GREEN SODA ASH - SUSTAINABLE STEPS IN TFL

Tuticorin Alkali Chemicals and Fertilizers Limited

COMPANY PROFILE

Established during 1971

Production established during Nov 1982

Process : Dual Solvay Process

Technology : Hitachi Zosen

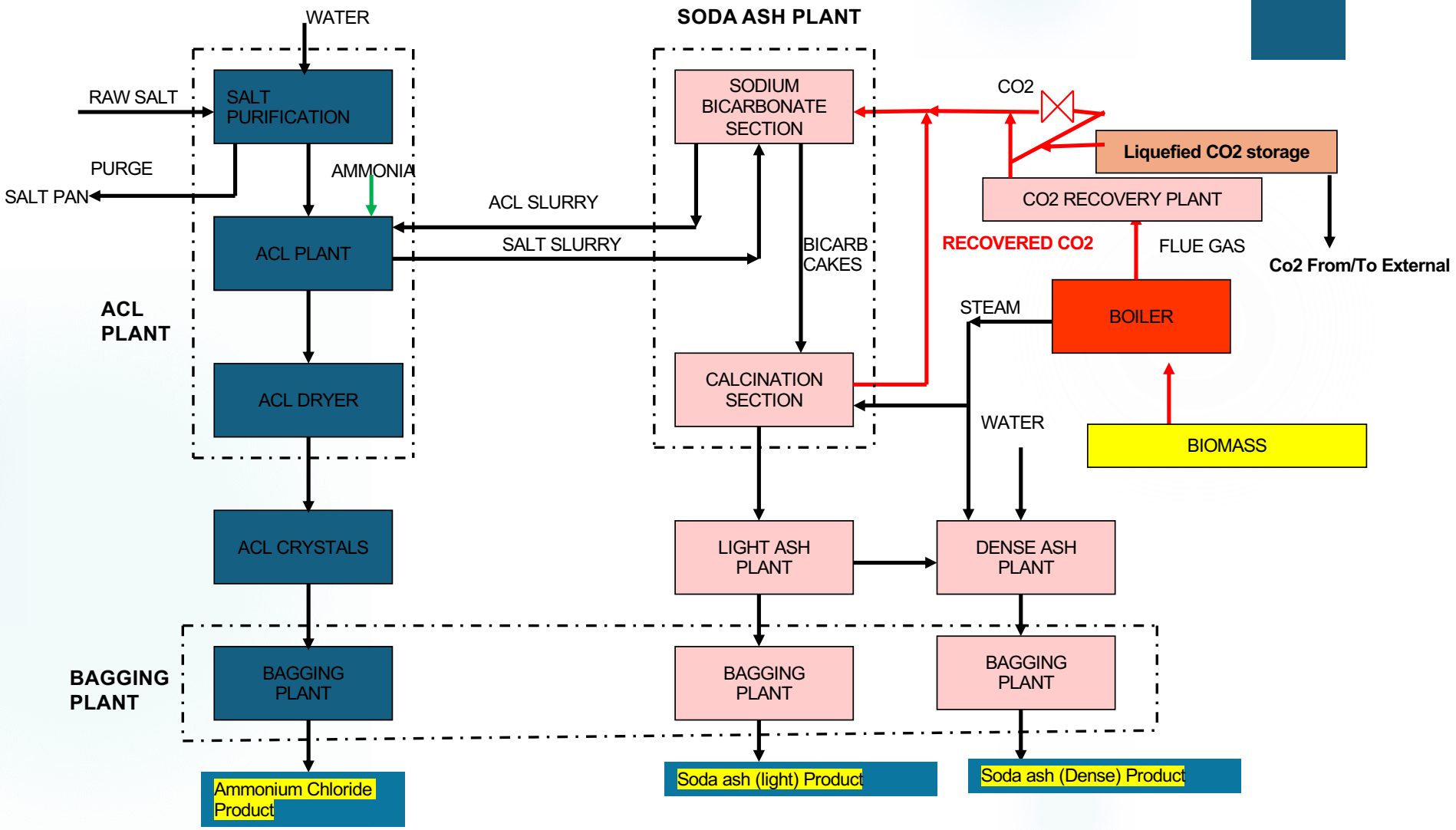
Soda Ash
100,000 MTPA

Ammonium Chloride–
85000 MTPA

TO DETERGENT INDUSTRIES

TO AGRI/INDUSTRIES

PROCESS AT A GLANCE - DUAL SOLVAY - **ZLD**



1982	• TFL started its commercial production
2016	• First CO2 capturing plant from coal fired flue gas in India
2018	• Desalination plant for conserve natural resource and enhance salt productivity
2019	• Launched EPR (Extended producer responsibilty) compliance
2024	• Elimination of fossil fuel usage – Conversion boiler to Bio mass based one
2023-24	• Scope 1- 24,000 MT fossil based CO2 and **9000 Biogenic Co2** captured and utilised
2025-26	• Scop1& Scope 2- 100% scope one emission reduction & TARGETING ZERO Scope 2 emission

STRATEGIES FOR SUSTAINABLE BUSINESS

2 X 25 TPH BIOMASS BOILER

174MTPD BIOGENIC CARBON CAPTURE PLANT

3 MLD DE-SALINATION PLANT

1.25MW WIND FARM

Sustainability initiatives

174MTPD CARBON CAPTURE PLANT

5 x 225kW WINDFARM

Energy recovery through 700 KVA IG turbine

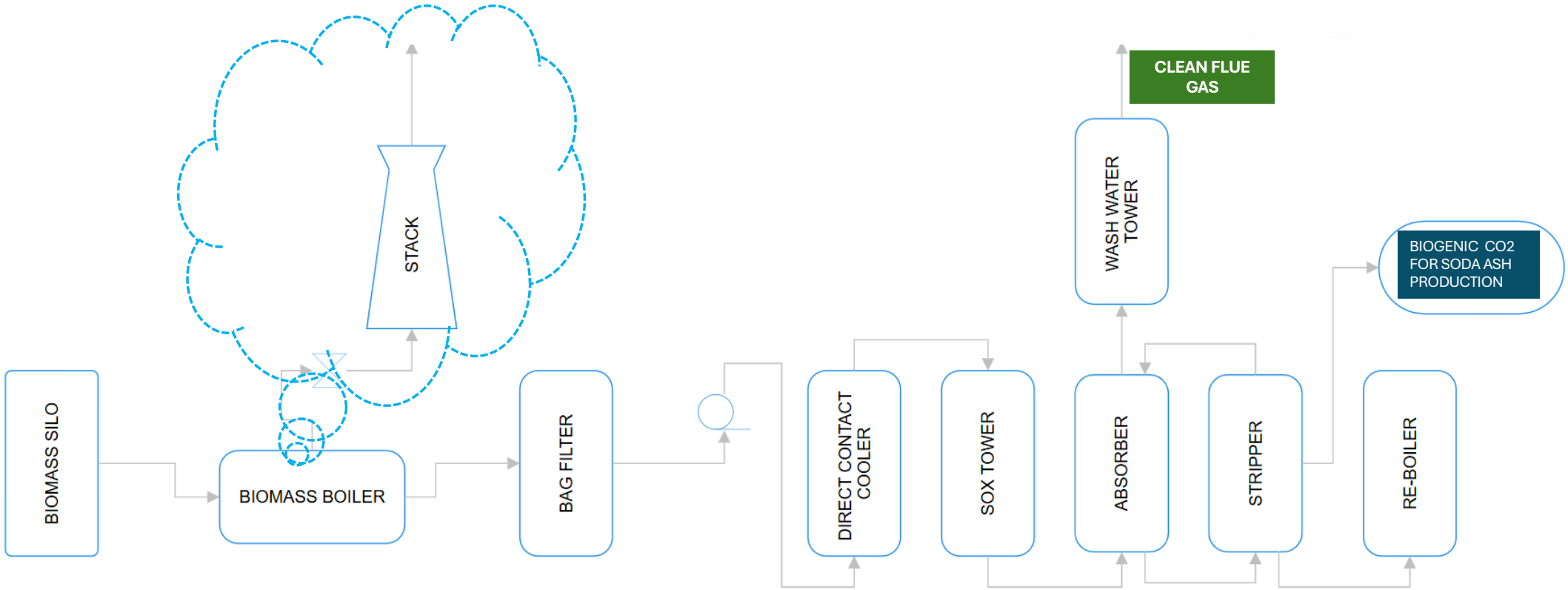
Group’s Initiative to capture solar energy with water conservation

- ✓ The state-of-the-art India’s first and largest floating solar power plant with an installed capacity of 22 MW AC spread over an area of 15.6 hectares
- ✓ The power generated from the plant has offset 18,686 Tons of CO_2 emissions a year.
- ✓ The floating solar power plant provides higher yield than traditional land-based solar plants enhancing energy generation and curtails water evaporation ~2,500,000 Litres/Day

CARBON CAPTURE PLANT

- ✓Installed a 174 MTPD Co2 capture plant in the year 2016 with Indigenous technology
- ✓Co2 capture from boiler flue gas and used as raw material for Soda Ash production
- ✓**TFL is the first industry in India with Low Carbon Footprint by recovering CO2 from boiler flue gas.**

CO_2 CAPTURE PROCESS FLOW DIAGRAM



Elimination of Fossil Fuel in production - BIOMASS conversion

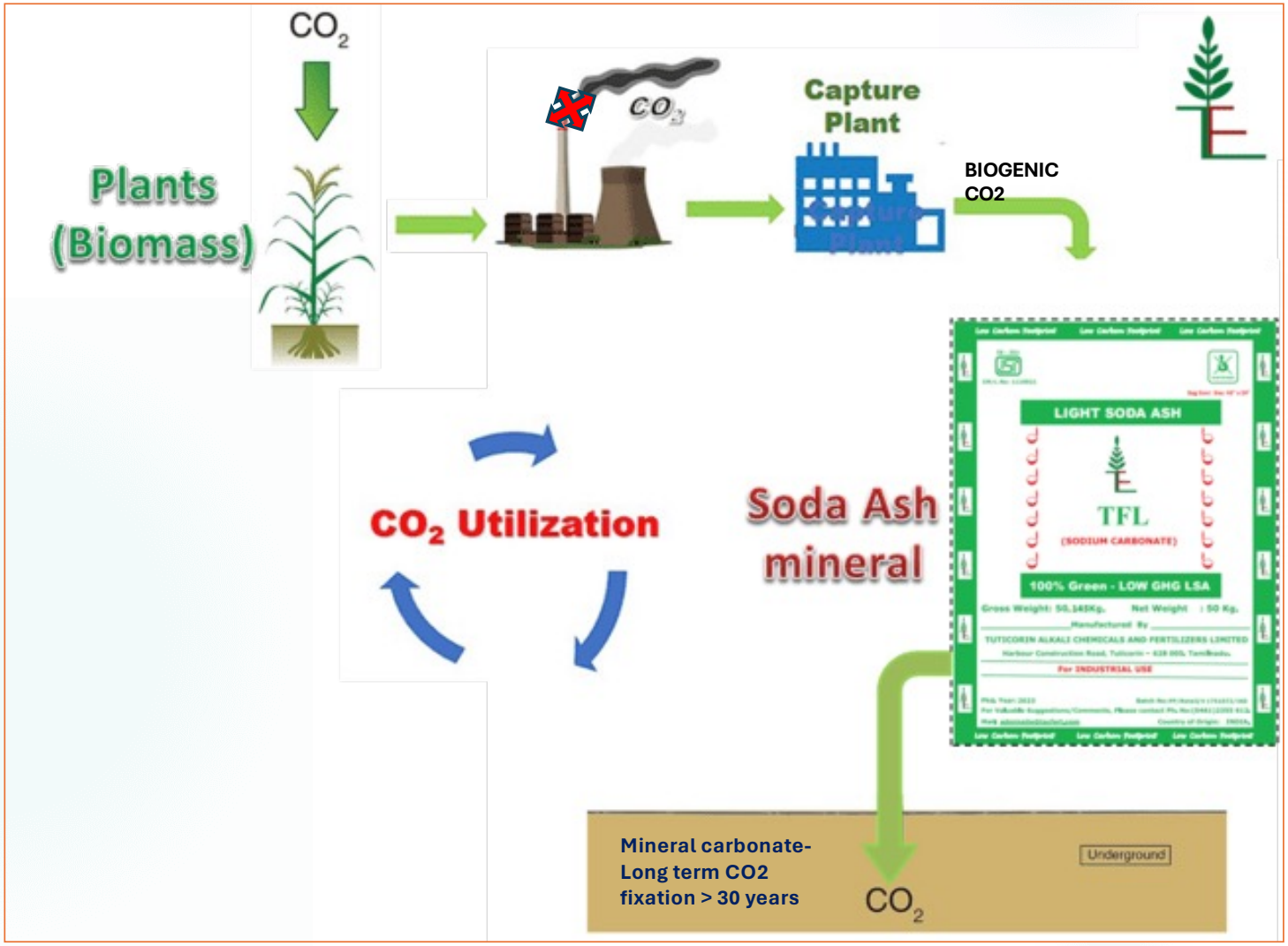
- ✓As green initiative, the conventional coal fired boiler was revamped to biomass feedstock
- ✓CO_2 generated from biomass boiler is biogenic in nature.
- ✓The prime fuel **is Julie Flora and other / Agri wastes (**Ground nut shells, tamarind shells, matchstick waste, and also corporation biowastes)

BIOMASS SILO / FEEDING AND CHIPPER SYSTEM

Energy conservation - AIR PREHEATER FOR BIOMASS BOILER

- ✓ As part of biomass conversion, we installed an Air pre-heater in our boiler
- ✓ Improvement in thermal efficiency increase by 3%

Green product – flow chart



130KL LIQUID CO_2 STORAGE FACILITY

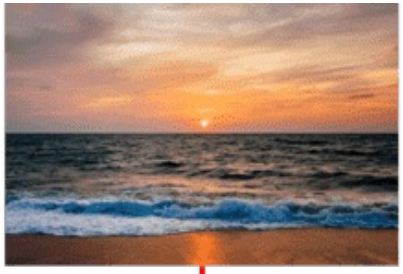
- ✓During October 2024, liquid CO2 storage system of 130 KL was erected
- ✓This has helped in reducing emissions from other emitting companies too

Sustainability – Fresh Water Conservation with Salt maximization

3MLD DESALINATION PLANT

345 ACRES OF SALT PANS

Salt recovery from RO plant Reject



Sea Water Intake

- Capacity – 3 MLD
- Permeate water used for plant process

TFL Salt Pan

Tapping in existing sea water line

Desalination Plant

Reject water send to TFL salt pan

Before Desalination Plant

After Desalination Plant

PLASTIC WASTE REDUCTION

- ✓Recycling 900Kg product bags to a minimum of 7 cycles
- ✓Substantial reduction in in plastic waste generation.

Adoption of Latest Sustainable Technology

- Targeted Capex to -275,000 MTPA
- **Zero carbon footprint soda ash**
- **limination of Lime**
- Integrated with latest technology equipment
  - Externally Cooled Carbonation Towers
  - Self Recycling Calciner
  - Horizontal Belt Filter
  - Fluidized Bed Drier for ACL
  - Target period of commissioning March-2026

GLIMPSE OF NEW EQUIPMENT

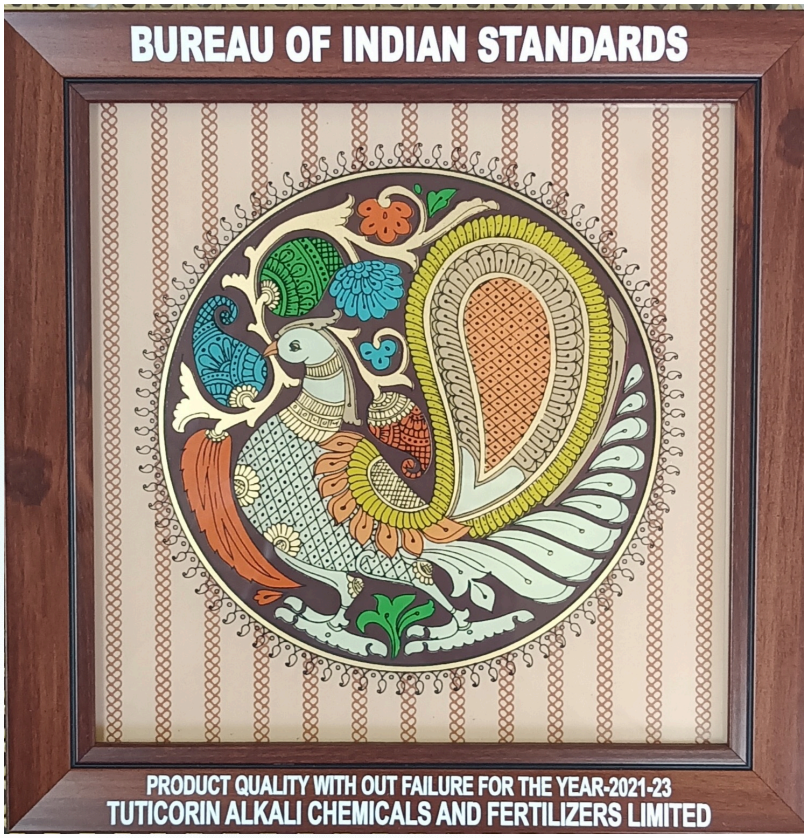
TFL SUSTAINABILITY – ROAD MAP

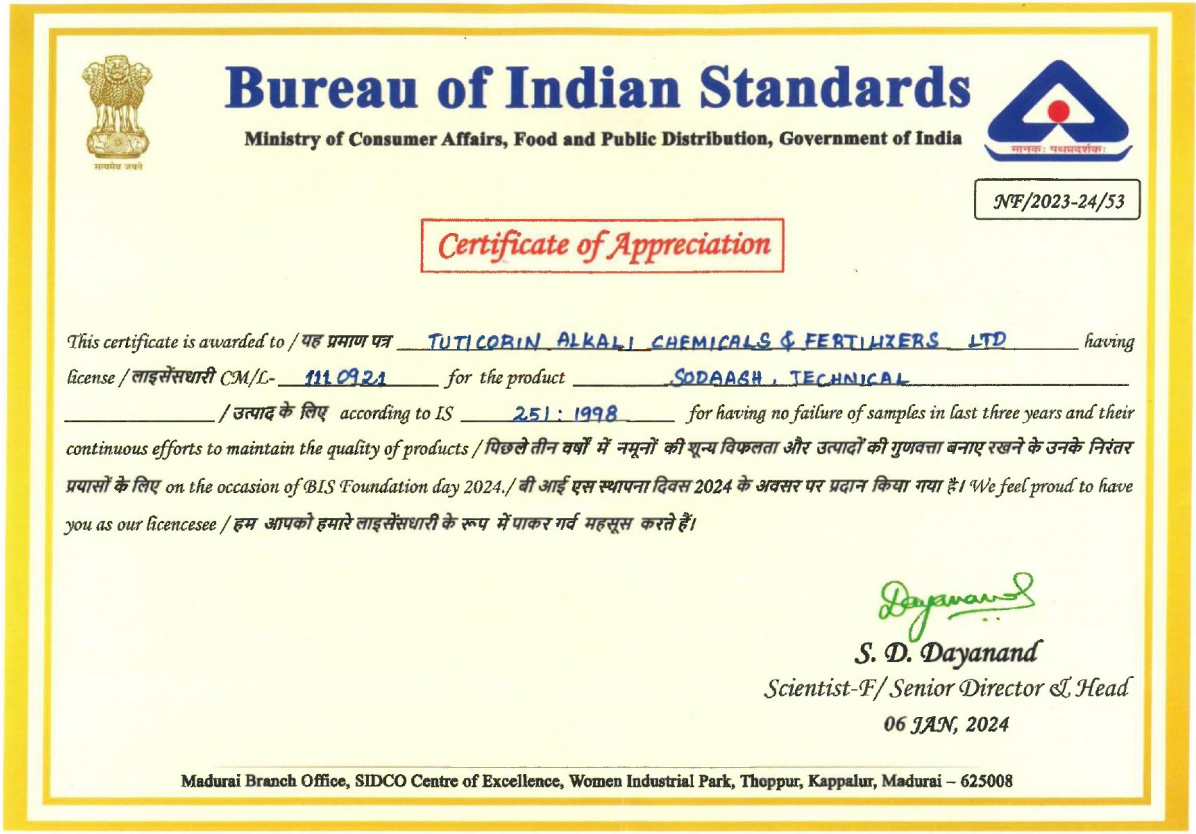
PCF SUMMARY						
YEAR	LSA OVERALL – GHG emission MT/MT of Product				GHG with Biogenic co2 capture	
	Scope 1	Scope2	Net GHG emission	Net reduction %	Biogenic CO2	NET GHG
Base year2022-23 (Gate to Gate)	0.75	0.40	1.15			1.15
2023-24*	0.69	0.24	0.93	17 %	(0.11)	0.82
2024-Feb'25*(full Biomass)	0.03	0.31	0.34	60%	(0.40)	(0.06)

✓ Targeting to reduce Scope 2 Emissions by investing in Green Infra to get green power

Our Mission	LSA OVERALL – GHG emission MT/MT of Product- (By Oct-2025)		
	Scope 1	Scope2	Net GHG emission
Expected	<0.05	<0.05	Negative with Biogenic CO2 capturing

TFL – Manufacturing quality product





Bureau of Indian Standards

Ministry of Consumer Affairs, Food and Public Distribution, Government of India

NF/2023-24/53

Certificate of Appreciation

This certificate is awarded to / यह प्रमाण पत्र TUTICORIN ALKALI CHEMICALS & FERTILIZERS LTD having license / लाइसेंसधारी CM/L- 111092 for the product SODAASH, TECHNICAL / उत्पाद के लिए according to IS 251 : 1998 for having no failure of samples in last three years and their continuous efforts to maintain the quality of products / पिछले तीन वर्षों में नमूनों की शून्य विफलता और उत्पादों की गुणवत्ता बनाए रखने के उनके निरंतर प्रयासों के लिए on the occasion of BIS Foundation day 2024./ बी आई एस स्थापना दिवस 2024 के अवसर पर प्रदान किया गया है। We feel proud to have you as our licencesee / हम आपको हमारे लाइसेंसधारी के रूप में पाकर गर्व महसूस करते हैं।

S. D. Dayanand
Scientist-F/ Senior Director & Head
06 JAN, 2024

Madurai Branch Office, SIDCO Centre of Excellence, Women Industrial Park, Thoppur, Kappalur, Madurai – 625008

TFL – CERTIFICATIONS

CERTIFICATE
OF APPRECIATION

Congratulations to

TUTICORIN ALKALI CHEMICALS AND FERTILIZERS LIMITED

for their voluntary efforts to "Juliflora Eradication & Support in Utilization of Biowaste" generated at Tuticorin.

P.GEETHA JEEVAN
MINISTER FOR SOCIAL WELFARE
AND WOMEN EMPOWERMENT

DATE: 14.02.2025

Sustainability – Home Care Award – Unilever

Let's Make our World a Greener Place

Thank you