

OCM/ENV/ 98 /2020

Date: 25.05.2020

To  
The Joint Director(s)  
Ministry of Environment, Forest & Climate change  
Govt. of India  
Eastern Regional Office  
Bhubaneswar

Sub:- Submission of Six Monthly report on the status of compliance to the conditions stipulated in the grant of Environmental Clearance Letter No.: J-11015/38/2006-IA-II(M), dtd06.12.2006 for **Ostapal Chromite Mines of M/s FACOR Ltd.**

Dear Sir,

This has reference to the captioned subject, it is to inform you that we are herewith submitting six monthly compliance reports pertaining to Ostapal Chromite Mines of M/s FACOR Ltd for the period from **October'2019 to March'2020** along with the Environmental Monitoring data (Ambient Air, Noise, Water & Soil) for your kind perusal. The soft copy of the same is being sent by mail to your good office.

This is for your kind information & necessary action.

Thanking You,

Yours faithfully,  
for FERRO ALLOYS CORPORATION LTD

  
MINES MANAGER

Encl: As above

CC: The Director (IA), MoEF, 3<sup>rd</sup> Floor, Indira Paryavaran Bhawan, Jorbagh Road,  
New Delhi-110032

Name of the Project :OSTAPALCHROMITEMINES,M/S.FACORLTD.

Project Code :Mining(Non-Coal)

Clearance Letter No. With date :No.J-11015/38/2006-IA-II(M)dt.06-12- 2006

Period of Compliance Report :October,2019 to March,2020

**Specific Condition:**

Sl. No.	Condition	Compliance Status
1.	All the conditions stipulated by the State Pollution control Board, in their Consent to establish should be effectively implemented.	All the stipulated conditions are being effectively implemented.
2.	Necessary forestry clearance under the Forest (Conservation) Act, 1980 for an area of 4.07 ha forest land shall be obtained before starting mining operation in that area. Till such time mining activities shall be restricted to an area of 64.354 ha for which in principle forestry clearance has been obtained from the Ministry on 03.10.2005	This area is left as Safety Zone area for greenbelt around periphery of forest land of M.L. area and mining operations in this area will not be done.
3.	Top soil should be stacked properly with proper slope at earmarked site(s) with adequate measures and should be used for reclamation and rehabilitation of mined out area.	No top soil has been generated during the period Oct, 2019 to March'2020
4.	<p>Over burden shall be stacked at earmarked dump site(s) only and should not be kept active for long period. The total height of the dump(s) should not exceed 45m in three stages of 15 m each, keeping overall slope of the dumps below 28 °. The proponent shall carry out slope stability study and submit report to the Ministry.</p> <p>The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be taken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self - sustaining. Compliance status should be submitted to the Ministry of Environment &amp; Forests on six monthly basis.</p>	<p>The OB is being dumped at earmarked sites only. The OB dump is not kept active for long period. The present height of the dump is 41m with over all slope 25 °. In future also the overall slope will be maintained below 28degrees.</p> <p>The inactive benches are being vegetated by suitable native species and massive grass plantation to prevent erosion &amp; surface runoff. The management of the rehabilitated areas of the dumps has been continuing until the vegetation becomes self-sustaining.</p>
5.	Trace Metals such as Ni,Co,As, and Hg should be analyzed in dust fall and soil samples for at least one year during summer, monsoon and winter seasons. If concentrations of these metals are found below the standards then with prior approval of MOEF this specific monitoring could be discontinued.	Collection and analysis of dust & soil samples is done and the test reports are enclosed in <b>Annexure No.-1 &amp; Annexure No.-2</b> . There is no standards for Ni, Co, As and Hg for dust fall and soil samples.

6.	<p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, plantation etc. The drains should be regularly de-silted and maintained properly.</p> <p>Garland drain (size, gradient and length) shall be constructed for both mine pit &amp; waste dump and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.</p> <p>Storm water return system should be provided. Storm water should not be allowed to go to the effluent treatment plant during high rainfall / super cyclone period. A separate storm water sump for this purpose should be created.</p>	<p>Catch drains around OB dumps and mineral stockyard have already been constructed with siltation ponds at regular intervals to arrest silt and sediments. Whenever required the silts and sediments are being cleaned from catch drains and siltation ponds and maintained regularly. Mine pumped out water is sufficient for dust suppression and plantation purposes. Hence catch drain water is discharging outside ML area through upgraded ETP. Hence there is no need for collection of water from catch drains from mine area, roads, plantation etc.</p> <p>Garland drains of width 2m, depth 1.5m and length 4325 m with gradient have been constructed for maximum discharge of rainfall in the adjoining areas.</p> <p>There is no chance of flow of storm water into the effluent treatment plant during high rain fall/super cyclone period because the plant is at high reduced level (RL). Hence storm water return system is not required.</p>
7.	<p>Dimensions of retaining wall at the toe of OB dumps &amp; benches within the mine to check run-off and siltation should be based on the rain fall data.</p>	<p>Retaining wall of width 1.5m and height 1.2m has already been constructed all around the toe of dumps up to a length of 3125 m to check the run-off and siltation.</p>
8.	<p>Effluents containing of Cr<sup>+6</sup> shall be treated to meet the prescribed standards before reuse/discharge. Effluent Treatment plant should be provided for treatment of mine water discharge and wastewater generated from the workshop and mineral separation plant.</p> <p>Run off from OB dumps and other surface run off should be analyzed for Cr<sup>+6</sup> and in case its concentration is found higher than the permissible limit the water should be treated before reuse/discharge.</p>	<p>An Effluent Treatment Plant is operating for treatment of Mines discharge water. The conc. of Cr<sup>+6</sup> in treated discharge water is &lt;0.005mg/l.</p> <p>The tailing water (waste water of mineral separation plant) also is being treated by adding FeSO<sub>4</sub> before discharge into tailing pond. The treated tailing pond water is being collected in an intake pond and being re-used in beneficiation plant. Thus zero discharge from Beneficiation Plant is being maintained.</p> <p>Almost all mining machineries and transporting vehicles are being engaged on contract basis for transportation of OB and chrome ore. The company has few nos. of vehicles. The major repairing of these vehicles is being done at outside workshop and minor repairing is being done in our garage. Hence, discharge of workshop effluent is nil.</p> <p>The total surface runoff water is being collected in two settling pits which are pumped to the ETP for treatment before final discharge.</p>
9.	<p>Separate impervious concrete pits for disposal of sludge shall be provided for the safe disposal of sludge generated from the mining operations.</p>	<p>The sludge generated from mining operations contains chrome ore. It is being fed in Beneficiation Plant to separate the Chrome.</p>

10.	The Project proponent shall ensure that the quality of decanted effluents from the tailing pond confirm to the pre scribed standards before discharge.	The effluents from tailing pond are not discharged outside. The super natant water of the tailing pond is being collected in a sump adjacent to the tailing pond and re-circulated in Beneficiation Plant .
11.	The Project proponent shall explore the possibility to reduce concentration of Cr <sup>+6</sup> in the tailing pond in consultation with an Expert Scientific Institution like NEERI.	The Conc. of Cr <sup>+6</sup> in tailings is being reduced by adding FeSO <sub>4</sub> solution and disposed in the tailing pond.
12.	Plantation shall be raised in an area of 33.02 Ha including green belt in an area of 6.56 Ha by planting native species around ML area, OB dumps, and roads around worked out area etc. in consultation with local DFO/Agriculture Department . The density of the trees should be around 2000 plant species per hectare.	Plantation has been done over inactive/dead benches of OB dumps, Road side, around C.O.B Plant and other places in an area of 32.83 Ha. Plantation is being carried out in consultation with local Forest Department.
13.	Regular monitoring of ground water level & quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year– pre-monsoon (April -May), monsoon (August) ,post - monsoon (November ) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground Water Authority and Regional Director Central Ground Water Board.	Monitoring of ground water level & quality is being carried out in 9 Nos. of wells.  The Monitoring reports has been sent & the monitoring report for the period from Oct,2019 to March, 2020 is enclosed as: Ground water level : <b>Annexure No.-3</b> Ground water quality : <b>Annexure No.-4</b>
14.	The project proponent shall carry out regular monitoring of ground water quality in all the 14 wells. The frequency of monitoring in 8 wells where concentration of Cr <sup>+6</sup> is within permissible limits, will be quarterly while in the remaining 6 wells it will be on monthly basis.	The monitoring test reports of ground water quality in 6 Bore wells & 3 Nos. of piezometer holes for concentration of Cr <sup>+6</sup> are enclosed as <b>Annexure No.- 5.</b>
15.	Project Authorities should meet water requirement of the peripheral village(s), especially, if the village wells go dry due to mine de -watering.	As a part of peripheral development, the Project Authority has constructed Bore wells at nearby villages and also potable water is being provided to nearby villages by water tankers. Reading of the abstraction structures, used for water supply to local community are enclosed for reference as <b>Annexure No.:6</b>
16.	Permission from the competent authority should be obtained for drawl of ground water for domestic use.	NOC has been obtained from Central Ground Water Authority , Ministry of Water Resources, New Delhi vide letter no.21 - 4/1456/OR/MIN/2017 -1735 dated 28.08.2018 for ground water withdrawal. The approved NOC is enclosed as <b>Annexure No.-7.</b>
17.	Suitable rain water harvesting measures on long-term basis shall be planned and implemented in consultation with Regional Director, CGWB.	Rain water has been collected in different pits for suitable rain water harvesting measures.

18.	Drills should be wet operated or operated with dust extractors.	Wet Drilling is being practiced.
19.	Blasting operation should be carried out only during the day time. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting operation is being carried out in day time only. Controlled blasting is being practiced by following Nonel & muffle blasting. Delay detonators are used for providing delay timings between rows and within rows of holes. Numbers of rows in a blast are restricted to less than three to get good fragmentation and to reduce fly rocks and ground vibration.
20.	The voids created at the end of mining shall be converted into water Body with shallow depths not exceeding 30m. The higher benches of the excavated void/mine pit shall be terraced and plantation done to stabilize the slopes. Peripheral fencing shall be done along the excavated area.	The same will be implemented at the end of mining operation. It has already been prepared in Mining Plan & submitted to IBM, Bhubaneswar
21.	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	Vehicular emission of all machinery used in mining operations are being monitored regularly and kept under control of rigorous maintenance of all engines and changing of lubricants as per the recommendation of the manufacturer. HEMMs have valid PUC Certificate which is only allowed for operation inside the Mines. All the transporting vehicles are being covered with tarpaulin and over loading are strictly avoided.
22.	Consent to operate should be obtained from SPCB before enhancing Production capacity of the mine.	Consent to operate has been obtained from SPCB, Bhubaneswar. There is no proposal of enhancing the production capacity of the mine.
23.	Sewage treatment Plant should be installed for the colony. ETP should also be provided for workshop and waste water generated from Mining operations.	There is no colony inside the ML area. Almost all mining machineries and transporting vehicles are being engaged on contract basis for transportation of OB and chrome ore. The company has few Nos. of vehicles. However, major repairing of the vehicles is being done at outside workshop and minor repairing is being done in our garage. Hence, discharge of workshop effluent is nil. An ETP has already been established for treatment of mines water.
24.	A final mines closure plan along with details of corpus fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	The same will be submitted in due time to MOEF for approval .

**GENERAL CONDITIONS:**

Sl. No.	Condition	Compliance Status
1	No change in mining technology & scope of working should be made without prior.	The Mining technology & scope of working has not been changed.
2	No change in the calendar plan including excavation, quantum of mineral Chromite and waste should be made.	The calendar plan including excavation, quantum of mineral Chromite and waste over burden has not been changed. The calendar plan including excavation, quantum of mineral chromite and waste over burden has been generated during the period ( April, 2019 to March, 2020)is given in <b>Annexure No. -8</b> .
3	Conservation measures for protection of flora & fauna in the Core & Buffer Zone should be drawn up in consultation with local forest & wild life department.	As per the advice of Forest Department, we are maintaining vehicles, watchman and infrastructural facility as measures to protect Flora & Fauna in core & buffer zone.
4	Four ambient air quality -monitoring stations should be established in the Core zone as well as in the Buffer zone for RPM, SPM, SO <sub>2</sub> & NO <sub>x</sub> monitoring. Location of the stations should be decided based on the meteorological data, topographical features, and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.	Ambient Air quality monitoring stations has already been established in consultation with SPCB.
5	Data on ambient Air Quality (RPM, SPM, SO <sub>2</sub> & NO <sub>x</sub> ) should be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	Test reports on Ambient Air Quality monitoring viz., PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> & CO is being monitored & submitted regularly. Monitoring report for the period Oct, 2019 to March, 2020 is enclosed as follows: <b>Annexure No.-9A : Core Zone</b> <b>Annexure No.-9B : Buffer Zone</b>
6	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading & unloading and at transfer points should be provided and properly maintained.	Control of fugitive dust emissions is being carried out by water spraying on haul roads, Ore handling yard, loading and unloading points regularly. The test report of the same is enclosed as <b>Annexure No.-10</b> .
7	Measures should be taken for control of noise levels below 85 dB(A) in work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Control measures such as maintenance of all machines including checking of silencers regularly, controlled blasting using delay detonators, installing immovable machinery on foundations with suitable rubber pad and closed rooms is being followed -up. The workers engaged at noise generating areas are allowed to work on rotation basis with providing earplugs/muffs. Location wise noise level at work environment is enclosed as <b>Annexure No. -11</b> .

8	<p>Industrial waste water (workshop &amp; waste water from the Mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19<sup>th</sup> May, 1993 and 31<sup>st</sup> December, 1993 or as amended from time to time. Oil &amp; grease trap should be installed before discharge of workshop effluents.</p>	<p>The Mines waste water is being pumped out directly in to the intake tank of the ETP for treatment of Cr<sup>+6</sup> and part of the treated water is used in our COB Plant, plantation, dust suppression and surplus treated water is finally discharged to outside ML area. The analysis of this water shows that all parameters are well within the prescribed limit. The analysis report of Mines final discharge water after treatment in E.T.P., for the period October, 2019 to March, 2020 is enclosed as <b>Annexure No.-12</b>. Almost all mining machineries and transporting vehicles are being engaged on contract basis for transportation of OB and chrome ore. The company has few Nos. of vehicles. The major repairing of these vehicles is being done outside mines and minor repairing is being done in our garage. Hence, discharge of workshop effluent is not envisaged.</p>
9	<p>Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.</p> <p>Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.</p>	<p>In addition to water spraying to suppress dust generation, workers engaged in dusty areas such as drillers, dumper drivers, HEMM Operators are being provided with nose masks as precautionary measure. Training &amp; information on safety, health hazards are being given to all categories of deserved workers. Occupational health surveillance programme to all categories of workers and employees is being conducted periodically by lung function test, audiometry test, vision tests and other tests. Workers/employees with defects are advised for suitable treatment or engaged on suitable rotation duty.</p>
10	<p>A separate Environment Management Cell with suitable qualified personnel should be set -up under the control of a Senior Executive, who will report directly to the Head of the Organization.</p>	<p>A separate Environment Management Cell with qualified personnel and well equipped Environment Engineering Laboratory is functioning under the control of a Senior Executive. Besides we are carrying out all Environmental monitoring &amp; analysis through a MoEF &amp; NABL accredited laboratory M/S Environmental Research and Services ( India) Pvt. Ltd., Bhubaneswar &amp; the monitoring reports are enclosed as Annexures.</p>
11	<p>The Project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the Project by the concerned authorities and the date of start of land development work.</p>	<p>The final approval of the Project is 06.12.2006. It is a mining industry. Hence, land development work is a continuous process.</p>
12	<p>The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.</p>	<p>Separate funds provision is made to carryout environmental protection measures. Details of expenses during the year 2019-20 and proposed budgeted amount for the year 2020-21 is given in <b>Annexure No. -13</b>.</p>



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha  
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

## ANALYSIS REPORT of DUST FALL (For Nov-2019)

Date: 11 Dec 2019

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client.  
Date of Sampling/Monitoring : 01-30.11.2019  
Sample Received on : 02.12.2019  
Analysis Started On : 03.12.2019  
Analysis Completed on : 07.12.2019  
Method of Sampling : IS 5182 : Part 1 : 2006, Reaffirmed 2012

Sampling Location Specification :

D<sub>1</sub> : Roof top of the Office Building

Sl. No.	Parameter	Unit (Milligram of deposit per square meter per day)	Result
			D <sub>1</sub>
01	Ni	mg / m <sup>2</sup> d	ND
02	Co	mg / m <sup>2</sup> d	ND
03	As	mg / m <sup>2</sup> d	ND
04	Hg	mg / m <sup>2</sup> d	ND

ND : Not Detected

.....END OF TEST REPORT...

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager





GSTIN : 21AAACE6224D1ZE

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## ANALYSIS REPORT of DUST FALL (For Feb-2020)

Date: 11 Mar 2020

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client.  
Date of Sampling/Monitoring : 01-29.02.2020  
Sample Received on : 02.03.2020  
Analysis Started on : 03.03.2020  
Analysis Completed on : 09.03.2020  
Method of Sampling : IS 5182 : Part 1 : 2006, Reaffirmed 2012

Sampling Location Specification :

D<sub>1</sub> : Roof top of the Office Building

Sl. No.	Parameter	Unit (Milligram of deposit per square meter per day)	Result
			D <sub>1</sub>
01	Ni	mg / m <sup>2</sup> d	ND
02	Co	mg / m <sup>2</sup> d	ND
03	As	mg / m <sup>2</sup> d	ND
04	Hg	mg / m <sup>2</sup> d	ND

ND : Not Detected

  
(Authorized Signatory)

.....END OF TEST REPORT... S.P.Pattanayak  
Tech.Manager

# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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## ANALYSIS REPORT of SOIL SAMPLE

(For Nov-2019)

Date: 11 Dec 2019

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the Client.

Date of Sampling/Monitoring : 27.11.2019

Sample Received on : 02.12.2019

Analysis Started On : 03.12.2019

Analysis Completed on : 09.12.2019

### Sampling Location Specification :

- S1 : Soil sample from Eastern side of the lease hold area  
S2 : Soil sample from Western side of the lease hold area  
S3 : Soil sample from Northern side of the lease hold area  
S4 : Soil sample from Southern side of the lease hold area

Sl. No.	Parameter	Unit	Result			
			S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>
01	Ni	Mg/Kg	15.3	12.2	18.6	14.7
02	Co	Mg/Kg	ND	ND	ND	ND
03	As	Mg/Kg	ND	ND	ND	ND
04	Hg	Mg/Kg	ND	ND	ND	ND

ND : Not Detected

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager



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Tel: +91-9437143248, +91-9937690329 , E-mail: ersibbsr@gmail.com

## ANALYSIS REPORT of SOIL SAMPLE (For Feb-2020)

Date: 11 Mar 2020

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client.  
Date of Sampling/Monitoring : 26.02.2020  
Sample Received on : 02.03.2020  
Analysis Started on : 03.03.2020  
Analysis Completed on : 09.03.2020

### Sampling Location Specification :

S1 : Soil sample from Eastern side of the lease hold area  
S2 : Soil sample from Western side of the lease hold area  
S3 : Soil sample from Northern side of the lease hold area  
S4 : Soil sample from Southern side of the lease hold area

Sl. No.	Parameter	Unit	Result			
			S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>
01	Ni	Mg/Kg	9.4	18.6	10.2	14.2
02	Co	Mg/Kg	ND	ND	ND	ND
03	As	Mg/Kg	ND	ND	ND	ND
04	Hg	Mg/Kg	ND	ND	ND	ND

ND : Not Detected

  
(Authorized Signatory)

.....END OF TEST REPORT....

S.P.Pattanayak  
Tech.Manager

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(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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## GROUND WATER LEVEL, DEPTH FROM SURFACE

(For Nov-2019)

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
Date of Monitoring : 27-28.11.2019  
Monitoring carried by : ERSiPL's representative  
Monitoring carried in presence of : Client's representative

Sl. No.	Location	Depth (bgL in meter)
01	Borewell Near workshop of the Mines	10.06
02	Bore well near main gate of OCM	9.88
03	Near Ostia Village (Open Well)	2.34
04	Near Ostapal Village (Open well)	4.57
05	Tube well inside the Shiva Temple of Village Gurujanga	10.11
06	Tube well outside of the Shiva Temple of Village Gurujanga	9.93
07	Eastern side of the quarry, (PZ-1)	2.34
08	Southern side of the quarry, (PZ-2)	1.75
09	Western side of the quarry, (PZ-3)	1.96



(Authorized Signatory)

.....END OF TEST REPORT.....

**S.P. Pattanayak**  
Tech. Manager



GSTIN : 21AAACE6224D1ZE

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## GROUND WATER LEVEL, DEPTH FROM SURFACE

(For Feb-2020)

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
Date of Monitoring : 24-25.02.2020  
Monitoring carried by : ERSIPL's representative  
Monitoring carried in presence of : Client's representative

Sl. No.	Location	Depth (bgL in meter)
01	Borewell Near workshop of the Mines	10.72
02	Bore well near main gate of OCM	10.36
03	Near Ostia Village (Open Well)	2.85
04	Near Ostapal Village (Open well)	4.88
05	Tube well inside the Shiva Temple of Village Gurujanga	10.36
06	Tube well outside of the Shiva Temple of Village Gurujanga	10.49
07	Eastern side of the quarry, (PZ-1)	3.20
08	Southern side of the quarry, (PZ-2)	2.57
09	Western side of the quarry, (PZ-3)	2.85

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
**S.P.Pattanayak**  
Tech.Manager



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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ULR-TC744019000000344F

Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Nov-2019)

Page 1 of 1

**Date: 11 Dec 2019**

**Test Report No: ERSIPL/TR/WA/427**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
Date of Sampling : 27-28.11.2019  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the client  
Sample Received on : 02.12.2019  
Analysis Started on : 03.12.2019  
Analysis Completed on : 07.12.2019  
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
Quantity of Sample : 2ltrs  
Type of Container : Glass Bottle & HDPE Bottle  
Environment Condition : All Tests carried out in Room Temperature

**Sampling Location Specification**

ERSIPL/WA/1582  
ERSIPL/WA/1583  
ERSIPL/WA/1584  
ERSIPL/WA/1585  
ERSIPL/WA/1586  
GWQ1- Bore well near workshop of the Mines  
GWQ2- Bore well near main gate of OCM  
GWQ3- Open well near Ostia Village  
GWQ4- Open well near Ostapal Village  
GWQ5- Tube well inside the Shiva Temple of Village Gurujanga

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result				
					ERSIPL/WA/1582	ERSIPL/WA/1583	ERSIPL/WA/1584	ERSIPL/WA/1585	ERSIPL/WA/1586
01	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.4	0.3	0.2	0.5	0.3
02	pH	IS 3025:Part 11: 1983 Reaffirmed-2017	No	6.5 to 8.5	6.50	6.57	6.67	6.54	5.92
03	Total Hardness as CaCO <sub>3</sub>	IS 3025:Part 21: 2009 Reaffirmed-2014	mg/L	200.0	84.28	84.28	92.12	99.96	127.4
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	0.3	<0.07	<0.07	<0.07	<0.07	<0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2014	mg/L	250.0	21.52	22.50	16.63	14.67	45.0
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2014	mg/L	500.0	92.6	92.3	110.4	119.8	213.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2014	mg/L	75.0	10.99	12.57	10.99	13.35	26.70
08	Magnesium as Mg	IS 3025 (Part 46):1994, Reaffirmed -2014	mg/L	30.0	13.84	12.88	15.75	16.22	14.79
09	Sulphate as SO <sub>4</sub>	IS 3025:Part 24: 1986 Reaffirmed-2014	mg/L	200.0	3.62	3.12	1.62	1.87	4.87
10	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	1.0	<0.1	<0.1	<0.1	<0.1	<0.1
11	Total Alkalinity as CaCO <sub>3</sub>	IS 3025:Part 23: 1986 Reaffirmed-2014	mg/L	200.0	50.0	52.0	38.0	40.0	34.0

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager

.....END OF TEST REPORT.....

# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Nov-2019)

Page 1 of 2

**Date: 11 Dec 2019**

**Test Report No: ERSIPL/TR/WA/427:T**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
Date of Sampling : 27-28.11.2019  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the client  
Sample Received on : 02.12.2019  
Analysis Started On : 03.12.2019  
Analysis Completed on : 07.12.2019  
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
Quantity of Sample : 2ltrs  
Type of Container : Glass Bottle & HDPE Bottle  
Environment Condition : All Tests carried out in Room Temperature

**Sampling Location Specification**

ERSIPL/WA/1582 : GWQ1- Bore well near workshop of the Mines  
ERSIPL/WA/1583 : GWQ2- Bore well near main gate of OCM  
ERSIPL/WA/1584 : GWQ3- Open well near Ostia Village  
ERSIPL/WA/1585 : GWQ4- Open well near Ostapal Village  
ERSIPL/WA/1586 : GWQ5- Tube well inside the Shiva Temple of Village Gurujanga

SI	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result				
					ERSIPL/WA/1582	ERSIPL/WA/1583	ERSIPL/WA/1584	ERSIPL/WA/1585	ERSIPL/WA/1586
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A	A
04	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	0.2 (min)	Nil	Nil	Nil	Nil	Nil
05	Copper	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
06	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
07	Nitrate as NO <sub>3</sub>	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	45.0	<5.0	<5.0	<5.0	<5.0	<5.0
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	0.003	ND	ND	ND	ND	ND
11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND

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Page 2 of 2

12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.05	ND	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	<0.1	<0.1	<0.1	<0.1	<0.1
16	Anionicdetergents	IS 13428 :2005 Reaffirmed-2014	mg/L	0.2	ND	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	0.05	0.05	0.05	0.26	0.28	0.24
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	0.5	ND	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2014	mg/L	0.03	ND	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	0.02	ND	ND	ND	ND	ND

ND - Not Detected

**S.P.Pattanayak**  
Tech. Manager  
(Authorized Signatory)

.....END OF TEST REPORT.....





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ULR-TC744019000000345F

Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Nov-2019)

Page 1 of 1

Date: 11 Dec 2019

Test Report No: ERSIPL/TR/WA/428

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
 Date of Sampling : 27-28.11.2019  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the client  
 Sample Received on : 02.12.2019  
 Analysis Started On : 03.12.2019  
 Analysis Completed on : 07.12.2019  
 Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
 Quantity of Sample : 2ltrs  
 Type of Container : Glass Bottle & HDPE Bottle  
 Environment Condition : All Tests carried out in Room Temperature  
 Sampling Location Specification :

ERSIPL/WA/1587

GWQ6- Tube well outside of the Shiva Temple of Village Gurujanga

ERSIPL/WA/1588

GWQ7- Eastern side of the quarry, (PZ-1)

ERSIPL/WA/1589

GWQ8- Southern side of the quarry, (PZ-2)

ERSIPL/WA/1590

GWQ9- Western side of the quarry, (PZ-3)

SI	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/1587	ERSIPL/WA/1588	ERSIPL/WA/1589	ERSIPL/WA/1590
01	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.7	0.2	0.3	0.4
02	pH	IS 3025:Part 11: 1983 Reaffirmed-2017	No	6.5 to 8.5	5.88	7.75	7.57	7.68
03	Total Hardness as CaCO <sub>3</sub>	IS 3025:Part 21: 2009 Reaffirmed-2014	mg/L	200.0	127.4	131.32	119.56	99.96
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	0.3	<0.07	<0.07	<0.07	<0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2014	mg/L	250.0	43.05	15.63	14.67	19.56
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2014	mg/L	500.0	215.0	218.0	190.3	114.7
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2014	mg/L	75.0	28.28	10.99	12.56	11.78
08	Magnesium as Mg	IS 3025 (Part 46):1994, Reaffirmed -2014	mg/L	30.0	13.84	25.29	21.47	17.18
09	Sulphate as SO <sub>4</sub>	IS 3025:Part 24: 1986 Reaffirmed-2014	mg/L	200.0	5.5	2.0	2.75	2.62
10	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	1.0	<0.1	<0.1	0.16	0.19
11	Total Alkalinity as CaCO <sub>3</sub>	IS 3025:Part 23: 1986 Reaffirmed-2014	mg/L	200.0	34.0	76.0	80.0	76.0

  
**S.P. Patterayak**  
 (Authorized Signatory)  
 Tech. Manager

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Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Nov-2019)

Page 1 of 2

Date: 11 Dec 2019

Test Report No: ERSIPL/TR/WA/428:T

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
Date of Sampling : 27-28.11.2019  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the client  
Sample Received on : 02.12.2019  
Analysis Started On : 03.12.2019  
Analysis Completed on : 07.12.2019  
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
Quantity of Sample : 2ltrs  
Type of Container : Glass Bottle & HDPE Bottle  
Environment Condition : All Tests carried out in Room Temperature  
Sampling Location Specification :

ERSIPL/WA/1587  
ERSIPL/WA/1588  
ERSIPL/WA/1589  
ERSIPL/WA/1590

GWQ6- Tube well outside of the Shiva Temple of Village Gurujanga  
GWQ7- Eastern side of the quarry, (PZ-1)  
GWQ8- Southern side of the quarry, (PZ-2)  
GWQ9- Western side of the quarry, (PZ-3)

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/1587	ERSIPL/WA/1588	ERSIPL/WA/1589	ERSIPL/WA/1590
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07.08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
05	Copper	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	0.05	<0.02	<0.02	<0.02	<0.02
06	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	<0.01	<0.01	<0.01	<0.01
07	Nitrate as NO <sub>3</sub>	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	0.003	ND	ND	ND	ND
11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND

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Page 2 of 2

12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	<0.1	<0.1	<0.1	<0.1
16	Anionicdetergents	IS 13428 :2005 Reaffirmed-2014	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	0.05	0.25	0.05	0.04	0.05
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2014	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	0.02	ND	ND	ND	ND

ND - Not Detected

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager



# Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC744020000000110F

Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Feb-2020)

Page 1 of 1

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/WA/048

Name and Address of the Customer	:	Ostapal Chromite Mines of M/S FACOR LTD
Date of Sampling	:	24-25.02.2020
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the client
Sample Received on	:	02.03.2020
Analysis Started on	:	03.03.2020
Analysis Completed on	:	07.03.2020
Method of Sampling	:	IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample	:	2ltrs
Type of Container	:	Glass Bottle & HDPE Bottle
Environment Condition	:	All Tests carried out in Room Temperature
<b>Sampling Location Specification</b>	:	
ERSIPL/WA/1756		GWQ1- Bore well near workshop of the Mines
ERSIPL/WA/1757		GWQ2- Bore well near main gate of OCM
ERSIPL/WA/1758		GWQ3- Open well near Ostia Village
ERSIPL/WA/1759		GWQ4- Open well near Ostapal Village

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/1756	ERSIPL/WA/1757	ERSIPL/WA/1758	ERSIPL/WA/1759
01	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.2	0.5	1.0	1.0
02	pH	IS 3025:Part 11: 1983 Reaffirmed-2017	No	6.5 to 8.5	6.91	6.86	6.55	6.63
03	Total Hardness as CaCO <sub>3</sub>	IS 3025:Part 21: 2009 Reaffirmed-2014	mg/L	200.0	78.0	74.0	90.0	88.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	0.3	<0.07	<0.07	<0.07	<0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2014	mg/L	250.0	22.50	20.54	12.72	16.63
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2014	mg/L	500.0	90.4	91.9	106.7	109.6
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2014	mg/L	75.0	12.02	11.22	19.23	20.84
08	Magnesium as Mg	IS 3025 (Part 46):1994, Reaffirmed -2014	mg/L	30.0	11.68	11.20	10.22	8.76
09	Sulphate as SO <sub>4</sub>	IS 3025:Part 24: 1986 Reaffirmed-2014	mg/L	200.0	2.00	2.00	2.12	3.25
10	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
11	Total Alkalinity as CaCO <sub>3</sub>	IS 3025:Part 23: 1986 Reaffirmed-2014	mg/L	200.0	66.0	70.0	108.0	102.0



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Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Feb-2020)

Page 1 of 2

**Date: 11 Mar 2020**  
**Test Report No: ERSIPL/TR/WA/048:T**  
 Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
 Date of Sampling : 24-25.02.2020  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the client  
 Sample Received on : 02.03.2020  
 Analysis Started on : 03.03.2020  
 Analysis Completed on : 07.03.2020  
 Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
 Quantity of Sample : 2ltrs  
 Type of Container : Glass Bottle & HDPE Bottle  
 Environment Condition : All Tests carried out in Room Temperature

### Sampling Location Specification :

ERSIPL/WA/1756  
 ERSIPL/WA/1757  
 ERSIPL/WA/1758  
 ERSIPL/WA/1759

GWQ1- Bore well near workshop of the Mines  
 GWQ2- Bore well near main gate of OCM  
 GWQ3- Open well near Ostia Village  
 GWQ4- Open well near Ostapal Village

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/1756	ERSIPL/WA/1757	ERSIPL/WA/1758	ERSIPL/WA/1759
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
05	Copper	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	0.05	<0.02	<0.02	<0.02	<0.02
06	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	<0.01	<0.01	<0.01	<0.01
07	Nitrate as NO <sub>3</sub>	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	0.003	ND	ND	ND	ND
11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND



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Page 2 of 2

12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	<0.1	<0.1	<0.1	<0.1
16	Anionicdetergents	IS 13428 :2005 Reaffirmed-2014	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	0.05	0.04	0.04	0.41	0.19
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2014	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	0.02	ND	ND	ND	ND

ND - Not Detected

.....END OF TEST REPORT.....

(Authorized Signatory)  
S.P. Panthayak  
Tech. Manager



# Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC744020000000111F

Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Feb-2020)

Page 1 of 1

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/WA/049

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
Date of Sampling : 24-25.02.2020  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the client  
Sample Received on : 02.03.2020  
Analysis Started on : 03.03.2020  
Analysis Completed on : 07.03.2020  
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
Quantity of Sample : 2ltrs  
Type of Container : Glass Bottle & HDPE Bottle  
Environment Condition : All Tests carried out in Room Temperature  
Sampling Location Specification :  
ERSIPL/WA/1760  
ERSIPL/WA/1761  
ERSIPL/WA/1762  
ERSIPL/WA/1763  
ERSIPL/WA/1764

GWQ5- Tube well inside the Shiva Temple of Village Gurujanga  
GWQ6- Tube well outside of the Shiva Temple of Village Gurujanga  
GWQ7- Eastern side of the quarry, (PZ-1)  
GWQ8- Southern side of the quarry, (PZ-2)  
GWQ9- Western side of the quarry, (PZ-3)

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result				
					ERSIPL/WA/1760	ERSIPL/WA/1761	ERSIPL/WA/1762	ERSIPL/WA/1763	ERSIPL/WA/1764
01	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.9	0.7	1.0	1.0	1.0
02	pH	IS 3025:Part 11: 1983 Reaffirmed-2017	No	6.5 to 8.5	6.07	6.06	7.11	7.17	7.25
03	Total Hardness as CaCO <sub>3</sub>	IS 3025:Part 21: 2009 Reaffirmed-2014	mg/L	200.0	54.0	58.0	138.0	136.0	130.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	0.3	<0.07	<0.07	<0.07	<0.07	<0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2014	mg/L	250.0	20.54	19.56	14.67	16.63	17.61
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2014	mg/L	500.0	70.3	71.9	132.4	151.5	135.5
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2014	mg/L	75.0	8.01	9.62	19.23	14.42	12.02
08	Magnesium as Mg	IS 3025 (Part 46):1994, Reaffirmed -2014	mg/L	30.0	8.28	8.28	21.91	24.35	24.35
09	Sulphate as SO <sub>4</sub>	IS 3025:Part 24: 1986 Reaffirmed-2014	mg/L	200.0	2.87	2.37	4.12	6.00	3.75
10	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	1.0	<0.1	<0.1	<0.1	<0.1	<0.1
11	Total Alkalinity as CaCO <sub>3</sub>	IS 3025:Part 23: 1986 Reaffirmed-2014	mg/L	200.0	44.0	48.0	136.0	134.0	140.0



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/ICE 17025 : (NABL) Accredited Laboratory, DSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha  
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Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Feb-2020)

Page 1 of 2

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/WA/49:T

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
Date of Sampling : 24-25.02.2020  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the client  
Sample Received on : 02.03.2020  
Analysis Started on : 03.03.2020  
Analysis Completed on : 07.03.2020  
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
Quantity of Sample : 2ltrs  
Type of Container : Glass Bottle & HDPE Bottle  
Environment Condition : All Tests carried out in Room Temperature

### Sampling Location Specification :

ERSIPL/WA/1760  
ERSIPL/WA/1761  
ERSIPL/WA/1762  
ERSIPL/WA/1763  
ERSIPL/WA/1764

GWQ5- Tube well inside the Shiva Temple of Village Gurujanga  
GWQ6- Tube well outside of the Shiva Temple of Village Gurujanga  
GWQ7- Eastern side of the quarry, (PZ-1)  
GWQ8- Southern side of the quarry, (PZ-2)  
GWQ9- Western side of the quarry, (PZ-3)

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result				
					ERSIPL/WA/1760	ERSIPL/WA/1761	ERSIPL/WA/1762	ERSIPL/WA/1763	ERSIPL/WA/1764
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A	A
04	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	0.2 (min)	Nil	Nil	Nil	Nil	Nil
05	Copper	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
06	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
07	Nitrate as NO <sub>3</sub>	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	45.0	<5.0	<5.0	<5.0	<5.0	<5.0
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.001	ND	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	0.003	ND	ND	ND	ND	ND
11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND





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Page 2 of 2

12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.05	ND	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.01	ND	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	<0.1	<0.1	<0.1	<0.1	<0.1
16	Anionicdetergents	IS 13428 :2005 Reaffirmed-2014	mg/L	0.2	ND	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	0.05	0.33	0.32	0.11	0.12	0.11
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	0.5	ND	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2014	mg/L	0.03	ND	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	0.02	ND	ND	ND	ND	ND

ND - Not Detected

.....END OF TEST REPORT.....

  
(Authorized Signatory)

S.P.Pattanayak  
Tech.Manager



# Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC744019000000346P

Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Nov-2019)

**Date: 11 Dec 2019**

**Test Report No: ERSIPL/TR/WA/429**

Name and Address of the Customer	:	Ostapal Chromite Mines of M/S FACOR LTD
Date of Sampling	:	27-28.11.2019
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the client
Sample Received on	:	02.12.2019
Analysis Started On	:	03.12.2019
Analysis Completed on	:	07.12.2019
Method of Sampling	:	IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample	:	2ltrs
Type of Container	:	Glass Bottle & HDPE Bottle
Environment Condition	:	All Tests carried out in Room Temperature
<b>Sampling Location Specification</b>	:	
ERSIPL/WA/1582		GWQ1- Bore well near workshop of the Mines
ERSIPL/WA/1583		GWQ2- Bore well near main gate of OCM
ERSIPL/WA/1584		GWQ3- Open well near Ostia Village
ERSIPL/WA/1585		GWQ4- Open well near Ostapal Village
ERSIPL/WA/1586		GWQ5- Tube well inside the Shiva Temple of Village Gurujanga
ERSIPL/WA/1587		GWQ6- Tube well outside of the Shiva Temple of Village Gurujanga
ERSIPL/WA/1588		GWQ7- Eastern side of the quarry, (PZ-1)
ERSIPL/WA/1589		GWQ8- Southern side of the quarry, (PZ-2)
ERSIPL/WA/1590		GWQ9- Western side of the quarry, (PZ-3)

Sl	Parameters Analysed	Result in mg/L								
		ERSIPL/ WA/ 1582	ERSIPL/ WA/ 1583	ERSIPL/ WA/ 1584	ERSIPL/ WA/ 1585	ERSIPL/ WA/ 1586	ERSIPL/ WA/ 1587	ERSIPL/ WA/ 1588	ERSIPL/ WA/ 1589	ERSIPL/ WA/ 1590
01	Hexavalent Chromium (IS 3025: Part 52:2003, Reaffirmed 2014)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03

  
(Authorized Signatory)  
S.P. Pattnayak  
Tech. Manager

.....END OF TEST REPORT.....



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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ULR-TC744020000000112P

Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF GROUND WATER SAMPLE (For Feb-2020)

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/WA/050

Name and Address of the Customer	:	Ostapal Chromite Mines of M/S FACOR LTD
Date of Sampling	:	24-25.02.2020
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the client
Sample Received on	:	02.03.2020
Analysis Started on	:	03.03.2020
Analysis Completed on	:	07.03.2020
Method of Sampling	:	IS 3025: Part 1: 1987, Reaffirmed 2014
Quantity of Sample	:	2ltrs
Type of Container	:	Glass Bottle & HDPE Bottle
Environment Condition	:	All Tests carried out in Room Temperature
<b>Sampling Location Specification</b>	:	
ERSIPL/WA/1756		GWQ1- Bore well near workshop of the Mines
ERSIPL/WA/1757		GWQ2- Bore well near main gate of OCM
ERSIPL/WA/1758		GWQ3- Open well near Ostia Village
ERSIPL/WA/1759		GWQ4- Open well near Ostapal Village
ERSIPL/WA/1760		GWQ5- Tube well inside the Shiva Temple of Village Gurujanga
ERSIPL/WA/1761		GWQ6- Tube well outside of the Shiva Temple of Village Gurujanga
ERSIPL/WA/1762		GWQ7- Eastern side of the quarry, (PZ-1)
ERSIPL/WA/1763		GWQ8- Southern side of the quarry, (PZ-2)
ERSIPL/WA/1764		GWQ9- Western side of the quarry, (PZ-3)

Sl	Parameters Analysed	Result in mg/L								
		ERSIPL/ WA/ 1756	ERSIPL/ WA/ 1757	ERSIPL/ WA/ 1758	ERSIPL/ WA/ 1759	ERSIPL/ WA/ 1760	ERSIPL/ WA/ 1761	ERSIPL/ WA/ 1762	ERSIPL/ WA/ 1763	ERSIPL/ WA/ 1764
01	Hexavalent Chromium (IS 3025: Part 52:2003, Reaffirmed 2014)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

  
(Authorized Signatory)  
S.P. Pattanayak  
Tech. Manager

.....END OF TEST REPORT.....

GROUND WATER ABSTRACTION DATA FROM ABSTRACTION STRUCTURE FOR THE YEAR 2019-20 OSTAPAL CHROMITE MINES, M/s FACORL TD									
Month	Bore Well -1 (Near Main Gate)			Bore well -2 (Near Mechanical Workshop)			TOTAL Withdrawal (A+B) in KL	Avg. Withdrawal Per day in KL	
	Initial Reading	Final Reading	A.Total withdrawal (In KL)	Initial Reading	Final Reading	B.Total withdrawal (In KL)			
April'19	46494	48025	1531	62033	63129	1096	2627	87.57	
May'19	48025	49690	1665	63129	64247	1118	2783	89.77	
June'19	49690	50962	1272	64247	65453	1206	2478	82.60	
July'19	50962	51958	996	65453	66579	1126	2122	68.45	
Aug'19	51958	53048	1090	66579	67710	1131	2221	71.65	
Sept'19	53048	54023	975	67710	68836	1126	2101	70.03	
Oct'19	54023	55148	1125	68836	69810	974	2099	67.71	
Nov'19	55148	56610	1462	69810	70676	866	2328	77.60	
Dec'19	56610	58890	2280	70676	70676	0	2280	73.55	
Jan'20	58890	60230	1340	70676	71750	1074	2414	77.87	
Feb'20	60233	61480	1247	71750	72786	1036	2283	81.54	
Mar'20	61480	63061	1581	72786	73940	1154	2735	88.23	
TOTAL			16564	TOTAL			11907	28471	936.56
Avg. withdrawal per day is 78.00 KL									

  
**Mines Manager**  
**Ostapal Chromite Mines**  
**M/s FACOR LTD.**  
**Kaliapani, Dist-Jajpur.**  
**Pin-755047**



Regional Director

भारत सरकार  
केन्द्रीय भूमि जल प्राधिकरण  
जल संसाधन, नदी विकास  
और गंगा संरक्षण मंत्रालय

Government of India  
Central Ground Water Authority  
Ministry of Water Resources,  
River Development & Ganga Rejuvenation

File No: - 21-4/1456/OR/MIN/2017 - 1735

NOC No: - CGWA/NOC/MIN/ORIG/2018/3957

Date:- 28 AUG 2018

To

M/s Facor Ltd.  
Ostapal Chromite Mines  
Village Gurujanga, Block Sukinda,  
District Jajapur, Odisha – 755028

**Sub: - NOC for ground water withdrawal to M/s Facor Ltd. in respect of their existing "Ostapal Chromite Mines" located at Village Gurujanga, Block Sukinda, District Jajapur, Odisha – reg.**

Refer to your application for grant of NOC for ground water withdrawal dated 28/08/2017. Based on recommendations of Regional Director, Central Ground Water Board, Central Ground Water Board, South Eastern Region, Bhubaneswar vide his letter dated 17/06/2018 and further deliberations on the subject, the NOC of Central Ground Water Authority for ground water withdrawal is hereby accorded to **M/s Facor Ltd. in respect of their existing "Ostapal Chromite Mines" located at Village Gurujanga, Block Sukinda, District Jajapur, Odisha.** The NOC is valid from 02/08/2018 to 01/08/2020 and is subject to the following conditions:-

1. The firm may abstract **100 cu.m/day** of ground water (and not exceeding **36,500 cu.m/year**) through two (2) existing bore wells and **3,300 cu.m/day** (not exceeding **12,04,500 cu.m/year**) through dewatering mine seepage through two (2) existing mine pits on account of mining intersecting the water table. The total withdrawal should not exceed **3,400 cu.m/day** (not exceeding **12,41,000 cu.m/year**). No additional dewatering and ground water abstraction structure shall be constructed for this purpose without prior approval of the CGWA. Any unexpected variation in inflow of ground water into the mine pit should be reported to the concerned Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar.
2. Both the wells as well as dewatering structures shall be fitted with digital water meters by the firm at its own cost and monitoring of monthly ground water abstraction data of each ground water abstraction structures shall be recorded in a log book. Compliance to this condition shall be reported within one month from the date of issue of this letter.
3. **M/s Facor Ltd, Ostapal Chromite Mines**, in consultation with the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar shall implement ground water recharge measures atleast to the tune of **23,630 cu.m/year** as proposed, for augmenting the ground water resources of the areas where post monsoon water level is more than 5 meter below ground level. Firm shall report the compliance within six months from the date of issuance of this letter. Firm shall also undertake periodic maintenance of recharge structures at its own cost.
4. The photographs of the recharge structures after completion of construction of the same shall be furnished immediately to the Regional Director, Central Ground Water

18/11, Jamnagar House, Mansingh Road, New Delhi-110011

Phone : (011) 23383561 Fax : 23382051, 23386743

Website: www.cgwa.noc.gov.in

स्वच्छ सुरक्षित जल - सुन्दर खुशहाल कल

CONSERVE WATER - SAVE LIFE


Board, South Eastern Region, Bhubaneswar for verification under intimation to this office.

5. The firm, at its own cost, shall construct four (4) observation wells (piezometers) at suitable locations and install digital water level recorders along the periphery of the mine for monthly ground water level monitoring. Further, the firm shall execute ground water level monitoring four (4) times a year (January, May, August and November) in core and buffer zone by establishing sufficient number of key wells in consultation with the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar. Firm shall install telemetry system on one of the piezometer and share the user ID and password of the telemetry system with the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar.
6. The ground water quality shall be monitored once in a year (during pre monsoon period).
7. The monitoring data in respect of S. No. 2, 5 & 6 shall be submitted to the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar on regular basis at least once in a year.
8. The firm shall ensure proper recycling and reuse of waste water after adequate treatment.
9. Action taken report in respect of S. No. 1 to 8 shall be submitted to CGWA within one year period.
10. The NOC is liable to be cancelled in case of non-compliance of any of the conditions as mentioned in S. No. 1 to 9.
11. This NOC is subject to prevailing Central/State Government rules/laws or Court orders related to construction of tubewell/ground water withdrawal/construction of recharge or conservation structure/discharge of effluents or any such matter as applicable.
12. The firm shall report self compliance online in the website ([www.cgwa-noc.gov.in](http://www.cgwa-noc.gov.in)) within one year from the date of issue of this NOC.
13. This NOC does not absolve the applicant / proponent of this obligation / requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
14. The NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and be taking decisions independently of the NOC.

  
Regional Director

**Copy to:**

1. The Member Secretary, Odisha Pollution Control Board, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit- VIII, Bhubaneswar- 751012, Odisha **with a request to ensure that the conditions mentioned in the NOC are complied by the firm in consultation with the District Collector & Magistrate, District Jajapur, Odisha.**
2. The District Collector & Magistrate, District Jajapur, Odisha for necessary action.
3. The Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar. This has reference to your recommendation dated 17/06/2018.
4. Guard File 2018-19.

  
Regional Director

**CALENDAR PLAN INCLUDING EXCAVATION, QUANTUM OF MINERAL CHROMITE AND WASTE  
GENERATED DURING THE PERIOD 2019-20  
IN OSTAPAL CHROMITE MINES**

SL. NO.	MATERIALS	CALENDER PLAN PER ANNUM (2019-20)	QUANTITY GENERATED DURING THE PERIOD FROM (April, 2019 to March, 2019)
01.	CHROME ORE	1.046 Lakh Tonnes	1.044 Lakh Tonnes
02.	WASTE OVERBURDEN	3.552 Lakh M <sup>3</sup>	2.076 Lakh M <sup>3</sup>

  
Mines Manager  
Ostapal Chromite Mines  
M/s FACOR LTD.  
Kaliapani, Dist-Jajpur.  
Pin-755047



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ULR-TC744019000000299P

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Oct-2019)

Pg No: 1 of 2

**Date: 05 Nov 2019**

**Test Report No: ERSIPL/TR/AA/338**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client.  
Date of Sampling/Monitoring : 28-29.10.2019  
Sample Received on : 01.11.2019  
Analysis Started on : 01.11.2019  
Analysis Completed on : 05.11.2019  
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
Quantity of Sample : 01 sample for each parameter  
Environment Condition : Sunny

### Sample ID. No.

### Locations (Core Zone)

1. ERSIPL/AA/2230
2. ERSIPL/AA/2231
3. ERSIPL/AA/2232
4. ERSIPL/AA/2233

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2230	ERSIPL/AA/2231	ERSIPL/AA/2232	ERSIPL/AA/2233
1	Particulate Matter (size less than 10 $\mu$ m) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2017, Gravimetric Method	$\mu$ g/m <sup>3</sup>	100.0	73.36	78.08	66.90	67.23
2	Particulate Matter (size less than 2.5 $\mu$ m) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	$\mu$ g/m <sup>3</sup>	60.0	28.57	34.19	31.33	27.32
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu$ g/m <sup>3</sup>	80.0	7.49	7.99	6.01	8.93





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Page 2/2

4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m <sup>3</sup>	80.0	11.99	9.57	11.34	12.94
5	Carbon Monoxide (CO)	By CO Monitor	mg/m <sup>3</sup>	2.0	<1.14	<1.14	<1.14	<1.14
6	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m <sup>3</sup>	100.0	12.0	10.0	14.2	10.6
7	Lead (Pb)		µg/m <sup>3</sup>	1.0	ND	ND	ND	ND
8	Arsenic (As)		ng/m <sup>3</sup>	6.0	ND	ND	ND	ND
9	Nickel (Ni)		ng/m <sup>3</sup>	20.0	ND	ND	ND	ND
10	Ammonia (NH <sub>3</sub> )		µg/m <sup>3</sup>	400.0	ND	ND	ND	ND
11	Benzene (C <sub>6</sub> H <sub>6</sub> )		µg/m <sup>3</sup>	5.0	ND	ND	ND	ND
12	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m <sup>3</sup>	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures

Note: ND = Not Detected

.....END OF TEST REPORT.....

(Authorized Signatory)

**S.P. Pattanayak**  
**Tech. Manager**



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha  
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ULR-TC744019000000348F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

**Date: 11 Dec 2019**

**Test Report No: ERSIPL/TR/AA/362**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client.  
 Date of Sampling/Monitoring : 27-28.11.2019  
 Sample Received on : 02.12.2019  
 Analysis Started on : 03.12.2019  
 Analysis Completed on : 07.12.2019  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2331
2. ERSIPL/AA/2332
3. ERSIPL/AA/2333
4. ERSIPL/AA/2334

### Locations (Core Zone)

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2331	ERSIPL/ AA/ 2332	ERSIPL/ AA/ 2333	ERSIPL/ AA/ 2334
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m <sup>3</sup>	100.0	75.13	73.02	78.68	81.43
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m <sup>3</sup>	60.0	33.47	31.54	37.50	25.12
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m <sup>3</sup>	80.0	8.32	6.95	<6.0	7.75
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m <sup>3</sup>	80.0	17.91	14.37	10.19	11.12

\*Monitoring carried out with control measures

(Authorized Signatory)  
**S.P. Paltanayak**  
Tech. Manager

.....END OF TEST REPORT.....

# Environmental Research and Services (India) Pvt. Ltd.

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Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

Date: 11 Dec 2019

Test Report No: ERSIPL/TR/AA/362:T

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client.  
Date of Sampling/Monitoring : 27-28.11.2019  
Sample Received on : 02.12.2019  
Analysis Started on : 03.12.2019  
Analysis Completed on : 07.12.2019  
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
Quantity of Sample : 01 sample for each parameter  
Environment Condition : Sunny

### Sample ID. No.

5. ERSIPL/AA/2331
6. ERSIPL/AA/2332
7. ERSIPL/AA/2333
8. ERSIPL/AA/2334

### Locations (Core Zone)

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant


### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2331	ERSIPL/AA/2332	ERSIPL/AA/2333	ERSIPL/AA/2334
1	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	μg/m <sup>3</sup>	100.0	14.0	16.1	12.8	20.2
2	Carbon Monoxide (CO)		mg/m <sup>3</sup>	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		μg/m <sup>3</sup>	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m <sup>3</sup>	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m <sup>3</sup>	20.0	ND	ND	ND	ND
6	Ammonia (NH <sub>3</sub> ),		μg/m <sup>3</sup>	400.0	ND	ND	ND	ND
7	Benzene (C <sub>6</sub> H <sub>6</sub> ),		μg/m <sup>3</sup>	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m <sup>3</sup>	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures

Note:ND = Not Detected

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
S.P. Pattanayak  
Tech. Manager



# Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC744020000000010F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Dec-2019)

Pg No: 1 of 1

Date: 04 Jan 2020

Test Report No: ERSIPL/TR/AA/05

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client.  
 Date of Sampling/Monitoring : 26-27.12.2019  
 Sample Received on : 31.12.2019  
 Analysis Started on : 01.01.2020  
 Analysis Completed on : 04.01.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2428
2. ERSIPL/AA/2429
3. ERSIPL/AA/2430
4. ERSIPL/AA/2431

### Locations (Core Zone)

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2428	ERSIPL/ AA/ 2429	ERSIPL/ AA/ 2430	ERSIPL/ AA/ 2431
1	Particulate Matter (size less than 10 $\mu\text{m}$ ) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	80.36	77.30	69.20	75.35
2	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	$\mu\text{g}/\text{m}^3$	60.0	31.24	37.54	30.44	27.25
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.75	8.40	6.35	<6.0
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	$\mu\text{g}/\text{m}^3$	80.0	12.72	10.27	11.18	10.19

\*Monitoring carried out with control measures

.....END OF TEST REPORT.....

(Authorized Signatory)

**S.P. Pattanayak**  
Tech. Manager

# Environmental Research and Services (India) Pvt. Ltd.

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Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Dec-2019)

Pg No: 1 of 1

Date: 04 Jan 2020

Test Report No: ERSIPL/TR/AA/05:T

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client.  
Date of Sampling/Monitoring : 26-27.12.2019  
Sample Received on : 31.12.2019  
Analysis Started on : 01.01.2020  
Analysis Completed on : 04.01.2020  
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
Quantity of Sample : 01 sample for each parameter  
Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2428
2. ERSIPL/AA/2429
3. ERSIPL/AA/2430
4. ERSIPL/AA/2431

### Locations (Core Zone)

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2428	ERSIPL/AA/2429	ERSIPL/AA/2430	ERSIPL/AA/2431
1	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	μg/m <sup>3</sup>	100.0	18.0	14.8	16.4	10.6
2	Carbon Monoxide (CO)		mg/m <sup>3</sup>	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		μg/m <sup>3</sup>	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m <sup>3</sup>	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m <sup>3</sup>	20.0	ND	ND	ND	ND
6	Ammonia (NH <sub>3</sub> ),		μg/m <sup>3</sup>	400.0	ND	ND	ND	ND
7	Benzene (C <sub>6</sub> H <sub>6</sub> ),		μg/m <sup>3</sup>	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m <sup>3</sup>	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures

Note:ND = Not Detected

  
(Authorized Signatory)

.....END OF TEST REPORT.....

**S.F. Pattanayak**  
Tech. Manager



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ULR-TC744020000000065F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Jan-2020)

Pg No: 1 of 1

**Date: 04 Feb 2020**

**Test Report No: ERSIPL/TR/AA/30**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client.  
 Date of Sampling/Monitoring : 23-24.01.2020  
 Sample Received on : 31.01.2020  
 Analysis Started on : 01.02.2020  
 Analysis Completed on : 04.02.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2521
2. ERSIPL/AA/2522
3. ERSIPL/AA/2523
4. ERSIPL/AA/2524

### Locations (Core Zone)

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2521	ERSIPL/ AA/ 2522	ERSIPL/ AA/ 2523	ERSIPL/ AA/ 2524
1	Particulate Matter (size less than 10 $\mu\text{m}$ ) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	86.74	61.42	65.57	77.04
2	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	$\mu\text{g}/\text{m}^3$	60.0	37.88	34.55	27.39	35.44
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	<6.0	7.38	6.43	<6.0
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	$\mu\text{g}/\text{m}^3$	80.0	13.73	11.07	11.30	10.82

\*Monitoring carried out with control measures

.....END OF TEST REPORT.....

Page 7 of 12

  
 (Authorized Signatory)  
**S.P. Pattanayak**  
 Tech. Manager



# Environmental Research and Services (India) Pvt. Ltd.

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Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR)

(For Jan-2020)

Pg No: 1 of 1

Date: 04 Feb 2020

Test Report No: ERSIPL/TR/AA/30:T

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the Client.

Date of Sampling/Monitoring : 23-24.01.2020

Sample Received on : 31.01.2020

Analysis Started on : 01.02.2020

Analysis Completed on : 04.02.2020

Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2521
2. ERSIPL/AA/2522
3. ERSIPL/AA/2523
4. ERSIPL/AA/2524

### Locations (Core Zone)

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2521	ERSIPL/AA/2522	ERSIPL/AA/2523	ERSIPL/AA/2524
1	Ozone (O3) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	$\mu\text{g}/\text{m}^3$	100.0	14.4	17.2	10.2	12.1
2	Carbon Monoxide (CO)		$\text{mg}/\text{m}^3$	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		$\mu\text{g}/\text{m}^3$	1.0	ND	ND	ND	ND
4	Arsenic (As)		$\text{ng}/\text{m}^3$	6.0	ND	ND	ND	ND
5	Nickel (Ni)		$\text{ng}/\text{m}^3$	20.0	ND	ND	ND	ND
6	Ammonia (NH3),		$\mu\text{g}/\text{m}^3$	400.0	ND	ND	ND	ND
7	Benzene (C6H6),		$\mu\text{g}/\text{m}^3$	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		$\text{ng}/\text{m}^3$	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures

Note:ND = Not Detected

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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ULR-TC744020000000114F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

**Date: 11 Mar 2020**

**Test Report No: ERSIPL/TR/AA/053**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client.  
Date of Sampling/Monitoring : 24-25.02.2020  
Sample Received on : 02.03.2020  
Analysis Started on : 03.03.2020  
Analysis Completed on : 07.03.2020  
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
Quantity of Sample : 01 sample for each parameter  
Environment Condition : Sunny

**Sample ID. No.**

1. ERSIPL/AA/2614
2. ERSIPL/AA/2615
3. ERSIPL/AA/2616
4. ERSIPL/AA/2617

**Locations (Core Zone)**

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant

**TEST FINDINGS:**

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2614	ERSIPL/ AA/ 2615	ERSIPL/ AA/ 2616	ERSIPL/ AA/ 2617
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m <sup>3</sup>	100.0	70.85	83.54	79.08	66.71
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m <sup>3</sup>	60.0	31.23	38.18	32.07	38.75
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m <sup>3</sup>	80.0	9.36	7.77	<6.0	8.98
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m <sup>3</sup>	80.0	9.54	16.07	10.48	13.96

\*Monitoring carried out with control measures

.....END OF TEST REPORT.....

(Authorized Signatory)

**S.P.Pattanayak**  
Tech.Manager





# Environmental Research and Services (India) Pvt. Ltd.

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Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

**Date: 11 Mar 2020**  
**Test Report No: ERSIPL/TR/AA/053:T**  
 Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client.  
 Date of Sampling/Monitoring : 24-25.02.2020  
 Sample Received on : 02.03.2020  
 Analysis Started on : 03.03.2020  
 Analysis Completed on : 07.03.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2614
2. ERSIPL/AA/2615
3. ERSIPL/AA/2616
4. ERSIPL/AA/2617

### Locations (Core Zone)

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2614	ERSIPL/AA/2615	ERSIPL/AA/2616	ERSIPL/AA/2617
1	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	μg/m <sup>3</sup>	100.0	16.80	12.4	14.2	10.9
2	Carbon Monoxide (CO)		mg/m <sup>3</sup>	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		μg/m <sup>3</sup>	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m <sup>3</sup>	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m <sup>3</sup>	20.0	ND	ND	ND	ND
6	Ammonia (NH <sub>3</sub> ),		μg/m <sup>3</sup>	400.0	ND	ND	ND	ND
7	Benzene (C <sub>6</sub> H <sub>6</sub> ),		μg/m <sup>3</sup>	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m <sup>3</sup>	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures  
 Note:ND = Not Detected

.....END OF TEST REPORT.....

  
 (Authorized Signatory)  
 S P Pattanayak  
 Techn. Manager



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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ULR-TC744020000000131F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Mar-2020)

Pg No: 1 of 1

**Date: 20 Mar 2020**

**Test Report No: ERSIPL/TR/AA/61**

Name and Address of the Customer	:	Ostapal Chromite Mines of M/S FACOR LTD.
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of the Client.
Date of Sampling/Monitoring	:	13-14.03.2020
Sample Received on	:	16.03.2020
Analysis Started on	:	16.03.2020
Analysis Completed on	:	19.03.2020
Method of Sampling	:	IS 5182 : Part 5 : 1975, Reaffirmed 2014
Quantity of Sample	:	01 sample for each parameter
Environment Condition	:	Sunny

### Sample ID. No.

1. ERSIPL/AA/2652
2. ERSIPL/AA/2653
3. ERSIPL/AA/2654
4. ERSIPL/AA/2655

### Locations (Core Zone)

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant


### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2652	ERSIPL/ AA/ 2653	ERSIPL/ AA/ 2654	ERSIPL/ AA/ 2655
1	Particulate Matter (size less than 10 $\mu\text{m}$ ) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	73.00	78.67	75.54	70.77
2	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	$\mu\text{g}/\text{m}^3$	60.0	34.95	33.74	37.04	28.10
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	<6.0	<6.0	<6.0	7.44
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	$\mu\text{g}/\text{m}^3$	80.0	9.37	10.08	10.12	17.86

\*Monitoring carried out with control measures

.....END OF TEST REPORT.....

Page 11 of 12

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager

# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR)

(For Mar-2020)

Pg No: 1 of 1

**Date: 20 Mar 2020**  
**Test Report No: ERSIPL/TR/AA/61:T**  
 Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client.  
 Date of Sampling/Monitoring : 13-14.03.2020  
 Sample Received on : 16.03.2020  
 Analysis Started on : 16.03.2020  
 Analysis Completed on : 19.03.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2652
2. ERSIPL/AA/2653
3. ERSIPL/AA/2654
4. ERSIPL/AA/2655

### Locations (Core Zone)

1. Near Dispensary
2. Near Weighbridge
3. At Middle of the Opencast Quarry
4. At Middle of the COB Plant

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2652	ERSIPL/AA/2653	ERSIPL/AA/2654	ERSIPL/AA/2655
1	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m <sup>3</sup>	100.0	15.4	10.6	10.8	11.2
2	Carbon Monoxide (CO)		mg/m <sup>3</sup>	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m <sup>3</sup>	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m <sup>3</sup>	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m <sup>3</sup>	20.0	ND	ND	ND	ND
6	Ammonia (NH <sub>3</sub> ),		µg/m <sup>3</sup>	400.0	ND	ND	ND	ND
7	Benzene (C <sub>6</sub> H <sub>6</sub> ),		µg/m <sup>3</sup>	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m <sup>3</sup>	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures

Note: ND = Not Detected



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ULR-TC744019000000300P

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Oct-2019)

Pg No: 1 of 2

**Date: 05 Nov 2019** **Test Report No: ERSIPL/TR/AA/339**  
**Name and Address of the Customer :** Ostapal Chromite Mines of M/S FACOR LTD.  
**Sample Collected by :** Representative of ERS (I) Pvt. Ltd.  
**Sample Collected in presence of :** Representative of the Client  
**Date of Sampling/Monitoring :** 27-28.10.2019  
**Sample Received on :** 01.11.2019  
**Analysis Started on :** 01.11.2019  
**Analysis Completed on :** 05.11.2019  
**Method of Sampling :** IS 5182: Part 5: 1975, Reaffirmed 2014  
**Quantity of Sample :** 01 sample for each parameter  
**Environment Condition :** Sunny

### Sample ID. No.

1. ERSIPL/AA/2234
2. ERSIPL/AA/2235
3. ERSIPL/AA/2236
4. ERSIPL/AA/2237

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2234	ERSIPL/ AA/ 2235	ERSIPL/ AA/ 2236	ERSIPL/ AA/ 2237
1	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	µg/m <sup>3</sup>	100.0	83.09	75.65	64.30	67.06
2	Particulate Matter (size less than 2.5 µm) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	µg/m <sup>3</sup>	60.0	30.85	29.67	26.55	27.39
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m <sup>3</sup>	80.0	<6.0	6.36	7.40	7.16



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4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	µg/m <sup>3</sup>	<b>80.0</b>	14.89	9.85	12.29	10.31
5	Carbon Monoxide (CO)	By CO Monitor	mg/m <sup>3</sup>	<b>2.0</b>	<1.14	<1.14	<1.14	<1.14
6	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m <sup>3</sup>	<b>100.0</b>	9.4	12.2	10.6	11.1
7	Lead (Pb)		µg/m <sup>3</sup>	<b>1.0</b>	ND	ND	ND	ND
8	Arsenic (As)		ng/m <sup>3</sup>	<b>6.0</b>	ND	ND	ND	ND
9	Nickel (Ni)		ng/m <sup>3</sup>	<b>20.0</b>	ND	ND	ND	ND
10	Ammonia (NH <sub>3</sub> ),		µg/m <sup>3</sup>	<b>400.0</b>	ND	ND	ND	ND
11	Benzene (C <sub>6</sub> H <sub>6</sub> ),		µg/m <sup>3</sup>	<b>5.0</b>	ND	ND	ND	ND
12	Benzo(a)Pyrene (BaP) Particulate phase only	ng/m <sup>3</sup>	<b>1.0</b>	ND	ND	ND	ND	

\*Monitoring carried out with control measures

Note: ND = Not Detected

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager



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ULR-TC744019000000349F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

**Date: 11 Dec 2019**

**Test Report No: ERSIPL/TR/AA/363**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client  
 Date of Sampling/Monitoring : 27-28.11.2019  
 Sample Received on : 02.12.2019  
 Analysis Started on : 03.12.2019  
 Analysis Completed on : 07.12.2019  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2335
2. ERSIPL/AA/2336
3. ERSIPL/AA/2337
4. ERSIPL/AA/2338

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2335	ERSIPL/ AA/ 2336	ERSIPL/ AA/ 2337	ERSIPL/ AA/ 2338
1	Particulate Matter (size less than 10 $\mu\text{m}$ ) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	75.61	69.70	79.03	74.77
2	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	$\mu\text{g}/\text{m}^3$	60.0	33.95	31.11	34.46	30.07
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	6.68	<6.0	6.57	8.04
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	$\mu\text{g}/\text{m}^3$	80.0	13.39	14.91	11.03	9.59

\*Monitoring carried out with control measures

.....END OF TEST REPORT.....

(Authorized Signatory)  
**S.P. Pattnayak**  
Tech. Manager

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Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

Date: 11 Dec 2019

Test Report No: ERSIPL/TR/AA/363:T

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client  
Date of Sampling/Monitoring : 27-28.11.2019  
Sample Received on : 02.12.2019  
Analysis Started on : 03.12.2019  
Analysis Completed on : 07.12.2019  
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
Quantity of Sample : 01 sample for each parameter  
Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2335
2. ERSIPL/AA/2336
3. ERSIPL/AA/2337
4. ERSIPL/AA/2338

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2335	ERSIPL/AA/2336	ERSIPL/AA/2337	ERSIPL/AA/2338
1	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	μg/m <sup>3</sup>	100.0	17.5	11.7	12.1	10.9
2	Carbon Monoxide (CO)		mg/m <sup>3</sup>	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		μg/m <sup>3</sup>	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m <sup>3</sup>	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m <sup>3</sup>	20.0	ND	ND	ND	ND
6	Ammonia (NH <sub>3</sub> ),		μg/m <sup>3</sup>	400.0	ND	ND	ND	ND
7	Benzene (C <sub>6</sub> H <sub>6</sub> ),		μg/m <sup>3</sup>	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m <sup>3</sup>	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures

Note:ND = Not Detected

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager



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ULR-TC744020000000011F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Dec-2019)

Pg No: 1 of 1

Date: 04 Jan 2020

Test Report No: ERSIPL/TR/AA/06

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client  
 Date of Sampling/Monitoring : 27-28.12.2019  
 Sample Received on : 31.12.2019  
 Analysis Started on : 01.01.2020  
 Analysis Completed on : 04.01.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2432
2. ERSIPL/AA/2433
3. ERSIPL/AA/2434
4. ERSIPL/AA/2435

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2432	ERSIPL/ AA/ 2433	ERSIPL/ AA/ 2434	ERSIPL/ AA/ 2435
1	Particulate Matter (size less than 10 $\mu\text{m}$ ) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	74.08	68.83	73.48	71.01
2	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	$\mu\text{g}/\text{m}^3$	60.0	25.26	27.64	28.46	25.86
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	6.38	<6.0	7.56	8.66
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	$\mu\text{g}/\text{m}^3$	80.0	13.33	9.46	12.69	14.68

\*Monitoring carried out with control measures

.....END OF TEST REPORT.....:

(Authorized Signatory)

**S.P. Pattanayak**  
Tech. Manager



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Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Dec-2019)

Pg No: 1 of 1

**Date:** 04 Jan 2020  
**Test Report No:** ERSIPL/TR/AA/06:T  
**Name and Address of the Customer :** Ostapal Chromite Mines of M/S FACOR LTD.  
**Sample Collected by :** Representative of ERS (I) Pvt. Ltd.  
**Sample Collected in presence of :** Representative of the Client  
**Date of Sampling/Monitoring :** 27-28.12.2019  
**Sample Received on :** 31.12.2019  
**Analysis Started on :** 01.01.2020  
**Analysis Completed on :** 04.01.2020  
**Method of Sampling :** IS 5182 : Part 5 : 1975, Reaffirmed 2014  
**Quantity of Sample :** 01 sample for each parameter  
**Environment Condition :** Sunny

### Sample ID. No.

1. ERSIPL/AA/2432
2. ERSIPL/AA/2433
3. ERSIPL/AA/2434
4. ERSIPL/AA/2435

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2432	ERSIPL/AA/2433	ERSIPL/AA/2434	ERSIPL/AA/2435
1	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	μg/m <sup>3</sup>	100.0	12.2	19.7	16.2	14.9
2	Carbon Monoxide (CO)		mg/m <sup>3</sup>	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		μg/m <sup>3</sup>	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m <sup>3</sup>	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m <sup>3</sup>	20.0	ND	ND	ND	ND
6	Ammonia (NH <sub>3</sub> ),		μg/m <sup>3</sup>	400.0	ND	ND	ND	ND
7	Benzene (C <sub>6</sub> H <sub>6</sub> ),		μg/m <sup>3</sup>	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m <sup>3</sup>	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures

Note:ND = Not Detected

.....END OF TEST REPORT.....

  
(Authorized Signatory)

**S.P.Pattanayak**  
Tech.Manager



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ULR-TC74402000000066F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Jan-2020)

Pg No: 1 of 1

**Date: 04 Feb 2020**

**Test Report No: ERSIPL/TR/AA/31**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client  
 Date of Sampling/Monitoring : 23-24.01.2020  
 Sample Received on : 31.01.2020  
 Analysis Started on : 01.02.2020  
 Analysis Completed on : 04.02.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2525
2. ERSIPL/AA/2526
3. ERSIPL/AA/2527
4. ERSIPL/AA/2528

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2525	ERSIPL/ AA/ 2526	ERSIPL/ AA/ 2527	ERSIPL/ AA/ 2528
1	Particulate Matter (size less than 10 $\mu\text{m}$ ) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	70.45	71.97	75.35	61.65
2	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	$\mu\text{g}/\text{m}^3$	60.0	28.33	34.71	36.54	32.05
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.85	8.70	6.64	7.21
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	$\mu\text{g}/\text{m}^3$	80.0	16.23	13.61	11.80	13.58

\*Monitoring carried out with control measures

.....END OF TEST REPORT.....:

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager



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Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Jan-2020)

Pg No: 1 of 1

Date: 04 Feb 2020

Test Report No: ERSIPL/TR/AA/31:T

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client  
 Date of Sampling/Monitoring : 23-24.01.2020  
 Sample Received on : 31.01.2020  
 Analysis Started on : 01.02.2020  
 Analysis Completed on : 04.02.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2525
2. ERSIPL/AA/2526
3. ERSIPL/AA/2527
4. ERSIPL/AA/2528

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2525	ERSIPL/AA/2526	ERSIPL/AA/2527	ERSIPL/AA/2528
1	Ozone (O3) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	$\mu\text{g}/\text{m}^3$	100.0	10.6	9.8	12.5	12.4
2	Carbon Monoxide (CO)		$\text{mg}/\text{m}^3$	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		$\mu\text{g}/\text{m}^3$	1.0	ND	ND	ND	ND
4	Arsenic (As)		$\text{ng}/\text{m}^3$	6.0	ND	ND	ND	ND
5	Nickel (Ni)		$\text{ng}/\text{m}^3$	20.0	ND	ND	ND	ND
6	Ammonia (NH <sub>3</sub> ),		$\mu\text{g}/\text{m}^3$	400.0	ND	ND	ND	ND
7	Benzene (C <sub>6</sub> H <sub>6</sub> ),		$\mu\text{g}/\text{m}^3$	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		$\text{ng}/\text{m}^3$	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures  
Note: ND = Not Detected

(Authorized Signatory)

S.P. Pattanayak  
Tech. Manager

.....END OF TEST REPORT.....



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)



Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha  
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ULR-TC744020000000115F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

Date: 11 Mar 2020

Test Report No: ERSIPL/TR/AA/054

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client  
Date of Sampling/Monitoring : 25-26.02.2020  
Sample Received on : 02.03.2020  
Analysis Started on : 03.03.2020  
Analysis Completed on : 07.03.2020  
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
Quantity of Sample : 01 sample for each parameter  
Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2618
2. ERSIPL/AA/2619
3. ERSIPL/AA/2620
4. ERSIPL/AA/2621

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2618	ERSIPL/ AA/ 2619	ERSIPL/ AA/ 2620	ERSIPL/ AA/ 2621
1	Particulate Matter (size less than 10 $\mu\text{m}$ ) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	77.07	64.30	75.08	75.31
2	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	$\mu\text{g}/\text{m}^3$	60.0	29.43	27.78	32.55	27.02
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	6.00	6.21	7.28	6.44
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	$\mu\text{g}/\text{m}^3$	80.0	9.58	13.65	9.96	10.52

\*Monitoring carried out with control measures

.....END OF TEST REPORT.....:

(Authorized Signatory)

S.P. Pattanayak  
Tech. Manager



# Environmental Research and Services (India) Pvt. Ltd.

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Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

**Date: 11 Mar 2020**  
**Name and Address of the Customer :** Ostapal Chromite Mines of M/S FACOR LTD.  
**Sample Collected by :** Representative of ERS (I) Pvt. Ltd.  
**Sample Collected in presence of :** Representative of the Client  
**Date of Sampling/Monitoring :** 25-26.02.2020  
**Sample Received on :** 02.03.2020  
**Analysis Started on :** 03.03.2020  
**Analysis Completed on :** 07.03.2020  
**Method of Sampling :** IS 5182 : Part 5 : 1975, Reaffirmed 2014  
**Quantity of Sample :** 01 sample for each parameter  
**Environment Condition :** Sunny

**Test Report No: ERSIPL/TR/AA/54:T**

### Sample ID. No.

1. ERSIPL/AA/2618
2. ERSIPL/AA/2619
3. ERSIPL/AA/2620
4. ERSIPL/AA/2621

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2618	ERSIPL/AA/2619	ERSIPL/AA/2620	ERSIPL/AA/2621
1	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m <sup>3</sup>	100.0	20.6	18.4	16.4	12.4
2	Carbon Monoxide (CO)		mg/m <sup>3</sup>	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m <sup>3</sup>	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m <sup>3</sup>	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m <sup>3</sup>	20.0	ND	ND	ND	ND
6	Ammonia (NH <sub>3</sub> ),		µg/m <sup>3</sup>	400.0	ND	ND	ND	ND
7	Benzene (C <sub>6</sub> H <sub>6</sub> ),		µg/m <sup>3</sup>	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m <sup>3</sup>	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures

Note:ND = Not Detected

(Authorized Signatory)

.....END OF TEST REPORT.....



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ULR-TC744020000000132F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Mar-2020)

Pg No: 1 of 1

Date: 20 Mar 2020

Test Report No: ERSIPL/TR/AA/62

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client  
 Date of Sampling/Monitoring : 14-15.03.2020  
 Sample Received on : 16.03.2020  
 Analysis Started on : 16.03.2020  
 Analysis Completed on : 19.03.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.

1. ERSIPL/AA/2656
2. ERSIPL/AA/2657
3. ERSIPL/AA/2658
4. ERSIPL/AA/2659

### Locations (Buffer Zone)

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

### TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 2656	ERSIPL/ AA/ 2657	ERSIPL/ AA/ 2658	ERSIPL/ AA/ 2659
1	Particulate Matter (size less than 10 $\mu\text{m}$ ) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	68.38	61.47	78.70	76.95
2	Particulate Matter (size less than 2.5 $\mu\text{m}$ ) or PM 2.5	ERSIPL/SOP/01 Issue No:03, Revision Date: 01.02.2019	$\mu\text{g}/\text{m}^3$	60.0	33.03	26.26	36.40	27.31
3	Sulphur Dioxide (SO <sub>2</sub> )	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	9.38	<6.0	7.11	9.49
4	Oxides of Nitrogen (NO <sub>x</sub> )	IS 5182 (Part 6): 2006, Reaffirmed - 2017	$\mu\text{g}/\text{m}^3$	80.0	13.89	12.85	12.64	11.12

\*Monitoring carried out with control measures

(Authorized Signatory)

S.P.Pattanayak  
Tech.Manager

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Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Mar-2020)

Pg No: 1 of 1

**Date: 20 Mar 2020**  
**Test Report No: ERSIPL/TR/AA/62:T**  
 Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client  
 Date of Sampling/Monitoring : 14-15.03.2020  
 Sample Received on : 16.03.2020  
 Analysis Started on : 16.03.2020  
 Analysis Completed on : 19.03.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

**Sample ID. No.**

1. ERSIPL/AA/2656
2. ERSIPL/AA/2657
3. ERSIPL/AA/2658
4. ERSIPL/AA/2659

**Locations (Buffer Zone)**

1. Near Village Ostia
2. Near Village Koiposi
3. Near Kaliapani Township
4. Near Village Ostapal

**TEST FINDINGS:**

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/2656	ERSIPL/AA/2657	ERSIPL/AA/2658	ERSIPL/AA/2659
1	Ozone (O <sub>3</sub> ) 8 Hrly	As per Guidelines for the measurement of Ambient Air Pollutants, Vol - I, CPCB, May 2011	µg/m <sup>3</sup>	100.0	8.4	14.2	10.4	10.6
2	Carbon Monoxide (CO)		mg/m <sup>3</sup>	2.0	<1.14	<1.14	<1.14	<1.14
3	Lead (Pb)		µg/m <sup>3</sup>	1.0	ND	ND	ND	ND
4	Arsenic (As)		ng/m <sup>3</sup>	6.0	ND	ND	ND	ND
5	Nickel (Ni)		ng/m <sup>3</sup>	20.0	ND	ND	ND	ND
6	Ammonia (NH <sub>3</sub> ),		µg/m <sup>3</sup>	400.0	ND	ND	ND	ND
7	Benzene (C <sub>6</sub> H <sub>6</sub> ),		µg/m <sup>3</sup>	5.0	ND	ND	ND	ND
8	Benzo(a)Pyrene (BaP) Particulate phase only		ng/m <sup>3</sup>	1.0	ND	ND	ND	ND

\*Monitoring carried out with control measures

Note: ND = Not Detected

  
(Authorized Signatory)

.....END OF TEST REPORT.....

Page 12 of 12

S.P. Pattanayak  
Tech. Manager



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ULR-TC744019000000350F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Nov-2019)

Pg No: 1 of 1

Date: 11 Dec 2019 Test Report No: ERSIPL/TR/AA/364  
Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the Client.  
Date of Sampling/Monitoring : 27.11.2019  
Sample Received on : 02.12.2019  
Analysis Started on : 03.12.2019  
Analysis Completed on : 07.12.2019  
Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
Quantity of Sample : 01 sample for each parameter  
Environment Condition : Sunny

Sample ID. No.

Locations

- |  |                                       |
|--|---------------------------------------|
| 1. ERSIPL/AA/2339 (Fugitive Emission)  | 1. Near Mines Ore Plot Area           |
| 2. ERSIPL/AA/ 2340 (Fugitive Emission) | 2. Near COB Plant area                |
| 3. ERSIPL/AA/ 2341(Fugitive Emission)  | 3. Near Mines Loading Unloading Point |

**TEST FINDINGS:**

Sl. No	Test Parameters	Test Method	Unit	Results*		
				ERSIPL/ AA/ 2339	ERSIPL/ AA/ 2340	ERSIPL/ AA/ 2341
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)-1999, Reaffirmed 2014, Gravimetric Method	µg/m <sup>3</sup>	244.92	222.43	185.22

\*Monitoring carried out with control measures

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager

.....END OF TEST REPORT...





# Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC744020000000116F

Test Report Format No.: ERSIPL/FM/37

## TEST REPORT (AMBIENT AIR) (For Feb-2020)

Pg No: 1 of 1

Date: 11 Mar 2020 Test Report No: ERSIPL/TR/AA/055  
 Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD.  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the Client.  
 Date of Sampling/Monitoring : 26.02.2020  
 Sample Received on : 02.03.2020  
 Analysis Started on : 03.03.2020  
 Analysis Completed on : 07.03.2020  
 Method of Sampling : IS 5182 : Part 5 : 1975, Reaffirmed 2014  
 Quantity of Sample : 01 sample for each parameter  
 Environment Condition : Sunny

### Sample ID. No.


### Locations

- |  |                                       |
|--|---------------------------------------|
| 1. ERSIPL/AA/2622 (Fugitive Emission)  | 1. Near Mines Ore Plot Area           |
| 2. ERSIPL/AA/ 2623 (Fugitive Emission) | 2. Near COB Plant area                |
| 3. ERSIPL/AA/ 2624(Fugitive Emission)  | 3. Near Mines Loading Unloading Point |

### TEST FINDINGS:

Sl. No	Test Parameters	Test Method	Unit	Results*		
				ERSIPL/ AA/ 2622	ERSIPL/ AA/ 2623	ERSIPL/ AA/ 2624
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)-1999, Reaffirmed 2014, Gravimetric Method	$\mu\text{g}/\text{m}^3$	191.17	224.15	173.58

\*Monitoring carried out with control measures

  
(Authorized Signatory)

G.P. Pattanayak  
Tech. Manager



# Environmental Research and Services (India) Pvt. Ltd.

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## NOISE LEVEL MEASUREMENT REPORT (For Nov-2019)

Date: 11 Dec 2019

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD

Date of Monitoring : 27.11.2019

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the client

Sl. No	Location		Result in dB (A) Leq	
			Day Time (6.00 A. M. – 10.00 P.M.)	Night Time (10.00 P.M. – 6.00 A.M.)
1	Ambient	Opencast quarry	59.9	52.4
2		COB Plant Area	65.2	57.9
3		Mines Loading Unloading Point	61.6	56.2

### Ambient Noise Level Standards

Area Code	Category of Area / Zone	Limits in dB(A)	
		Day Time (6.00 a.m. to 10.00 p.m.)	Night Time (10.00 p.m. to 6.00 a.m.)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
**S.P. Pattanayak**  
Tech. Manager



GSTIN : 21AAACE6224D1ZE

# Environmental Research and Services (India) Pvt. Ltd.

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Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

## NOISE LEVEL MEASUREMENT REPORT

(For Feb-2020)

Date: 11 Mar 2020

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD

Date of Monitoring : 25.02.2020

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the client

Sl. No	Location	Result in dB (A) Leq	
		Day Time (6.00 A. M. – 10.00 P.M.)	Night Time (10.00 P.M. – 6.00 A.M.)
1	Opencast quarry	65.7	55.2
2	Ambient COB Plant Area	69.8	59.9
3	Mines Loading Unloading Point	57.6	51.5

### Ambient Noise Level Standards

Area Code	Category of Area / Zone	Limits in dB(A)	
		Day Time (6.00 a.m. to 10.00 p.m.)	Night Time (10.00 p.m. to 6.00 a.m.)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
S.P. Pattansyak  
Tech. Manager



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Comp)

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Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF EFFLUENT WATER SAMPLE (For Nov-2019)

Page 1 of 2

**Date: 11 Dec 2019**  
Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
Date of Sampling : 28.11.2019  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the client  
Sample Received on : 02.12.2019  
Analysis Started on : 03.12.2019  
Analysis Completed on : 07.12.2019  
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
Quantity of Sample : 2ltrs  
Type of Container : Glass Bottle & HDPE Bottle  
Environment Condition : All Tests carried out in Room Temperature

### Sampling Location Specification :

ERSIPL/WA/1591

EWQ1- Mines Final Discharge Water after Treatment in ETP

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per G.S.R. 422(E) dated 19.05.1993	Result
					ERSIPL/ WA/1591
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A
03	Temperature	IS 3025: Part 9:1984, Reaffirmed 2017	°C	Shall not exceed 5 <sup>0</sup> C above the receiving	NOT APPLICABLE
04	Total Residual Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	1.0	Nil
05	Ammonical Nitrogen (as N)	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	50.0	2.4
06	Total Kjeldahl Nitrogen (as NH <sub>3</sub> )	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	100.0	3.6
07	Free Ammonia (as NH <sub>3</sub> )	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	5.0	0.2
08	Arsenic (as As)	IS 3025: Part 37:1988, Reaffirmed 2014	mg/L	0.2	ND

# Environmental Research and Services (India) Pvt. Ltd.

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Page 2 of 2

09	Mercury (as Hg)	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.01	ND
10	Lead (as Pb)	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.1	ND
11	Cadmium (as Cd)	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	2.0	ND
12	Total Chromium (as Cr)	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	2.0	0.26
13	Copper (as Cu)	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	3.0	ND
14	Zinc (as Zn)	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	ND
15	Selenium (as Se)	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.05	ND
16	Nickel (as Ni)	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	3.0	ND
17	Cyanide (as CN)	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.2	ND
18	Sulphide (as S)	IS 3025:Part 29: 1986 Reaffirmed-2014	mg/L	2.0	<0.1
19	Phenolic Compounds(as C <sub>6</sub> H <sub>5</sub> OH)	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	1.0	ND
20	Manganese (as Mn)	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	2.0	ND
21	Vanadium (as V)	APHA 22nd Edition,3500-V D. (Gallic Acid Method)	mg/L	0.2	ND
22	Nitrate Nitrogen	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	10.0	<5.0
23	Particle Size of Suspended Solids	XX	--	shall pass 850 micron IS Sieve	NA
24	Bio-assay Test	XX	--	90% survival of fish after 96 hrs in 100% effluent	93% Survival of fish after 96 hrs in 100% effluent
25	Total Coliform	IS 1622:1981, Reaffirmed 2014	MPN/100 ml	--	6.0

ND - Not Detected

.....END OF TEST REPORT.....

  
(Authorized Signatory)  
S.P. Pattanayak  
Tech. Manager



# Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC74402000000113F

Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF EFFLUENT WATER SAMPLE (For Feb-2020)

Page 1 of 1

**Date: 11 Mar 2020**

**Test Report No: ERSIPL/TR/WA/051**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
 Date of Sampling : 26.02.2020  
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
 Sample Collected in presence of : Representative of the client  
 Sample Received on : 02.03.2020  
 Analysis Started on : 03.03.2020  
 Analysis Completed on : 07.03.2020  
 Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
 Quantity of Sample : 2ltrs  
 Type of Container : Glass Bottle & HDPE Bottle  
 Environment Condition : All Tests carried out in Room Temperature  
**Sampling Location Specification :**

ERSIPL/WA/1765

EWQ1- Mines Final Discharge Water after Treatment in ETP

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per G.S.R. 422(E) dated 19.05.1993	Result
					ERSIPL/ WA/1765
01	Suspended Solids	IS 3025:Part 17: 1984 Reaffirmed-2017	mg/L	100.0	<10.0
02	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	No.	5.5 – 9.0	6.78
03	Oil & Grease	IS 3025:Part 39: 1991 Reaffirmed-2014	mg/L	10.0	<10.0
04	BOD @ 27 <sup>0</sup> C 3Days	IS:3025:Part 44:1993 Reaffirmed 2014, 27 <sup>0</sup> C 3 days	mg/L	30.0	3.3
05	COD	IS 3025:Part 58:2006 Reaffirmed-2017	mg/L	250.0	8.0
06	Hexavalent Chromium CRVI	IS 3025: Part 52:2003, Reaffirmed 2014	mg/L	0.1	<0.05
07	Fluoride (as F)	IS 3025:Part 60: 2008 Reaffirmed-2013	mg/L	2.0	<0.1
08	Dissolved Phosphates (as P)	IS 3025:Part 31: 1988 Reaffirmed-2014	mg/L	5.0	0.13
09	Iron (as Fe)	IS 3025:Part 53: 2003 Reaffirmed-2014	mg/L	3.0	1.11
10	Dissolved Oxygen	IS 3025: Part 38:1991, Reaffirmed 2014	mg/L	--	9.0

  
 (Authorized Signatory)  
 S.P.Pattanayak  
 Tech.Manager

.....END OF TEST REPORT.....



# Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha  
Tel: +91-9437143248, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/40

## ANALYSIS REPORT OF EFFLUENT WATER SAMPLE (For Feb-2020)

Page 1 of 2

**Date: 11 Mar 2020**

**Test Report No: ERSIPL/TR/WA/051:T**

Name and Address of the Customer : Ostapal Chromite Mines of M/S FACOR LTD  
Date of Sampling : 26.02.2020  
Sample Collected by : Representative of ERS (I) Pvt. Ltd.  
Sample Collected in presence of : Representative of the client  
Sample Received on : 02.03.2020  
Analysis Started on : 03.03.2020  
Analysis Completed on : 07.03.2020  
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2014  
Quantity of Sample : 2ltrs  
Type of Container : Glass Bottle & HDPE Bottle  
Environment Condition : All Tests carried out in Room Temperature  
**Sampling Location Specification :**  
ERSIPL/WA/1765

EWQ1- Mines Final Discharge Water after Treatment in ETPP

Sl.	Parameters Analysed	Test Method	Unit	Permissible Limit As per G.S.R. 422(E) dated 19.05.1993	Result
					ERSIPL/ WA/1765
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A
03	Temperature	IS 3025: Part 9:1984, Reaffirmed 2017	°C	Shall not exceed 5 <sup>0</sup> C above the receiving	NOT APPLICABLE
04	Total Residual Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2014	mg/L	1.0	Nil
05	Ammonical Nitrogen (as N)	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	50.0	3.4
06	Total Kjeldahl Nitrogen (as NH <sub>3</sub> )	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	100.0	3.1
07	Free Ammonia (as NH <sub>3</sub> )	IS 3025:Part 34: 1988 Reaffirmed-2014	mg/L	5.0	0.3
08	Arsenic (as As)	IS 3025: Part 37:1988, Reaffirmed 2014	mg/L	0.2	ND



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Tel: +91-9437143248, +91-9937690329 , E-mail: ersibbsr@gmail.com

09	Mercury (as Hg)	IS 3025:Part 48: 1994 Reaffirmed-2014	mg/L	0.01	ND
10	Lead (as Pb)	IS 3025:Part 47: 1994 Reaffirmed-2014	mg/L	0.1	ND
11	Cadmium (as Cd)	IS 3025:Part 41: 1992 Reaffirmed-2014	mg/L	2.0	ND
12	Total Chromium (as Cr)	IS 3025:Part 52: 2003 Reaffirmed-2014	mg/L	2.0	0.28
13	Copper (as Cu)	IS 3025:Part 42: 1992 Reaffirmed-2014	mg/L	3.0	ND
14	Zinc (as Zn)	IS 3025:Part 49: 1994 Reaffirmed-2014	mg/L	5.0	ND
15	Selenium (as Se)	IS 3025:Part 56: 2003 Reaffirmed-2014	mg/L	0.05	ND
16	Nickel (as Ni)	IS 3025:Part 54: 2003 Reaffirmed-2014	mg/L	3.0	ND
17	Cyanide (as CN)	IS 3025:Part 27: 1986 Reaffirmed-2014	mg/L	0.2	ND
18	Sulphide (as S)	IS 3025:Part 29: 1986 Reaffirmed-2014	mg/L	2.0	<0.1
19	Phenolic Compounds(as C <sub>6</sub> H <sub>5</sub> OH)	IS 3025:Part 43: 1992 Reaffirmed-2014	mg/L	1.0	ND
20	Manganese (as Mn)	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	2.0	ND
21	Vanadium (as V)	APHA 22nd Edition, 3500-V D. (Gallic Acid Method)	mg/L	0.2	ND
22	Nitrate Nitrogen	IS 3025:Part 34: 1983 Reaffirmed-2014	mg/L	10.0	<5.0
23	Particle Size of Suspended Solids	XX	--	shall pass 850 micron IS Sieve	NA
24	Bio-assay Test	XX	--	90% survival of fish after 96 hrs in 100% effluent	91% Survival of fish after 96 hrs in 100% effluent
25	Total Coliform	IS 1622:1981, Reaffirmed 2014	MPN/100 ml	--	12.0

ND - Not Detected

  
(Authorized Signatory)

S.P. Pattanayak  
Tech. Manager

.....END OF TEST REPORT.....



**DETAILS OF EXPENDITURE INCURRED ON ENVIRONMENTAL PROTECTION MEASURES DURING THE YEAR 2019-20  
AND PROPOSED BUDGETED AMOUNT FOR THE YEAR 2020-21 FOR OSTAPAL CHROMITE MINES**

Sl. No.	I T E M	Expenses during the Year 2019-20 (in Rupees ₹)	Proposed budgeted amount for the year 2020-21 (in Rupees ₹)
1.	<b>AFFORESTATION</b>		
a)	Seedlings @ ₹ 70/- each	4,23,500.00	46,58,00.00
b)	Fertilizer/Insecticide/Cow - dung(@ ₹ 20)	1,51,250.00	1,66,375.00
c)	Digging of Pits/Planting (Labor cost)@ ₹40	2,42,000.00	2,66,200.00
d)	Post Plantation care@₹120/- (Watering, Weeding, basin making etc.)	7,26,000.00	7,98,600.00
e)	Supervising	4,38,394.00	4,82,230.00
	<b>Sub-Total</b>	<b>19,81,114.00</b>	<b>21,79,205.00</b>
2.	<b>WATER MANAGEMENT &amp; TREATMENT</b>		
a)	ETP Operation & Maintenance (including costs of "chemical&Manpower)	21,70,000.00	23,87,000.00
b)	Power Consumption	6,43,134.00	7,07,447.00
c)	Sludge disposal	72,213.00	79,430.00
d)	Water sample analysis	69,036	76,000.00
	<b>Sub-Total</b>	<b>29,54,383.00</b>	<b>32,49,877.00</b>
3.	<b>DUST SUPPRESSION &amp; AIR MONITORING</b>		
a)	Water spraying at dust generating points by water tanker.	11,10,226.00	12,21,200.00
b)	Air monitoring charges	2,30,000.00	2,53,000.00
c)	Noise level measurement	1800	1,980.00
	<b>Sub-Total</b>	<b>13,42,026.00</b>	<b>14,76,200.00</b>
	<b>Grand Total</b>	<b>Rs.62,77,553.00</b>	<b>Rs 69,05,282.00</b>

  
**Mines Manager**  
**Ostapal Chromite Mines**  
**M/s FACOR LTD.**  
**Kaliapani, Dist-Jajpur.**  
**Pin-755047**