

# **Six Monthly Compliance Report of Environmental Clearance**

## **For**

### **Viscose Staple Fibre, Sulphuric Acid and Carbon-Di-sulphide**



#### **Submitted to:-**

##### **Ministry of Environment Forest & Climate**

Change, (WR Office) Bhopal Ministry of Environment  
Forest & Climate Change, New Delhi  
Central Pollution Control Board, Zonal Office  
(Vadodara) Gujarat Pollution Control Board-Bharuch

#### **Submitted By:-**

##### **Grasim Industries Limited**

(Unit: - Grasim Cellulosic Division)  
Plot No. 1 GIDC Vilayat Industrial Estate,  
PO-Vilayat, Taluka-Vagra, Dist: - Bharuch-  
392012, Gujarat, India

**Period: -01.10.2018 to 31.03.2019**

# Compliance Status Report for “Environmental Clearance” Accorded by the MoEF For Grasim Cellulosic Division (GCD), Vilayat Project

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3	Chlor Alkali EC	Annexure-2
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# **Compliance Status Report for “Environmental Clearance” Accorded by the MoEF For Grasim Cellulosic Division (GCD), Vilayat Project**

## **-: Introduction: -**

1. Grasim Industries Limited (GIL), incorporated on 25th Aug., 1947; is a flagship company of the Aditya Birla Group and India's pioneer in manufacturing of Viscose Staple Fibre (VSF) a man-made, biodegradable fibre with characteristics akin to cotton.
2. M/s. Grasim Industries Ltd. has four VSF Plants in India which are located at Nagda (Madhya Pradesh), Harihar (Karnataka), Kharach & Vilayat (Gujarat).
3. Grasim Cellulosic Division, Vilayat is a latest plant in the Pulp & Fibre business, commissioned in Apr-2014 which produces both grey VSF and specialty fibre. This is the company's first plant producing specialty grade fibre.
4. The Company's main production is Viscose Staple Fibre, Sulphuric Acid, Carbon-Disulphide.
5. All the operation related permits, including Environmental Clearance, Forest Clearance from MOEF&CC and Consents to Establish (CTE) & Consent to Operate (CTO) has obtained from Gujarat Pollution Control Board, are in place.
6. Environmental quality monitoring in & around the project site is being carried out by GPCB & NABL approved Laboratory on a regular basis.
7. 04 No. of Ambient Air Quality Monitoring Stations (AAQMS) along with Environmental Parameter Display Board at main gate have been established.
8. Continuous Emission Monitoring System has installed in process stacks of Rayon (Fibre) plant and H<sub>2</sub>SO<sub>4</sub> acid plant for regular monitoring of CS<sub>2</sub>, SO<sub>2</sub> etc.
9. Online TOC, pH & flow meters installed at the outlet of ETP, before discharging treated effluent to GIDC pipeline.
10. Green belt is being developed as per the CPCB guidelines to curb the emission and also to provide an aesthetic look.
11. Point wise compliance status of Environmental Clearance for GCD, Vilayat is furnished herewith.

**Compliance Status Report for “Environmental Clearance” Accorded by the MoEF**  
**For**  
**Grasim Cellulosic Division (GCD), Vilayat Project**

**Compliance status on Environmental Clearance**  
**MOEF Ref. Letter No.: J-11011/463/2007-IA II (I), dated 20-12-2007**

<b>Sr. No.</b>	<b>Stipulation</b>	<b>Compliance Status</b>
<b>1</b>	This reference to application No. Nil, dated 9 <sup>th</sup> May-2007 along with Form-I & pre-feasibility report seeking the environmental clearance for the above mentioned project and subsequent correspondence vide letters dated 28 <sup>th</sup> September 2007, 13 <sup>th</sup> October 2007 and 30 <sup>th</sup> November 2007.	-
<b>2</b>	The Ministry of Environment & Forest has examined the proposal along with the correspondence mentioned above and noted the proposal is to set up the Viscose Staple Fibre (VSF) plant at plot # 1, GIDC Industrial estate, Vilayat, Vagra, Bharuch district Gujarat by M/s Grasim Industries Limited (Grasim Cellulosic Division)	Latitude : 21 deg 46’8” and 21 deg 47’11”North Longitude : 72 deg 53’18”and 72 deg 54’49”East
	The Total Cost of the Project is Rs. 1200 Crores	Total Cost 1703 Crores
	No ecological sensitive areas are located within 15 KM periphery of the plant site.	Yes
	The proposed plant is to be located in notified Industrial area at GIDC (Gujarat Industrial Development Corporation)	Yes
	Total land taken on lease from Gujarat Industrial Development Corporation for the plant is 567 Acres.	530 Acre area provided on lease from GIDC after having provision of land for power corridor. GIDC offer letter attached as <b>Annexure-1</b>

**Following will be the products & production capacity:-**

<b>Products=→</b>	<b>Viscose Staple Fibre</b>	<b>Carbon Di sulphide</b>	<b>Sulfuric Acid</b>	<b>Sodium Sulphate (Byproduct)</b>	<b>Power Generation</b>
<b>EC Amendment As per EC No. F. No. J-11011/321/2016-IA-II(I) Pt Dated – 15.01.2018</b>	<b>255500</b> (36500 by De bottle necking & 91250 by new lines)	<b>34675</b>	<b>182500</b>	<b>166076 to 210788</b>	<b>55 MW</b>
Total Production (Tons) - Oct-18 to Mar-19	81083	12248	53674	53697	-
Total Production (Tons) - Apr-18 to Sep-18	78546	14874	55966	55246	-
Total Production (Tons) - Jan-18 to Mar-18	27369	2418	20135	19086	-
<b>As per EC Letter No. J-11011/463/2007-IA-II(I) Dated- 20.12.2007 As per EC SEIAA/Guj./EC/1(d2),4(d)&amp;5(f)/96/2011,date 30.05.2011</b>	<b>127750,00</b>	<b>23725,31025</b>	<b>102200,36500</b>	<b>83038,00</b>	<b>-</b>
Total Production (Tons) - Apr-17 to Dec-17	106275	17880	92165	82007	-
Total Production (Tons) - FY 2016 to 2017	127749	24094	117648	82914	-
Total Production (Tons) - FY 2015 to 2016	122625	23075	87291	76460	-
Total Production (Tons) - FY 2014 to 2015	65005	5647	51897	40620	-

**\*\* Note :** -\_State Environmental Impact Assessment Authority (SEIAA), Gujarat has also issued an amendment vide letter no. SEIAA/Guj./EC/1(d2), 4(d) & 5(f) /96/2011, dated 30-May-2011 in their Permission to increase production of CS2 to 31025 TPA and H2SO4 to 36500 TPA, EC copy has attached as **Annexure-2**

**3 Raw Material**

**Following will be the Raw Material:-**

<b>Raw Material=→</b>	<b>Pulp (Dissolving Grade)</b>	<b>Caustic Soda 100%</b>	<b>Sulphur</b>	<b>Charcoal</b>
<b>Raw Material Consumption (TPA) As per EC F. No. J-11011/463/2007-IA-II(I), Dated – 20.12.2007</b>	<b>130305</b>	<b>74195</b>	<b>55079</b>	<b>7118</b>
Total Consumption FY-18	134990	80392	53874	NIL
Consumption (Tons) Oct-17 to Mar-18	59396	33405	23149	NIL
Consumption (Tons) Apr-18 to Sep-18	79136	47515	31079	NIL
Consumption (Tons) Oct-18 to Mar-19	81459	44415		Nil

Justification: Pulp & Caustic consumption is increased due increase in VSF production under de-bottlenecking after receiving EC amendment in Jan-2018.

Coal (255500 TPA) will be used as a Raw Material: -

**Power Plant Covered under Chemical Division consent.** State Environmental Impact Assessment Authority (SEIAA), Gujarat has issued an amendment vide letter no. SEIAA/Guj./EC/1(d), 4(d) & 5(f) /96/2011, dated 30-May-2011 for use of natural gas in place of charcoal in CS2 plant, details attached as **Annexure-2**

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Total Water Requirement of the plant will be 25,000 m3/day and will be sourced from Narmada River, supplied by GIDC.

Average Water consumption for last six months (Oct'18-Mar'18) 13,486 m3/day (for VSF plant only), sourced from Narmada River, supplied by GIDC (Except Power plant), following are the tabulated water Consumption details in **Table No.01**

**Table No.01**

Month	Water Consumption (m3/day)		
	Average	Minimum	Maximum
Oct-18	14745	11933	17352
Nov-18	14805	13031	16275
Dec-18	12683	11398	13985
Jan-19	12654	9770	13830
Feb-19	12238	9812	14422
Mar-19	13791	12542	15206
<b>Avg.</b>	<b>13486</b>	-	-

Following are the GIDC offer cum allotment letter details;

1) Letter No.	GIDC/POJ/MKT/GRASIM/575 Dated 06 <sup>th</sup> December-2006
Agreement for Water Supply	15.60 MLD
Effluent Discharge	12.48 MLD
2) Letter No.	GIDC/SE/CG//BRH/1236 Dated 29 <sup>th</sup> December-2016
Agreement for Water Supply	25.00 MLD
Effluent Discharge	19.40 MLD

Necessary agreement of water supply is made with GIDC

Agreement of water supply is made with GIDC on **06.12.2006**, details as per **Annexure-1 & 1A**.

A full-fledged Effluent Treatment Plant will be installed with Primary & Secondary treatment facilities based on extended aeration activated sludge process.

Full Fledged ETP installed, which comprises of;

1. Primary Treatment: -Grit Chambers, Equalization tank, Neutralization tank & Primary Clarifier with sludge dewatering system installed.
2. Extended aeration activated sludge process: -Diffused aeration system.
3. Secondary treatment: - Biological reactor with secondary clarifier & settling tanks.

**Treated effluent quality for the period of Apr-18 to Sep-18 is summarized as under Table no. 02**  
**Monthly Test Report from Unistar Refer as Annexure – 3**

**Third Party Lab Details: -**

**Agency:** - Unistar Environment & Research lab Pvt. Ltd

**Address:** -GIDC, Char Rasta, Vapi

**NABL :** - NABL Certificate Number TC-7753

**NABL Certificate Issue Date & Expiry Date:** - 15.09.2018 to 14.09.2020  
 (Copy of NABL Certificate is attached with Test Report **(Annexure-3)**)

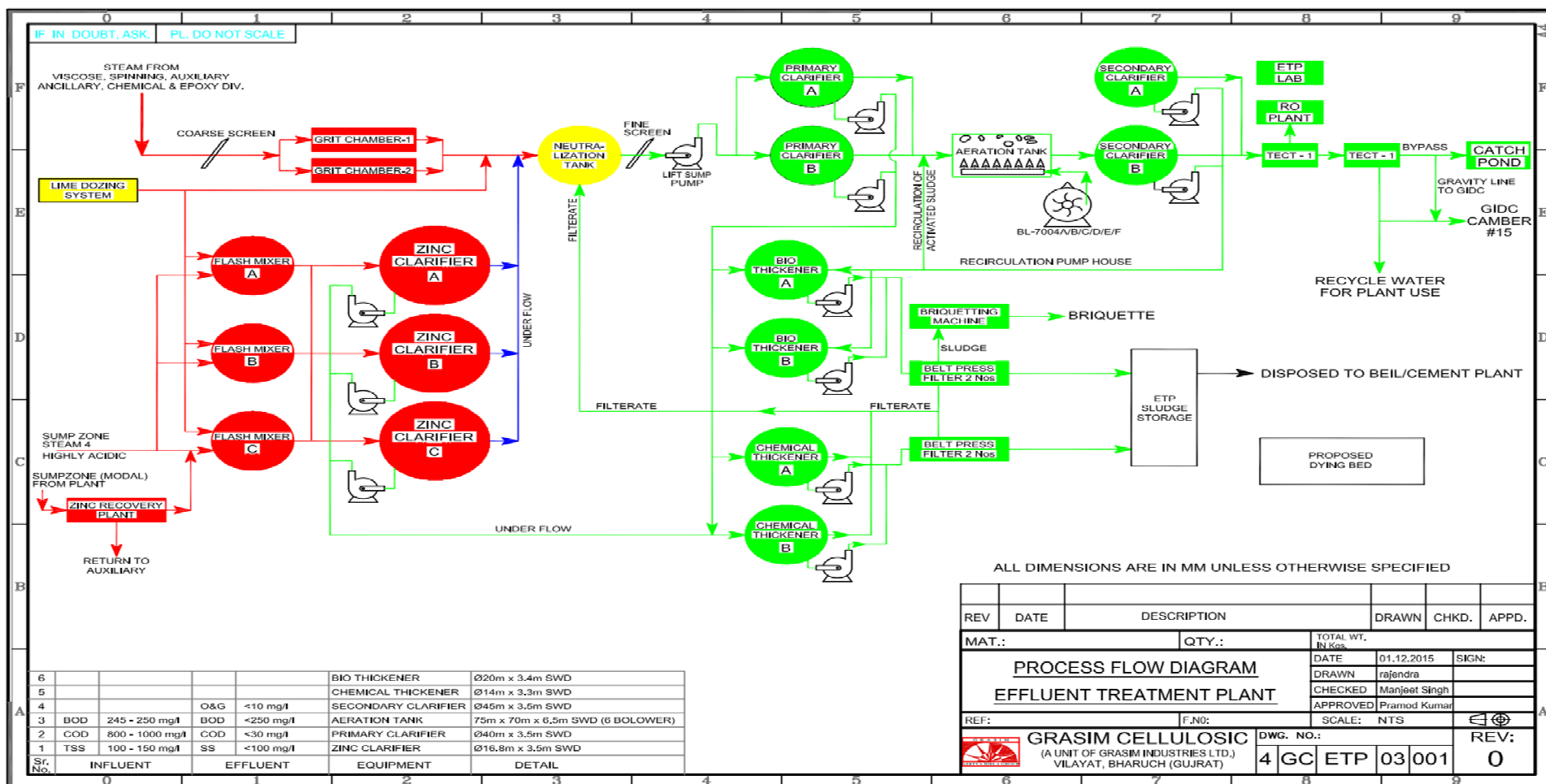
**Table No. 02**

**FINAL TREATED EFFLUENT**

Month & Date of Sampling	pH	Temp.	TSS	Oil & Grease	Fluoride	Sulphide	TKN	Amm. N as N	Copper	Zinc	BOD	COD	Total Res Cl <sub>2</sub>	Arsenic	Mercury	Hexavalent Chromium	Total Chromium	Lead	Cadmium	Nickel	Cyanide	Phenolic Comp	Selenium	Manganese	Iron	Vanadium	Nitrate N	Bio Assay test
<b>Unit</b>	-	deg C	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	90% Survival of fish after 96hrs.
<b>GPCB limit</b>	6.0 - 9.0		100	10	15	5	50	50	3	15	100	250	1	0.2	0.01	0.1	2	0.1	0.05	3	0.2	5	0.05	2	3	0.2	50	
Oct-18	7.46	32	95	BDL	6.4	3.6	-	32.5	BDL	2.5	72	235.4	ND	ND	ND	ND	0.06	ND	0.06	0.05	BDL	0.36	BDL	BDL	0.03	BDL	-	-
Nov-18	7.22	32	90	BDL	2.6	2.9	-	8.2	BDL	2.4	68	214.6	BDL	BDL	BDL	BDL	0.05	BDL	0.05	0.04	BDL	0.31	BDL	BDL	0.24	BDL	-	-
Dec-18	7.13	31	25	BDL	2.7	BDL	-	6.5	BDL	2.4	42	132.6	BDL	BDL	BDL	BDL	0.06	BDL	0.04	0.03	BDL	0.23	BDL	BDL	0.21	BDL	-	-
Jan-19	7.60	29	5	BDL	1.4	BDL	-	4.1	BDL	2.5	48	155	BDL	BDL	BDL	BDL	0.07	0.10	0.05	0.03	BDL	0.37	BDL	BDL	0.24	BDL	-	-
Feb-19	7.60	31	10	BDL	1.2	BDL	14.3	8.6	BDL	2.2	44	142.5	BDL	BDL	BDL	BDL	0.11	BDL	0.04	0.04	BDL	0.05	BDL	BDL	0.31	BDL	6.50	Compl
Mar-19	7.69	32	40	BDL	6.7	BDL	29.0	24.1	BDL	2.3	54	174.5	BDL	BDL	BDL	BDL	0.12	BDL	0.06	0.06	BDL	0.63	BDL	BDL	0.43	BDL	7.70	Compl
<b>Min</b>	<b>7.1</b>	<b>29</b>	<b>5.0</b>	<b>BDL</b>	<b>1.2</b>	<b>BDL</b>	<b>14.3</b>	<b>4.05</b>	<b>BDL</b>	<b>2.2</b>	<b>42</b>	<b>132.6</b>	<b>BDL</b>	<b>BDL</b>	<b>BDL</b>	<b>BDL</b>	<b>0.05</b>	<b>0.1</b>	<b>0.04</b>	<b>0.03</b>	<b>BDL</b>	<b>0.05</b>	<b>BDL</b>	<b>BDL</b>	<b>0.03</b>	<b>BDL</b>	<b>6.50</b>	-
<b>Max</b>	<b>7.7</b>	<b>32</b>	<b>95</b>	<b>BDL</b>	<b>6.7</b>	<b>BDL</b>	<b>29.</b>	<b>32.5</b>	<b>BDL</b>	<b>2.5</b>	<b>72</b>	<b>235.4</b>	<b>BDL</b>	<b>BDL</b>	<b>BDL</b>	<b>BDL</b>	<b>0.12</b>	<b>0.1</b>	<b>0.06</b>	<b>0.06</b>	<b>BDL</b>	<b>0.63</b>	<b>BDL</b>	<b>BDL</b>	<b>0.43</b>	<b>BDL</b>	<b>7.70</b>	-
<b>Average</b>	<b>7.5</b>	<b>31</b>	<b>44</b>	<b>BDL</b>	<b>3.5</b>	<b>BDL</b>	<b>21.7</b>	<b>14.0</b>	<b>BDL</b>	<b>2.4</b>	<b>55</b>	<b>175.8</b>	<b>BDL</b>	<b>BDL</b>	<b>BDL</b>	<b>BDL</b>	<b>0.08</b>	<b>0.1</b>	<b>0.05</b>	<b>0.04</b>	<b>BDL</b>	<b>0.32</b>	<b>BDL</b>	<b>BDL</b>	<b>0.24</b>	<b>BDL</b>	<b>7.10</b>	-

**Please Refer Effluent Treatment Plant PFD & Details of Equipments on Next Page**

**ETP PFD: -**



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After treatment the treated effluent will be disposed of in Gulf of Khambhat via pipeline already laid by GIDC

Treated effluent is being pumped to GIDC effluent collection station, Vilayat, from where it is pumped to Gulf of Khambhat by GIDC.



5	The main source of Air pollution will be CS2 plant, Viscose plant, Sulphuric Acid plant and Coal based captive power plant. The proposed pollution control equipment are:		
	CS2 Plant	Carbon disulphide recovery system	4 nos. CS2 Recovery system using condensation route installed.
		Oil scrubbing system for recovery of CS2	This is not Applicable as the installation is natural gas based CS2 plant.
		Water/ chilled water condensers	
		Brine condensers	
		Klaus kiln for CS2 plant	Klaus kiln for CS2 plant installed to recover Sulphur
		The stack of 175m shall be provided to reduce GLC of CS2 & H2S	The stack of 175m has provided to reduce GLC of CS2 & H2S from VSF plant
		Dust extraction cum Ventury scrubbing System for CS2 Furnace	Not applicable as CS2 is manufactured
	Acid Plant	Gas scrubbing system for tail gases	Two stage Caustic Scrubber installed
		Mist eliminators	Installed for all 3 nos. of towers
	Power plant	Electrostatic Precipitator (ESP) in power plant along with 100 m height stack	Electrostatic Precipitator (ESP) in power plant along with 125 m height stack installed under chemical Division
		Ash Handling plant	Ash Handling Plant Installed as a part of Chemical Division.
	Auxiliary section	Cyclone	Cyclone /dryer (total 3 nos. ) installed
		Water scrubbers	Water scrubbers are Installed
6	During regeneration process of Cellulose from Viscose in Spg. Machine CS2 & H2S will be liberated. It will be extracted through powerful exhaust system and discharged through chimney.		CS2 & H2S from Spg. Machine is extracted through Powerful exhaust system provided at spinning machines, connected with main chimney of 175m height.
	The part of liberated fugitive emission in work zone area will be controlled by modified exhaust system, motorized curtain in Spg. machine.		The part of liberated fugitive emission in work zone area is controlled by modified exhaust system, motorized curtain in Spg. Machine.
	Air curtain at stretch & feed rollers and bottom exhaust		Air curtains provided on stretch, feed and bottom rollers.

7	Spent catalyst (2.5 MT/Year)	Spent Catalyst Disposal Details are as under <b>Table No.03</b> <table><tr><th colspan="2">Table No. 03</th></tr><tr><td><b>Disposed To.</b></td><td>TSDF (Refer BEIL Membership as <b>Annexure-10</b>)</td></tr><tr><td><b>Agency: -</b></td><td>Bharuch Enviro Infrastructure Limited</td></tr><tr><td><b>Reference</b></td><td>BEIL/ANK/Oth/474</td></tr><tr><td><b>Membership Qty</b></td><td>1500 Tone/Annum</td></tr><tr><td colspan="2"><b>Consent Qty. 2.5MT/Year</b></td></tr><tr><td>Oct-18 to Mar-19</td><td>8.9 MT</td></tr></table>	Table No. 03		<b>Disposed To.</b>	TSDF (Refer BEIL Membership as <b>Annexure-10</b> )	<b>Agency: -</b>	Bharuch Enviro Infrastructure Limited	<b>Reference</b>	BEIL/ANK/Oth/474	<b>Membership Qty</b>	1500 Tone/Annum	<b>Consent Qty. 2.5MT/Year</b>		Oct-18 to Mar-19	8.9 MT
	Table No. 03															
	<b>Disposed To.</b>	TSDF (Refer BEIL Membership as <b>Annexure-10</b> )														
	<b>Agency: -</b>	Bharuch Enviro Infrastructure Limited														
<b>Reference</b>	BEIL/ANK/Oth/474															
<b>Membership Qty</b>	1500 Tone/Annum															
<b>Consent Qty. 2.5MT/Year</b>																
Oct-18 to Mar-19	8.9 MT															
	Spent resin from D.M plant (4 MT/Year)	Spent Resin Disposal Details are in following table <table><tr><td><b>Disposed To.</b></td><td>TSDF (Refer BEIL Membership as <b>Annexure-10</b>)</td></tr><tr><td><b>Agency: -</b></td><td>Bharuch Enviro Infrastructure Limited</td></tr><tr><td><b>Reference</b></td><td>BEIL/ANK/Oth/474</td></tr><tr><td><b>Membership Qty</b></td><td>3500 Tone/Annum</td></tr><tr><td colspan="2"><b>Consent Qty. 4.0 MT/Year</b></td></tr><tr><td>Oct-18 to Mar-19</td><td>NIL</td></tr></table>	<b>Disposed To.</b>	TSDF (Refer BEIL Membership as <b>Annexure-10</b> )	<b>Agency: -</b>	Bharuch Enviro Infrastructure Limited	<b>Reference</b>	BEIL/ANK/Oth/474	<b>Membership Qty</b>	3500 Tone/Annum	<b>Consent Qty. 4.0 MT/Year</b>		Oct-18 to Mar-19	NIL		
<b>Disposed To.</b>	TSDF (Refer BEIL Membership as <b>Annexure-10</b> )															
<b>Agency: -</b>	Bharuch Enviro Infrastructure Limited															
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<b>Membership Qty</b>	3500 Tone/Annum															
<b>Consent Qty. 4.0 MT/Year</b>																
Oct-18 to Mar-19	NIL															
	Sulphur de-ashing sludge will be disposed off through common TSDF	Sulphur de-ashing sludge is not generated as we have natural gas based CS2 plant.														
	Used oil will be sold to CPCB registered recyclers	Used Oil Sold to CPCB Registered Agency & following are the details of Agency in <b>Table No 04 &amp; Refer Annexure-4</b> for Vendor Registration <table><tr><th colspan="2">Table No. 04</th></tr><tr><td><b>Used Oil is being sent to.</b></td><td>Registered refiners as per CC&amp;A guidelines</td></tr><tr><td><b>Recycler Details</b></td><td>M/s ABC Organics &amp; Chemicals, plot # 605, GIDC Estate, Panoli, Dist. Bharuch (Gujarat)</td></tr><tr><td><b>Registration no.</b></td><td>GPCB/HAZ-RF-184/45/2014, Dated 17/12/2014.</td></tr><tr><td><b>Membership Qty</b></td><td>1500 Tone/Annum</td></tr></table>	Table No. 04		<b>Used Oil is being sent to.</b>	Registered refiners as per CC&A guidelines	<b>Recycler Details</b>	M/s ABC Organics & Chemicals, plot # 605, GIDC Estate, Panoli, Dist. Bharuch (Gujarat)	<b>Registration no.</b>	GPCB/HAZ-RF-184/45/2014, Dated 17/12/2014.	<b>Membership Qty</b>	1500 Tone/Annum				
Table No. 04																
<b>Used Oil is being sent to.</b>	Registered refiners as per CC&A guidelines															
<b>Recycler Details</b>	M/s ABC Organics & Chemicals, plot # 605, GIDC Estate, Panoli, Dist. Bharuch (Gujarat)															
<b>Registration no.</b>	GPCB/HAZ-RF-184/45/2014, Dated 17/12/2014.															
<b>Membership Qty</b>	1500 Tone/Annum															

		<b>Consent Qty. 10.0 MT/Year</b>																																																							
		Oct-18 to Mar-19	6.4 KL																																																						
	Fly ash will be disposed off as per Fly Ash Notification 2003 and used for brick / cement manufacturing	Fly ash is being disposed off as per Fly Ash Notification 2003 and used for brick / cement manufacturing, following are the disposal details in <b>Table-05</b> We have not installed power plant. Power & steam is being taken from CPP operated by our Chemical Division. <b>(Annexure-5)</b> Whenever we install power plant after EC is obtained, we commit for 100% utilization of fly ash.																																																							
	<table><tr><th colspan="5">Table No. 05</th></tr><tr><th rowspan="2">Month</th><th rowspan="2">Ash Generation in MT</th><th colspan="2">Ash Disposal to MT</th><th>In House Use</th></tr><tr><th>Bricks /Road Manufacturing</th><th>Cement Manufacturing</th><th>Reclaiming &amp; Compaction</th></tr><tr><td>Oct-18</td><td>7370.48</td><td>0</td><td>3731.1</td><td>3639.34</td></tr><tr><td>Nov-18</td><td>4208.53</td><td>0</td><td>3463.9</td><td>744.61</td></tr><tr><td>Dec-18</td><td>5156.99</td><td>0</td><td>4097.6</td><td>1059.44</td></tr><tr><td>Jan-19</td><td>4191.98</td><td>0</td><td>4193.47</td><td>-1.49</td></tr><tr><td>Feb-18</td><td>4204.96</td><td>0</td><td>3712.2</td><td>492.76</td></tr><tr><td>Mar-19</td><td>4785.30</td><td>0</td><td>4383.4</td><td>401.87</td></tr><tr><td><b>Total</b></td><td><b>29918</b></td><td><b>0</b></td><td><b>23582</b></td><td><b>6337</b></td></tr><tr><td colspan="4"><b>% Utilization Achieved</b></td><td><b>100%</b></td></tr></table>				Table No. 05					Month	Ash Generation in MT	Ash Disposal to MT		In House Use	Bricks /Road Manufacturing	Cement Manufacturing	Reclaiming & Compaction	Oct-18	7370.48	0	3731.1	3639.34	Nov-18	4208.53	0	3463.9	744.61	Dec-18	5156.99	0	4097.6	1059.44	Jan-19	4191.98	0	4193.47	-1.49	Feb-18	4204.96	0	3712.2	492.76	Mar-19	4785.30	0	4383.4	401.87	<b>Total</b>	<b>29918</b>	<b>0</b>	<b>23582</b>	<b>6337</b>	<b>% Utilization Achieved</b>				<b>100%</b>
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8	The expert appraisal committee (Industry) in its 73rd meeting held on 24th - 26th Oct-2007 considered the proposal. All manmade Fibers (rayon) manufacturing units are listed at Sl. 5(d) of schedule of EIA notification 2006 under category "A" hence appraisal at Central level. Since the project located at GIDC, Vilayat, Vagra. it does not need Public Consultation as per Para 7(i) III, Stage (3) (b)	The condition stipulated under EIA notification 2006, Para 7(i) III, Stage (3) (b) for all manmade fibre (Rayon) manufacturing units are complied.																																																							
9	Based on information submitted by project authorities, the MoEF accords environmental clearance to the above project under EIA notification 2006 subject to the compliance to the below specific & general conditions	The compliance status for specific & general conditions are as below																																																							

## A. Specific Condition : -

1	The project authority shall maintain emission limit of 50 kg/Ton of Viscose Staple Fibre (VSF) for Carbon di-sulphide (CS2)	We are complying the said stipulation by maintaining emission limits below 50 Kg/T of VSF for CS2. The details are tabulated in below <b>Table No. 06</b>																																												
<b>Emission of CS2 /Ton of Viscose Staple Fibre (VSF): Monthly Stack Monitoring Report from Unistar Please Refer Annexure-6</b>																																														
<table><tr><th colspan="4">Table No. 06</th></tr><tr><th rowspan="3">Third Party Lab Details</th><th rowspan="2">Month &amp; Date of Sample</th><th colspan="2">Rayon Plant</th></tr><tr><th>CS2 (Kg/Tone of Fibre)</th><th>H2S (mg/nm3)</th></tr><tr><th>Consent Value</th><th>50</th><th>-</th></tr><tr><td>Agency: - Unistar Environment &amp; Research lab Pvt. Ltd</td><td>Oct-18</td><td>32.0</td><td>85.0</td></tr><tr><td>Address: -GIDC, Char Rasta, Vapi</td><td>Nov-18</td><td>46.0</td><td>81.0</td></tr><tr><td>NABL : - NABL Certificate Number TC-7753</td><td>Dec-18</td><td>43.0</td><td>84.0</td></tr><tr><td rowspan="7">Details of instrument Used for Monitoring: - Instrument Name: - Stack Monitoring Kit Vss1 Instrument ID: - UERL-D/AIR/SMK/03 Serial No.:- 126 DTG 2018 Calibration Date:- 13.07.18 Expiry Date: - 12.07.19</td><td>Jan-19</td><td>45.0</td><td>92.0</td></tr><tr><td>Feb-18</td><td>42.0</td><td>147.0</td></tr><tr><td>Mar-19</td><td>40.0</td><td>134.0</td></tr><tr><td>Min</td><td>32.0</td><td>81.0</td></tr><tr><td>Max</td><td>46.0</td><td>147.0</td></tr><tr><td>Avg</td><td>41.3</td><td>103.8</td></tr></table>			Table No. 06				Third Party Lab Details	Month & Date of Sample	Rayon Plant		CS2 (Kg/Tone of Fibre)	H2S (mg/nm3)	Consent Value	50	-	Agency: - Unistar Environment & Research lab Pvt. Ltd	Oct-18	32.0	85.0	Address: -GIDC, Char Rasta, Vapi	Nov-18	46.0	81.0	NABL : - NABL Certificate Number TC-7753	Dec-18	43.0	84.0	Details of instrument Used for Monitoring: - Instrument Name: - Stack Monitoring Kit Vss1 Instrument ID: - UERL-D/AIR/SMK/03 Serial No.:- 126 DTG 2018 Calibration Date:- 13.07.18 Expiry Date: - 12.07.19	Jan-19	45.0	92.0	Feb-18	42.0	147.0	Mar-19	40.0	134.0	Min	32.0	81.0	Max	46.0	147.0	Avg	41.3	103.8
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	2	A guard/polishing pond shall be provided before discharge of treated waste water into GIDC pipeline for discharge into sea	2 nos. of guard ponds, each of (L: 90 m, B: 60 m, SWD: 6.5m) equivalent to 50,000m3 capacity installed, which is suitable for storage of 48 hrs. have been provided before discharge of treated waste water into GIDC pipeline for discharge into Sea. Photograph of guard pond are shown at <b>Figure-01.</b>																																											

**Figure – 01: - Guard pond for storage of Treated effluent**



**2**

TOC should continuously monitored

TOC Meter is placed to continuously monitored TOC meter & following are the TOC meter reading tabulated in **Table No. – 07 & the photograph of TOC meter**

(Permissible COD : 250 mg/litre which is equivalent to TOC value of 100 mg/litre)



**Table No. 07**  
**TOC Meter Values**

**TOC Meter Make: - Shimanzu**

Month	Min	Max	Average
Oct-18	67	96	82
Nov-18	74	94	84
Dec-18	59	92	76
Jan-19	60	78	69
Feb-19	33	98	66
Mar-19	23	61	42
Min	23	61	42
Max	74	98	84
Avg	53	87	70

**Figure 02: TOC Meter**



**3**

The project authorities shall install at least 11 multiple effect evaporator (MEE) to achieve

We have installed 10 nos. of more efficient (less specific steam consumption) 14 stage multiple effect evaporator (MEE) having higher evaporation Capacity in place earlier visualized 11 small MEE's of 18 m3/hr.

Total evaporation is 280 m3/hr. instead 198 m3/hr.

Higher than 65% recovery of Sodium Sulphate

> 65% recovery of Sodium sulphate achieved during the period Oct-18 to Mar-19, following are the details tabulated under **Table No.08**

**Table No. 08**

Month	Viscose Staple Fibre (Tone)	Sodium Sulphate (Tone)	Recovery (%)
Oct-18	14169.19	8028.50	57%
Nov-18	13287.99	8912.00	67%
Dec-18	13581.98	9405.00	69%
Jan-19	13760.05	9779.00	71%
Feb-19	12302.23	8289.50	67%
Mar-19	13981.16	9283.00	66%

	<b>Total</b>	<b>78546</b>	<b>55246</b>	<b>66%</b>	
<b>4</b>	Electrostatic Precipitators (ESP's) to power plant boiler shall be provided to control particulate matter.	Electrostatic Precipitators (ESP's) to power plant boiler has provided to control particulate matter as Chemical division have installed CPP. EC has been amended through Chemical division. Pl. refer <b>Annexure-2</b>			
	3-stage condensing system for recovery of CS2	We have installed 3 stage condensing system with all 4 spinning lines and Caustic scrubber has installed with Acid plant chimney.			
	Scrubber to Acid plant chimney				
	klaus kiln recovery system to recover Sulphur from CS2 plant gases, followed by lime water absorber shall be provided	Klaus kiln recovery system to recover Sulphur from CS2 plant gases installed for achieving > 96% Sulphur recovery efficiency.			
<b>5</b>	Monitoring arrangement shall be provided with the scrubber & condenser vents and shall be monitored monthly.	Monitoring arrangement provided for scrubbers & condenser vents. Following are the details tabulated under <b>Table No. 09</b>			
	<b>Table No. 09</b>				
	<b>Testing Details</b>	<b>Month &amp; Date of Sample</b>	<b>CS2 (PPM)</b>	<b>H2S (PPM)</b>	
	<b>Agency:</b> - Environmental Monitoring Lab	<b>Standard</b>	<b>NP</b>	<b>NP</b>	
	<b>Address:</b> -Internal Lab	Oct-18	9.1	7.2	
	<b>Details of instrument Used for Monitoring:</b> -	Nov-18	8.0	9.0	
	Inst. Calibration done by : - Respo Products	Dec-18	8.5	8.0	
	<b>Instrument Name:</b> - Toxirae III (for H2S Measurement) For CS2 measurement following IS 5182 (Part 20) : 1982 method	Jan-19	9.0	8.5	
	<b>Serial No.:-</b> G011236349	Feb-19	9.2	8.8	
	<b>Calibration Date:-</b> 09.08.18	Mar-19	8.8	9.2	
	<b>Expiry Date:</b> - 08.02.19	<b>Min</b>	<b>8.0</b>	<b>7.2</b>	
	<b>Note:</b> - The Third Party Monitoring will be started from next FY.	<b>Max</b>	<b>9.2</b>	<b>9.2</b>	
		<b>Avg</b>			
	Report shall be submitted to Ministry's regional office, Bhopal, CPCB & GPCB	Reports are submitted to MOEF as <b>Annexure-7</b> to compliance report every six months. Last compliance report submitted in May-18.			
The technology employed shall achieve standards notified by the Ministry for the	As per Gazette notification, CS2 emission of 125 Kgs/T F is to be met. New control technology using organic solvent based on absorption and desorption to recover CS2 from exhaust gases				

6	Rayon Industry vide Gazette Notification no. 195, dated 16th Oct-2006, other than CS <sub>2</sub> .	installed which is helping in achieving CS <sub>2</sub> emission level at much lower level.
	1. If there are more than one stack existing in the plant, the required height of all stacks shall be on the minimum emission rate in any of the stacks. In other words, all the stacks carrying CS <sub>2</sub> emission shall be on same height (based on maximum emission rate)	We have installed only one stack of 175m based on stack height calculation as per notification.
	2. Number of Stacks shall not be increased from the existing number. However the number of stacks may be reduced. The existing stacks may be rebuilt & if stacks are to be relocated condition no. 3 below applies	We have installed only one stack of 175m height
	3. Spacing among the stacks (x) at the minimum shall be 3.0 H (in m). If distance, x between two stacks is less than 3.0H (in m), emission shall be considered as single point source & height of both the stacks shall be calculated considering all emission is going through one stack.	Presently we have installed only one stack, in future if we increase, we will follow the instructions.
	The Company shall monitor CS <sub>2</sub> & H <sub>2</sub> S regularly and submit data on the emission levels to the Ministry and its Regional office at Bhopal, GPCB and CPCB.	CS <sub>2</sub> & H <sub>2</sub> S is being monitored regularly. Emission details for Oct'18-Mar'19 is tabulated in <b>Table No. 10</b>

**Emission of CS<sub>2</sub> /Ton of Viscose Staple Fibre (VSF):**  
**Monthly Stack Monitoring Details from Unistar refer as Annexure-6**

Table No. 10			
Third Party Lab Details	Month & Date of Sample	Rayon Plant	
		CS <sub>2</sub> (Kg/ Tone of Fibre)	H <sub>2</sub> S (mg/nm <sup>3</sup> )
	Consent Value	50	-
<b>Agency:</b> - Unistar Environment & Research lab Pvt. Ltd	Oct-18	32.0	85.0



	<b>Address:</b> -GIDC, Char Rasta, Vapi	Nov-18	46.0	81.0
	<b>NABL :</b> - NABL Certificate Number TC-7753	Dec-18	43.0	84.0
	<b>Details of instrument Used for Monitoring: -</b> <b>Instrument Name:</b> - Stack Monitoring Kit Vss1 <b>Instrument No. :</b> - UERL-D/AIR/SMK/03 <b>Serial No.:-</b> 126 DTG 2018 <b>Calibration Date:-</b> 13.07.18 <b>Expiry Date:</b> - 12.07.19	Jan-19	45.0	92.0
		Feb-19	42.0	147.0
		Mar-19	40.0	134.0
		<b>Min</b>	<b>32.0</b>	<b>81.0</b>
		<b>Max</b>	<b>46.0</b>	<b>147.0</b>
		<b>Avg.</b>	<b>41.3</b>	<b>103.8</b>
	Provision shall be made for retrofit additional equipment's, if necessary in future	In future if required, company is committed to install additional equipment. At present there is no such requirement.		
<b>7</b>	The effluent should be treated in ETP having primary & secondary treatment facilities and treated effluent should meet the standards to be prescribed by the GPCB or under E. P. Act-1986 whichever are more stringent	Full Fledged ETP installed, which comprises of Primary, Extended aeration activated sludge process and secondary treatment. Details are tabulated in <b>Table No. 10</b>		

**Treated effluent quality for the period of Apr-18 to Sep-18 is summarized as under in Table No. 11**

**Agency:** - Unistar Environment & Research lab Pvt. Ltd

**Address:** -GIDC, Char Rasta, Vapi

**NABL :** - NABL Certificate Number TC-7753

**Monthly Analysis Report from Unistar refer as Annexure-03**

**Table No. 11**

**FINAL TREATED EFFLUENT**

Month & Date of Sampling	pH	Temp.	TSS	Oil & Grease	Fluoride	Sulphide	TKN	Amm. N as N	Copper	Zinc	BOD	COD	Total Res Cl <sub>2</sub>	Arsenic	Mercury	Hexavalent Chromium	Total Chromium	Lead	Cadmium	Nickel	Cyanide	Phenolic Comp	Selenium	Manganese	Iron	Vanadium	Nitrate N	Bio Assay test
Unit	-	deg C	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	mg/lit	90% Survival of fish after 96hrs.
GPCB limit	6.0 - 9.0		100	10	15	5	50	50	3	15	100	250	1	0.2	0.01	0.1	2	0.1	0.05	3	0.2	5	0.05	2	3	0.2	50	
Oct-18	7.46	32	95	BDL	6.4	3.6	-	32.5	BDL	2.5	72	235.4	ND	ND	ND	ND	0.06	ND	0.06	0.05	BDL	0.36	BDL	BDL	0.03	BDL	-	-
Nov-18	7.22	32	90	BDL	2.6	2.9	-	8.2	BDL	2.4	68	214.6	BDL	BDL	BDL	BDL	0.05	BDL	0.05	0.04	BDL	0.31	BDL	BDL	0.24	BDL	-	-
Dec-18	7.13	31	25	BDL	2.7	BDL	-	6.5	BDL	2.4	42	132.6	BDL	BDL	BDL	BDL	0.06	BDL	0.04	0.03	BDL	0.23	BDL	BDL	0.21	BDL	-	-
Jan-19	7.60	29	5	BDL	1.4	BDL	-	4.1	BDL	2.5	48	155	BDL	BDL	BDL	BDL	0.07	0.10	0.05	0.03	BDL	0.37	BDL	BDL	0.24	BDL	-	-
Feb-19	7.60	31	10	BDL	1.2	BDL	14.3	8.6	BDL	2.2	44	142.5	BDL	BDL	BDL	BDL	0.11	BDL	0.04	0.04	BDL	0.05	BDL	BDL	0.31	BDL	6.50	Complid

Mar-19	7.69	32	40	BDL	6.7	BDL	29.0	24.1	BDL	2.3	54	174.5	BDL	BDL	BDL	BDL	0.12	BDL	0.06	0.06	BDL	0.63	BDL	BDL	0.43	BDL	7.70	Compl ied
Min	7.1	29	5.0	BDL	1.2	BDL	14.3	4.05	BDL	2.2	42	132.6	BDL	BDL	BDL	BDL	0.05	0.1	0.04	0.03	BDL	0.05	BDL	BDL	0.03	BDL	6.50	-
Max	7.7	32	95	BDL	6.7	BDL	29.	32.5	BDL	2.5	72	235.4	BDL	BDL	BDL	BDL	0.12	0.1	0.06	0.06	BDL	0.63	BDL	BDL	0.43	BDL	7.70	-
Average	7.5	31	44	BDL	3.5	BDL	21.7	14.0	BDL	2.4	55	175.8	BDL	BDL	BDL	BDL	0.08	0.1	0.05	0.04	BDL	0.32	BDL	BDL	0.24	BDL	7.10	-

	Total quantity of effluent should not exceed 60m3/ ton of production. The production shall be regulated to match the permitted discharge quantity by GIDC/GPCB	The quantity of effluent discharged is 28.4 m3 / Ton of Fibre. Against stipulation of 60m3/TF. <b>Avg. water intake</b> : 12,307 m3/day, (22,764 m3/day For all 3 units) <b>Effluent discharge</b> : 12,072 m3/day (For all 3 units) Following are the details tabulated in <b>Table No.12</b>																																							
	<table><tr><th colspan="4">Table No. 12</th></tr><tr><th rowspan="2">Month</th><th colspan="3">Effluent Generation (m3/day)</th></tr><tr><th>Average</th><th>Minimum</th><th>Maximum</th></tr><tr><td>Oct-18</td><td>12230</td><td>9926</td><td>13831</td></tr><tr><td>Nov-18</td><td>11493</td><td>9777</td><td>13183</td></tr><tr><td>Dec-18</td><td>9934</td><td>1959</td><td>11499</td></tr><tr><td>Jan-19</td><td>9524</td><td>6652</td><td>10818</td></tr><tr><td>Feb-19</td><td>7460</td><td>5186</td><td>10855</td></tr><tr><td>Mar-19</td><td>11220</td><td>8866</td><td>12850</td></tr><tr><td><b>Avg.</b></td><td><b>10310</b></td><td>-</td><td>-</td></tr></table>		Table No. 12				Month	Effluent Generation (m3/day)			Average	Minimum	Maximum	Oct-18	12230	9926	13831	Nov-18	11493	9777	13183	Dec-18	9934	1959	11499	Jan-19	9524	6652	10818	Feb-19	7460	5186	10855	Mar-19	11220	8866	12850	<b>Avg.</b>	<b>10310</b>	-	-
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<b>Avg.</b>	<b>10310</b>	-	-																																						
8	The project authorities shall produce the copy of agreement with GIDC for discharge of treated wastewater to the Ministry & its Regional office within three months and submit the same to Regional office	Agreement with GIDC for water supply & discharge of treated waste water in GIDC chamber was done. A Copy of same was submitted along with earlier six monthly compliance report to MoEF&CC. <b>Following are the GIDC offer cum allotment letter details;</b> <table><tr><td><b>3) Letter No.</b></td><td><b>GIDC/POJ/MKT/GRASIM/575</b> <b>Dated 06<sup>th</sup> December-2006</b></td></tr><tr><td><b>Agreement for Water Supply</b></td><td><b>15.60 MLD</b></td></tr><tr><td><b>Effluent Discharge</b></td><td><b>12.48 MLD</b></td></tr></table>	<b>3) Letter No.</b>	<b>GIDC/POJ/MKT/GRASIM/575</b> <b>Dated 06<sup>th</sup> December-2006</b>	<b>Agreement for Water Supply</b>	<b>15.60 MLD</b>	<b>Effluent Discharge</b>	<b>12.48 MLD</b>																																	
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4) Letter No.	GIDC/SE/CG//BRH/1236 Dated 29 <sup>th</sup> December-2016							
Agreement for Water Supply	25.00 MLD							
Effluent Discharge	19.40 MLD							
9	The project authorities shall take up the in-house or through IIT's research studies for further reduction of CS2 emission below 50 Kg/ Ton of production of VSF within three months and submit the same to Regional office	<p>In house research studies done and many steps taken to further reduce the CS2 emission level. Some of the initiatives taken are :</p> <p>1) Control technology using organic solvent based on absorption and desorption to recover CS2 from exhaust gases installed</p> <p>2) Natural Gas based CS2 plant installed in place of conventional charcoal process to avoid CS2 emission from CS2 plant</p> <p>Above information is submitted to MOEF through letter, dated 05.11.18 Please refer as <b>Annexure-18</b></p>						
<p><b><u>Brief of Technology: -</u></b></p> <p><b>Introduction:</b> - The spinning line is equipped with CS2 condensation system wherein CS2 entrapped in Tow during wet spinning process is recovered by vaporizing the same with LP Steam followed by Condensation of CS2 in series of Condensers using soft water at ambient temperature and chilled water in final condenser. Around 46-50% of CS2 added in the process can be recovered by this process depending on the ambient temperature. To reduce emission load from stack further technological operations to recover CS2 from exhaust gases is imperative. We had taken lab scale trials at our Nagda unit using genosorb solvent which is comprises of POLY-ETHYLENE GLYCOL DIALKALINE ETHER (Chemical from Clariant) for adsorption of CS2 &amp; H2S. H2S is stripped off &amp; taken to vent/chimney. CS2 is stripped and condensed &amp; recovered. The lab scale trials ws successful results with 80% removal of CS2. Finally semi commercial scale plant was set up in Nagda utilizing 10% of total gases being taken to chimney was taken. After lab &amp; pilot plant trials of six months, it was decided to put 02 nos. of 45,000 Nm3/hr Genosorb commercial scale unit at Vilayat.</p> <p><b>Process Step:-</b></p> <ul style="list-style-type: none"><li>❑ Gas coming from the different areas of spinning and Auxiliary section is washed out using cooling water to remove acid mist &amp; to cool the gas</li><li>❑ Washed gas sent to cooler to get the required 25°C of Gas temperature for absorption using chilled water.</li><li>❑ In absorption tower, mainly CS2 and minor amount of H2S is absorbed in GENOSORB and remaining gases exhausted through chimney.</li><li>❑ After absorption GENOSORB sent to H2S stripper column, In this column H2S gas is stripped out using HOT AIR at 70°C</li><li>❑ CS2 rich GENESORB sent to CS2 stripping column, CS2 is stripped out using LIVE STEAM at 125°C</li></ul>								

	<div><div><input type="checkbox"/> Stripped CS2 is cooled in two stages, in first stage cooled up to 70°C to condensate water &amp; then up to 25°C to condense CS2.</div><div><input type="checkbox"/> Condensed CS2 is @ 100% pure and sent to CS2 plant for Storage &amp; re use.</div></div>																																																																																																																		
10	The industry shall measure ambient air quality for CS2, and H2S at the 3 ambient air quality monitoring stations set up in consultation with the GSPCB to ensure CS2 and H2S emission not exceed 100 microgram/m3 and 150 microgram/m3				Ambient air quality is being monitored regularly for CS2 & H2S emissions, 4 nos. ambient air quality monitoring stations (covering all directions) placed in consultation with the GPCB. CS2 & H2S emission are well below the prescribed standards.																																																																																																														
	Summary of 6 months (Oct’18 - Mar’19) is tabulated below in Table No. 13																																																																																																																		
	Monthly Report from Unistar Please refer Annexure No. -08																																																																																																																		
	Agency : - Unistar Environment & Research Lab Pvt. Ltd																																																																																																																		
	Instrument ID & Name: -1) UERL/AIR/RDS/02 – Respirable Dust Sampler (Calibration Period: - 10.08.2018 – 09.08.2019)																																																																																																																		
	2) UERL/AIR/FPS/08 – Fine Particulate Sampler (Calibration Period: - 10.08.2018 – 09.08.2019)																																																																																																																		
	Table No. 13																																																																																																																		
	<table><tr><th rowspan="2">Month</th><th colspan="2">ETP MCC Room</th><th colspan="2">ER Office</th><th colspan="2">Aluminum Chloride plant</th><th colspan="2">Security Gate (CA Plant)</th></tr><tr><th>H2S</th><th>CS2</th><th>H2S</th><th>CS2</th><th>H2S</th><th>CS2</th><th>H2S</th><th>CS2</th></tr><tr><td>Norms --&gt;</td><td>150</td><td>100</td><td>150</td><td>100</td><td>150</td><td>100</td><td>150</td><td>100</td></tr><tr><td>Oct-18</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td></tr><tr><td>Nov-18</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td></tr><tr><td>Dec-18</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td></tr><tr><td>Jan-19</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td></tr><tr><td>Feb-19</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td></tr><tr><td>Mar-19</td><td>11</td><td>ND</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td></tr><tr><td>Min</td><td>11</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td></tr><tr><td>Max</td><td>11</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td></tr><tr><td>Average</td><td>11</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td><td>BDL</td></tr></table>								Month	ETP MCC Room		ER Office		Aluminum Chloride plant		Security Gate (CA Plant)		H2S	CS2	H2S	CS2	H2S	CS2	H2S	CS2	Norms -->	150	100	150	100	150	100	150	100	Oct-18	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	Nov-18	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	Dec-18	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	Jan-19	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	Feb-19	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	Mar-19	11	ND	BDL	BDL	BDL	BDL	BDL	BDL	Min	11	BDL	BDL	BDL	BDL	BDL	BDL	BDL	Max	11	BDL	BDL	BDL	BDL	BDL	BDL	BDL	Average	11	BDL	BDL	BDL	BDL	BDL	BDL	BDL
	Month	ETP MCC Room		ER Office		Aluminum Chloride plant		Security Gate (CA Plant)																																																																																																											
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Norms -->	150	100	150	100	150	100	150	100																																																																																																											
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Nov-18	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL																																																																																																											
Dec-18	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL																																																																																																											
Jan-19	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL																																																																																																											
Feb-19	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL																																																																																																											
Mar-19	11	ND	BDL	BDL	BDL	BDL	BDL	BDL																																																																																																											
Min	11	BDL	BDL	BDL	BDL	BDL	BDL	BDL																																																																																																											
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Average	11	BDL	BDL	BDL	BDL	BDL	BDL	BDL																																																																																																											
	The Solid & Hazardous waste shall be segregated according to its calorific contents and stored separately for treatment and disposal				Solid / Hazardous waste being categorized as per guideline of GPCB consent, treatment & disposal practice is followed accordingly. We are member of BEIL, Dahej for transportation & disposal of hazardous waste ; Following are the Disposal details tabulated in Table No.14																																																																																																														

<b>11</b>	Type of waste	Category	Treatment /Disposal
	Chemical sludge from ETP	34.3	Collection, storage, transportation, disposal at Cement Industries/ TSDF-BEIL
	Used Oil	5.1	Collection, storage, transportation, disposal by selling to registered refiners.
	Discarded container	33.3	Collection storage, transportation, disposal by selling to vendors after detoxification
	Discarded bags/liner	33.3	Collection, storage, transportation, disposal by selling to vendors after detoxification
	Spent catalyst from H2SO4 plant	17.2	Collection, storage, transportation, disposal to TSDF-BEIL
	Spent catalyst from H2SO4 plant	34.2	Collection, storage, transportation, disposal to TSDF-BEIL
Please refer <b>Annexure-9</b> for CCA from GPCB			

Table No. 14												
Month	Chemical sludge-ETP-MT		Used Oil (KL)		Empty barrels/containers/bags/liners		Bio Sludge from ETP		Spent Catalyst-MT		Spent Resin-MT	
	Generation	Disposal	Generation	Disposal	Generation	Disposal	Generation	Disposal	Generation	Disposal	Generation	Disposal
CC&A Qty.➔	6000 MT (35.3)		10.0 KL (5.1)		50 MT (33.1)		5000 MT		5.0 MT (17.2)		5.0 MT (35.2)	
Oct-18	803.53	866.06	0	0	7.79	12.79	593.25	280.48	0	0	0	0
Nov-18	710.29	1478.68	2.21	2.21	5.87	5.87	520.63	17.24	0	0	0	0
Dec-18	659.57	570.79	0	0	3.97	3.97	463.75	102.13	0	0	0	0
Jan-19	504.48	0	0	0	4.64	4.64	492.63	768.48	0	0	0	0
Feb-19	574.38	0	2.1	2.1	4.87	4.87	428.75	840.43	0	0	0	0
Mar-19	532.59	964.3	2.1	2.1	5.96	5.96	542.5	1521.7	8.9	8.9	0	0
Total	3784.84	3879.83	6.41	6.41	32.52	37.52	3041.51	3530.46	8.9	8.9	0	0
Disposed To➔	Ultra Tech & TSDF BEIL Dahej		M/S ABC Organic		Sold to Vendors		TSDF BEIL Dahej		TSDF BEIL Dahej		TSDF BEIL Dahej	

<b>12</b>	<p>Fly Ash generated from CPP shall be utilize as per fly ash notification 1999 and subsequent amendment in 2003</p>	<p>We are utilizing 100% fly ash as per guidelines please refer below <b>Table No.15</b></p>
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	Table No. 15				
	Month	Ash Generation in MT	Ash Disposal to MT		In House Use
			Bricks /Road Manufacturing	Cement Manufacturing	Reclaiming & Compaction
	Oct-18	7370.48	0	3731.1	3639.34
	Nov-18	4208.53	0	3463.9	744.61
	Dec-18	5156.99	0	4097.6	1059.44
	Jan-19	4191.98	0	4193.47	-1.49
	Feb-18	4204.96	0	3712.2	492.76
	Mar-19	4785.30	0	4383.4	401.87
	<b>Total</b>	<b>29918</b>	<b>0</b>	<b>23582</b>	<b>6337</b>
% Utilization Achieved				100%	
13	Green belt development 150 Acre out of 567 Acre to mitigate the effect of fugitive emission all around the plant.			Total Plant Area – 567Acre Cellulosic Division – 300 Acre (132-Open Area+168Acre- Const. Area) Chemical + Epoxy Division – 267 Acre Out of 567 Acres, Grasim Cellulosic division has 300 Acre and out of 300 Acre 168 Acre is construction area. We have developed greenbelt in our factory complex along the boundary wall and open space area of 55.4 acre area to achieve target of 33% green belt of construction area. Total 50,000 nos. tree have been planted till Aug-2018. We are planning to plant > 15,000 trees in FY-20 and to cover 33% of total plant area the detail action plan are Tabulated in Table No. 16	
	The development of green belt along the boundary wall and two additional rows in predominant wind direction shall be provided in consultation with the local DFO as per the CPCB guideline			We have developed greenbelt along with boundary wall & planted different plant species in campus area. Following are the list of plant species. Plant species were selected as per the directives of CPCB & DFO. Photograph of green belts is attached below.	
	Table No. 16			Existing Plantation Species:	
Sr. No	Duration	Area (Acre.) for Plantation	Number of Plant		
1	Existing (Till FY; 2017-18)	60	37,500 Plants		
2	2018-19	25	15,000 Plants		

3	2019-20	25	15,000 Plant
4	2020-21	25	15,000 Plant
5	2021-22	25	15,000 Plant
6	2022-23	25	15,000 Plant
Total=>		185	1,12,500 Plant

Acacia (*Acacia auriculiformis*), Kadamb (*Neolamarckia cadamba*), Basant Rani (*Tabebuia rosea*), Safeda (*Eucalyptus*), *Bougainvillea spectabilis*, Lawn Plantation and Shrubbery.

The Existing Spices for plantation are Selected by following CPCB guidelines

**Proposed Plantation Species:** Neem (*Azadirachta indica*), Kasood (*Cassia siamea*), Pine/Junglisaru (*Casuarina equisetifolia*), Orchid tree (*Bauhinia blakeana*), Saptparni (*Alstonia scholaris*), Gulmohar (*Delonix regia*), Rain tree (*Samanea saman*), Shisham (*Dalbergia sissoo*), Bel (*Aegle marmelos*), Arjun tree (*Terminalia arjuna*), Cassia fistula (*Amaltas*), Yellow Gulmohar (*Peltophorum ferrugineum*), Bottle brush (*Callistemon sp.*), Kadamb (*Neolamarckia cadamba*), Semal/Kapok (*Bombax ceiba*), Jamun (*Syzygium cumini*), Apple blossom tree (*Cassia javanica*), Sausage tree (*Kigelia pinnata*), Basant Rani (*Tabebuia rosea*), Morpankhi (*Thuja occidentalis*), Safeda (*Eucalyptus*), Guh babool (*Acacia farnesiana*), Kaner (*Nerium indicum*), Champa (*Plumeria rubra*), Holy basil (*Ocimum tenuiflorum*), Jarul (*Lagerstroemia speciosa*), *Bougainvillea spectabilis*, Lemon (*Citrus lemon*), Sankuppi (*Clerodendrum inerme*), Lawn Plantation and Shrubbery etc.

**Plant species for Odor management :** Neem (*Azadirachta indica*), Saptparni (*Alstonia scholaris*), Guh babool (*Acacia farnesiana*), Morpankhi (*Thuja occidentalis*), *Bougainvillea spectabilis*, Lemon (*Citrus lemon*), Kaner (*Nerium indicum*), Mehndi (*Lawsonia inermis*), Champa (*Plumeria rubra*), Holy basil (*Ocimum tenuiflorum*), Tulsi (*Ocimum sanctum*), Sankuppi (*Clerodendrum inerme*), Jasmine tree (*Plumeria alba*), Jarul (*Lagerstroemia speciosa*), Gurhal (*Hibiscus rosa sinensis*), Bunchgrass (*Vetiveria zizanioides*) etc.

**Gaseous emission (SO<sub>2</sub> & NO<sub>x</sub>) tolerant species:** Neem (*Azadirachta indica*), Bel (*Aegle marmelos*), Kasood (*Cassia siamea*), Earleaf Acacia (*Acacia auriculiformis*), Saptparni (*Alstonia scholaris*), Aldu (*Ailanthus excelsa*), Siris (*Albizia lebbeck*), Shisham (*Dalbergia sissoo*), Pipal (*Ficus religiosa*), White fig (*Ficus infectoria*), Maulsari (*Mimusops elengi*), Kaner (*Nerium indicum*), Jarul (*Lagerstroemia speciosa*) etc.

### **Green Belt Development Photographs are as under :-**



14	The project proponent shall comply with the environmental protection measures and safeguards recommended in the EIA/EMP	Total project cost was Rs. 1200 Crores as mentioned in EC. As committed in the EIA/EMP, Unit has been allocated capital cost Rs. 170.5 Crores and recurring cost Rs. 15.5 Crores per annum respectively for implementations of environmental pollution control measures as per condition stipulated by the MoEF & CC & state government. Detailed EIA/EMP report is explained below & Capex – Opex Details are tabulated under <b>Table No. 17</b>
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		Table No. 17						
		Sl.	Particular	Capex	Opex FY-17	Opex FY-18	Opex FY-19	
		1	Effluent treatment Plant	79.00	11.50	10.56	11.0	
		2	Air Pollution Control	91.00	03.50	04.00	3.3	
		3	Green belt development	00.50	00.50	00.55	1.3	
		4	Waste Management	01.50	00.50	00.60	1.6	
			<b>Total Amount</b>	<b>172.00</b>	<b>16.00</b>	<b>15.71</b>	<b>17.2</b>	

**Environmental monitoring Program :** - In order to ensure that the predicted impact levels are within the acceptable limits and to further mitigate the impacts wherever possible from proposed facilities, following monitoring programs are undertaken;

**Air Environment:** Air quality surveillance program which includes;

1. Monitoring of air quality of all 4 stacks for CS<sub>2</sub>, H<sub>2</sub>S, PM, SO<sub>2</sub> & Nox by our Lab as well as 3<sup>rd</sup> party Lab.
2. Ground level concentration is monitored for CS<sub>2</sub>, H<sub>2</sub>S, PM, SO<sub>2</sub> & Nox in the impact zone as a part of ambient air monitoring by our Lab & 3<sup>rd</sup> party Lab.
3. Port holes and sampling facilities are provided in each stack as per CPCB guidelines, periodic performance evaluation of control measures & equipment's are done

**Noise Environment:** Noise generated sources are regularly monitored, ambient noise level is being monitored on quarterly basis inside & outside of plant area and strictly adhered the Factory Act norms of workroom and ambient levels as per E P Act.

**Water Environment:** For effective environmental pollution control the following measures are taken;

1. Daily monitoring of treated effluent in our Lab as well as third party monitoring by outside labs.
2. Evaluation of ETP performance is done regularly, based on the results of treated effluent.
3. Treated sewage is 100% used in green belt, sewage quantity is very less as only plant sewage comes to STP.
4. 2 nos. of guard ponds, each of (L: 90 m, B: 60 m, SWD: 6.5m) equivalent to 50,000m<sup>3</sup> capacity installed, which is suitable for storage of 48 hrs. treated effluent to meet the emergency situation in discharge of treated effluent through GIDC pipeline
5. Water conservation measures are taken and achieved very less discharge of treated effluent (< 35m<sup>3</sup> / Ton of fibre as against 60m<sup>3</sup> / Ton of fibre).



**Land Environment:** Following measures are taken to avoid adverse impacts on biological activities;

1. All precautions are taken to avoid any spillages on ground.
2. A record of Solid & Hazardous waste is maintained & monitored regularly by Env. Cell
3. Waste is categorized based on CC&A by GPCB. Hazardous waste is stored separately and disposed as per GPCB guidelines through online Manifest.
4. Green belt development program is undertaken and planted > 10,000 tree every year which will be continued to cover > 33% area as green belt.

**Biological Environment:** Following measures are taken to avoid adverse impacts on biological activities;

1. Survival rate of planted trees are closely monitored. New saplings are planted in place of dead saplings as per guideline which is closely monitored by Horticulture department.
2. Past project environmental monitoring has taken up, our plant is commissioned in Apr-2014 and only 3 financial years are completed.

15	The project authorities shall obtain the membership of TSDF and waste water disposal facility and copy of the same shall be submitted to the GPCB and Ministries regional office at Bhopal within three months.	<p>We have obtained the membership of TSDF and waste water disposal facility and copy of the same has submitted to the GPCB and Ministries regional office at Bhopal regularly with six monthly compliance reports</p> <p>Membership with TSDF for waste disposal,</p> <p><b>TSDF Name:</b> - Bharuch Enviro Infrastructure Limited, Dahej.  <b>Ref :</b> -BEIL/ANK/Oth/474  <b>Membership Qty:</b> - 1500Tone/Annum  Membership copy is attached herewith as <b>Annexure-10</b></p> <p>Membership copy is attached for waste water disposal through GIDC pipeline, Pl. refer <b>Annexure-1</b></p>
16	Occupational health surveillance of the workers shall be carried out on a regular basis and records shall be maintained as per the factories Act.	<p>100% employees undergo with occupational health surveillance every 6 month / 12 month depending on exposure. Record is available with Occupational Health Centre.</p> <p>No one is suffering from any occupational health related disease. Details are given for different type of test reports of employees, conducted on Yearly / Six monthly basis in table below in <b>Table No. 18</b></p>

**Table No. 18**  
**Spirometry (FY : 2017- 18)**

Name of Dept.	Total Employees	FVC (liters)	FEV 1	FEV 1/ FVC %	PEF Liters/Sec	Conclusion
Admin Department (SCM, Purchase, Account, Legal, IT Dept.)	34	2	0	0	2	Aprox 2.94% deviation from normal
%		5.88	0.00	0.00	5.88	
Process Dept. (Auxiliary, viscose, spinning, CS2/Acid, WTP/ETP/STP, EC, Civil)	413	8	1	4	10	Aprox 1.39% is deviation from normal
%		1.94	0.24	0.97	2.42	
Technical Cell, WCM, Customer Focus, Electrical Dept. (Auxiliary, viscose, spinning, CS2/Acid, WTP/ETP/STP, EC)	70	3	0	0	4	Aprox 2.5% is deviation from normal
%		4.29	0.00	0.00	5.71	
Mechanical Dept. (Auxiliary, viscose, spinning, CS2/Acid, WTP/ETP/STP, EC)	163	8	1	1	6	Aprox 2.45% deviation from normal
%		4.91	0.61	0.61	3.68	
QC & QA Instrumentation Dept. (Auxiliary, viscose, spinning, CS2/Acid, WTP/ETP/STP, EC)	81	3	0	0	7	Aprox 3.09% deviation from normal
%		3.70	0.00	0.00	8.64	
P&A (HR, Security & Services, ER, CSR, HORTICULTURE, Workshop) Dept.	27	1	0	0	2	Aprox 2.77% deviation from normal
%		3.70	0.00	0.00	7.41	

Circulatory system ( FY- 2017-18)						Vision (FY - 2017-18)		ENT
Employees	Total Employees	Pulse	ECG	Blood Pressure	Hemat	Distant Vision	Color Blindness	Audiometry
					Hb			
Admin Department (SCM, Purchase, Account, Legal, IT Dept.)	34	0	0	1	0	0	0	1
%		0.00	0.00	2.94	0.00	0.00	0.00	2.94

Process Dept. (Auxiliary, viscose, spinning, CS2/Acid, WTP/ETP/STP, EC, Civil)	<b>413</b>	0.00	4.00	9.00	15.00	0.00	5.00	5
%		0.00	0.97	2.18	3.63	0.00	1.21	1.21
Technical Cell, WCM, Customer Focus, Electrical Dept. (Auxiliary, viscose, spinning, CS2/Acid, WTP/ETP/STP, EC)	<b>70</b>	0.00	2.00	2.00	3.00	0.00	1.00	3
%		0.00	2.86	2.86	4.29	0.00	1.43	4.29
Mechanical Dept. (Auxiliary, viscose, spinning, CS2/Acid, WTP/ETP/STP, EC)	<b>163</b>	0.00	2.00	2.00	6.00	0.00	1.00	5
%		0.00	1.23	1.23	3.68	0.00	0.61	3.07
QC & QA Instrumentation Dept. (Auxiliary, viscose, spinning, CS2/Acid, WTP/ETP/STP, EC)	<b>81</b>	0.00	1.00	1.00	1.00	0.00	2.00	3
%		0.00	1.23	1.23	1.23	0.00	2.47	3.70
P&A (HR, Security & Services, ER, CSR, HORTICULTURE, Workshop) Dept.	<b>27</b>	0.00	0.00	1.00	1.00	0.00	1.00	2
%		0.00	0.00	3.70	3.70	0.00	3.70	7.41

<b>17</b>	The project authorities shall take up all out efforts to protect the water bodies and biodiversity around the plant.	Regular monitoring of Water & Air quality done by our Lab and 3rd party. There is only one water body namely “Bhooki Khadi” which is approximately 500 m from boundary wall. Water from this is being used for irrigation and cattle feeding.
	A monitoring mechanism for water / air quality , production & crop pattern around the plant shall be adopted and comparative status shall be reported annually to the Ministries Regional office, GPCB & CPCB	Water, Air quality & production is being monitored regularly and compared with base line. Same is being reported to Ministries Regional office on six monthly basis and submitting reports to GPCB on monthly basis for the same. Data are tabulated Under <b>Table No.19</b> & refer monthly data from Unistar Test Report <b>Annexure – 11</b>
	<b>Agency:</b> - Unistar Environment & Research Lab <b>Address:</b> - Near GIDC Office Char Rasta, Vapi-396195	<b>NABL Accreditation:</b> - NABL Certificate Number TC-7754

Table No. 19										
Parameters	Up Stream					Down Stream				
	pH	Temperature	Turbidity	Nitrate	Phenolic Compound	pH	Temperature	Turbidity	Nitrate	Phenolic Compound
UOM		Deg C	NTU	PPM	PPM		Deg C	NTU	PPM	PPM
Base Line	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
Oct-18	7.4	32	1	0.9	BDL	7.2	32	1	1.4	BDL
Nov-18	7.5	31	5	0.4	BDL	7.5	31	0.1	0.4	BDL
Dec-18	7.9	30	0.1	1.0	BDL	8.1	30	0.1	1.0	BDL
Jan-19	7.3	29	0.1	0.5	BDL	7.8	29	0.1	0.5	BDL
Feb-19	7.9	31	0.1	0.6	BDL	7.7	31	0.1	0.5	BDL
Mar-19	7.7	30	0.1	BDL	BDL	8.3	30	0.1	BDL	BDL
Min	7.3	29	0.1	0.4	BDL	7.2	29	0.1	0.4	BDL
Max	7.9	32	5	1	BDL	8.3	32	1	1.4	BDL
Avg	7.6	31	1.1	0.7	BDL	7.8	30.5	0.3	0.8	BDL

There are 4 nos. of Ambient air quality monitoring stations covering all directions in nearby villages. Monthly monitoring is being done on monthly by NABL accredited Lab. The Ambient Air quality results for the period of Apr-18 to Sep-18 is tabulated as under Table No. 20

Monthly Report from Unistar Refer as Annexure-12

**Agency :** - Unistar Environment & Research Lab Pvt. Ltd

**Instrument ID & Name:** -1) UERL/AIR/RDS/02 –1) Respirable Dust Sampler (Calibration Period: - 10.08.2018 – 09.08.2019)

2) UERL/AIR/FPS/08 – Fine Particulate Sampler (Calibration Period: - 10.08.2018 – 09.08.2019)

Table No. 20																								
Month	SARNAR						DEROL						ARGAMA						VILAYAT					
	SPM PM10	SPM PM2.5	SO2	NO2	H2S	CS2	SPM PM10	SPM PM2.5	SO2	NO2	H2S	CS2	SPM PM10	SPM PM2.5	SO2	NO2	H2S	CS2	SPM PM10	SPM PM2.5	SO2	NO2	H2S	CS2
	µg/m3						µg/m3						µg/m3						µg/m3					
Norms ->	100	60	80	80	150	100	100	60	80	80	150	100	100	60	80	80	150	100	100	60	80	80	150	100
Oct-18	72	22	24	29	BDL	BDL	76	30	21	24	BDL	BDL	80	25	22	25	BDL	BDL	70	24	18	24	BDL	BDL
Nov-18	69	25	18	25	BDL	BDL	79	28	19	23	BDL	BDL	73	23	21	27	BDL	BDL	76	25	22	28	BDL	BDL
Dec-18	73	25	18	24	BDL	BDL	77	27	20	25	BDL	BDL	71	25	20	26	BDL	BDL	75	26	19	25	BDL	BDL
Jan-19	76	28	21	25	BDL	BDL	78	26	22.0	28	BDL	BDL	74	24	22.0	28	BDL	BDL	78	27	20	26	BDL	BDL
Feb-19	79	26	23	28	BDL	BDL	76	24	20	24	BDL	BDL	72	21	19	24	BDL	BDL	77	25	22	26	BDL	BDL
Mar-19	78	25	18	24	BDL	BDL	83	28	19	23	BDL	BDL	87	29	23	27	BDL	BDL	84	33	20	25	BDL	BDL

Average	69	22	18	24	BDL	BDL	76	24	19	23	BDL	BDL	71	21	19	24	BDL	BDL	70	24	18	24	BDL	BDL
Min	79	28	24	29	BDL	BDL	83	30	22	28	BDL	BDL	87	29	23	28	BDL	BDL	84	33	22	28	BDL	BDL
Max	71	24	20	26	BDL	BDL	77	28	20	24	BDL	BDL	75	24	21	26	BDL	BDL	74	25	20	26	BDL	BDL

## B. General Condition: -

i)	The project authorities must strictly adhere to the stipulations of the SPCB/State Government or any statutory body	All stipulations made by GPCB are strictly complied. Pl. refer detailed CCA Report tabulated under <b>Annexure-A</b>
ii)	No expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to the Ministry for clearance, a fresh reference shall be made to the Ministry to access the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	We have received EC for expansion of VSF plant capacity from 127750 TPA to 255500 TPA along with expansion of CS2 & H2SO4 plants on 15 <sup>th</sup> Jan-18, also for setting up Solvent Spun Cellulosic fibre plant for 100 T/d and CPP of 55 MW. We have implemented capacity expansion under de-bottlenecking of VSF plant.
iii)	The gaseous emission (SO2, Nox, H2S & CS2) and PM along with RSPM levels from various process units shall confirm to the standards prescribed by the concerned authorities from time to time.	Gaseous emission is monitored regularly and results confirm to the standards specified by both GPCB and CPCB The lab results are summarized for the period Apr-18 to Sep-18 as under <b>Table No.22 &amp; Table No.23</b> Monthly Report from Unistar Refer as <b>Annexure-6.</b>

Table No. 22			
Third Party Lab Details	Month & Date of Sample	Rayon Plant	
		CS2 (Kg/Tone of Fibre)	H2S (mg/nm3)
	Consent Value	50	-
<b>Agency:</b> - Unistar Environment & Research lab Pvt. Ltd	Oct-18	32.0	85.0
<b>Address:</b> -GIDC, Char Rasta, Vapi	Nov-18	46.0	81.0
<b>NABL :</b> - NABL Certificate Number TC-7753	Dec-18	43.0	84.0
<b>Details of instrument Used for Monitoring: -</b> <b>Instrument Name:</b> - Stack Monitoring Kit Vss1 <b>Instrument ID:</b> - UERL-D/AIR/SMK/03	Jan-19	45.0	92.0
	Feb-18	42.0	147.0
	Mar-19	40.0	134.0

	<b>Serial No.:- 126 DTG 2018</b> <b>Calibration Date:- 13.07.18</b> <b>Expiry Date: - 12.07.19</b>						Min	32.0	81.0				
							Max	46.0	147.0				
							Avg	41.3	103.8				
	<b>Agency : - Unistar Environment &amp; Research Lab Pvt. Ltd</b>												
	<b>Instrument ID &amp; Name: -1) UERL/AIR/RDS/02 – Respirable Dust Sampler (Calibration Period: - 10.08.2018 – 09.08.2019)</b> <b>2)UERL/AIR/FPS/08 – Fine Particulate Sampler (Calibration Period: - 10.08.2018 – 09.08.2019)</b>												
	<b>Monthly Report from Unistar refer as <u>Annexure- 8</u></b>												
	<b>Table No. 23 (For Ambient Air)</b>												
	Month	Near ETP MCC Room						Near ER Office					
		SPM PM10	SPM PM2.5	SO2	NO2	H2S	CS2	SPM PM10	SPM PM2.5	SO2	NO2	H2S	CS2
		µg/m3						µg/m3					
	Norms ->	100	60	80	80	150	100	100	60	80	80	150	100
	Oct-18	84	33	23	27	BDL	BDL	86	29	21	25	BDL	BDL
	Nov-18	88	36	26	29	BDL	BDL	85	33	24	27	BDL	BDL
	Dec-18	84	32	29	33	11	ND	79	27	26	28	BDL	BDL
	Jan-19	82	29	24	27	BDL	BDL	83	32	27	31	BDL	BDL
	Feb-19	85	32	23	25	BDL	BDL	80	30	24	28	BDL	BDL
	Mar-19	80	31	22	26	BDL	BDL	87	32	23	27	BDL	BDL
	Min	80	29	22	25	11	BDL	79	27	21	25	BDL	BDL
	Max	88	36	29	33	11	BDL	87	33	27	31	BDL	BDL
	Average	82	31	23	26	BDL	BDL	83	31	25	29	BDL	BDL
	At no time, the emission shall exceed the prescribed limits.					Till date, the emission level has never exceeded prescribed limits. (Refer Table No.22)							
	In the event of failure of any pollution control system adopted by the unit, the unit shall be immediately put of the operation and shall not be restarted until the desired efficiency has been achieved					We Will put of operation in case of failure of any pollution control system In the event of failure of any pollution control system adopted by the unit, the unit will immediately put of the operation and will not restart until the desired efficiency has been achieved							
IV)	The location of Ambient Air Quality (AAQ) monitoring stations shall be reviewed in consultation with SPCB and additional shall be installed, if required, in the downwind					The location of Ambient Air Quality (AAQ) monitoring stations have been reviewed & there are 4 nos. AAQ monitoring stations installed in consultation with GPCB in nearby 4 villages, at Derol, Vilayat, Sarnar and Argama within 2-3							

	direction as well as where maximum ground level concentration is anticipated.	kms radius.
v)	Dedicated scrubbers and stack of appropriate height as per CPCB guidelines shall be provided to control the emissions from various stacks/vents.	<p>Dedicated scrubbers and stack of appropriate height as per CPCB guidelines are provided to control the emissions from various stacks/vents.</p> <p><b>Rayon plant</b> – 175m stack  (As per stack height formula  <math>H(m) = 11Q^{0.41-3V_s \cdot D/U}</math>  Q- CS<sub>2</sub> emission rate (kgs/hr)  V<sub>s</sub>-Stack Velocity (m/sec)  D- Diameter of Stack,  U- Annual Avg Wind speed at top of stack (m/sec)</p> <p><b>H<sub>2</sub>SO<sub>4</sub> plant</b> – 50m stack  <b>CS<sub>2</sub> Plant</b> – 100m stack provided</p>
	The scrubber water shall be sent to ETP for further treatment	The scrubber water is routed through ETP.
vi)	All the chemicals / solvents storage tank shall be under negative pressure to avoid any leakages. Breather valve, N <sub>2</sub> blanketing and secondary condensers with brine chilling system shall be provided for all the storage tanks to minimize vapor losses. All liquid raw material shall be stored in storage tanks and drums.	All storage tanks are suitably designed to avoid leakages for storage under atmospheric conditions. CS <sub>2</sub> is stored under water due its volatile nature. Dykes re provided at all chemical storage area as per guidelines to arrest spillages / leaks with Emergency response plan for any such event.
vii)	The company shall undertake following waste minimization measures;	
	- Metering & control of quantities of active ingredients to minimize waste	Metering & measurement system is in place. Reduction in wastage is also reflected in specific consumption of chemicals
	- Reuse of by-products from the process as raw material or as RM substitution in other processes	Sodium Sulphate is bye-product. Though it is not used in our process, it is being utilized by detergent, glass, & paper industries
	- Use of automated filling to minimize spillages	Chemicals such as Caustic, Sodium hypochlorite, Sulphuric acid, Carbon disulphide is transported through pipelines. Sodium sulphate is bagged through automatic bagging M/c.

	<ul style="list-style-type: none"><li>- Use of "closed feed" system into batch reactors</li><li>- Venting equipment through vapor recovery system</li></ul>	Not Applicable as ours is continuous process																																																																																																												
		There is one CS2 recovery system/machine (total 4 nos.) wherein CS2 is being recovered by condensation.																																																																																																												
VIII)	Fugitive emissions in the work zone environment, product & raw materials storage area shall be regularly monitored. The emissions shall confirm to the limits imposed by SPCB/ CPCB	Fugitive emissions in work zone environment & storage area are monitored by our Lab on monthly basis and are well within stipulated norms. Lab data are tabulated as <b>Table No. 24</b>																																																																																																												
	<div><p><b>Agency:</b> - Environmental Monitoring Lab <b>Address:</b> -Internal Lab <b><u>Details of instrument Used for Monitoring:</u></b> - <b>Inst. Calibration done by :</b> - Respo Products <b>Instrument Name:</b> - Toxirae III (for H2S Measurement) &amp; For CS2 measurement following IS 5182 (Part 20) : 1982 method <b>Serial No.:-</b> I348982 <b>Calibration Date:-</b> 08.01.2019 <b>Expiry Date:</b> - 08.01.2020</p><table><tr><th colspan="14">Table No. 24</th></tr><tr><th rowspan="2">Area</th><th rowspan="2">Std (ppm)</th><th colspan="2">Oct-18</th><th colspan="2">Nov-18</th><th colspan="2">Dec-18</th><th colspan="2">Jan-19</th><th colspan="2">Feb-19</th><th colspan="2">Mar-19</th></tr><tr><th>H2S (ppm)</th><th>CS2 (ppm)</th><th>H2S (ppm)</th><th>CS2 (ppm)</th><th>H2S (ppm)</th><th>CS2 (ppm)</th><th>H2S (ppm)</th><th>CS2 (ppm)</th><th>H2S (ppm)</th><th>CS2 (ppm)</th><th>H2S (ppm)</th><th>CS2 (ppm)</th></tr><tr><td>Xanthation</td><td>10</td><td>0-0</td><td>1-2</td><td>0</td><td>1-2</td><td>0</td><td>1-2</td><td>0</td><td>1-2</td><td>0</td><td>1-2</td><td>0</td><td>1-2</td></tr><tr><td>Spinning machine</td><td>10</td><td>1-2</td><td>4-6</td><td>2-3</td><td>4-6</td><td>2-2</td><td>3-6</td><td>2-2</td><td>3-6</td><td>1-3</td><td>3-6</td><td>1-3</td><td>2-5</td></tr><tr><td>Stretch bath</td><td>10</td><td>1-2</td><td>4-6</td><td>1-3</td><td>4-6</td><td>2-3</td><td>3-6</td><td>1-3</td><td>3-6</td><td>1-3</td><td>4-6</td><td>1-3</td><td>4-6</td></tr><tr><td>Cutter</td><td>10</td><td>2-2</td><td>4-6</td><td>1-2</td><td>5-6</td><td>1-2</td><td>3-5</td><td>1-2</td><td>1-5</td><td>1-2</td><td>3-6</td><td>1-2</td><td>3-6</td></tr></table></div>														Table No. 24														Area	Std (ppm)	Oct-18		Nov-18		Dec-18		Jan-19		Feb-19		Mar-19		H2S (ppm)	CS2 (ppm)	H2S (ppm)	CS2 (ppm)	H2S (ppm)	CS2 (ppm)	H2S (ppm)	CS2 (ppm)	H2S (ppm)	CS2 (ppm)	H2S (ppm)	CS2 (ppm)	Xanthation	10	0-0	1-2	0	1-2	0	1-2	0	1-2	0	1-2	0	1-2	Spinning machine	10	1-2	4-6	2-3	4-6	2-2	3-6	2-2	3-6	1-3	3-6	1-3	2-5	Stretch bath	10	1-2	4-6	1-3	4-6	2-3	3-6	1-3	3-6	1-3	4-6	1-3	4-6	Cutter	10	2-2	4-6	1-2	5-6	1-2	3-5	1-2	1-5	1-2	3-6	1-2	3-6
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IX)	The project authorities shall strictly comply with the rules and guidelines under manufacture, storage and import of hazardous chemicals Rules 1989 as amended up to date and Hazardous waste (management & handling) Rules 1989 as amended time to time. Authorization from the GPCB shall be obtained for collection, storage, treatment and disposal of hazardous wastes	Deputy Controller of Explosive from M/s PESO (PETROLEUM & Explosives Safety Organization), has granted license for storage of 60 KL light diesel oil and storage of 10 KL HSD at 2 location in plant area for DG sets. We have valid factory license from DISH. Copy of factory & Petroleum License copy attached as <b>Annexure -13</b>  Hazardous waste Rules 2000 is fully complied as per the consent																																																																																																												



		stipulated norm and Unit is complying all the waste defined in CC& A. Hazardous waste is being disposed to M/ 5. BEIL, Dahej TSDF facility and annual hazardous waste disposal details are submitted on GPCB XGN online site and waste disposal online report is attached as <b>Annexure-14</b> . Unit has obtained CC&A # AWH 62510 for collection, storage, treatment and disposal of hazardous waste from GPCB dated 7th Jul 2014 which is valid up to 23rd Mar 2019.																																																																																																																	
x)	The overall noise levels in and around the plant area shall be kept well within the standard by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall confirm to the standards prescribed under the Environment (P) Act, 1986 Rules 1989 viz. <b><u>75 dB (day time and 70 dB (night time)</u></b>	Following measures taken to control noise level: <ul style="list-style-type: none"><li>- Provision of Silencers</li><li>- Acoustic Enclosures</li><li>- Rubber pads for rotating equipment</li></ul>																																																																																																																	
<b>The Noise level (dB) at workroom for last 6 months is tabulated as under Table No. 25:</b> <b>Calibration Period:</b> - 08.01.19 – 08.01.20 <b>dB Meter:</b> - <b>Make:</b> - Lutron SL-4010 <b>Certification Agency:</b> - Team Maintenance Service / <b>Address:</b> - 806 – 808, Abhinandan Royale, Opp. Rajhans Olympia, Bhatar Road, Surat – 395007, Gujarat, India <b>Reference Standard:</b> - Sound Level Calibrator, <b>Sr. No.</b> I348982,																																																																																																																			
	<table><tr><th colspan="13">Table No. 25</th></tr><tr><th rowspan="2">Area</th><th colspan="2">Oct-18</th><th colspan="2">Nov-18</th><th colspan="2">Dec-18</th><th colspan="2">Jan-19</th><th colspan="2">Feb-19</th><th colspan="2">Mar-19</th></tr><tr><th>Day Time</th><th>Night Time</th><th>Day Time</th><th>Night Time</th><th>Day Time</th><th>Night Time</th><th>Day Time</th><th>Night Time</th><th>Day Time</th><th>Night Time</th><th>Day Time</th><th>Night Time</th></tr><tr><td>Main Gate</td><td>60</td><td>58</td><td>63</td><td>59</td><td>61</td><td>59</td><td>62</td><td>58</td><td>59</td><td>55</td><td>60</td><td>59</td></tr><tr><td>Material Gate</td><td>58</td><td>54</td><td>59</td><td>55</td><td>62</td><td>56</td><td>64</td><td>56</td><td>62</td><td>59</td><td>61</td><td>57</td></tr><tr><td>OHC</td><td>65</td><td>60</td><td>64</td><td>59</td><td>66</td><td>63</td><td>68</td><td>62</td><td>63</td><td>62</td><td>63</td><td>60</td></tr><tr><td>Derol</td><td>56</td><td>52</td><td>56</td><td>54</td><td>55</td><td>54</td><td>58</td><td>54</td><td>58</td><td>56</td><td>57</td><td>56</td></tr><tr><td>Vilayat</td><td>57</td><td>56</td><td>56</td><td>53</td><td>55</td><td>54</td><td>59</td><td>55</td><td>58</td><td>55</td><td>55</td><td>52</td></tr></table>												Table No. 25													Area	Oct-18		Nov-18		Dec-18		Jan-19		Feb-19		Mar-19		Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Main Gate	60	58	63	59	61	59	62	58	59	55	60	59	Material Gate	58	54	59	55	62	56	64	56	62	59	61	57	OHC	65	60	64	59	66	63	68	62	63	62	63	60	Derol	56	52	56	54	55	54	58	54	58	56	57	56	Vilayat	57	56	56	53	55	54	59	55	58	55	55	52
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Vilayat	57	56	56	53	55	54	59	55	58	55	55	52																																																																																																							

	Sarnar	54	50	55	53	56	53	56	52	56	55	56	54
	Argama	54	52	56	53	53	49	56	51	57	54	56	54
XI)	The company shall develop rain water harvesting structures to harvest the runoff water for recharge of ground water					We have assigned job to experts M/s Allegiance Enterprises, Vadodara in the field of rain water harvesting. They have surveyed our plant site and submitted final proposal. Required action will be taken for development of rain water harvesting system based on receiving final proposals. Pl. refer <b>Annexure-15</b>							
XII)	The company shall undertake eco-development measures including community welfare measures in the project area for the overall improvement of the environment.					We have been undertaking various community development measures in and around 25 Villages and 61,515 nos. of beneficiaries covered in FY'18 (April'17 to March'18} Unit has proposed Eco development plan yearly basis through CSR activities and submitting CSR activities update in Annual Environment Audit Report to GPCB on yearly basis.							
	The eco development plan should be submitted to SPCB within three months of receipt of this letter for approval					Eco development measures including community welfare being done under CSR initiatives as attached in <b>Annexure-16</b> & its expenditure details are in below <b>Table No.26</b>							

Table No. 26				
Financial Year	Average Net Profit (in Crore) of the company (As per 135(S) company’s Act)	Allocate CSR Amount (2%)	Actual Spent in CSR (Amount in Crore)	% Spent CSR against Net Profit
2015-2016	791	15.82	15.05	
2016-2017	790	15.80	18.06	
2017-2018	1107	22.14	29.84	
2018-2019	Report under finalization			
Total=>	2688		62.95	2.34%

XIII)	A separate Environment Management Cell equipped with full-fledged laboratory facilities shall be set up to carry out the Environmental Management and monitoring functions. The details of the Cell shall be submitted to MoEF regional officer prior to commissioning of the plant	We have personnel within Environment Management/ Engineering, Chemical, botany & water resources and also from Process & Engineering. Pl. refer below Organization chart.
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<div> <div> <b>Organization Chart for Environmental Management</b> </div> <div> <pre> graph TD     UH["Unit Head &amp; Sr. President Ashish Garg B. Tech (Chemical), MBA"]     AVP["Assistant Vice President Technical Services Anik Sengupta BE-Chemical, MBA"]     VP_HR["Vice President Human Resources Subodh Gautam BBA, MBA-HR"]     VP_Tech["Vice President Technical Diptiman Majumdar BE-Chemical, MS-Ind."]     AGM_ESS["AGM – Env &amp; Sustainability Paras Jain M.SC (Env.), PDIS"]     GM_Lab["GM–Laboratory &amp; Systems Shailley Garg B. Tech - Metallurgy"]     Manager_OHC["Manager-OHC Dr. Sandeep B MBBS, CIH"]     GM_Admin["GM- Admin Milind Dighe B.Com Diploma in IRPM"]     Manager_CSR["Manager CSR Dilip Koradiya MSW"]     AGM_Water_ETP["AGM-Water &amp; ETP Pramod Kumar M.Sc (Env.) LLB (Env. Law), PDIS"]     Officer_ESS["Officer-Env. &amp; Sustainability Sneha Mehta M. Sc Org. Chemistry &amp; PDIETM (appear)"]     Manager_Chem_Lab["Manager Chemical Lab Atul Gondaliya M. Sc – Org chemistry"]     Manager_Textile_Lab["Manager Textile Lab R D Parashar M. Sc –Post Graduate in Env."]     Asst_Manager_Horticulture["Asst. Manager-Horticulture Sanjay Shrivastava B.Sc Agriculture"]     Dy_Manager_ETP_RO["Dy. Manager-ETP &amp; RO plant Satish K. Gupta M.Sc. &amp; M. Phil. - Environment"]     Asst_Manager_Env_ETP["Asst. Manager-Env. &amp; ETP Mahendra Singh BE- Env."]      UH --&gt; AVP     UH --&gt; VP_HR     UH --&gt; VP_Tech     AVP --&gt; AGM_ESS     AVP --&gt; GM_Lab     AGM_ESS --&gt; Officer_ESS     GM_Lab --&gt; Manager_Chem_Lab     GM_Lab --&gt; Manager_Textile_Lab     VP_HR --&gt; Manager_OHC     VP_HR --&gt; GM_Admin     VP_HR --&gt; Manager_CSR     GM_Admin --&gt; Asst_Manager_Horticulture     VP_Tech --&gt; AGM_Water_ETP     AGM_Water_ETP --&gt; Dy_Manager_ETP_RO     AGM_Water_ETP --&gt; Asst_Manager_Env_ETP </pre> </div> </div>		
XIV)	The project authorities shall earmark separate funds to implement the condition stipulated by MoEF as well as state government along with the implementation schedule for all the conditions stipulated herein	Total project cost was Rs. 1200 Crores as mentioned in EC. As committed in the EIA/EMP, unit has allocated capital cost Rs. 170.5 Crores and recurring cost Rs. 15.5 Crores per annum respectively for implementation of environmental pollution control measures as per condition stipulated by the MoEF as well as state Govt.
	The funds so provided shall not be diverted for any other purpose.	Funds are used in Air pollution control measures, water pollution control measures, Environmental monitoring & management, waste management, green belt development. We hereby declare that the capital & recurring fund is not diverted for other purpose.

	Fund Utilize for Environmental Management are under (Rs. In Crore)					
	Sr. No.	Particular	Capex	Opex FY-17	Opex FY-18	Opex FY-19
	1	Effluent Treatment	79.00	11.50	10.56	11.00
	2	Air Pollution Control	91.00	03.50	04.00	03.30
	3	Green Belt Development	00.50	00.50	00.55	01.30
	4	Waste Management	01.50	00.50	00.60	01.60
		Total Amount=>	172.00	16.00	15.71	17.20
XV)	The implementation of the project vis-a-vis environmental action plans shall be monitored by the concerned regional office of MoEF/ GPCB/ CPCB. A six monthly compliance status report shall be submitted to monitoring agencies and shall be posted on the website of the company.			Six monthly compliance status report is being regularly submitted, pl. refer attached Annexure-7 of last report as acknowledgement, dated 21/05/2018.		
				Compliance Period		Date of Report Submission
				Apr-16 to Sep-16		10.11.2016
				Oct-16 to Mar-17		24.04.2017
				Apr-17 to Sep-17		14.06.2017
				Oct-17 to Mar-18		21.05.2018
				Apr-18 to Sep-18		Oct & Nov-2018
XVI)	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB/Committee and may also be seen at website of MoEF http://envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the concerned regional office of the Ministry.			EC issued on 20.12.2007, received on 24.12.2007 following are the advertisement details.		
	Name of Paper : - Indian Express Date of Issue: - 28.12.2007 In : - English language			Name of Paper : - Gujarati Loksatta Date of Issue: - 28.12.2007 In : - Gujarati language		



Grasim Cellulosic  
Plot No.-1, GIDC Vilayat  
Dist: Bharuch, (Gujarat)  
Environment Clearance by MOEF

Vide letter No. F.No.J-11011/463/2007-IA II (I), dated 20-12-07, which was received on 24-12-2007, the Ministry of Environment and Forests (Govt. Of India) has accorded Environmental Clearance for the Green Field Viscose Staple Fibre (127750 TPA) and Captive Power Plant (25 MW).

Copies of the clearance letter are available with GPCB and may also be seen at website of the Ministry of Environment and Forests at <http://envfor.nic.in>

**Grasim Industries Limited**

Registered Office: P.O.-Birlagram, Nagda-456 331 Dist.-Ujjain (MP)



ગ્રાસીમ સેલ્યુલોઝીક

પ્લોટ નં.-૧, જુઆઈડીસી વિલાયત, ડી.ભરૂચ, (ગુજરાત)

MOEF દ્વારા પર્યાવરણીય પરવાનગી

પર્યાવરણ તથા વનમંત્રાલયે (ભારત સરકાર) વિલાયતમાં VSF પ્લાન્ટ ૧૨૭૭૫૦ ટન પ્રતિ વર્ષ અને પાવરનું ઉત્પાદન ૨૫ મેગાવોટના ગ્રીન ફીલ્ડ પ્રોજેક્ટની પરવાનગી તારીખ ૨૦-૧૨-૨૦૦૭ના પત્ર નં. એફ. નં. જે-૧૧૦૧૧/૪૬૩/૨૦૦૭- Iએ II (I) દ્વારા આપેલ છે. પરવાનગી પત્રની નકલ જુપીસીબી અને પર્યાવરણ તથા વન મંત્રાલયની વેબસાઈટ <http://envfor.nic.in> પર પ્રાપ્ય છે.

**ગ્રાસીમ ઈન્ડસ્ટ્રીઝ લીમીટેડ**

રજીસ્ટર્ડ ઓફીસ: પી.ઓ.બિરલાગ્રામ, નાગદા-૪૫૬ ૩૩૧ જી. ઉજ્જૈન (એમ.પી.)

EC Amendment on 15.01.2018 & following are the advertisement details.

Name of Paper : - Times of India

Date of Issue: - 19.01.2018


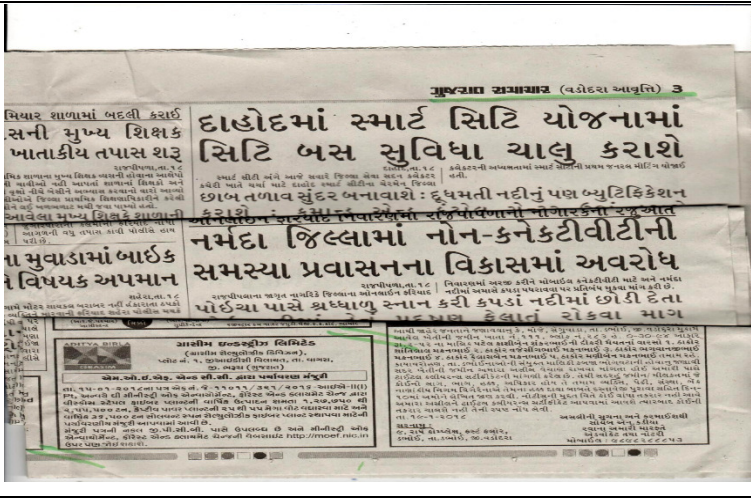
In : - English language

Name of Paper : - Gujarat Samachar

Date of Issue: - 19.01.2018

In : - Gujarati language



		
XVII)	The project authorities shall inform the Regional Office as well as Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of the start of the project	<p>We have submitted the same in last six monthly EC compliance report &amp; BSE – NSE report to MoEF &amp; CC, Bhopal. Pl. refer <b>Annexure-7</b> for EC compliance report &amp; for BSE-NSE refer <b>Annexure-17</b>.</p> <p>Project / plant activities are as under;</p> <ol style="list-style-type: none"> <li>(1) EC received on 20<sup>th</sup> Dec-07,</li> <li>(2) Civil &amp; other const. work started in Jun-2011.</li> <li>(3) 1<sup>st</sup> line commissioned in Mar-2014.</li> <li>(4) All 4 lines commissioned by Jan-2015.</li> </ol>
10.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory	Noted & will abide
11.	The Ministry reserves the rights to stipulate additional conditions, if found necessary. The company in a time bound manner will implement these conditions.	-NA to PP
12.	The above conditions will be enforced, inter-alia under the provision of the Water (Prevention & control of pollution) Act-1977, the Air (Prevention & control of pollution) Act-1981, the Environment (Protection) Act-1986, Hazardous waste (Management & Handling) Rules-2003 and the Public Liability Insurance Act-1991 along with their amendments and rules.	<p>-We are following terms &amp; conditions GPCB CC&amp;A compliance.</p> <p>(Detailed report attached in General Condition Point No. I)</p>

# **Compliance Status Report for “Environmental Clearance” Accorded by the MoEF**

**For  
Grasim Cellulosic Division (GCD), Vilayat Project**

## **Monitoring of Ambient Air Quality, Noise Levels & Surface water quality**

### **Ambient Air Quality:**

The scenario of existing Ambient Air Quality in the study area has been assessed through a network of 06 Ambient Air Quality locations which are established in and around the plant premises. The monitoring stations are established based on the consultation with the Regional office of Gujarat Pollution Control Board, Bharuch.

Third party NABL & GPCB accredited laboratory has been entrusted for carrying out Environmental monitoring, analysis & reporting of environmental parameters at locations designated within and around plant premises.

Pre- calibrated Fine dust samplers have been used for carrying out ambient air quality monitoring in line with provisions of National Ambient Air Quality Standards (NAAQS). The parameters monitored are PM<sub>10</sub>, PM<sub>2.5</sub>, Sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) & Carbon mono oxide (CO).

### **Noise Environment:**

Noise level being monitored in Ambient & Work zone area at different Locations once in a quarter. The noise levels at each location were recorded for 24 hours, using integrated sound level meter.

### **Water Quality:**

The existing status of water quality for surface water was assessed by collecting the water samples from nearby Bhookhi Khadi for upstream & downstream. Portable water from Plant & Labor Camp is also analyzed. The overall water quality parameters have been found to be below the stipulated permissible limits.

# Compliance Status Report for “Environmental Clearance” Accorded by the MoEF

## For Grasim Cellulosic Division (GCD), Vilayat Project

### Green belt development

#### **Green Belt Development:**

A green belt is being developed along the plant boundary, along the roads & other available open space, using native species avenue plantation as per the CPCB guidelines for curbing emission and providing aesthetic look.

‘> 40,000 trees covering an area of 25 Hact, with survival rate of 80 % have already been planted till date. A nursery for growing the saplings, being used for plantation purposes, has also been established inside the plant premises.

Criteria used for selection of species for greenbelt:

- Fast growing
- Thick canopy cover
- Perennial & evergreen
- Large leaf area index
- High sink potential
- Efficient in absorbing pollutants without affecting their growth
- Suitable for the local seasons

#### **Plantation Species:**

Neem (*Azadirachta indica*), Kasood (*Cassia siamea*), Pine/Junglisaru (*Casuarina equisetifolia*), Orchid tree (*Bauhinia blakeana*), Gulmohar (*Delonix regia*), Rain tree (*Samanea saman*), Yellow Gulmohar (*Peltophorum ferrugineum*), Bottle brush (*Callistemon sp.*), Earleaf Acacia (*Acacia auriculiformis*), Kadamb (*Neolamarckia cadamba*), Basant Rani (*Tabebuia rosea*), Safeda (*Eucalyptus*), *Bougainvillea spectabilis*, Lawn Plantation and Shrubbery.



# **Compliance Status Report for “Environmental Clearance” Accorded by the MoEF**

**For**

**Grasim Cellulosic Division (GCD), Vilayat Project**

## **Green belt development**

### **Plant species for Odor management;**

Neem (*Azadirachta indica*), Saptparni (*Alstonia scholaris*), Guh babool (*Acacia farnesiana*), Morpankhi (*Thuja occidentalis*), Bougainvillea (*Bougainvillea spectabilis*), Lemon (*Citrus lemon*), Kaner (*Nerium indicum*), Mehndi (*Lawsonia inermis*), Champa (*Plumeria rubra*), Holy basil (*Ocimum tenuiflorum*), Tulsi (*Ocimum sanctum*), Sankuppi (*Clerodendrum inerme*), Jasmine tree (*Plumeria alba*), Jarul (*Lagerstroemia speciosa*), Gurhal (*Hibiscus rosa sinensis*), Bunchgrass (*Vetiveria zizanioides*) etc.

### **Gaseous emission (SO<sub>2</sub> & NO<sub>x</sub>) tolerant species:**

Neem (*Azadirachta indica*), Bel (*Aegle marmelos*), Kasood (*Cassia siamea*), Earleaf Acacia (*Acacia auriculiformis*), Saptparni (*Alstonia scholaris*), Aldu (*Ailanthus excelsa*), Siris (*Albizia lebbeck*), Shisham (*Dalbergia sissoo*), Pipal (*Ficus religiosa*), White fig (*Ficus infectoria*), Maulsari (*Mimusops elengi*), Kaner (*Nerium indicum*), Jarul (*Lagerstroemia speciosa*) etc.