



ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in, eles.ranchi@gmail.com
Phone no.: 0651-2290103
Website : www.elespl.co.in



TEST REPORT

Test Report No. : ELES/RNC/2023/3844	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002517F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3562
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Mines Office Near VTC (Core Zone)
Plant Status	: Operational	Sampling Date	: 26.09.2023 to 27.09.2023
Period of Analysis	: 30.09.2023 to 09.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 27	2	Barometric Pressure (mmHg) : 745
3	Relative Humidity (%) : 66	4	Weather Condition : Partly Cloudy
5	Longitude : 84°04'48.08"E	6	Latitude : 24°07'41.61"N

NABL Accredited


Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	53	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	28	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	8.5	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	21.1	80 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)


Reviewed by

****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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TEST REPORT

Test Report No. : ELES/RNC/2023/3845	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002518F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3563
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Near DG Stack (Core Zone)
Plant Status	: Operational	Sampling Date	: 26.09.2023 to 27.09.2023
Period of Analysis	: 30.09.2023 to 09.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 745
3	Relative Humidity (%)	: 66	4	Weather Condition	: Partly Cloudy
5	Longitude	: 84°04'50.48"E	6	Latitude	: 24°07'42.06"N

NABL Accredited

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	52	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	26	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.2	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	19.7	80 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)


Reviewed by

****End of Report****


Authorized Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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"Save Environment, Save Future"



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CIN: U74999JH2012PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3846	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002519F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3564
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Near Substation (Core Zone)
Plant Status	: Operational	Sampling Date	: 26.09.2023 to 27.09.2023
Period of Analysis	: 30.09.2023 to 09.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 745
3	Relative Humidity (%)	: 66	4	Weather Condition	: Partly Cloudy
5	Longitude	: 84°05'05.36"E	6	Latitude	: 24°07'40.83"N

NABL Accredited				
Discipline : Chemical			Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	56	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	30	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	10.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	24.1	80 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	1.08	2 (8hrs)

Reviewed by

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Authorized Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3847	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002520F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3565
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: R & R Colony, Chandan Nagar (Buffer Zone)
Plant Status	: Operational	Sampling Date	: 26.09.2023 to 27.09.2023
Period of Analysis	: 30.09.2023 to 09.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 27	2	Barometric Pressure (mmHg) : 745
3	Relative Humidity (%) : 66	4	Weather Condition : Partly Cloudy
5	Longitude : 84°03'56.22"E	6	Latitude : 24°07'27.95"N

NABL Accredited

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	47	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	29	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.9	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	22.8	80 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)

Abhishek Kumar
Reviewed by

****End of Report****

Dr. Deependra Kumar Sinha
Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3848	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002521F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3566
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Kathautia Village (Buffer Zone)
Plant Status	: Operational	Sampling Date	: 27.09.2023 to 28.09.2023
Period of Analysis	: 30.09.2023 to 09.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 745
3	Relative Humidity (%)	: 72	4	Weather Condition	: Cloudy
5	Longitude	: 84°04'12.09"E	6	Latitude	: 24°07'18.89"N

NABL Accredited				
Discipline : Chemical			Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	43	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	21	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	5.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	16.2	80 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)



Reviewed by

****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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TC-8839

CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3849	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002522F	

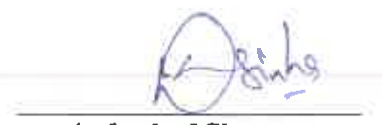
CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3567
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Sikka Village (Buffer Zone)
Plant Status	: Operational	Sampling Date	: 27.09.2023 to 28.09.2023
Period of Analysis	: 30.09.2023 to 09.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 745
3	Relative Humidity (%)	: 72	4	Weather Condition	: Cloudy
5	Longitude	: 84°05'16.76"E	6	Latitude	: 24°07'03.60"N

NABL Accredited				
Discipline : Chemical			Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	43	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	21	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.3	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	15.7	80 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)


Reviewed by

****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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TEST REPORT

Test Report No. : ELES/RNC/2023/3850	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002523F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3568
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Batsara Village (Buffer Zone)
Plant Status	: Operational	Sampling Date	: 27.09.2023 to 28.09.2023
Period of Analysis	: 30.09.2023 to 09.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 745
3	Relative Humidity (%)	: 72	4	Weather Condition	: Cloudy
5	Longitude	: 84°05'16.76"E	6	Latitude	: 24°07'03.60"N

NABL Accredited				
Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	46	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	21	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.2	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	19.3	80 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)



Reviewed by

****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3851	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002524F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3569
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Near Main Gate (Core Zone)
Plant Status	: Operational	Sampling Date	: 27.09.2023 to 28.09.2023
Period of Analysis	: 30.09.2023 to 09.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 745
3	Relative Humidity (%)	: 72	4	Weather Condition	: Cloudy
5	Longitude	: 84°04'46.77"E	6	Latitude	: 24°07'41.19"N

NABL Accredited

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	59	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	28	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	12.3	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	25.1	80 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	1.1	2 (8hrs)



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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CIN: U74999JH2018PTC011125

TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3864	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002529F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/SW/3588
Address	: Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 10.10.2023	Type of Sample	: Surface Water
		Source of Sample	: Pit- C
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

NABL Accredited				
Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
pH (at 24.7°C)	-	IS 3025 (Part 11) : 2022	7.89	6.5-8.5
Colour	Hazen	IS 3025 (Part -4) : 2021	5.0	300
Odour	-	IS 3025 (Part-5) : 2018	Agreeable	--
Biochemical Oxygen Demand (BOD) (@ 20°C for 5 days)	mg/L	APHA 23 rd Ed.2017; 5210B	2.2	3.0
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16):1984; RA2017	312	1500
Oil & Grease	mg/L	IS 3025 (Part-39): 2021	<0.1	0.1
Fluoride (as F)	mg/L	IS 3025 (Part-60) :2008; RA2019	0.218	1.5
Sulphate (as SO ₄)	mg/L	IS 3025 (Part 24) : 1986; RA2019	50.2	400
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	<0.012	0.05
Chloride (as Cl)	mg/L	IS 3025 (Part-32) :1988; RA2019	14.2	600
Total Hardness (as CaCO ₃)	mg/L	IS 3025 (Part-21) : 2009; RA2019	169	--
Nitrate (as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	<0.5	50
Phenols Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43) :1992; RA2019	<0.0005	0.005
Free Ammonia (as NH ₃)	mg/L	IS 3025 (Part 34) :1988; RA2019	<0.1	--

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3864	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002529F	

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1982 Class C (Inland Surface Water)
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38) :1989, RA2019	7.0	4(min)
Calcium (as Ca)	mg/L	IS 3025 (Part-40) :1991, RA2019	44	--
Discipline : Chemical		Group : Residues in Water		
Arsenic (as As)	mg/L	APHA 23 rd Ed 2017, 3500 As B	<0.005	0.2
Barium (as Ba)	mg/L	IS 15302 : 2003; RA2018	<0.1	--
Boron (as B)	mg/L	IS 3025 (Part-57) :2021	<0.2	--
Cadmium (as Cd)	mg/L	APHA23 rd Ed 2017; 3111B	<0.003	0.01
Total Chromium (as Cr)	mg/L	APHA23 rd Ed 2017; 3111B, & 3280 Cr B	<0.03	0.05
Copper (as Cu)	mg/L	APHA23 rd Ed 2017; 3111B	<0.03	1.5
Iron (as Fe)	mg/L	APHA23 rd Ed 2017; 3111B, & 3500 Fe B	0.144	50
Lead (as Pb)	mg/L	APHA 23 rd Ed 2017, 3111 B, & 3500 Pb B	<0.01	0.1
Manganese (as Mn)	mg/L	APHA 23 rd Ed 2017; 3111 B, &3500 Mn B	<0.05	--
Mercury (as Hg)	mg/L	IS 3025 (Part-48) :1994; RA 2019	<0.001	--
Selenium (as Se)	mg/L	IS 3025 (Part-56) :2003; RA 2019	<0.01	0.05
Zinc (as Zn)	mg/L	APHA 23 rd Ed 2017, 3111 B & 3500 Zn B	<0.1	15
Silver (as Ag)	mg/L	Annex-J of IS 13428 :2005; RA 2018	<0.1	--
Magnesium (as Mg)	mg/L	IS 3025 (Part-46) : 1994; RA2019	16.2	--

Remarks: 1. pH done at Lab.

Reviewed by

****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg
ELES Pvt. Ltd. Technical Manager

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2023/3864	Report Release Date	: 18.10.2023
Work Order No.	: 13572310670	Work Order Date	: 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/SW/3588
Address	: Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 16.10.2023	Type of Sample	: Surface Water
		Source of Sample	: Pit- C
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water	
Parameter	Unit	Test Protocol	Result
Anionic Surfactants (as MBAS)*	mg/L	Annex K of IS 13428 : 2005	<0.05
Mineral Oil*	mg/L	IS:3025(Part-39) :2021, Clause 6 Infrared Spectroscopic method.	<0.01
Polynuclear Aromatic Hydrocarbons (PAH)*	µg/L	SO-IN-MUL-TE-023	<0.05
Free CO ₂	mg/L	IS 3025 (Part-61) : 2008	20
SAR	mg/L	Calculative	<2.0
Percent Sodium	%	IS 3025 (Part-45): 1993; RA2019	0.0055
Taste	-	APHA 23 rd Ed.2017, 2160 C	N/A
Pesticides			
DDT(o,p and p,p-isomers of DDT,DDEand DDD)*	µg/L	SO-IN-MUL-TE-020	<0.01
Gamma HCH (Lindane)*	µg/L	SO-IN-MUL-TE-020	<0.01
Alpha HCH*	µg/L	SO-IN-MUL-TE-020	<0.01
Beta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01
Delta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01
Endosulfan (alpha, beta and sulphate)*	µg/L	SO-IN-MUL-TE-020	<0.01
Alachor*	µg/L	SO-IN-MUL-TE-020	<0.01

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3864	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

Discipline : Chemical		Group : Water	
Parameter	Unit	Test Protocol	Result
Pesticides			
Aldrin/Dieldrin*	µg/L	SO-IN-MUL-TE-020	<0.01
Butachlor*	µg/L	SO-IN-MUL-TE-020	<0.01
Isoproturon*	µg/L	SO-IN-MUL-TE-020	<0.01
2,4-Dichlorophenoxyacetic acid*	µg/L	SO-IN-MUL-TE-020	<0.01
Ethion *	µg/L	SO-IN-MUL-TE-020	<0.01
Monocrotophos*	µg/L	SO-IN-MUL-TE-020	<0.01
Atrazine*	µg/L	SO-IN-MUL-TE-020	<0.01
Chlorpyrifos*	µg/L	SO-IN-MUL-TE-020	<0.01
Methyl Parathion*	µg/L	SO-IN-MUL-TE-020	<0.01
Malathion*	µg/L	SO-IN-MUL-TE-020	<0.01
Phorate*	µg/L	SO-IN-MUL-TE-020	<0.01
Discipline : Biological		Group : Water	
Parameter	Unit	Test Protocol	Result
Total Coliform	CFU/100 mL	IS 15185:2016; RA 2021	6.36 × 10 ³

Remarks:1. (*) - Parameters are outsourced to NABL Accredited Lab.



Reviewed by

****End of Report****

Authorised Signatory

Dr. Deependra Kumar Sinha

Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3865	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002530F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/SW/3589
Address	: Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 10.10.2023	Type of Sample	: Surface Water
		Source of Sample	: Pit- D
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

NABL Accredited

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
pH (at 25.1 °C)	-	IS 3025 (Part 11) : 2022	7.97	6.5-8.5
Colour	Hazen	IS 3025 (Part -4) : 2021	6.0	300
Odour	-	IS 3025 (Part-5) : 2018	Agreeable	--
Biochemical Oxygen Demand (BOD) (@ 20°C for 5 days)	mg/L	APHA 23 rd Ed.2017; 5210B	2.3	3.0
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16):1984; RA2017	328	1500
Oil & Grease	mg/L	IS 3025 (Part-39): 2021	<0.1	0.1
Fluoride (as F)	mg/L	IS 3025 (Part-60) :2008; RA2019	0.248	1.5
Sulphate (as SO ₄)	mg/L	IS 3025 (Part 24) : 1986; RA2019	24.8	400
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	<0.012	0.05
Chloride (as Cl)	mg/L	IS 3025 (Part-32) :1988; RA2019	13.3	600
Total Hardness (as CaCO ₃)	mg/L	IS 3025 (Part-21) : 2009; RA2019	162	--
Nitrate (as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	<0.5	50
Phenols Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43) :1992; RA2019	<0.0005	0.005
Free Ammonia (as NH ₃)	mg/L	IS 3025 (Part 34) :1988; RA2019	<0.1	--

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TC-8839

TEST REPORT

Test Report No.	: ELES/RNC/2023/3865	Report Release Date	: 18.10.2023
Work Order No.	: 13572310670	Work Order Date	: 27.09.2023
ULR No.	: TC883923000002530F		

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1982 Class C (Inland Surface Water)
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38) :1989, RA2019	5.9	4(min)
Calcium (as Ca)	mg/L	IS 3025 (Part-40) :1991, RA2019	42	--
Discipline : Chemical		Group : Residues in Water		
Arsenic (as As)	mg/L	APHA 23 rd Ed 2017, 3500 As B	<0.005	0.2
Barium (as Ba)	mg/L	IS 15302 : 2003; RA2018	<0.1	--
Boron (as B)	mg/L	IS 3025 (Part-57) :2021	<0.2	--
Cadmium (as Cd)	mg/L	APHA23 rd Ed 2017; 3111B	<0.003	0.01
Total Chromium (as Cr)	mg/L	APHA23 rd Ed 2017; 3111B, & 3280 Cr B	<0.03	0.05
Copper (as Cu)	mg/L	APHA23 rd Ed 2017; 3111B	<0.03	1.5
Iron (as Fe)	mg/L	APHA23 rd Ed 2017; 3111B, & 3500 Fe B	0.148	50
Lead (as Pb)	mg/L	APHA 23 rd Ed 2017, 3111 B, & 3500 Pb B	<0.01	0.1
Manganese (as Mn)	mg/L	APHA 23 rd Ed 2017; 3111 B, &3500 Mn B	<0.05	--
Mercury (as Hg)	mg/L	IS 3025 (Part-48) :1994; RA 2019	<0.001	--
Selenium (as Se)	mg/L	IS 3025 (Part-56) :2003; RA 2019	<0.01	0.05
Zinc (as Zn)	mg/L	APHA 23 rd Ed 2017, 3111 B & 3500 Zn B	<0.1	15
Silver (as Ag)	mg/L	Annex-J of IS 13428 :2005; RA 2018	<0.1	--
Magnesium (as Mg)	mg/L	IS 3025 (Part-46) : 1994; RA2019	15.5	--

Remarks: 1. pH done at Lab.



****End of Report****

Authorised Signatory

Dr. Deependra Kumar Sinha

Page 2 of 2

Ph. D. Environmental Engg.

ELES Pvt. Ltd. Technical Manager

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TEST REPORT

Test Report No.	: ELES/RNC/2023/3865	Report Release Date	: 18.10.2023
Work Order No.	: 13572310670	Work Order Date	: 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/SW/3589
Address	: Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 16.10.2023	Type of Sample	: Surface Water
		Source of Sample	: Pit- D
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical

Group : Water

Parameter	Unit	Test Protocol	Result
Anionic Surfactants (as MBAS)*	mg/L	Annex K of IS 13428 : 2005	<0.05
Mineral Oil*	mg/L	IS:3025(Part-39) :2021, Clause 6 Infrared Spectroscopic method.	<0.01
Polynuclear Aromatic Hydrocarbons (PAH)*	µg/L	SO-IN-MUL-TE-023	<0.05
Free CO ₂	mg/L	IS 3025 (Part-61) : 2008	21.4
SAR	mg/L	Calculative	<2.0
Percent Sodium	%	IS 3025 (Part-45): 1993; RA2019	0.0051
Taste	-	APHA 23 rd Ed.2017, 2160 C	N/A
Pesticides			
DDT(o,p and p,p-isomers of DDT,DDEand DDD)*	µg/L	SO-IN-MUL-TE-020	<0.01
Gamma HCH (Lindane)*	µg/L	SO-IN-MUL-TE-020	<0.01
Alpha HCH*	µg/L	SO-IN-MUL-TE-020	<0.01
Beta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01
Delta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01
Endosulfan (alpha, beta and sulphate)*	µg/L	SO-IN-MUL-TE-020	<0.01
Alachor*	µg/L	SO-IN-MUL-TE-020	<0.01

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TEST REPORT

Test Report No.	: ELES/RNC/2023/3865	Report Release Date	: 18.10.2023
Work Order No.	: 13572310670	Work Order Date	: 27.09.2023

Discipline : Chemical		Group : Water	
Parameter	Unit	Test Protocol	Result
Pesticides			
Aldrin/Dieldrin*	µg/L	SO-IN-MUL-TE-020	<0.01
Butachlor*	µg/L	SO-IN-MUL-TE-020	<0.01
Isoproturon*	µg/L	SO-IN-MUL-TE-020	<0.01
2,4-Dichlorophenoxyacetic acid*	µg/L	SO-IN-MUL-TE-020	<0.01
Ethion *	µg/L	SO-IN-MUL-TE-020	<0.01
Monocrotophos*	µg/L	SO-IN-MUL-TE-020	<0.01
Atrazine*	µg/L	SO-IN-MUL-TE-020	<0.01
Chlorpyrifos*	µg/L	SO-IN-MUL-TE-020	<0.01
Methyl Parathion*	µg/L	SO-IN-MUL-TE-020	<0.01
Malathion*	µg/L	SO-IN-MUL-TE-020	<0.01
Phorate*	µg/L	SO-IN-MUL-TE-020	<0.01
Discipline : Biological		Group : Water	
Parameter	Unit	Test Protocol	Result
Total Coliform	CFU/100 mL	IS 15185:2016; RA 2021	5.09 × 10 ³

Remarks:1. (*) - Parameters are outsourced to NABL Accredited Lab.



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager



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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3860	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002525F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sampling Date	: 26.09.2023 to 27.09.2023
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Sampling Received Date	: 30.09.2023
		Type of Sample	: Ambient Noise (Inside Plant)
		Sampling procedure	: ELES/DOC/SMPL/03
Plant Status	: Operational	Sample Drawn By	: ELES Pvt. Ltd.
		Period of Analysis	: 30.09.2023 to 07.10.2023

METEOROLOGICAL INFORMATION			
1	Average Temperature (°C)	: 27	2 Barometric Pressure (mmHg) : 745
3	Relative Humidity (%)	: 66	4 Weather Condition : Partly Cloudy

NABL Accredited					
Discipline : Chemical			Group : Atmospheric Pollution		
Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
Mines Office Near VTC	dB(A)	IS 9989:1981; RA 2020	Time	L_{eq}	
Sample ID: ELES/RNC/2023/AN/3578			Day Time	63	
Latitude: 24°07'41.61"N			Night Time	51	
Near Main Gate	dB(A)	IS 9989:1981; RA 2020	Time	L_{eq}	75 dB(A) Day Time & 70 dB(A) Night Time
Sample ID: ELES/RNC/2023/AN/3579			Day Time	70	
Latitude: 24°07'41.19"N			Night Time	49	
Near DG Stack	dB(A)	IS 9989:1981; RA 2020	Time	L_{eq}	
Sample ID: ELES/RNC/2023/AN/3580			Day Time	63	
Latitude: 24°07'42.06"N			Night Time	47	

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CIN: U74999JH2018PTCO11125

TEST REPORT

Test Report No. : ELES/RNC/2023/3860	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002525F	

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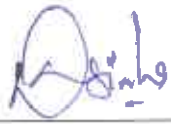
Discipline : Chemical

Group : Atmospheric Pollution

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	Leq	
Near Substation	dB(A)	IS 9989:1981; RA 2020	Day Time	60	75 dB(A) Day Time & 70 dB(A) Night Time
Sample ID: ELES/RNC/2023/AN/3581			Night Time	45	
Latitude: 24°07'40.83"N			Longitude: 84°05'05.36"E		



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3861	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002526F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sampling Date	: 27.09.2023 to 28.09.2023
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Sampling Received Date	: 30.09.2023
Plant Status	: Operational	Type of Sample	: Ambient Noise (Outside Plant)
		Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.
		Period of Analysis	: 30.09.2023 to 07.10.2023

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 745
3	Relative Humidity (%)	: 72	4	Weather Condition	: Cloudy

NABL Accredited					
Discipline : Chemical			Group : Atmospheric Pollution		
Location	Unit	Test Protocol	Result		Regulatory Limit (Residential Zone)
R & R Colony, Chandan Nagar	dB(A)	IS 9989:1981; RA 2020	Time	L_{eq}	
Sample ID: ELES/RNC/2023/AN/3582			Day Time	54	
Latitude: 24°07'27.95"N			Night Time	41	
Kathautiya Village	dB(A)	IS 9989:1981; RA 2020	Time	L_{eq}	55 dB(A) Day Time & 45 dB(A) Night Time
Sample ID: ELES/RNC/2023/AN/3583			Day Time	52	
Latitude: 24°07'18.89"N			Night Time	39	
Batsara Village	dB(A)	IS 9989:1981; RA 2020	Time	L_{eq}	
Sample ID: ELES/RNC/2023/AN/3584			Day Time	50	
Latitude: 24°07'03.60"N			Night Time	45	
	Longitude: 84°03'56.22"E				
	Longitude: 84°04'12.09"E				
	Longitude: 84°05'16.76"E				

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CIN: U74999JH2018PTC011125

TEST REPORT


Test Report No. : ELES/RNC/2023/3861	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002526F	

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Discipline : Chemical		Group : Atmospheric Pollution			
Location	Unit	Test Protocol	Result		Regulatory Limit (Residential Zone)
Sikka Village	dB(A)	IS 9989:1981; RA 2020	Time	L_{eq}	55 dB(A) Day Time & 45 dB(A) Night Time
Sample ID: ELES/RNC/2023/AN/3585			Day Time	51	
Latitude: 24°07'03.60"N			Night Time	39	
Longitude: 84°05'16.76"E					



****End of Report****



Authorised Signatory
Dr. Deependra Kumar Sinha
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ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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TC-8839

CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3866	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002531F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/EF/3590
Address	: Kathautia Open Cast Coal Mines	Sampling Date	: 29.09.2023
	: Post- Naudiha, P.S.- Pandwa,	Sample Received Date	: 30.09.2023
	: Daltongang, Dist- Palamu,	Type of Sample	: Effluent Water
	: Jharkhand, Pin-822123	Source of Sample	: STP Outlet
Plant Status	: Operational	Sampling Procedure	: ELES/DOC/SMPL/01
Period of Analysis	: 30.09.2023 to 11.10.2023	Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

NABL Accredited

Discipline : Chemical		Group : Pollution & Environment		Discharge Limits – CPCB EPR, 1986 Schedule VI	
Parameter	Unit	Test Protocol	Result	Inland Surface Water	Land for Irrigation
pH (at 24.8°C)	-	APHA 23 rd Ed.2017,4500-H ¹ B	7.16	5.5-9.0	5.5-9.0
Colour	Hazen	IS 3025 (Part -4): 2021	9.0	Should be removed	
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part 17):2022	7.8	100	200
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16): 1984; RA2017	636	--	--
Chemical Oxygen Demand (COD)	mg/L	IS 3025 (Part-58): 2006; RA2022	58.8	250	--
Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days)	mg/L	IS 3025 (Part-44): 1993; RA2019	4.8	30	100
Temperature	°C	APHA 23 rd Ed.2017, 2550 B	25.2	Shall Not Exceed 5°C Above the Receiving Water Temperature	--
Oil & Grease	mg/L	IS 3025 (Part-39): 2021	2.4	10	10
Fluoride (as F)	mg/L	IS 3025 (Part-60): 2008; RA2019	0.218	2.0	1.5
Phenols Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025(Part-43): 1992; RA2019	<1.0	1.0	--
Dissolved Phosphate (as P)	mg/L	IS 3025 (Part-31) : 1988; RA2021	0.284	5.0	--

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TC-8839

CIN: U74999JH2018FTCO11125

TEST REPORT

Test Report No. : ELES/RNC/2023/3866	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002531F	

NABL Accredited

Discipline : Chemical		Group : Residues in Water		Discharge Limits – CPCB EPR, 1986 Schedule VI	
Parameter	Unit	Test Protocol	Result	Inland Surface Water	Land for Irrigation
Arsenic (as As)	mg/L	APHA 23 rd Ed.2017, 3500 As B	<0.005	0.2	0.2
Cadmium (as Cd)	mg/L	APHA23 rd Ed.2017; 3111B	<0.003	2.0	--
Total Chromium (as Cr)	mg/L	APHA23 rd Ed.2017; 3111B, & 3280 Cr B	0.148	2.0	--
Copper (as Cu)	mg/L	APHA23 rd Ed.2017; 3111B	<0.03	3.0	--
Lead (as Pb)	mg/L	APHA 23 rd Ed.2017, 3111 B & 3500 Pb B	<0.01	0.1	--
Mercury (as Hg)	mg/L	IS 3025 (Part-48) :1994; RA 2019	<0.001	0.01	--
Selenium (as Se)	mg/L	IS 3025 (Part-56) :2003; RA 2019	<0.01	0.05	--
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017, 3111 B & 3500 Zn B	<0.1	5.0	--

Remarks: 1. pH done at Lab.



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
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ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2023/3866	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/EF/3590
Address	: Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 11.10.2023	Type of Sample	: Effluent Water
		Source of Sample	: STP Outlet
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Pollution & Environment		Discharge Limits – CPCB EPR, 1986 Schedule VI	
Parameter	Unit	Test Protocol	Result	Inland Surface Water	Land for Irrigation
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) : 2021	<0.1	1.0	--
Odour	-	IS 3025 (Part-5) : 2018	Agreeable	Should be removed	



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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TEST REPORT

Test Report No. : ELES/RNC/2023/3867	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002532F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/EF/3591
Address	: Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 11.10.2023	Type of Sample	: Effluent Water
		Source of Sample	: ETP Outlet
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd
		Sample Condition	: Sealed & Preserved

NABL Accredited				Discharge Limits – CPCB EPR, 1986 Schedule VI	
Discipline : Chemical		Group : Pollution & Environment		Inland Surface Water	Land for Irrigation
Parameter	Unit	Test Protocol	Result		
pH (at 24.8°C)	-	APHA 23 rd Ed.2017,4500-H ¹ B	7.27	5.5-9.0	5.5-9.0
Colour	Hazen	IS 3025 (Part -4): 2021	8.0	Should be removed	
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part 17):2022	9.8	100	200
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16): 1984; RA2017	628	--	--
Chemical Oxygen Demand (COD)	mg/L	IS 3025 (Part-58): 2006; RA2022	78.8	250	--
Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days)	mg/L	IS 3025 (Part-44): 1993: RA2019	6.6	30	100
Temperature	°C	APHA 23 rd Ed.2017, 2550 B	25.1	Shall Not Exceed 5°C Above the Receiving Water Temperature	--
Oil & Grease	mg/L	IS 3025 (Part-39): 2021	2.6	10	10
Fluoride (as F)	mg/L	IS 3025 (Part-60): 2008; RA2019	0.193	2.0	--
Phenols Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025(Part-43): 1992; RA2019	<1.0	1.0	--
Dissolved Phosphate (as P)	mg/L	IS 3025 (Part-31) : 1988; RA2021	0.206	5.0	--

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TC-8839

CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3867	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002532F	


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Discipline : Chemical		Group : Pollution & Environment		Discharge Limits -- CPCB EPR, 1986 Schedule VI	
Parameter	Unit	Test Protocol	Result	Inland Surface Water	Land for Irrigation
Arsenic (as As)	mg/L	APHA 23 rd Ed 2017, 3500-As B	<0.005	0.2	0.2
Cadmium (as Cd)	mg/L	APHA23 rd Ed 2017; 3111B	<0.003	2.0	--
Total Chromium (as Cr)	mg/L	APHA23 rd Ed 2017; 3111B, & 3280 Cr B	0.109	2.0	--
Copper (as Cu)	mg/L	APHA23 rd Ed 2017; 3111B	<0.03	3.0	--
Lead (as Pb)	mg/L	APHA 23 rd Ed 2017, 3111 B, & 3500 Pb B	<0.01	0.1	--
Mercury (as Hg)	mg/L	IS 3025 (Part-48) :1994; RA 2019	<0.001	0.01	--
Selenium (as Se)	mg/L	IS 3025 (Part-56) :2003; RA 2019	<0.01	0.05	--
Zinc (as Zn)	mg/L	APHA 23 rd Ed 2017, 3111 B & 3500 Zn B	<0.1	5.0	--

Remarks: 1. pH done at Lab.



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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TEST REPORT

Test Report No. : ELES/RNC/2023/3867	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/EF/3591
Address	: Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 11.10.2023	Type of Sample	: Effluent Water
		Source of Sample	: ETP Outlet
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd
		Sample Condition	: Sealed & Preserved

Discipline: Chemical		Group: Pollution & Environment		Discharge Limits – CPCB EPR, 1986 Schedule VI	
Parameter	Unit	Test Protocol	Result	Inland Surface Water	Land for Irrigation
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) : 2021	<0.1	1.0	--
Odour	-	IS 3025 (Part-5) : 2018	Agreeable	Should be removed	



****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager



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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3862	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002527F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/GW/3586
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
		Sample Received Date	: 30.09.2023
Plant Status	: Operational	Type of Sample	: Ground Water
Period of Analysis	: 30.09.2023 to 09.10.2023	Source of Sample	: Tap Water
		Location of Sample	: AMPL Barrick
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

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Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
pH (at 24.7°C)	-	APHA 23 rd Ed.2017, 4500-H ⁺ -B	6.54	6.5-8.5	No Relaxation
Odour	-	IS 3025 (Part-5) :2018	Agreeable	Agreeable	Agreeable
Colour	Hazen	APHA 23 rd Ed.2017, 2120B&D	1.0	5	15
Turbidity	NTU	APHA 23 rd Ed.2017, 2130 B	0.14	1.0	5.0
Total Dissolved Solids (TDS)	mg/L	APHA 23 rd Ed.2017, 2540B,C&D	612	500	2000
Chloride (as Cl)	mg/L	APHA 23 rd Ed.2017, 4500 Cl-B	36.1	250	1000
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986; RA2019	195.8	200	600
Total Hardness (as CaCO ₃)	mg/L	APHA 23 rd Ed.2017, 2340 C	349	200	600
Sulphate (as SO ₄)	mg/L	APHA 23 rd Ed.2017, 4500 SO ₄ ²⁻ -E	104	200	400
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	<0.012	0.05	No Relaxation
Fluoride (as F)	mg/L	APHA 23 rd Ed.2017, 4500 F-D	<0.1	1.0	1.5
Residual Free Chlorine (RFC)	mg/L	IS 3025 (Part-26):2021	<0.1	0.2(Min)	1.0(Min)
Nitrate(as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	<0.5	45	No Relaxation

Page 1 of 2

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3862	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002527F	

NABL Accredited					
Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Phenolic Compound (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43):1992;RA2019	<0.0005	0.001	0.002
Calcium (as Ca)	mg/L	IS 3025 (Part-40):1991;RA2019	84	75	200
Discipline : Chemical		Group : Residues in Water			
Aluminum (as Al)	mg/L	IS 3025 (Part-55) :2003; RA2019	<0.02	0.03	0.2
Arsenic (as As)	mg/L	APHA 23 rd Ed.2017; 3500-As B	<0.005	0.01	0.01
Boron (as B)	mg/L	IS 3025 (Part-57) :2021	<0.2	0.5	2.4
Cadmium (as Cd)	mg/L	APHA 23 rd Ed.2017; 3111B	<0.003	0.003	No Relaxation
Total Chromium (as Cr)	mg/L	APHA 23 rd Ed 2017; 3111B, & 3280 Cr B	<0.03	0.05	No Relaxation
Copper (as Cu)	mg/L	APHA23 rd Ed 2017; 3111B	<0.03	0.05	1.5
Iron (as Fe)	mg/L	APHA23 rd Ed 2017; 3111B, & 3500 Fe B	0.166	1.0	1.0
Lead (as Pb)	mg/L	APHA 23 rd Ed 2017; 3111B & 3500 Pb B	<0.01	0.01	No Relaxation
Manganese (as Mn)	mg/L	APHA 23 rd Ed 2017; 3111B &3500 Mn B	<0.05	0.1	0.3
Mercury (as Hg)	mg/L	IS 3025 (Part-48) :1994; RA2019	<0.001	0.001	No Relaxation
Selenium (as Se)	mg/L	IS 3025 (Part-56) :2003; RA2019	<0.01	0.01	No Relaxation
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017; 3111B & 3500 Zn B	<0.1	5	15

Remarks:1. pH and RFC done at Lab.



Reviewed by

****End of Report****

Authorised Signatory

Dr. Deepen G. ...

Ph. D. Environmental Engg.

ELES Pvt. Ltd. Technical Manager

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3862	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/GW/3586
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 16.10.2023	Type of Sample	: Ground Water
		Source of Sample	: Tap Water
		Location of Sample	: AMPL Barrick
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Anionic Surfactants (as MBAS)*	mg/L	Annex K of IS 13428:2005	<0.05	0.2	1.0
Mineral Oil*	mg/L	IS 3025 (Part-39):2021, Clause 6 Infrared Spectroscopic Method	<0.01	0.5	No Relaxation
Polynuclear Aromatic Hydrocarbons (PAH)*	µg/L	SO-IN-MUL-TE-023	<0.05	0.1	No Relaxation
Taste	-	APHA 23 rd Ed.2017, 2160C	Agreeable	Agreeable	Agreeable
Pesticides					
DDT(o,p and p,p-isomers of DDT,DDEand DDD)*	µg/L	SO-IN-MUL-TE-020	<0.01	--	1.0
Gamma HCH (Lindane)*	µg/L	SO-IN-MUL-TE-020	<0.01	--	2.0
Alpha HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.01
Beta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.04
Delta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.04
Endosulfan (alpha, beta and sulphate)*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.40
Alachor*	µg/L	SO-IN-MUL-TE-020	<0.01	--	20
Aldrin/Dieldrin*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.03
Butachlor*	µg/L	SO-IN-MUL-TE-020	<0.01	--	125

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3862	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Pesticides					
Isoproturon*	µg/L	SO-IN-MUL-TE-020	<0.01	--	9
2,4-Dichlorophenoxyacetic acid*	µg/L	SO-IN-MUL-TE-020	<0.01	--	30
Ethion *	µg/L	SO-IN-MUL-TE-020	<0.01	--	3.0
Monocrotophos*	µg/L	SO-IN-MUL-TE-020	<0.01	--	1
Atrazine*	µg/L	SO-IN-MUL-TE-020	<0.01	--	2
Chlorpyriphos*	µg/L	SO-IN-MUL-TE-020	<0.01	--	30
Methyl parathion*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.30
Malathion*	µg/L	SO-IN-MUL-TE-020	<0.01	--	190
Phorate*	µg/L	SO-IN-MUL-TE-020	<0.01	--	2
Discipline : Biological		Group : Water			
Total Coliform	Per 100 mL	IS 15185:2016; RA2021	Not Detected	Shall not be detected	
Escherichia Coli (E. Coli)	Per 100 mL	IS 15185:2016; RA2021	Not Detected		

Remarks:1. (*) - Parameters are outsourced to NABL Accredited Lab.



****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3863	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002528F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/GW/3587
Address	: Kathautia Open Cast Coal Mines,	Sampling Date	: 29.09.2023
	Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Sample Received Date	: 30.09.2023
Plant Status	: Operational	Type of Sample	: Ground Water
Period of Analysis	: 30.09.2023 to 09.10.2023	Source of Sample	: Tap Water
		Location of Sample	: Office VTC
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

NABL Accredited					
Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
pH (at 24.6 °C)	--	APHA 23 rd Ed.2017, 4500-H ⁺ -B	6.61	6.5-8.5	No Relaxation
Odour	-	IS 3025 (Part-5) :2018	Agreeable	Agreeable	Agreeable
Colour	Hazen	APHA 23 rd Ed.2017, 2120B&D	1.0	5	15
Turbidity	NTU	APHA 23 rd Ed.2017, 2130 B	0.16	1.0	5.0
Total Dissolved Solids (TDS)	mg/L	APHA 23 rd Ed.2017, 2540B,C& D	572	500	2000
Chloride (as Cl)	mg/L	APHA 23 rd Ed.2017, 4500 Cl-B	21.8	250	1000
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986; RA2019	197.8	200	600
Total Hardness (as CaCO ₃)	mg/L	APHA 23 rd Ed.2017, 2340 C	292	200	600
Sulphate (as SO ₄)	mg/L	APHA 23 rd Ed.2017, 4500 SO ₄ ⁻² -E	108	200	400
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	<0.012	0.05	No Relaxation
Fluoride (as F)	mg/L	APHA 23 rd Ed.2017, 4500 F-D	<0.1	1.0	1.5
Residual Free Chlorine (RFC)	mg/L	IS 3025 (Part-26):2021	<0.1	0.2(Min)	1.0(Min)
Nitrate(as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	<0.5	45	No Relaxation

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3863	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002528F	

Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Phenolic Compound (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43):1992;RA2019	<0.0005	0.001	0.002
Calcium (as Ca)	mg/L	IS 3025 (Part-40):1991;RA2019	70.6	75	200
Discipline : Chemical		Group : Residues in Water			
Aluminum (as Al)	mg/L	IS 3025 (Part-55) :2003; RA2019	<0.02	0.03	0.2
Arsenic (as As)	mg/L	APHA 23 rd Ed.2017; 3500-As B	<0.005	0.01	0.01
Boron (as B)	mg/L	IS 3025 (Part-57) :2021	<0.2	0.5	2.4
Cadmium (as Cd)	mg/L	APHA 23 rd Ed.2017; 3111B	<0.003	0.003	No Relaxation
Total Chromium (as Cr)	mg/L	APHA 23 rd Ed 2017; 3111B, & 3280 Cr B	<0.03	0.05	No Relaxation
Copper (as Cu)	mg/L	APHA23 rd Ed 2017; 3111B	<0.03	0.05	1.5
Iron (as Fe)	mg/L	APHA23 rd Ed 2017; 3111B, & 3500 Fe B	0.155	1.0	1.0
Lead (as Pb)	mg/L	APHA 23 rd Ed 2017; 3111B & 3500 Pb B	<0.01	0.01	No Relaxation
Manganese (as Mn)	mg/L	APHA 23 rd Ed 2017; 3111B & 3500 Mn B	<0.05	0.1	0.3
Mercury (as Hg)	mg/L	IS 3025 (Part-48) :1994; RA2019	<0.001	0.001	No Relaxation
Selenium (as Se)	mg/L	IS 3025 (Part-56) :2003; RA2019	<0.01	0.01	No Relaxation
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017; 3111B & 3500 Zn B	<0.1	5	15

Remarks:1. pH and RFC done at Lab.



Reviewed by

****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinha
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ELES Pvt. Ltd. Technical Manager

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3863	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/GW/3587
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
		Sample Received Date	: 30.09.2023
Plant Status	: Operational	Type of Sample	: Ground Water
		Source of Sample	: Tap Water
Period of Analysis	: 30.09.2023 to 16.10.2023	Location of Sample	: Office VTC
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Anionic Surfactants (as MBAS)*	mg/L	Annex K of IS 13428:2005	<0.05	0.2	1.0
Mineral Oil*	mg/L	IS 3025 (Part-39):2021, Clause 6 Infrared Spectroscopic Method	<0.01	0.5	No Relaxation
Polynuclear Aromatic Hydrocarbons (PAH)*	µg/L	SO-IN-MUL-TE-023	<0.05	0.1	No Relaxation
Taste	-	APHA 23 rd Ed.2017, 2160C	Agreeable	Agreeable	Agreeable
Pesticides					
DDT(o,p and p,p-isomers of DDT,DDEand DDD)*	µg/L	SO-IN-MUL-TE-020	<0.01	--	1.0
Gamma HCH (Lindane)*	µg/L	SO-IN-MUL-TE-020	<0.01	--	2.0
Alpha HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.01
Beta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.04
Delta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.04
Endosulfan (alpha, beta and sulphate)*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.40
Alachor*	µg/L	SO-IN-MUL-TE-020	<0.01	--	20
Aldrin/Dieldrin*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.03
Butachlor*	µg/L	SO-IN-MUL-TE-020	<0.01	--	125

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CIN: U74999JH2018PTC011125

TEST REPORT


Test Report No. : ELES/RNC/2023/3863	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Pesticides					
Isoproturon*	µg/L	SO-IN-MUL-TE-020	<0.01	--	9
2,4-Dichlorophenoxyacetic acid*	µg/L	SO-IN-MUL-TE-020	<0.01	--	30
Ethion *	µg/L	SO-IN-MUL-TE-020	<0.01	--	3.0
Monocrotophos*	µg/L	SO-IN-MUL-TE-020	<0.01	--	1
Atrazine*	µg/L	SO-IN-MUL-TE-020	<0.01	--	2
Chlorpyrifos*	µg/L	SO-IN-MUL-TE-020	<0.01	--	30
Methyl parathion*	µg/L	SO-IN-MUL-TE-020	<0.01	--	0.30
Malathion*	µg/L	SO-IN-MUL-TE-020	<0.01	--	190
Phorate*	µg/L	SO-IN-MUL-TE-020	<0.01	--	2
Discipline : Biological		Group : Water			
Total Coliform	Per 100 mL	IS 15185:2016; RA2021	Not Detected	Shall not be detected	
Escherichia Coli (E. Coli)	Per 100 mL	IS 15185:2016; RA2021	Not Detected		

Remarks:1. (*) - Parameters are outsourced to NABL Accredited Lab.



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3852	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/WA/3570
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Mining Phase Pit "A"
Plant Status	: Operational	Sampling Date	: 26.09.2023
Period of Analysis	: 30.09.2023 to 07.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Workzone Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 28	2	Barometric Pressure (mmHg)	: 744
3	Relative Humidity (%)	: 64	4	Weather Condition	: Partly Cloudy
5	Longitude	: 84°05'32.30"E	6	Latitude	: 24°07'59.50"N

Discipline : Chemical		Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result
Suspended Particulate Matter (SPM)	µg/m ³	IS:5182 (Part-4):1999; RA 2019	301



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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TEST REPORT

Test Report No. : ELES/RNC/2023/3853	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/WA/3571
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Mining Phase Pit "B"
Plant Status	: Operational	Sampling Date	: 26.09.2023
Period of Analysis	: 30.09.2023 to 07.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Workzone Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 28	2	Barometric Pressure (mmHg)	: 744
3	Relative Humidity (%)	: 64	4	Weather Condition	: Partly Cloudy
5	Longitude	: 84°05'03.69"E	6	Latitude	: 24°08'22.43"N

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result
Suspended Particulate Matter (SPM)	µg/m ³	IS:5182 (Part-4):1999; RA 2019	300



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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TEST REPORT

Test Report No. : ELES/RNC/2023/3854	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/WA/3572
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Mining Phase Pit "C"
Plant Status	: Operational	Sampling Date	: 26.09.2023
Period of Analysis	: 30.09.2023 to 07.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Workzone Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved


METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 28	2	Barometric Pressure (mmHg) : 744
3	Relative Humidity (%) : 64	4	Weather Condition : Partly Cloudy
5	Longitude : 84°04'56.22"E	6	Latitude : 24°08'41.63"N

Discipline : Chemical		Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result
Suspended Particulate Matter (SPM)	µg/m ³	IS:5182 (Part-4):1999; RA 2019	311



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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TEST REPORT

Test Report No. : ELES/RNC/2023/3855	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/WA/3573
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Dump Yard External
Plant Status	: Operational	Sampling Date	: 27.09.2023
Period of Analysis	: 30.09.2023 to 07.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Workzone Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved


METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 28	2	Barometric Pressure (mmHg)	: 744
3	Relative Humidity (%)	: 65	4	Weather Condition	: Partly Cloudy
5	Longitude	: 84°04'25.48"E	6	Latitude	: 24°08'05.80"N

Discipline : Chemical		Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result
Suspended Particulate Matter (SPM)	µg/m ³	IS:5182 (Part-4):1999; RA 2019	312



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Authorised Signatory
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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3856	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023


CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/WA/3574
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Haul Road
Plant Status	: Operational	Sampling Date	: 27.09.2023
Period of Analysis	: 30.09.2023 to 07.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Workzone Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 28	2	Barometric Pressure (mmHg)	: 744
3	Relative Humidity (%)	: 65	4	Weather Condition	: Partly Cloudy
5	Longitude	: 84°05'01.93"E	6	Latitude	: 24°07'55.74"N

Discipline : Chemical		Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result
Suspended Particulate Matter (SPM)	µg/m ³	IS:5182 (Part-4):1999; RA 2019	283



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Authorised Signatory
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Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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TEST REPORT

Test Report No. : ELES/RNC/2023/3857	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/WA/3575
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Coal Stock Yard
Plant Status	: Operational	Sampling Date	: 27.09.2023
Period of Analysis	: 30.09.2023 to 07.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Workzone Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 28	2	Barometric Pressure (mmHg) : 744
3	Relative Humidity (%) : 65	4	Weather Condition : Partly Cloudy
5	Longitude : 84°04'59.53"E	6	Latitude : 24°07'58.72"N

Discipline : Chemical		Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result
Suspended Particulate Matter (SPM)	µg/m ³	IS:5182 (Part-4):1999; RA 2019	405



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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/3858	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/WA/3576
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Truck Parking Zone
Plant Status	: Operational	Sampling Date	: 28.09.2023
Period of Analysis	: 30.09.2023 to 07.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Workzone Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 27	2	Barometric Pressure (mmHg) : 744
3	Relative Humidity (%) : 68	4	Weather Condition : Cloudy
5	Longitude : 84°04'25.48"E	6	Latitude : 24°08'05.80"N

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result
Suspended Particulate Matter (SPM)	µg/m ³	IS:5182 (Part-4):1999; RA2019	377



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TEST REPORT

Test Report No. : ELES/RNC/2023/3859	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/WA/3577
Address	: Kathautia Open Cast Coal Mines, Post- Naudiha, P.S. Pandwa, Daltongang, Dist- Palamu Jharkhand, Pin-822123	Location	: Rajhara railway Siding
Plant Status	: Operational	Sampling Date	: 28.09.2023
Period of Analysis	: 30.09.2023 to 07.10.2023	Sample Received Date	: 30.09.2023
		Type of Sample	: Workzone Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 744
3	Relative Humidity (%)	: 68	4	Weather Condition	: Cloudy
5	Longitude	: 84°03'03.55"E	6	Latitude	: 24°09'31.86"N

Discipline : Chemical		Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result
Suspended Particulate Matter (SPM)	µg/m ³	IS:5182 (Part-4):1999; RA 2019	324



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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3868	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002533F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/SL/3592
Address	: Kathautia Open Cast Coal Mines Post- Naudaha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 11.10.2023	Type of Sample	: Soil
		Location of Sample	: Near Office
		Sampling Procedure	: ELES/DOC/SMPL/05
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Pollution & Environment	
Parameter	Unit	Test Protocol	Result
pH (1:2) at 24.8 °C	-	IS 2720 (Part 26):1987; RA2021	6.77
Conductivity (1:2) at 24.8 °C	µS/cm	IS 14767: 2000; RA2021	184
Total Organic Carbon (TOC)	%	Soil Testing in India: 2011 (Walkley & Black Method)	0.4017
Available Phosphorus (as P) (1:10)	kg/ha	Soil Testing in India; 2011	0.548
Potassium (as K)	mg/kg	IS 9497:1980; RA 2020	136
Available Nitrogen	%	Soil Testing in India: 2011	7.28
Chloride (1:2)	%	ELES/SOIL/SOP/01	0.0071
Lead (as Pb)	mg/kg	US EPA 3050 A&B : 1996	21.5
Cadmium (as Cd)	mg/kg	US EPA 3050 A&B : 1996	100
Mercury (as Hg)	mg/kg	US EPA 7473 : 2007	<0.01
Magnesium (as Mg)	mg/kg	Soil Testing in India: 2011	6920

Remarks:1. pH done at Lab.



Reviewed by

****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinha
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TEST REPORT

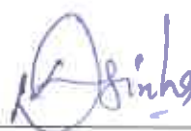
Test Report No. : ELES/RNC/2023/3868	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/SL/3592
Address	: Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 11.10.2023	Type of Sample	: Soil
		Location of Sample	: Near Office
		Sampling Procedure	: ELES/DOC/SMPL/05
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline: Chemical		Group: Pollution & Environment	
Parameter	Unit	Test Protocol	Result
Arsenic (as As)	mg/kg	APHA 23 rd Ed 2017, 3500-As B	<0.005
Selenium (as Se)	mg/kg	IS 3025 (Part-56) :2003; RA 2019	<0.01



****End of Report****


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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2023/3869	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023
ULR No. : TC883923000002534F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindalco Industries Limited	Address : Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sample Ref. No. : ELES/RNC/2023/SL/3593	Sampling Date : 29.09.2023
Plant Status : Operational	Period of Analysis : 30.09.2023 to 11.10.2023	Sample Received Date : 30.09.2023	Type of Sample : Soil
		Location of Sample : Near STP	Sampling Procedure : ELES/DOC/SMPL/05
		Sample Collected By : ELES Pvt. Ltd.	Sample Condition : Sealed & Preserved

Discipline : Chemical		Group : Pollution & Environment	
Parameter	Unit	Test Protocol	Result
pH (1:2) at 24.8 °C	-	IS 2720 (Part 26):1987; RA2021	6.59
Conductivity (1:2) at 24.8 °C	µS/cm	IS 14767: 2000; RA2021	162
Total Organic Carbon (TOC)	%	Soil Testing in India: 2011 (Walkley & Black Method)	0.1673
Available Phosphorus (as P) (1:10)	kg/ha	Soil Testing in India; 2011	1.049
Potassium (as K)	mg/kg	IS 9497:1980; RA 2020	124
Available Nitrogen	%	Soil Testing in India: 2011	5.04
Chloride (1:2)	%	ELES/SOIL/SOP/01	0.0355
Lead (as Pb)	mg/kg	US EPA 3050 A&B : 1996	28.9
Cadmium (as Cd)	mg/kg	US EPA 3050 A&B : 1996	6.9
Mercury (as Hg)	mg/kg	US EPA 7473 : 2007	<0.01
Magnesium (as Mg)	mg/kg	Soil Testing in India: 2011	7720

Remarks:1. pH done at Lab.



Reviewed by

****End of Report****

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ELES Pvt. Ltd. Technical Manager

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"Save Environment, Save Future"



ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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TEST REPORT

Test Report No. : ELES/RNC/2023/3869	Report Release Date : 18.10.2023
Work Order No. : 13572310670	Work Order Date : 27.09.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/SL/3593
Address	: Kathautia Open Cast Coal Mines Post- Naudiha, P.S.- Pandwa, Daltongang, Dist- Palamu, Jharkhand, Pin-822123	Sampling Date	: 29.09.2023
Plant Status	: Operational	Sample Received Date	: 30.09.2023
Period of Analysis	: 30.09.2023 to 11.10.2023	Type of Sample	: Soil
		Location of Sample	: Near STP
		Sampling Procedure	: ELES/DOC/SMPL/05
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline: Chemical		Group: Pollution & Environment	
Parameter	Unit	Test Protocol	Result
Arsenic (as As)	mg/kg	APHA 23 rd Ed 2017, 3500-As B	<0.005
Selenium (as Se)	mg/kg	IS 3025 (Part-56) :2003; RA 2019	<0.01



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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