

ENVIRONMENTAL MONITORING REPORT

August, 2022

PROJECT: RAMANADURGA IRON ORE MINE

ML NO. 2141
Dharmapura Village
Sandur Taluk, Ballari District,
Karnataka

Lessee

M/S. Sri. KUMARASWAMY MINERAL EXPORTS PVT. LTD.,

D. No. 462, SMIORE Colony,
Near Fire Station, Kudligi Road
SANDUR - 583119
BELLARY, KARNATAKA

CONSULTANTS

MINERAL ENGINEERING SERVICES

Mining & Environmental Engineers

25/XXV, Club Road, BALLARI - 583 103.

Tel/Fax:08392-267421

E-mail:mes_msraju@yahoo.co.uk

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MINERAL ENGINEERING SERVICES

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Table No. 1

TEST REPORT OF AMBIENT AIR QUALITY

MES/AQ/TR/06/00

Name of the Project : Ramanadurga Iron Ore Mine (ML No. 2141)
 Name of the Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
 Station at & Code : A - I, Dharmapura
 Duration : 24 Hrs
 Date of Report : 06.09.2022
 Reference IS 5182 Report No : MES/MS/ARN/232

Date of Sampling	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
04.08.2022	6	9	33	20	<20	<1
06.08.2022	9	12	49	22	<20	<1
08.08.2022	7	10	55	28	<20	<1
10.08.2022	10	12	42	25	<20	<1
17.08.2022	11	12	53	26	<20	<1
19.08.2022	9	11	40	22	<20	<1
24.08.2022	6	9	35	21	<20	<1
26.08.2022	10	12	44	23	<20	<1
Limits for Industrial , Residential, Rural and other Areas	80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
04.08.2022	0.12	<0.5	<0.5	<0.5	0.25	24
06.08.2022	0.07	<0.5	<0.5	<0.5	0.16	21
08.08.2022	0.05	<0.5	<0.5	<0.5	0.20	26
10.08.2022	0.13	<0.5	<0.5	<0.5	0.21	23
17.08.2022	0.10	<0.5	<0.5	<0.5	0.25	25
19.08.2022	0.14	<0.5	<0.5	<0.5	0.16	28
24.08.2022	0.11	<0.5	<0.5	<0.5	0.13	25
26.08.2022	0.09	<0.5	<0.5	<0.5	0.26	24
Limits for Industrial , Residential, Rural and other Areas	1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr

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Table No. 2

TEST REPORT OF AMBIENT AIR QUALITY

MES/AQ/TR/06/00

Name of the Project : Ramanadurga Iron Ore Mine (ML No. 2141)
 Name of the Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
 Station at & Code : A - II, Yeshwanthanagar
 Duration : 24 Hrs
 Date of Report : 06.09.2022
 Reference IS 5182 Report No : MES/MS/ARN/233

Date of Sampling	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
04.08.2022	7	9	27	21	<20	<1
06.08.2022	9	10	46	22	<20	<1
08.08.2022	11	12	33	19	<20	<1
10.08.2022	10	13	44	23	<20	<1
17.08.2022	8	10	50	25	<20	<1
19.08.2022	9	11	55	29	<20	<1
24.08.2022	6	9	54	27	<20	<1
26.08.2022	10	11	40	22	<20	<1
Limits for Industrial , Residential, Rural and other Areas	80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
04.08.2022	0.10	<0.5	<0.5	<0.5	0.19	26
06.08.2022	0.12	<0.5	<0.5	<0.5	0.27	25
08.08.2022	0.15	<0.5	<0.5	<0.5	0.32	21
10.08.2022	0.10	<0.5	<0.5	<0.5	0.29	22
17.08.2022	0.12	<0.5	<0.5	<0.5	0.17	23
19.08.2022	0.05	<0.5	<0.5	<0.5	0.20	27
24.08.2022	0.06	<0.5	<0.5	<0.5	0.25	28
26.08.2022	0.05	<0.5	<0.5	<0.5	0.16	25
Limits for Industrial , Residential, Rural and other Areas	1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr

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Table No. 3

TEST REPORT OF AMBIENT AIR QUALITY

MES/AQ/TR/06/00

Name of the Project : Ramanadurga Iron Ore Mine (ML No. 2141)
 Name of the Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
 Station at & Code : A - III, Sushila Nagar village
 Duration : 24 Hrs
 Date of Report : 06.09.2022
 Reference IS 5182 Report No : MES/MS/ARN/221

Date of Sampling	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
01.08.2022	6	10	39	18	<20	<1
03.08.2022	9	12	48	24	<20	<1
11.08.2022	7	10	54	26	<20	<1
13.08.2022	9	11	35	18	<20	<1
16.08.2022	8	13	54	24	<20	<1
18.08.2022	10	12	51	19	<20	<1
25.08.2022	6	9	48	23	<20	<1
27.08.2022	8	9	53	26	<20	<1
Limits for Industrial , Residential, Rural and other Areas	80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
01.08.2022	0.10	<0.5	<0.5	<0.5	0.15	20
03.08.2022	0.12	<0.5	<0.5	<0.5	0.26	23
11.08.2022	0.05	<0.5	<0.5	<0.5	0.23	25
13.08.2022	0.21	<0.5	<0.5	<0.5	0.21	23
16.08.2022	0.09	<0.5	<0.5	<0.5	0.25	24
18.08.2022	0.11	<0.5	<0.5	<0.5	0.15	20
25.08.2022	0.14	<0.5	<0.5	<0.5	0.13	22
27.08.2022	0.12	<0.5	<0.5	<0.5	0.09	25
Limits for Industrial , Residential, Rural and other Areas	1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr

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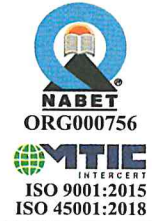


Table No. 4

TEST REPORT OF AMBIENT AIR QUALITY

MES/AQ/TR/06/00

Name of the Project : Ramanadurga Iron Ore Mine (ML No. 2141)
 Name of the Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
 Station at & Code : A - IV Sandur Town
 Duration : 24 Hrs
 Date of Report : 06.09.2022
 Reference IS 5182 Report No : MES/MS/ARN/259

Date of Sampling	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
04.08.2022	8	11	46	25	<20	<1
06.08.2022	9	10	40	19	<20	<1
08.08.2022	6	11	35	24	<20	<1
10.08.2022	8	12	44	26	<20	<1
17.08.2022	7	10	36	25	<20	<1
19.08.2022	7	9	40	28	<20	<1
24.08.2022	8	11	39	22	<20	<1
26.08.2022	7	10	55	25	<20	<1
Limits for Industrial , Residential, Rural and other Areas	80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
04.08.2022	0.12	<0.5	<0.5	<0.5	0.18	23
06.08.2022	0.13	<0.5	<0.5	<0.5	0.17	26
08.08.2022	0.10	<0.5	<0.5	<0.5	0.19	28
10.08.2022	0.12	<0.5	<0.5	<0.5	0.20	25
17.08.2022	0.24	<0.5	<0.5	<0.5	0.25	24
19.08.2022	0.15	<0.5	<0.5	<0.5	0.14	26
24.08.2022	0.08	<0.5	<0.5	<0.5	0.24	30
26.08.2022	0.11	<0.5	<0.5	<0.5	0.15	27
Limits for Industrial , Residential, Rural and other Areas	1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr


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Table No. 5

TEST REPORT OF AMBIENT AIR QUALITY

MES/AQ/TR/06/00

Name of the Project : Ramanadurga Iron Ore Mine (ML No. 2141)
 Name of the Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
 Station at & Code : A - V Core zone Within ML Area
 Duration : 24 Hrs
 Date of Report : 06.09.2022
 Reference IS 5182 Report No : MES/MS/ARN/258

Date of Sampling	Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
04.08.2022	9	11	46	24	<20	<1
06.08.2022	7	9	44	22	<20	<1
08.08.2022	9	11	48	26	<20	<1
10.08.2022	8	10	50	25	<20	<1
17.08.2022	10	12	29	23	<20	<1
19.08.2022	6	9	48	26	<20	<1
24.08.2022	8	10	37	18	<20	<1
26.08.2022	5	9	44	26	<20	<1
Limits for Industrial , Residential, Rural and other Areas	80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
04.08.2022	0.12	<0.5	<0.5	<0.5	0.32	20
06.08.2022	0.06	<0.5	<0.5	<0.5	0.18	22
08.08.2022	0.09	<0.5	<0.5	<0.5	0.05	24
10.08.2022	<0.05	<0.5	<0.5	<0.5	0.09	26
17.08.2022	0.09	<0.5	<0.5	<0.5	0.24	28
19.08.2022	0.05	<0.5	<0.5	<0.5	0.14	25
24.08.2022	0.14	<0.5	<0.5	<0.5	0.07	27
26.08.2022	0.15	<0.5	<0.5	<0.5	0.12	21
Limits for Industrial , Residential, Rural and other Areas	1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr


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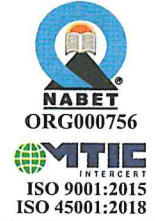


Table No. 6

Test Report of Fugitive Emission

MES/AQ/TR/06/00

Name of the Client	: M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
Project	: Ramanadurga Iron Ore Mine (ML No. 2141)
Station at & Code	: A - VI, Loading point
Duration	: 08 Hrs
Date of Report	: 06.09.2022
Report No	: MES/MS/ARN/260

Date of sample	Particulate mater ($\mu\text{g}/\text{m}^3$)
06.08.2022	285
09.06.2022	315

Station at & Code	: A - VII, Crushing & Screening
Duration	: 08 Hrs
Date of Report	: 06.09.2022

Date of sample	Particulate mater ($\mu\text{g}/\text{m}^3$)
05.08.2022	417
08.08.2022	368

Station at & Code	: A - VIII, Dumping point
Duration	: 08 Hrs
Date of Report	: 06.09.2022

Date of sample	Particulate mater ($\mu\text{g}/\text{m}^3$)
06.08.2022	388
09.06.2022	408

Station at & Code	: A - IX, Haulage Road
Duration	: 08 Hrs
Date of Report	: 06.09.2022

Date of sample	Particulate mater ($\mu\text{g}/\text{m}^3$)
05.08.2022	406
08.08.2022	361

Ref : Environmental (Protection) Rules, 2010 (Sixth Amendment)

Particulate mater ($\mu\text{g}/\text{m}^3$)	
Permissible limits for Fugitive Emissions	1200 $\mu\text{g}/\text{m}^3$


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Table No. 7

STATISTICAL AIR QUALITY DATA

Name of the Project : Ramanadurga Iron Ore Mine (ML No. 2141)												
Name of the Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd												
Month : August, 2022												
Station Code : A - I, Dharmapura					A - II, Yeshwanthanagar				A - III, Sushila Nagar village			
	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}
Min.	6	9	33	20	6	9	27	19	6	9	35	18
10%	6	9	34	21	7	9	31	20	6	9	38	18
25%	7	10	39	22	8	10	38	22	7	10	46	19
50%	9	12	43	23	9	11	45	23	8	11	50	24
75%	10	12	50	25	10	11	51	26	9	12	53	25
98%	11	12	55	28	11	13	55	29	10	13	54	26
Max.	11	12	55	28	11	13	55	29	10	13	54	26
Avg.	9	11	44	23	9	11	44	24	8	11	48	22
SD	2	1	8	3	2	1	10	3	1	1	7	3
No. of obs	8				8				8			
Station Code : A - IV Sandur Town					A - V Core zone Within ML Area							
	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}				
Min.	6	9	35	19	5	9	29	18				
10%	7	10	36	21	6	9	35	21				
25%	7	10	38	24	7	9	42	23				
50%	8	11	40	25	8	10	45	25				
75%	8	11	45	25	9	11	48	26				
98%	9	12	54	28	10	12	50	26				
Max.	9	12	55	28	10	12	50	26				
Avg.	8	11	42	24	8	10	43	24				
SD	1	1	6	3	2	1	7	3				
No. of obs	8				8							


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Table No. 8

WATER TEST REPORT

MES/W/FTR/12/00

Name of the Project : Ramanadurga Iron Ore Mine (ML No. 2141)
 Name of the Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
 Month : August, 2022
 Date of sampling : 05.08.2022
 Date of Report : 06.09.2022
 Report No : MES/MS/WRN/74
 Ref:IS : 2296, 1982 Class C Norms (Stream Water Standards)

Sl.No.	Parameters	Method of Testing	Limits For Stream Water Standards	Result	
				SW1	SW2
i	pH	IS:3025(Part-11)	6.5 to 8.5	8.08	8.06
ii	Dissolved Oxygen (as O ₂), mg/l, Min	IS:3025(Part-38)	4	5.5	5.6
iii	Biochemical Oxygen Demand (as O ₂), mg/l, Max	IS:3025(Part-44)	3	1.9	2.0
iv	Total Coliform (mpn/100ml), Max	IS:1622	5000	136	128
v	Colour (Hazen Units), Max	IS:3025(Part-4)	300	5	5
vi	Fluoride (as F),mg/l, Max	IS:3025(Part-60)	1.5	<0.1	<0.1
vii	Cadmium (as Cd), mg/l, Max	IS:3025(Part-41)	0.01	<0.002	<0.002
viii	Chloride (as Cl),mg/l, Max	IS:3025(Part-32)	600	32.0	32.0
ix	Chromium (as Cr ⁺⁶), mg/l, Max	IS:3025(Part-52)	0.05	<0.03	<0.03
x	Cyanides (as CN), mg/l, Max	IS:3025(Part-27)	0.05	<0.01	<0.01
xi	Total Dissolved Solids (mg/l), Max	IS:3025(Part-16)	1500	162	162
xii	Selenium (as Se), mg/l, Max	IS:3025(Part-56)	0.05	<0.005	<0.005
xiii	Sulphates as SO ₄ (mg/l), Max	IS:3025(Part-24)	400	32.8	32.6
xiv	Lead (as Pb) mg/l, Max	IS:3025(Part-47)	0.1	<0.005	<0.005
xv	Copper (as Cu),mg/l, Max	IS:3025(Part-42)	1.5	<0.01	<0.01
xvi	Arsenic as As (mg/l), Max	IS:3025(Part-37)	0.2	<0.002	<0.002
xvii	Iron (as Fe),mg/l, MAX	IS:3025(Part-53)	50	<0.05	<0.05
xviii	Phenolic compounds (as C ₆ H ₅ OH),mg/l, Max	IS:3025(Part-43)	0.005	<0.001	<0.001
xix	Zinc (as Zn),mg/l, Max	IS:3025(Part-49)	15	<0.005	<0.005
xx	Insecticides, mg/l, Max	APHA 21 st	Absent	NA	NA
xxi	Anionic detergents (as MBAS),mg/l, Max	Annex K of IS 13248	1	<0.1	<0.1
xxii	Oil and grease, mg/l, Max	IS:3025(Part-39)	0.1	<0.01	<0.01
xxiii	Nitrates (as NO ₃),mg/l, Max	IS:3025(Part-34)	50	18.2	17.7
xxiv	Alpha Emitters (µcurie/ml), Max	APHA 21 st	10 ⁻⁹	NA	NA
xxv	Beta Emitters (µcurie/ml), Max	APHA 21 st	10 ⁻⁸	NA	NA

SAMPLE TYPE :

Note : NA - Not Analysed

SW1 - Nari Halla Up Stream water

SW2 - Nari Halla Down Stream water

Samples Collected & Analysed by Mineral Engineering Services, Ballari


 (M.R. DURGA PRASAD)
 GOVT. ANALYST


 (M.S.RAJU)
 HEAD OF LABORATORY

25/XXV, Club Road, Ballari-583 103, Karnataka. Landline No. :08392-267421

E-mail : mes_msraju@yahoo.co.uk / mesbly25@gmail.com

Website : www.envtest.in