ADITYA BIRLA

GRASIM

24th Sept, 2019

To,

The Member Secretary

Karnataka State Pollution Control Board,
"Parisara Bhavan", #49, 4th & 5th Floor,
Church Street, Bangalore-560001

Dear Sir,

Sub : Submission of Environmental Statement Report (Form-V) (April, 2018 to March, 2019) for Grasilene Division, at Kumarapatnam – 581 123, Dist: Haveri Karnataka by M/s. Grasim Industries Ltd.

With reference to the aforesaid subject, we are herewith submitting the **Environmental Statement Report (Form-V)** for Grasilene Division, at Kumarapatnam – 581 123, Dist: Haveri Karnataka for financial year April, 2018 to March, 2019.

Thanking you with regards,

For GRASILENE DIVISION

(Ashok K Prabhakaran)
Vice president (Technical)

encl. a.a

Cc: The Environmental Officer,
Karnataka State Pollution Control Board,
"C" Block,Plot No. 501, Near Income Tax Office,
Devraj Urs Layout,
Davangere – 577 006.

Birla Cellulose
Fibres from Nature

Grasim Industries Limited
Units : Harihar Polyfibers & Grasilene Division
Kumarapatnam 581123, Dist. Haveri, Karnataka.
T : +91 836 2482000 / +91 8373 242171 To 75 / +91 8192 247550 To 54 | F: +91 8373 242875 / +91 8192 247555
W : www.grasim.com | E : grasimharihar@adityabirla.com | CIN : L17124MP1947PLC000410
Regd. Office : P.O. Birlagram, Nagda 456 331 (M.P.)

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F O R M - V
(See Rule 14)

Environmental Statement for the financial year ending the 31st March, 2019

P A R T - A

(I)	Name and address of the owner/occupier of the Industry,operation or process	Ajay Kumar Gupta Sr. President, Grasim Industries Limited, Grasilene Division, **Kumarapatnam - 581 123** Dist. Haveri., Karnataka.
(ii.)	Industry category Primary - (STC Code) Secondary - (SIC Code)	
(iii)	Production capacity (Units)	87,600 TPA of Viscose Staple Fibre 75110 TPA of Sulphuric Acid 14365 TPA of CS2 (Carbon Di-Sulphide) 69205 TPA of by-product Sodium Sulphate 20 MW Power Plant
(iv)	Year of establishment	1977
(v)	Date of the last Environmental Statement submitted	29th September, 2018

P A R T - B

Water and Raw material consumption

(I)	Water Consumption	m^3/day	15777
	Process	"	11182
	Cooling	"	4380
	Domestic	"	215

Name of Products	Process water consumption per unit of Product output	
	During the previous financial year **2017- 2018**	During the current financial year **2018 - 2019**
(1) Viscose Staple Fibre (Semi-Synthetic)	61.0 m^3/Ton	65.49 m^3/Ton
(2) -		
(3) -		

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(ii) Raw Material consumption

* Name of raw materials	Name of products	Consumption of raw material per unit of out put (T/T)	
		During the previous financial year **2017 - 2018**	During the current financial year **2018 - 2019**
a) Rayon Grade Pulp	Staple Fibre	1.003	1.001
b) Caustic Soda	"	0.535	0.515
c) Sulphuric Acid	"	0.720	0.696
d) Carbon-di-Sulphide	"	0.159	0.160
e) Zinc	"	0.0017	0.0015
f) Non-Ferric Alum	"	Nil	Nil

* Industry may use codes if disclosing details of raw materials would violate contractual obligations, otherwise all Industries have to name the raw materials used.

PART - C

Pollution discharged to environment, unit of output
(Parameters as specified in the consent issued)

(1) Pollutants	Quantity of Pollutants discharged (Mass/day)	Concentrations of pollutants in discharges	Percentage of variations from prescribed standards with reasons
a) Water		Refer Annexure - I	
b) Air		Refer Annexure - II	

PART - D
Hazardous Wastes

(as specified under Hazardous & Other wastes/Management & Transboundary movement Rules, 2016)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year **2017 - 2018**	During the current financial year **2018 - 2019**
a) From Process - Used Oil	3900	2400
b) From Pollution Control facilities	Nil	Nil

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PART - E

Solid Wastes

		Total Quantity (Kg)	
		During the previous financial year **2017-18**	During the current financial year **2018 - 2019**
a)	From Process	Nil	Nil
b)	From Pollution Control facilities		
	- Fly Ash *	150.21 Tons/day (Approx.)	111.13 Tons/day (Approx.)
c)	1) Quantity recycled or reutilised within Unit	Nil	Nil
	2) Sold	-	-
	3) Disposed	150.21 Tons/day (Approx.)	111.13 Tons/day (Approx.)

* The quantity includes Bottom ash also as per Fly Ash Notification S.O. 2804(E) dated 03.11.2009

PART - F

Please specify the characterisations (in terms of composition and quantum of Hazardous as well as Solid Wastes and indicate disposal practice adopted for both these categories of wastes

Refer Annexure - III

PART - G

Impact of the Pollution abatement measures taken on conservation of natural resources and on the cost of production

Refer Annexure - IV

PART - H

Additional measures/investment proposal for environmental protection including abatement of pollution, prevention of pollution

Refer Annexure - V

PART - I

Any other particulars for improving the quality of the Environment

Refer Annexure - VI

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G R A S I M

GRASILENE DIVISION : HARIHAR

Annexure - 1

Ref.Part(C)1(a)

Pollution discharged to environment, unit of output (Parameters as specified in the consent issued)

Sl. No.	Parameter	Unit	Limit Specified by KSPCB	Quantity of pollutants discharged (Tons/Day)	Conc. of Pollutants in mixed discharges	Percentage of variations from prescibed tolerance limits
1.	Colour & Odour	-	All efforts should be made to remove colour & unpleasant odour as far as practicable	-	*	All parameters are maintained within the prescribed tolerance limits
2.	Suspended Solids	mg/l	Max.100	1.68	51	
3.	Dissolved Solids (Inorganic)	"	Max.2100	60.18	1825	
4.	Temperature	°C	Shall not exceed 5°C above the receiving water temperature	-	33.0	
5.	pH	-	6.0 - 8.5	-	7.4	
6.	Oil and Grease	mg/l	Max. 10.0	0.043	1.33	
7.	Biochemical Oxygen Demand (3 days, 27°C)	"	Max.30.0	0.66	20	
8.	Chemical Oxygen Demand	"	Max.250.0	5.70	173	
9.	Mercury (as Hg)	"	Max. 0.01	-	ND	
10.	Total Chromium (as Cr)	"	Max.2.0	-	ND	
11.	Hexavalent Chromium (as Cr^{+6})	"	Max.0.10	-	ND	
12.	Zinc (as Zn)	"	Less than 1.0	0.0026	0.08	
13.	Sulphate (as SO_4)	"	Max.1000	27.37	830	
14.	Sulphide (as S)	"	Max.2.0	0.045	1.38	
15.	Phenolic Compound (as C_6H_5OH)	"	Max.1.0	-	ND	
16.	Bio - assay (as per IS 6582-1971)	% Surv-ival	Not less than 90 % of test animal shall survive in 96 Hrs. test.The test shall be conducted as per IS 6582-1971	-	100 % Survival in 100 % Effl.	
17	Effluent volume	m3/d Max	48120		32975	

* All possible efforts are made to remove colour and odour at source as far as possible.

ND Not Detectable

Note: Total volume of effluent discharge excluding the followings.

1) DM water used for boiler in both HPF and GRD is 3103 m3/day

2) Treated effluent used for greenery development and formers for irrigation purpose is 1540m3/day.

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GRASILENE DIVISION : HARIHAR

Annexure - II
Ref. Part (C) I(b)

Pollution discharged to environment/unit of out put (Parameters as specified in the Consent issued

Sl. No.	Parameter	Unit	Limit Specified by KSPCB	Quantity of Pollutants discharged (Tons/Day)	Conc. of Pollutants in discharges	Percentage of variations from prescribed tolerance limits
1.	**Spinning Plant**					
	a. SPM	mg/Nm^3	150	0.159	21.5	Within the prescribed limits
	b. CS_2	Kg/Ton	99	22.50	93.4	"
2.	**H_2SO_4 Plant**					
	a. SO_2	Kg/Ton	1.0	0.130	0.54	"
	b. Acid Mist	mg/Nm^3	50.0	0.0084	23.4	"
3.	**Power Plant**					
	CFBC Boiler					
	SPM	mg/Nm^3	150	0.98	61	"

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G R A S I M

GRASILENE DIVISION : HARIHAR

Annexure - III
Ref. Part (F)

Characterisations (in terms of composition and quantum) of Solid wastes and indicate disposal practice adopted for both these categories of wastes

A Hazardous waste

Source	Nature	Quantity kg/d (approx.)	Mode of Disposal
Used oil generated from industrial operations using oil as lubricants in hydarulic systems or other application.	Lubricating oil	8.0-11.0	Sold to authorised oil recycler

B. Solid wastes

Sl. No.	Source	Composition	Quantity t/d (approx.)	Mode of Disposal
1	Ash from Power Plant	Ash	150 - 180	Made available to cement manufacturers and brick manufacturers
2	CS2 Plant	Charcoal churi/ waste	3.5 - 4.5	Used as fuel in boilers
		Sulphur hardmass	0.15 - 0.20	Burnt in CFBC Boiler
3	ETP sludge (Organic)	Calorific value >3100 kcal/kg	4.0 - 5.0	Used as fuel in boilers after drying in sludge dryers
3	Gypsum sludge in ETP	CaSO4	5.0 - 8.0	Sold out to Cement Block Manufacturers

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GRASILENE DIVISION : HARIHAR

Annexure - IV

Ref. Part (G)

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production

Sheet 1/3

Sl. No.	Control measures adopted	Impact on conservation of resources
1.	Reuse of Xanthator cleaning water	Water conservation and waste load reduction.
2.	Continuous Filters in place of Plate & Frame Presses for viscose preparation.	Chemical conservation and waste load reduction.
3.	Reuse of Pump Gland leakages in Soda Station.	Chemical conservation and waste load reduction.
4.	Recycling of Sumpzone in Cutter Ventury.	Water and Steam conservation.
5.	Condensate from sodium Sulphate Dryer reused in Spinning Cutter Ventury.	Water and Steam conservation.
6.	Reuse of condensate, dryer condensate and PHE cooling water from Acid Plant in Aftertreatment.	Water and Steam conservation.
7.	Use of Bleach wash in Desulph zone in Aftertreatment	Water conservation .
8.	Introduction of Multi Stage Flash evaporators in place of Triple Effect Evaporators.	- Energy conservation. - Enhanced sodium sulphate recovery
9.	Introduction of Acid Absorption Crystallisers in place of Horizontal Continuous Crystallisers for recovery of Sodium Sulfate.	Energy conservation.
10.	Introduction of mechanical seals in anhydrous circulation pumps, strong acid pumps and spin bath pumps to avoid gland leakages.	Chemical conservation.
11.	Entrainment Separator in MSFE	Chemical conservation and waste load reduction.
12.	Introduction of Settling & Pumping pit for Power Plant drain to reuse the wastewater for coal quenching and handling plant	- Water conservation. - Reduction in effluent discharge
13.	Reuse of CS2 condenser water for fibre wash in Aftertreatment section	- Water conservation. - Reduction in effluent discharge
14.	Installation of Plate and heat Exchanger ipo Trombone Cooler for acid cooling. The hot water generated used fro fibre washing in Aftertreatment	- Water conservation. - Reduction in effluent discharge - Reduction in steam consumption for producing hot water for fibre washing by means of waste heat recovery
15.	Use of part of sumpzone (high acidity stream) i.p.o fresh water for tow washing	Reduction in - Water consumption. - Effluent discharge - SO4/TDS concentration in treated effluent.
16.	Use of Multi Stage Flash Evaporator (MSFE) condensate for spin bath filter washing i.p.o fresh water.	- Water conservation. - Reduction in effluent discharge

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Sl. No.	Control measures adopted	Impact on conservation of resources
17	Installation of two additional Multi Stage Flash evaportaors to recover Sodium Sulpahte from lean streams	- To reduce TDS load in treated effluent
18	Replacement of small capacity Spinning viscose storage tanks (16 Nos.) with continuous spinning tanks with stirrer	Reduction in - Cleaning frequency of tanks - Water consumption for tank cleaning - Organic load on ETP through reduced viscose loss
19	Recycling and reuse of treated effluent for a) Washing of Tow. b) Cleaning in CS2, H2SO4, ETP dept. etc. c) Lime Slurry preparation in ETP. d) Ash quenching in Power Plant. e) Fire fighting. f) spinning machine sides	Water conservation .
20	Replacement of M.S Aerator by S.S Aerator in Biological reactor	- Energy conservation
21	Condensing system for recovery of entrapped CS2 in Tow in Spinning department.	- Chemical conservation
22	Diffused aeration based secodary treatment system for effluent treatment	- Energy conservation
23	Exhaust System in Spinning Hall and Spin Bath Section.	Improved work environment
24	Replacement of Maurer Sieve band Slurry Press by Twin Roll Slurry Press	- To avoid chemical spillages - Reduction in waste load
25	Replacement of manual bin handling by Silo dumping system and pneumatic conveying instead of Belt conveying system	- Increased productivity from equipment - Reduced alkali spillage - Reduced load at influent itself
26	Modification of manual tightening type Viscose Plate & Frame Presses by hydraulically tightening system.	- Increased productivity. - Reduced downtime - Human intervention minimised - Reduced leakage/spillage of viscose and hence reduced influent load
27	Replacement of loose pulp Double Belt Conveyor by Pneumatic Conveyor	- Increased productivity. - Reduced pulp spillage - Reduction in influent load
28	Addition of additives in alkcell for improved quality of alkcell	Better xanthation resulting in reduced CS2 consumption
29	Marginal increase in spinning machine speed to reduce CS_2 loss	Improved CS2 recovery
30	Use of water in place of steam in cutter funnel to reduce CS_2 loss	Improved CS2 recovery
31	Modified hole configuration with Hastelloy C pipes in place of lead pipes for better steam penetration & CS_2 expelling in Recovery Trough	Improved CS2 recovery
32	Modified scrubber for improving the vapour contact in CS_2 recovery system	Improved CS2 recovery

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Sl. No.	Control measures adopted	Impact on conservation of resources
33	Bigger capacity first and second condenser with outer jacket in first condenser	Improved CS2 recovery
34	Installation of automatic temperature control system for CS_2 recovery	Improved CS2 recovery
35	Installation of efficient Circulating Fludised Bed Combustion (CFBC) Boilers with Distributed Control System (DCS) and better designed ESP	- Reduced SPM emission - Natural resource conservation
36	Construction of 175 m new Spinning Plant Chimney i.p.o 125 m Chimney (Main Stack)	For improved Ambient Air Quality.
37	Construction of 110 m new Power Plant Chimney i.po 78 m Chimney	For improved Ambient Air Quality.
38	Installation of new acid plant with Double Conversion Double Absorption (DCDA) system.	To reduce SO2 emission per ton of Acid produced.
39	Demister Pads in Acid Absorption Tower of Acid Plant.	To arrest Acid Mist.
40	Scrubbers for Acid Plant Chimney	SO2 emission per ton of Acid produced is less than the prescribed norms.
41	Klaus Kiln Sulphur Recovery Plant	To recover Sulphur from CS2 Plant tail gases.
42	Oil Scrubber system in CS_2 Refinery	To minimise the CS2 concentration in CS2 Plant tail gases.
43	Scrubber for Deashing gas for CS2 Furnaces.	Improved work environment.
44	Closed Calciner for Charcoal Calcination in place of Open Calciners.	Improved work environment.
45	Scrubbers for Exhaust air from salt Scrubber	Improved work environment.
46	Electro Static Precipitators for Power Plant Boilers	Low SPM emission.
47	Installation of Belt Press in place of Vacuum Belt Filter	Increasing the dry content of sludge
48.	Installation of Filter Press for ETP sludge handling	Increasing the dry content of sludge
49.	Dryers for ETP sludge	Dried sludge used as fuel in boilers after mixing with coal.
50.	Usage of fly ash for brick and cement manufacturing	Reuse of solid waste
51	Installation of VFD for main drive & soft finish drive in M/c No. 1 & 2	Save electrical energy
52	Preheating of Demin water in power plant with MSFE condensate.	Save steam
53	Installation of diffusers in place of surface aerators in old biological reactor.	Conserve electricity and to improve the quality of treated effluent

Impact on Pollution Control measures on cost of production can not be exactly quantified as there are other steps being taken continuously like inpalnt improvements, close supervision, Wastage Control etc. which have bearing on cost of production.

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G R A S I M
GRASILENE DIVISION : HARIHAR

Annexure - V
Ref. Part (H)

Additional investment proposal for Environmental protection including abatement of Pollution, Prevention of Pollution

Sl. No.	Projects
1.	Degasser For M/c#3 for CS2 & H2S reduction in Spin bath
2.	Bigger size RVF to improve productivity thereby reduction in water, steam & power consumption
3	Installation of on/off valves in Spin bath feed line to Machine for eliminating spin bath loss
4	Installation of centrifuge system (2 Sets) in place of Plate and frame filter press for Reject viscose filtration for reducing Pulp & Caustic loss
5	Replacement of existing Centrifugal Chiller with Once through system for cooling Mix charge system for Power saving
6	Replacement of inefficient Flash Deaerator Condenser Pump #1 for Power saving
7	Replacement of inefficient Condenser Pump #4 of Cooling Tower # 5 in Viscose for Power saving
8	Installation of Booster pump for MSFE#1 to 2 for improving Specific steam consumption
9	Conductivity meter for individual MSFE condensate for Minimising Spin bath losses
10	Replacement of inefficient Chilled water Pump #1 & 2 in CS2 /H2SO4 Department for Power saving
11	SOX, NOX And CO analyzer for AFBC Boiler

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