

ADITYA BIRLA



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

22nd Sept, 2021

Dear Sir,

Sub : Submission of Environmental Statement Report (Form-V) (April, 2020 to March, 2021) for Harihar Polyfibers, 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 Harihar Polyfibers, at Kumarapatnam - 581 123, Dist: Haveri Karnataka for financial year April, 2020 to March, 2021.

Thanking you with regards,

For HARIHAR POLYFIBERS

(Manohar Kumar R)
Vice President (Technical)

Encl: as above

Cc:

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

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ದಾವಣಗೆರೆ.
ಸಂಖ್ಯೆ: Jugadhi
ದಿನಾಂಕ: 23/09/2021
ಇವರಿಗೆ



Birla Cellulose
Fibres from Nature

Grasim Industries Limited

Unit : Harihar Polyfibers

Industry House, 45, Race Course Road, Bangalore 560 001
T : +91 80 2226 3051 / 2225 9325 | F : +91 80 2225 5661
Works : Kumarapatnam 581 123 | CIN : L17124MP1947PLC000410
Regd. Office : P.O. Birlagram, Nagda (M.P.)

ENVIRONMENTAL STATEMENT REPORT

FORM-V (See Rule 14)

Environmental Statement for the financial year ending with 31st March 2021

PART-A

(i)	Name and address of the owner/occupier of the industry operation or process.	Mr. Ajay Kumar Gupta, Sr. President and Unit Head M/s. Harihar Polyfibers, (Unit of Grasim Industries) Kumarapatnam - 581 123, Tq- Ranebennur, Dist: Haveri Karnataka
(ii)	Industry category	Primary
(iii)	Production capacity	Rayon Grade Pulp - 85,350 TPA as per the CFOxp order vide No. AW-316806 Dtd: 23.01.2020.
(iv)	Year of establishment	1972
(v)	Date of the last environmental statement submitted	18.09.2020

Note:

1. The industry has obtained EC for Expansion of Fibre Plant from 87,600 to 1,75,200 TPA, Pulp Plant from 74,400 to 1,48,800 TPA, Captive Power Plant from 20 to 50 MW and setting up Excel Fibre Plant of capacity 36,500 TPA vide EC LETTER NO. IA-J-11011/371/2006-IA II(I) DATED 13.08.2019 and half yearly compliance report has submitted to MoEF on 03.06.2021.
2. As per the EC, we have obtained the CFO for manufacture of Rayon Grade Pulp of capacity 85,350 vide CFOxp order No. AW 316806 Dtd: 23.01.2020.

PART-B

Water and Raw Material Consumption

(i) Water consumption: - 23072 m³/day

Process	21334 m ³ / day
Cooling	300 m ³ / day
Domestic	1438 m ³ / day (Including Gardening , Drinking and Miscellaneous)

Name of Products	Process Water Consumption per Unit of product Output (m ³ /ton)	
	During the previous financial year (2019-2020)	During the current financial year (2020-2021)
Rayon Grade Pulp	112.8	110.97

(ii) Raw Material Consumption

Name of raw materials	Name of products	Unit	Consumption of raw material per unit of output (kg/t)	
			During the previous financial year (2019-2020)	During the current financial year (2020-2021)
Wood	Rayon Grade Pulp	T/T	3.016	3.022
Caustic Soda		Kg/T	29.85	30.176
Sodium Sulphate		Kg/T	22.944	24.99
Chlorine		Kg/T	20.559	22.709
Hydrochloric acid		Kg/T	29.34	15.301
Hydrogen peroxide		Kg/T	12.663	13.834
Oxygen		Kg/T	16.737	13.872
Sulphuric Acid		Kg/T	29.686	20.773
Sodium chlorate		Kg/T	12.779	12.271
Sea Shell		Kg/T	30.135	31.665
Oil		Kg/T	40.367	38.494

PART-C

Pollution discharged to environment/unit of output

(Parameters specified in the consent issued)

a. Air

Pollutants (Particulates Emission)	Tolerance Limit Specified by KSPCB (Max)		Concentrations of pollutants in discharges		Quantity of pollutants discharged (ton/day)	Percentage of variation from prescribed standards with reasons
	Vol (Nm ³ /Hr)	SPM (mg/Nm ³)	Volume (Nm ³ /Hr)	SPM (mg / Nm ³)		
(a) Chimney attached to Recovery Boiler	106000	150	54213	65.6	0.085	Discharge level Maintained within prescribed standards
(b) Chimney attached to Lime Kiln	18000	150	11572	54.6	0.015	
(c) Package Boiler in Chipper House	-	350	-	-	-	

* Sawdust is used in CFBC Boiler & hence Package boiler has not been used

b. Water

S. no.	Pollutants	Unit	Tolerance limit specified by KSPCB (Mass/Vol)	Concentrations of pollutants in mixed discharges (Mass/Vol)	Quantity of pollutants discharged (T/day) [Mass/day]	Percentage of variation from prescribed standards with reasons
1.	Colour & Odour	--	*			<p style="text-align: center;">↑</p> <p style="text-align: center;">All the parameters are maintained within the prescribed standards</p> <p style="text-align: center;">↓</p>
2.	Suspended Solids	mg/l Max	100	51	1.45	
3.	Dissolved Solids (Inorganic)	mg/l Max	2100	1819	52.01	
4.	Temperature	Deg. C	***	33	-	
5.	pH	--	6.0 - 8.5	7.37	-	
6.	Oils & Grease	mg/l Max	10	1.52	0.043	
7.	Total residual Chlorine	"	1.0	0.40	0.011	
8.	Ammonical Nitrogen (as N)	"	50	1.64	0.046	
9.	Total Kjeldhal Nitrogen (as N)	"	100	2.04	0.058	
10.	Free Ammonia (as NH ₃)	"	5.0	0.56	0.016	
11.	Biochemical Oxygen Demand (3 days at 27 Deg.C)	"	30	17	0.48	
12.	Chemical Oxygen Demand	"	250	163	4.66	
13.	Arsenic (as As)	"	0.2	ND	-	
14.	Mercury (as Hg)	"	0.01	ND	-	
15.	Hexavalent Chromium (as Cr ⁺⁶)	"	0.1	ND	-	
16.	Total Chromium (as Cr)	"	2.0	ND	-	
17.	Boron (as B)	"	2.0	ND	-	
18.	Chloride (as Cl)	"	1000	339	9.69	
19.	Flouride (as F)	"	2.0	ND	-	
20.	Dissolved Phosphates (as P)	"	5.0	0.50	0.014	
21.	Sulphate (as SO ₄)	"	1000	851	24.33	
22.	Sulphide (as S)	"	2.0	1.65	0.047	
23.	Phenolic Compounds (as C ₆ H ₅ OH)	"	1.0	ND	-	
24.	Bioassay - as per IS-6582: 1971	% survival	Not less than 90% of test animals shall survive in 96 hours	100%	-	
25.	Total Volume of Mixed effluent	m ³ / day Max	48120	28598		

* All efforts should be made to remove colour & unpleasant odour as far as possible.

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

*** Shall not exceed 5°C above the receiving water temperature

ND- Not Detectable

Note: 1) Treated effluent used for greenery development and formers for irrigation purpose is 1196 m³/day (Common for GRD & HPF).

2) Plant operation was under shutdown from 25.03.2020 to 03.07.2020 due to Nationwide Lockdown declared by the Hon'ble Prime Minister because of COVID-19 outbreak.

**PART-D
HAZARDOUS WASTES**

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

Hazardous Waste	Total Quantity (Kg)	
	During the previous financial year (2019-20)	During the current financial year (2020 - 2021)
(a) *From process	1300	3500
(b) *From Pollution Control facilities		

* Used oil generated from industrial operations using lubricants

**PART-E
SOLID WASTE**

Source		Total Quantity (Tons)	
		During the Previous financial Year 2019-20	During the Current financial Year 2020 - 2021
a) From Process	1. Pulp from Centri-Cleaner Rejects	278.8	284.7
	2. Lime Sludge from Causticizing (as such)	46472	39899
b) From pollution control facility	Pulp from Primary Clarifier underflow	212.3	105.5
	Organic sludge (Biomass & Lignin) .	1677.9	1022
	Saw dust	1891	1540

PART-F

Please specify the characterization (in terms of composition and quantum) of hazardous material as well as solid wastes and indicate disposal practice adopted for both the categories of waste.

1. Hazardous Wastes

Hazardous Waste	Composition	Method of disposal
a. From Process	Lubricating oil	Provided designated area for collection and storage of waste oil and timely disposal to KSPCB authorized recycling unit i.e. M/s. Special Oils, Hubli.
b. From pollution control facility		

1. Solid Wastes

Source		Composition	Method of Disposal
a) From Process	1. Pulp from Centri-Cleaner Rejects	Cellulose fibers	Sold to cardboard manufacturer Unit
	2. Lime Sludge from Causticizing	Calcium Carbonate	100% recycled within the unit (Burnt in lime kiln)
b) From pollution control facility	Pulp from Primary Clarifier underflow	Cellulose fibers	Used in CFBC Boiler as a fuel
	Organic sludge	Bio mass Sludge and sludge generated due to Lignin	Used in CFBC Boiler as a fuel
	Saw dust	Wood dust	Used in CFBC boiler as a fuel

PART-G

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

The Following activity completed in FY 21.

- ✓ Industry has enhanced the ClO₂ plant and thereby minimizing the consumption of elemental chlorine at the bleaching section and also improved ambient air quality and treated effluent discharge quality.
- ✓ Around 200 m drain constructed as a part of rainwater harvesting at surrounding to ED Fibre storage building.
- ✓ Around 3000 different species plantation done in and around the factory premises (Common for both Harihar Polyfibers & Grasilene Division).
- ✓ VFD installed for UB pumps in Pulp mill which will be saving power 2 KW per ton of Pulp.
- ✓ Replaced existing OCEMS (Online Continuous Effluent Monitoring System) with new OCEMS at mixed treated effluent drain (Common for both Harihar Polyfibers & Grasilene Division)..
- ✓ Replaced around 600 No's mercury vapor lamps with LED Bulbs (Including Residents Colony)
- ✓ Installed Bio gas plant @ Grasim staff colony with the capacity to produce the biogas 7 Kg/day with Methane content around 70 % by utilizing the generated food & Kitchen waste quantity approx. 150kg per day within the Resident colony and generated biogas being used in Guesthouse Kitchen which reduced the around 70% fossil fuel consumption and also resulting in effective utilization of solid waste .

The Following activity completed and Sustained:

- ✓ Around 5000-6000 m³/day Pulp mill treated effluent is being used for agriculture purpose by neighboring farmers and our own gardening purpose except peak monsoon season. Hence, quantity of effluent discharge into Tungabhadra river will get reduced by 5000-6000m³/day (The Average effluent utilized in FY 21 is 1196m³/day and this is common for both HPF &GRD)
- ✓ Industry has adopted new Oxygen De Lignification (ODL) Technology to reduce water consumption up to 25% and also reduce the effluent generation from Pulp Mill.
- ✓ Unit has adopted Elemental Chlorine Free (ECF) bleaching thereby minimizing the consumption of Chlorine.
- ✓ At Recovery Section Lime kiln bearing cooling water consumption around 600m³/day is completely reusing and thereby reducing the same quantity of effluent generation.
- ✓ Biogas plant operation improved by installing 4th reactor of higher capacity to treat more volume of PH liquor which result in;
 - Increased generation of Green Energy as a Biogas
 - Reducing up to 60% of furnace oil consumption in Lime Kiln Operation.
 - Minimized emission of SO_x and NO_x.
 - Reduction of COD load on ETP.
- ✓ The industry has constructed new Water reservoir with built-up area of 1,80,000 Sq.m to harvest and store the rain water and excess runoff water from Tungabhadra River during monsoon season, thereby facilitating groundwater recharge. (Common for both Harihar Polyfibers & Grasilene Division).
- ✓ Industry has started using liquid PAC in effluent treatment plant instead of powdered PAC which results in;
 - Accurate dosing of PAC for better consistency in final effluent colour.
 - Ease of Operation /Handling
 - Controlled ergonomics
 - Reducing the fugitive emissions.
 - Reducing the generation of sludge
 - Restricted the entry of approx. 4T of plastic in to the premises (Plastic bags were used for packing of Powdered PAC).
 - Reduces the operation cost of the treatment facility.

Online Monitoring Details:

✓ As per the directions of CPCB, the unit has installed online continuous monitoring system for Treated effluent, stack emission and also for Ambient Air. The details are as follows;

➤ **For Treated Effluent:**

Sl. No.	Location	Parameters	Analyzer Model	Make	Service Provider	Online connectivity
1	Mixed Treated Effluent sampling point	pH, BOD, COD, TSS and Temperature	CarboVis 70xIQ TS	WTW (A Xylem brand)	M/s. Nevco Engineering Ltd.	CPCB Server
		Flow (Harihar Polyfibers)	136ULT	SBEM Pvt. LTD.		






➤ **For Stack Emission:**

Sl. No.	Location	Parameters	Analyzer Model	Make	Service Provider	Online connectivity
1	Recovery Boiler stack	Flow	HFM-200	Teledyne	Environment-SA	CPCB Server
		PM	SPM-380	PCME (envea)	Environment-SA	
2	Lime Kiln Stack	Flow	HFM-200	Teledyne	Environment-SA	
		PM	SPM-380	PCME (envea)	Environment-SA	

➤ **For AAQM:**

Sl. No.	Location	Parameters	Analyzer Model	Make	Service Provider	Online connectivity
1	Intake well	PM2.5 and PM10	MP101M	Environment-SA	Environment-SA	CPCB Server
		CS ₂ , H ₂ S, SO ₂	AF22M			
		NO _x	AC32M			
2	ETP	PM2.5 and PM10	MP101M	Environment-SA	Environment-SA	
		CS ₂ , H ₂ S, SO ₂	AF22M			
		NO _x	AC32M			
3	Guest House	PM2.5 and PM10	MP101M	Environment-SA	Environment-SA	
		CS ₂ , H ₂ S, SO ₂	AF22M			
		NO _x	AC32M			

✓ The details of Environmental improvement Projects completed in the FY-2020-21 with Expenditure cost are as follows;

SI No.	Name of the Project and its impact.	Expenditure Cost Rs. (Lakhs)	Photos
1	For the development of Green belt with 3000 different species which will helps to control fugitive emission as well as improves the ambient air quality.	4.0	
2	Replacement of existing Mercury Vapor Lamps with LED Bulbs which helps to minimize power consumption as well as fossil fuel.	4.0	
3	Enhancing of ClO2 Plant thereby minimized the consumption of elemental chlorine at the bleaching section and reduced the elemental chlorine load on ETP and improved discharge effluent quality.	114.26	
4	Installation of Biogas plant at Grasim staff colony to produce the Biogas by utilizing the food waste from the colony and generated Biogas being utilized in Guest house kitchen for food preparation.	20.0	
5	Construction of drain as a part of Rain harvesting at surrounding to ED Godown which will helps to collect rain and reuse the water.	20.0	
	Total Expenses	162.26	

PART-H

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

Proposed projects for the financial year 2021-22

Project Name	Approx. Cost Rs. (Lakhs)
Enhanced Utilization of secondary clarifier effluent for irrigation purpose from 5000 m ³ to 6500 m ³ - Phase I	24.0
Vermicomposting facility for effective utilization of the ETP organic Sludge	12.0
Replacement of 500 No's Mercury Vapor Lamps with LED Bulbs	5.0
Development of 3 Hectors Green Belt with more oxygen releasing plant	6.5
Installation of online DO analyzer at deaerator outlet.	6.6
Total	54.1

Strategies & techniques applied for continuous monitoring of environment and feedback mechanism for correcting/ preventing any run-away operations for achieving stable operations.

Effluent from pulping section consists of wood matter & residual chemicals from washing & bleaching stages. It is subjected to primary clarification in two primary clarifiers and the overflow is mixed with bleach drain. The effluent from recovery plant is also subjected to primary clarification in settling pond, overflow of which joins the combined effluent of primary clarifier overflow and bleach drain. The entire mill effluents are then treated in anaerobic digester. The overflow is subjected to aerobic treatment in biological reactor. Biological reactor is designed on the basis of Extended Aeration Activated Sludge Process and consists of 09 Nos. surface aerators of 25 HP each and diffuser aeration with four blowers of 60HP each.

The effluent from Biological Reactor taken in to secondary clarifiers (2 No's) and finally overflow of both secondary clarifiers taken into the tertiary clarifier, where color removal takes place up to 80 %. Finally treated effluent discharged in to River after meeting all the stipulated standards. The comparison between the qualities indicating parameters of the treated effluent from the ETP i.e. before and after the installation of Tertiary clarifier are as follows;

Parameter of Treated Wastewater	Unit	KSPCB target	Before Tertiary Treatment	After Tertiary Treatment	% of Reduction
COD	ppm	250	230	160	30.4
BOD	ppm	30	26	17	34.6
TSS	ppm	100	85	35	59
Inlet/Outlet Colour	PtCo	NA	900	180	80

The treated effluents are passed through an aquarium containing fish obtained from the receiving water body i.e. the river. The property of aquatic life to be highly sensitive to the surrounding environment is made use of as an early warning signal to notice any variation in the quality of effluents. Fish behavior is monitored round the clock and it serves as feedback mechanism to initiate corrective action much before the operations reach run-away stage. This is a unique approach addressing all the control parameters of significance.

In addition to the aforesaid foolproof arrangement the following in-plant measures help to control the operations for consistent quality of effluents and emissions -

1. Alternative power supply is provided to Effluent Treatment Plant (ETP) so that in case of failure of one supplies the stand by resumes automatically for the ETP. A similar arrangement is provided for air pollution control equipment's.
2. Sensitive effluent streams are monitored round the clock at influent stage itself by providing simple visual monitoring aids for easy and quick qualitative monitoring for taking timely corrective action.
3. Biogas plant efficiency has been improved by modifying the internals to treat higher quantity of PH liquor thereby reducing load on ETP.
4. Stand by arrangements have been provided for all critical air and water pollution control equipment's.
5. All equipment's critical to environment are identified & subjected to preventive maintenance and condition based monitoring as per a pre-drawn schedule to prevent unforeseen stoppages.

6. All process operating personnel have been trained to notice and inform any untoward incident that could lead to 'out of control' situation, to the operatives at the ETP so that the relevant stream can be diverted to a 'guard pond' which has a capacity to hold a day's effluents.
7. All input chemicals and raw materials are carefully and closely monitored daily against preset norms per unit weight of product so that all wasteful practices that would result in emission to air or discharge to environment is eliminated.
8. Industry has implemented NCG burning technology to reduce the odour from the process.
9. Operation cost of the ETP per day is as follows;

HPF ETP Operation Cost					
SNo	Chemicals	Unit cost (INR/Kg)	UoM	Daily consumption	Total cost (INR)/day
1	Hydrated Lime	5.3	Kg	300	1590
2	Urea	39.5	Kg	50	1975
3	DAP	62.5	Kg	50	3125
4	Liquid PAC	12.499	Kg	6	74994
5	Defoamer	135	Kg	5	675
6	Flocculant	207.5	Kg	70	14525
7	Electricity	7	No's	12500	87500
8	Sludge handling		Rs.	2950	2950
9	Capex		Rs.	8210	8210
10	Biogas operation		Rs.	92350	92350
11	Staff and workmen salary		Rs.	11,333	11333
12	Contract workmen for ETP		Rs.	4616	4616
	Total ETP treatment cost per day				3,038,43.00

PART-I

Any other particular for improving the quality of the environment

- ✓ The unit has aligned itself with Environmental Management Systems ISO 14001:2015 and Occupational Health and Safety Management System in accordance with ISO 45001:2018.
- ✓ The unit is continuously adopting cleaner technologies as an ongoing exercise with several projects under formulation and implementation to further enhance its environmental performance by avoiding human errors, improving work environment & controlling pollution at source.
- ✓ World Class Manufacturing practices are being adopted and 6-Sigma quality concept is being propagated for better process control and better quality of environment.
- ✓ Staff and workmen are exposed to environmental awareness training by in-house faculty and external agencies.
- ✓ High noise level equipment are identified and covered with shed to minimize the noise level.
- ✓ All activities in the mill, which have an interaction with the environment, have been identified. Aspects and impacts related to these activities are listed out. Based on this data environmental objectives and targets have been set against the significant environmental impacts. Aspects and impacts are being reviewed & updated periodically.
- ✓ Industry has strengthened the guard pond, PH Liquor lagoon bunds as a part of continuous up gradation of ETP facilities.
- ✓ Methane capturing and replacement of fuel by methane is given more importance as a step towards reducing greenhouse gases and fossil fuel usage.
- ✓ As a step towards afforestation, green coverage is extended to degraded lands with free distribution of seedlings and post plantation services to ensure maximum survival rate. Following plantation activities have been taken up under 'Operation Green' campaign. This activity will be a continuous exercise to improve the greenery in and around the industry:
 - Industry has already developed 245 acres of own land (by considering total plant area includes HPF and Grasilene) under "Operation Green Project" planting around 153000 Nos. of different tree species. (Around 3000 plantation done in FY 21)
- ✓ Various varieties of birds and flower species in & around factory premises are found due to availability of greenery in the premises and they were protected by industry. Lots of peacocks are found in the premises and special care is taken to protect them.

Awards

- Unit has own National Award for Energy Efficient unit from CII in 2020.
- Unit has own CII-ITC Sustainability awards for commendation of significant achievement in Environment Management in 2020.
- Unit has own Platinum Award for Occupational Health and Safety by Grow Care India, Delhi in 2021.
- Unit has own “Best Skill Development Award-2020” from Bangalore chamber of Industry & Commerce.
- Unit has emerged as one of the Top Performers at the National Level getting an award of three leaves in the Green Rating Award by Centre, New Delhi for Science and Environment. Also the unit is recognized with a special award for the best performance in fiber sourcing for striving towards raw material self-sufficiency by promoting farm and social forestry Certificate.
- Unit’s achievements of attaining the global distinction of high chemical recovery efficiency was appreciated and the technical paper presented in this regard during IPPTA Seminal was adjusted as the best and awarded the first prize.
- Unit was awarded 2nd prize amongst large industries in the State of Karnataka for Safety from Dept. of Factories & Boilers.
- Unit received “Unnatha Suraksha Puraskara” from the National Safety Council, for the year 2005, in recognition of outstanding safety performance and management system in paper and pulp category of industries during 2003-05.
- Technical paper titled “Two stage oxygen for Bleaching Dissolving Grade Pulp” presented during IPPTA Seminar was adjusted as one of the best Technical paper.
- IMC Ramakrishna Bajaj National Quality Special Award for Performance Excellence -2007 in the manufacturing category.
- Aditya Birla Group’s Chairman’s Platinum Award for Manufacturing Excellence in 2009.
- Harihar Polyfibers has received the Gold Award from Green Tech Foundation in 2010 for Outstanding Achievement in Environmental Performance.
- Harihar Polyfibers has own the “Most Innovative Environmental Project” award at the CII – Godrej Green Business Centre on 28 & 29 January 2011 at CII – Sohrabji Godrej Green Business Centre, Hyderabad.
- Unnatha Suraksha Puraskar 2013 by National Safety Council, Karnataka Chapter.
- Unit has awarded 4 star ratings for the Commitment to EHS practices in the CII-SR ESH Excellence awards in 2018.
- Unit has own “Golden Peacock Award” for Environmental management by Institute of Directors and world Environmental Foundation, New Delhi in 2018.



- Unit was awarded 1st prize for installation of “Color Removal Plant” in Project Project Recognition Program conducted by “Frost and Sullivan” at Mumbai in 2019.
- Unit has own the CII-ITC Sustainability award -2019 for “Excellence in Environment Management”

