 BASE YEAR SELECTION & JUSTIFICATION

EPIL HAS SELECTED FY 2024-25 AS THE BASE YEAR FOR GHG EMISSIONS BECAUSE IT REPRESENTS THE FIRST COMPREHENSIVE, COMPANY-WIDE INVENTORY PREPARED IN FULL ALIGNMENT WITH ISO 14064-1 AND THE GHG PROTOCOL. DATA AVAILABILITY AND QUALITY ARE SIGNIFICANTLY IMPROVED COMPARED TO PREVIOUS YEARS.

#### 12.2 HISTORICAL COMPARISON

AT PRESENT, HISTORICAL DATA IS LIMITED OR NOT FULLY ALIGNED WITH CURRENT METHODOLOGY. FUTURE INVENTORIES WILL COMPARE YEAR-ON-YEAR CHANGES AGAINST THIS BASE YEAR, INCLUDING ABSOLUTE EMISSIONS AND INTENSITY INDICATORS.

#### 12.3 ADJUSTMENTS FOR ORGANIZATIONAL CHANGES

ANY SIGNIFICANT CHANGES IN ORGANIZATIONAL BOUNDARIES, ACQUISITIONS, DIVESTMENTS OR STRUCTURAL CHANGES IN PRODUCTION CAPACITY WILL TRIGGER BASE YEAR RECALCULATION, CONSISTENT WITH ISO 14064-1 AND GHG PROTOCOL GUIDANCE.

### 13. UNCERTAINTY ASSESSMENT

#### 13.1 SOURCES OF UNCERTAINTY

ESTIMATION OF SCOPE 3 EMISSIONS FOR PURCHASED GOODS AND SERVICES USING SPEND-BASED OR GENERIC EMISSION FACTORS. APPROXIMATIONS IN EMPLOYEE COMMUTING PATTERNS AND BUSINESS TRAVEL WHERE DETAILED DATA IS LACKING. POSSIBLE UNDER- OR OVER-ESTIMATION OF REFRIGERANT LEAKAGE RATES FOR HVAC SYSTEMS.



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### 13.2 METHOD USED TO ESTIMATE UNCERTAINTY

FOR MAJOR CATEGORIES, RANGE-BASED ASSESSMENTS AND CROSS-CHEKS (E.G., COMPARING WITH INDUSTRY BENCHMARKS) ARE USED TO ASSESS REASONABLENESS. DATA IS CATEGORIZED QUALITATIVELY (E.G., HIGH, MEDIUM, LOW UNCERTAINTY) BASED ON DATA TYPE, MEASUREMENT METHOD AND EMISSION FACTOR QUALITY.

### 13.3 CONFIDENCE LEVEL

SCOPE 1 AND 2: GENERALLY HIGH CONFIDENCE DUE TO METERED AND INVOICE-BASED DATA. MEDIUM TO LOW CONFIDENCE, DEPENDING ON CATEGORY, DUE TO HIGHER RELIANCE ON ESTIMATES AND SECONDARY DATA.

## 14. DATA QUALITY ASSESSMENT

### 14.1 QUALITY RATING FOR ACTIVITY DATA & EMISSION FACTORS

#### ❖ ACTIVITY DATA QUALITY:

- A – METERED, DIRECTLY MEASURED DATA (FUEL, ELECTRICITY)
- B – SUPPLIER INVOICES, VERIFIED QUANTITIES
- C – ESTIMATES, SURVEY-BASED, OR SPEND-BASED DATA

#### ❖ EMISSION FACTOR QUALITY:

- 1 – RECENT, COUNTRY-SPECIFIC, AUTHORITATIVE SOURCE
- 2 – SECTORAL OR REGIONAL DEFAULTS
- 3 – GENERIC GLOBAL DEFAULTS OR PROXIES

### 14.2 CROSS-CHEKS AND VALIDATIONS

CROSS-CHECKING TOTAL FUEL AND POWER CONSUMPTION WITH COST AND PRODUCTION TRENDS. ENSURING NO DOUBLE COUNTING BETWEEN SCOPES AND CATEGORIES. REVIEW BY ESG/ENVIRONMENT MANAGER AND INTERNAL AUDIT (WHERE APPLICABLE).

## 15. GHG REDUCTION INITIATIVES

### 15.1 ENERGY EFFICIENCY PROGRAMS

UPGRADATION OF BOILERS AND FURNACES WITH BETTER COMBUSTION CONTROL & INSULATION. VARIABLE FREQUENCY DRIVES (VFDs) FOR PUMPS AND FANS. OPTIMIZATION OF COMPRESSED AIR AND CHILLED WATER SYSTEMS.



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## 15.2 WASTE & WATER REDUCTION MEASURES

IMPROVED PROCESS CONTROL TO REDUCE OFF-SPEC BATCHES AND REWORK. ENHANCED WASTE SEGREGATION AND RECYCLING, REDUCING WASTE-RELATED SCOPE 3 EMISSIONS. WATER CONSERVATION THROUGH RECYCLING AND REUSE IN NON-CRITICAL APPLICATIONS.

## 15.3 FUTURE SUSTAINABILITY GOALS (ILLUSTRATIVE)

SET A TARGET TO REDUCE SCOPE 1+2 GHG INTENSITY PER TONNE OF PRODUCT BY 15-20% BY 2030 FROM THE 2024-25 BASE YEAR. INCREASE RENEWABLE OR LOW-CARBON ELECTRICITY SHARE (E.G., ROOFTOP SOLAR, GREEN POWER PURCHASE) BY A DEFINED PERCENTAGE BY 2030. ENGAGE KEY SUPPLIERS TO REDUCE UPSTREAM GHG INTENSITY AND EXPLORE LOW-CARBON RAW MATERIALS.

## 17. CONCLUSIONS

EPIL'S TOTAL GHG EMISSIONS FOR THE REPORTING YEAR ARE 17,023.695 tCO<sub>2</sub>E, WITH SCOPE 3 EMISSIONS REPRESENTING THE LARGEST SHARE DUE TO UPSTREAM MATERIALS AND LOGISTICS. SCOPE 1 AND 2 EMISSIONS PRIMARILY ARISE FROM FUEL AND ELECTRICITY CONSUMPTION IN CORE MANUFACTURING AND UTILITY OPERATIONS.