

Test Report

Report Code: A20230131-010

Issue Date: 31.01.2023

Issued To: Greenfield Project Capacity 150 KLD Grain based Ethanol,
Plant along with of 4.5 MW Co-generation, Power Plant,
by M/s Swadeshi Fuels LLP, Industrial, Plot No. NS G-07
Industrial Area, Tehsil Nawanagar, District-Buxar, Bihar.

Analysis Duration: 04.01.2023 to 30.01.2023

Sample Description: Ambient Air

RESULTS

(Ambient Air Quality Analysis)

SAMPLING DETAILS

Sampling Location	: Project Site
Sample Collected by	: Mr. Rahul Singh
Sampling Protocol	: GRC/LAB/STP/AIR/01
Weather Condition	: Clear Sky
Sampling Duration	: 24 Hours
Sampling Duration for CO	: 1 Hour
Sampler Location w.r.t. Height	: 4.0 Meter above Ground Level
Sample Packing & Marking	: Plastic Bottle/ Zip Polybag & SFL /JAN /A001-008

S. No.	Date	Test Parameters				
		Particulate Matter (PM ₁₀); µg/m ³	Particulate Matter (PM _{2.5}); µg/m ³	Sulphur Dioxide (SO ₂); µg/m ³	Nitrogen Dioxide (NO ₂); µg/m ³	Carbon Monoxide, (CO) µg/m ³
		IS 5182 (Part 23):2006 (RA 2017)	GRC-LAB/STP-AIR/02; 2018/ IS 5182 (Part 24):2019	IS 5182 (Part 2):2001 (RA 2017)	IS 5182 (Part 6):2006 (RA 2017)	IS 5182 (Part 10):1999 (RA 2014)
1	02.01.2023	72.9	38.4	7.7	14.2	230
2	06.01.2023	73.4	40.6	7.3	11.9	200
3	09.01.2023	71.6	37.7	8.5	9.9	220
4	12.01.2023	66.4	34.9	7.1	13.1	270
5	16.01.2023	68.9	35.7	7.2	9.8	180
6	19.01.2023	73.8	40.2	7.3	10.6	260
7	23.01.2023	64.6	34.4	7.6	11.3	230
8	27.01.2023	68.4	36.5	7.3	12.6	210

****End of Report****

Narinder Singh
(Sr. Chemist)
Authorized Signatory
(Seal & Signature)



Date: 02.07.2018



GRC India

GRC INDIA TRAINING & ANALYTICAL LABORATORY

(A unit of Grass Roots Research & Creation India (P) Ltd.)

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 (OH&S) Certified
NABL Accredited Laboratory (A Constituent Board of QCI), TC 7501 (Chemical & Biological)
Recognized by Ministry of Environment, Forest & Climate Change (MoEF&CC, GOI),
under the E (P) Act, 1986

Head Office: F-375, Sector-63, Noida, Gautam Budh Nagar, U.P - 201 301

Phone No.: 0120 - 4044630, 4044660, 4323120, Fax: 0120 - 2406519, 0120 - 4044675

Website: <https://www.grc-india.com> E-mail: lab@grc-india.com; info@grc-india.com



Test Report

Report Code: N20230110-010

Issue Date: 10.01.2023

Issued To: Greenfield Project Capacity 150 KLD Grain based,
Ethanol Plant along with 4.5 MW.Co-generation, Power,
plant by M/s Swadeshi Fuels LLP. Industrial Plot No. NS
G-07, Industrial Area, Tehsil Nawanagar, District-Buxar, Bihar.

Data Received on: 09.01.2023

Sample Description: Ambient Noise

RESULTS

(Ambient Noise Level)

SAMPLING DETAILS

Date of Monitoring : 07.01.2023
Monitoring Done by : Mr. Rahul Singh
Sampling Protocol : GRC-LAB/STP-NOISE/01; 2018
Weather Condition : Clear Sky
Monitoring Duration : 24 Hours

S. No.	LOCATION	ZONE	Standard Limits (Noise Pollution Regulation & Control, Rules 2000); dB (A) Leq,		Observed Value dB (A), Leq	
			Day Time*	Night Time**	Day Time*	Night Time**
1.	Project Site	Industrial Area	75	70	48.3	35.1
* Day Time		6.00 A.M. to 10.00 P.M				
**Night Time		10.00 P.M. to 6.00 A.M.				

****End of Report****

Narinder Singh
NABL Chemist
Authorized Signatory
(Seal & Signature)

GRC-LAB/QF-039

Rev.00

Note: 1.The results indicated only refer to the tested samples and listed parameters and do not endorse any product.

2. This certificate shall not be reproduced wholly or in part without prior written consent of the laboratory.

3. This certificate shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

4. The samples received shall be destroyed after 30 days from the date of issue of the report unless specified otherwise and sample for biological testing will be destroyed after 7 days of testing.

Test Report

Report Code: S20230130-010

Issued To: Greenfield Project Capacity 150 KLD Grain based,
Ethanol Plant along with 4.5 MW.Co-generation, Power,
Plant by M/s Swadeshi Fuels LLP. Industrial Plot No. NS
G-07, Industrial Area, Tehsil Nawanagar, District-Buxar, Bihar

Issue Date: 30.01.2023

Sample Received on: 16.01.2023

Analysis Duration: 17.01.2023 to 28.01.2023

Sample Description: Soil Sample

RESULTS

(Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 14.01.2023
Sampling Location	: Project Site
Sample Collected by	: Mr. Rahul Singh
Sampling Protocol	: GRC-LAB/STP-SOIL/03; 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; SFL/JAN/SQ-01

S. No.	Parameters	Units	Results	Test Method
1.	Texture	-	Sandy Clay Loam	GRC-LAB/STP-SOIL/02; 2018
2.	Particle Size Distribution	-		IS 2720 (Part-4): 1985, RA 2015
	Sand	%	61.8	
	Silt	%	13.5	
	Clay	%	24.7	
3.	pH (1:2 Suspension)	-	7.39	IS 2720 (Part-26): 1987, RA 2016
4.	Electrical Conductivity (1:2 Suspension)	$\mu\text{S/cm}$	284	IS 14767: 2000, RA 2016
5.	Moisture Content	%	9.1	IS 14767: 2000, RA 2016
6.	Cation Exchange Capacity (CEC)	meq/100 gm	14.0	IS 2720 (Part-24): 1976, RA 2015
7.	Available Potassium (as K)	mg/kg	64	GRC-LAB/STP-SOIL/04; 2018
8.	Exchangeable Sodium (as Na)	mg/kg	117	GRC-LAB/STP-SOIL/03; 2018
9.	Exchangeable Calcium (as Ca)	mg/kg	2143	GRC-LAB/STP-SOIL/05; 2018
10.	Exchangeable Magnesium (as Mg)	mg/kg	316	GRC-LAB/STP-SOIL/06; 2018
11.	Sodium Absorption Ratio (SAR)	-	0.62	GRC-LAB/STP-SOIL/10; 2018
12.	Organic Carbon	%	0.88	GRC/LAB/STP/SOIL/08 dt: 2018
13.	Total Nitrogen (as N)	mg/kg	36	GRC-LAB/STP-SOIL/09; 2018
14.	Nitrate (as NO_3)	mg/kg	2.1	IS 14684: 1999 RA 2014
15.	Total Phosphate (as PO_4)	mg/kg	6.3	GRC-LAB/STP-SOIL/08; 2018

Narendra Singh
(Sr. Chemist)
Authorized Signatory
Seal & Signature

Test Report

Report Code: S20230130-010

Issue Date: 30.01.2023

16.	Iron (as Fe)	mg/kg	1.7	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017
17.	Zinc (as Zn)	mg/kg	1.1	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017
18.	Copper (as Cu)	mg/kg	0.8	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017
19.	Boron (as B)	mg/kg	1.2	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017
20.	Manganese (as Mn)	mg/kg	2.8	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017
21.	Water Holding Capacity	%	32.4	GRC-LAB/STP-SOIL/11; 2020
22.	Permeability	cm/hr	2.1	IS 2720 (Part-17): 1986, RA 2016
23.	Porosity	%	28.6	GRC-LAB/STP-SOIL/12; 2020
24.	Bulk Density	gm/cc	1.34	GRC-LAB/STP-SOIL/13; 2020

****End of Report****

Narendra Singh
(Sr. Chemist)
Authorized Signatory
(Seal & Signature)



Test Report

Report Code: W20230130-010(A)

Issue Date: 30.01.2023

Issued To: Greenfield Project Capacity 150 KLD Grain based,
Ethanol Plant along with 4.5 MW.Co-generation, Power,
Plant by M/s Swadeshi Fuels LLP. Industrial Plot No. NS
G-07, Industrial Area, Tehsil Nawanagar, District-Buxar, Bihar.

Sample Received on: 16.01.2023
Analysis Duration: 17.01.2023 to 28.01.2023

Sample Description: Ground Water

RESULTS

Water Quality Analysis

SAMPLING DETAILS

Date of Sampling	: 14.01.2023
Sampling Location	: Near Project site
Sample Collected by	: Mr. Narendra Singh
Sampling Protocol	: IS-3025(Pt-1)-1987 Reaff: 2003
Weather Condition	: Clear Sky
Sample Quantity	: 5 L
Sample Packing & Mark	: Plastic Bottle & SFL/JAN/GW-01

S. No.	Parameters	Units	Limits (as per IS:10500-2012)		Results	Test Method
			Desirable Limit	Permissible Limit		
1	Color	Hazen	5	15	<5	IS 3025 (Part-4): 1983, RA 2017
2	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Part-5): 2018
3	Turbidity	NTU	1	5	<1	IS 3025 (Part-10): 1984, RA 2017
4	pH Value	-	6.5-8.5	No Relaxation	7.78	IS 3025 (Part-11): 1983, RA 2017
5	Total Dissolved Solids	mg/l	500	2000	410	IS 3025 (Part-16): 1984, RA 2017
6	Total Hardness (as CaCO ₃)	mg/l	200	600	227	IS 3025 (Part-21): 2009, RA 2019
7	Total Alkalinity (as CaCO ₃)	mg/l	200	600	189	IS 3025 (Part-23): 1986, RA 2019
8	Chlorides (as Cl)	mg/l	250	1000	63	IS 3025 (Part-32): 1988, RA 2019
9	Fluoride (as F)	mg/l	1	1.5	0.5	4500F-D, APHA 23 rd Ed. 2017
10	Calcium (as Ca ²⁺)	mg/l	75	200	55	IS 3025 (Part-40): 1991, RA 2019
11	Magnesium (as Mg ²⁺)	mg/l	30	100	22	IS 3025 (Part-46): 1994, RA 2019
12	Sulphate (as SO ₄)	mg/l	200	400	56	IS 3025 (Part-24): 1986, RA 2019
13	Nitrate (as NO ₃)	mg/l	45	No Relaxation	17	IS 3025 (Part-34): 1988, RA 2019
14	Iron (as Fe)	mg/l	1	No Relaxation	0.33	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
15	Aluminum (as Al)	mg/l	0.03	0.2	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)

Rahul Singh (Sr. Chemist)
Authorized Signatory
(Seal & Signature)

Test Report

Report Code: W20230130-010(A)

Issue Date: 30.01.2023

16	Copper (as Cu)	mg/l	0.05	1.5	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
17	Manganese (as Mn)	mg/l	0.1	0.3	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
18	Boron (as B)	mg/l	0.5	1	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
19	Zinc (as Zn)	mg/l	5	15	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
20	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
21	Arsenic (as As)	mg/l	0.01	0.05	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
22	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
23	Total Chromium (as Cr ³⁺)	mg/l	0.05	No Relaxation	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
24	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.01	IS 3025 (Part-27): 1986, RA 2019
25	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
26	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
27	Nickel (as Ni)	mg/l	0.02	No Relaxation	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	0.001	0.002	<0.001	IS 3025 (Part-43): 1992, RA 2019
29	Anionic Detergent (as MBAS)	mg/l	0.2	1	<0.01	IS 3025 (Part-68): 2019
30	Silica (as SiO ₂)	mg/l	--	--	8.9	4500-SiO ₂ (C/D), APHA 23 rd Ed. 2017
31	Phosphate (as PO ₄)	mg/l	--	--	1.6	4500-P D, APHA 23 rd Ed. 2017
32	Specific Conductivity	μS/cm	-	-	620	IS 3025 (Part-14): 1984, RA 2019

**** End of Report ****

Rahul Singh (Sr. Chemist)
Authorized Signatory
(Seal & Signature)

Test Report

Report Code: W20230130-010(B)

Issue Date: 30.01.2023

Issued To: Greenfield Project Capacity 150 KLD Grain based,
Ethanol Plant along with 4.5 MW.Co-generation, Power,
Plant by M/s Swadeshi Fuels LLP. Industrial Plot No. NS
G-07, Industrial Area, Tehsil Nawanagar, District-Buxar, Bihar..

Sample Received on: 16.01.2023
Analysis Duration: 17.01.2023 to 21.01.2023

Sample Description: Ground Water

RESULTS

Water Quality Analysis

SAMPLING DETAILS

Date of Sampling	: 14.01.2023
Sampling Location	: Near Project site
Sample Collected by	: Mr. Narendra Singh
Sampling Protocol	: IS-1622- 1981(Reaff: 2003)
Weather Condition	: Clear Sky
Sample Quantity	: 500 ml
Sample Packing & Mark	: Glass Bottle & SFL/JAN/GW-01

S. No.	Parameters	Units	Limits (as per IS:10500-2012)	Results	Test Method
Bacteriological Parameters					
1	Total Coliform	MPN/100ml	shall not be detectable	Not Detected (<2)	IS : 1622-1981 (Reaff.2003)
2	E.coli	E.coli /100ml	shall not be detectable	Absent (<2)	IS : 1622-1981 (Reaff.2003)

**** End of Report ****

Ajay Kumar Sharma
(Quality Manager)
Authorized Signatory
(Seal & Signature)

Test Report

Report Code: SW20230130-006(A)

Issue Date: 30.01.2023

Issued To: Greenfield Project Capacity 150 KLD Grain based,
Ethanol Plant along with 4.5 MW.Co-generation, Power,
Plant by M/s Swadeshi Fuels LLP. Industrial Plot No. NS
G-07, Industrial Area, Tehsil Nawanagar, District-Buxar, Bihar.

Sample Received on: 16.01.2023
Analysis Duration: 17.01.2023 to 28.01.2023

Sample Description: Surface Water

RESULTS (Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 14.01.2023
Sampling Location : Thora River
Sample Collected by : Mr. Narendra Singh
Sampling Protocol : IS 3025(Part-1):1987, RA 2019
Weather Condition : Clear Sky
Sample Quantity : 5 L
Sample Packing & Marking : Plastic Bottle & SFL/JAN/SW-01

S. No.	Parameters	Units	Results	Test Method
1.	Color	Hazen	<5	IS 3025 (Part-4): 1983, RA 2017
2.	Turbidity	NTU	10	IS 3025 (Part-10): 1984, RA 2017
3.	Temperature	⁰ C	19.6	IS 3025(Part-9): 1984, RA 2017
4.	pH Value	-	7.29	IS 3025 (Part-11): 1983, RA 2017
5.	Dissolved Oxygen	mg/l	6.5	IS 3025 (Part-38): 1989, RA 2019
6.	Biochemical Oxygen Demand (BOD) 3 Days at 27 ⁰ C	mg/l	2.3	IS 3025 (Part-44): 1993, RA 2019
7.	Chemical Oxygen Demand	mg/l	9.6	IS 3025 (Part-58): 2006 RA 2017
8.	Total Dissolved Solids	mg/l	310	IS 3025 (Part-16): 1984, RA 2017
9.	Total Hardness (as CaCO ₃)	mg/l	186	IS 3025 (Part-21): 2009, RA 2019
10.	Total Alkalinity (as CaCO ₃)	mg/l	123	IS 3025 (Part-23): 1986, RA 2019
11.	Chlorides (as Cl)	mg/l	54	IS 3025 (Part-32): 1988, RA 2019
12.	Fluoride (as F ⁻)	mg/l	0.3	4500F-D, APHA 23 rd Ed. 2017
13.	Calcium (as Ca ²⁺)	mg/l	45	IS 3025 (Part-40): 1991, RA 2019
14.	Magnesium (as Mg ²⁺)	mg/l	18	IS 3025 (Part-46): 1994, RA 2019
15.	Sodium (as Na ⁺)	mg/l	28	IS 3025 (Part-45): 1993, RA 2019
16.	Potassium (as K ⁺)	mg/l	2.3	IS 3025 (Part-45): 1993, RA 2019
17.	Sulphate (as SO ₄)	mg/l	45	IS 3025 (Part-24): 1986, RA 2019
18.	Total Kjeldahl Nitrogen (as N)	mg/l	1.6	IS 3025 (Part-34): 1988, RA 2019

Rahul Singh
(Sr. Chemist)
Authorized Signatory
(Seal & Signature)

Test Report

Report Code: SW20230130-006(A)

Issue Date: 30.01.2023

19.	Free Ammonia (as NH ₃)	mg/l	0.2	IS 3025 (Part-34): 1988, RA 2019
20.	Nitrate (as NO ₃)	mg/l	1.6	IS 3025 (Part-34): 1988, RA 2019
21.	Silica (as SiO ₂)	mg/l	8.9	4500-SiO ₂ (C/D), APHA 23 rd Ed. 2017
22.	Phosphate (as PO ₄)	mg/l	2.1	4500-P D, APHA 23 rd Ed. 2017
23.	Iron (as Fe)	mg/l	0.6	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
24.	Aluminum (as Al)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
25.	Boron (as B)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
26.	Copper (as Cu)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
27.	Manganese (as Mn)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
28.	Zinc (as Zn)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
29.	Selenium (as Se)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
30.	Arsenic (as As)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
31.	Cadmium (as Cd)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
32.	Total Chromium (as Cr ³⁺)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
33.	Cyanide (as CN)	mg/l	<0.01	IS 3025 (Part-27): 1986, RA 2019
34.	Lead (as Pb)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
35.	Mercury (as Hg)	mg/l	<0.001	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
36.	Nickel (as Ni)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
37.	Total Suspended Solids	mg/l	23.5	IS 3025 (Part-17): 1984, RA 2017
38.	Sodium Adsorption Ratio	-	0.70	IS 11624: 2019
39.	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	<0.001	IS 3025 (Part-43): 1992, RA 2019
40.	Anionic Detergent (as MBAS)	mg/l	<0.01	IS 3025 (Part-68): 2019
41.	Specific Conductivity	μS/cm	460	IS 3025 (Part-14): 1984, RA 2019

**** End of Report ****


Rahul Singh
(Sr. Chemist)
Authorized Signatory
(Seal & Signature)

Test Report

Report Code: SW20230130-006(B)

Issue Date: 30.01.2023

Issued To: Greenfield Project Capacity 150 KLD Grain based,
Ethanol Plant along with 4.5 MW.Co-generation, Power,
plant by M/s Swadeshi Fuels LLP, Industrial Plot No. NS
G-07, Industrial Area, Tehsil Nawanagar, District-Buxar, Bihar.

Sample Received on: 16.01.2023
Analysis Duration: 17.01.2023 to 21.01.2023

Sample Description: Surface Water

RESULTS (Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 07.11.2022
Sampling Location : Thora River
Sample Collected by : Mr. Narendra Singh
Sampling Protocol : IS 1622:1981, RA 2019
Weather Condition : Clear Sky
Sample Quantity : 0.5 L
Sample Packing & Marking : Glass Bottle & SFL/JAN/SW-01

S. No.	Parameters	Units	Results	Test Method
1.	Total Coliform Organism	MPN/100ml	130	IS 1622: 1981, RA 2019
2.	Faecal Coliform Organism	MPN/100ml	23	IS 1622: 1981, RA 2019

**** End of Report ****

Ajay Kt. Sharma
(Quality Manager)
Authorized Signatory
(Seal & Signature)