

M/s. Pentakem Industries

Plot No. 3121, Panoli Industrial Estate,
Taluka: Ankleshwar, District: Bharuch, Gujarat.

Proposed of Synthetic Organic Chemicals Manufacturing,
Project Category: A, 5 (f) Synthetic Organic Chemicals

Sr. No.	Essential Details Sought by MS	Compliance
1	TOR granted by SEEIA however, now application submitted at Central level please clarify	Yes, TOR granted by the SEIAA, Gujarat wide letter no. SEIAA/GUJ/TOR/5(f)/740/2019 dated 16.05.2019 and we prepared the EIA/EMP report and after the NGT order dated 19.08.2019 for CEPI, After the OM dated 30.12.2019 states that the project falls under category A. accordingly we submitted application at MOEF&CC for further procedure.
2	Submit action plan as per the Ministry's office memorandum 31 st October, 2019 regarding projects located in Critically Polluted Area	Action plan as per the Ministry's office memorandum 31 st October, 2019 regarding projects located in Critically Polluted Area is enclosed as additional documents
3	Effluent treatment mechanism with plan for Zero Liquid Discharge needs to be submitted	Effluent treatment mechanism is given in chapter 2 of EIA report.
4	Proposed Green belt development programme along-with time line and budgetary allocation needs to be provided	Proposed Green belt development programme along-with time line and budgetary allocation is enclosed as additional documents
5	In view of the above, PP/Consultant are requested to revise the application for grant of EC and accordingly revise the Form 2 along with EIA/EMP Report. The EIA/EMP Report shall match with the information as filled in Form 2. On examination it is observed that the Consultant has not adequately submitted the application as per the provisions of the EIA Notification, 2006. Consultant has to read the documents before uploading the information in Form 2 /EIA/EMP report.	Revised

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Proposed of Synthetic Organic Chemicals Manufacturing,
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Compliance of the CPCB office memorandum dated 31.10.2019

Sr. No.	Condition	Compliance												
Condition under air Act														
1	Unit shall adhere to stringent air pollutants standards i.e. 80% of existing flue gas and process emission standard in the CPA	The industry will install the multi cyclone to control flue gas emission for along with the adequate stack height and adequate fuel. Flue gas stack details is enclosed as annexure-1												
2	Unit shall adhere to stringent air pollutants standards i.e 90% of existing flue gas and process emission standard in the SPA	NA												
3	Following air pollution control measures shall be provided for the flue gas emission sources like Boiler, Thermic Fluid Heaters etc. (As Applicable) <table><tr><td colspan="2">Stipulated APCM in Red/orange category industrial units of CPA/SPA</td></tr><tr><td>Steam Generation Capacity (TPH)</td><td>Type of APCM</td></tr><tr><td>Less than 1</td><td>Multi Cyclone</td></tr><tr><td>1 to <3</td><td>Multi Cyclone + Water Scrubber</td></tr><tr><td>3 to <6</td><td>Bag Filter + Water Scrubber</td></tr><tr><td>≥6</td><td>ESP + Water Scrubber</td></tr></table>	Stipulated APCM in Red/orange category industrial units of CPA/SPA		Steam Generation Capacity (TPH)	Type of APCM	Less than 1	Multi Cyclone	1 to <3	Multi Cyclone + Water Scrubber	3 to <6	Bag Filter + Water Scrubber	≥6	ESP + Water Scrubber	The industry will install the multi cyclone to control flue gas emission for along with the adequate stack height and adequate fuel. Flue gas stack details is enclosed as annexure-1
Stipulated APCM in Red/orange category industrial units of CPA/SPA														
Steam Generation Capacity (TPH)	Type of APCM													
Less than 1	Multi Cyclone													
1 to <3	Multi Cyclone + Water Scrubber													
3 to <6	Bag Filter + Water Scrubber													
≥6	ESP + Water Scrubber													
4	Unit shall provide at least two stage scrubbing system of appropriate media for the control of the process gas emission	The industry is proposed two stage scrubbing system for the control of the process gas emission. details of process gas emission is enclosed as annexure-2												
5	Unit shall install and commission Continuous Emission Monitoring System-CEMS (as per CPCB guidelines for relevant parameters) which shall be connected with GPCB/CPCB medium server (In case of large and red category industries)	The industry will install and commission Continuous Emission Monitoring System- CEMS (as per CPCB guidelines for relevant parameters) which will be connected with GPCB/CPCB medium server.												
6	All common facilities shall install CEMS (as per CPCB guidelines for relevant parameters) which shall be connected with GPCB/CPCB server to the Stacks provided with Common Multiple Effect Evaporator (CMEE),Common Spray Dryer, Common incinerator etc.	Not applicable												
7	The unit shall adhere to Sector specific guidelines/ SOP published by GPCB/CPCB from time to time for effective fugitive emission control.(like guidelines for : stone crushing unit, coal handling units, spent solvent handling management, spent acid management, decontamination of drums, containers etc.)	The unit shall adhere to Sector specific guidelines/ SOP published by GPCB/CPCB from time to time for effective fugitive emission control. The mitigation measure for Fugitive or Secondary Emissions is enclosed as annexure-3												

Sr. No.	Condition	Compliance
8	Unit shall take adequate measures to control odour nuisance from the industrial activities which may include measures like- use of masking agent with atomizer System (water curtain), closed / automatic material handling system, containment of the odour vulnerable areas etc.	Adequate measures to control odour nuisance from the industrial activities is enclosed as annexure-4
9	Unit shall not use Pet-coke, furnace oil, LSHS as a fuel.	The industry will use Natural gas and HSD as a fuel.
10	Transportation of materials by rail/conveyor belt wherever feasible.	Transportation of materials will be done by road.
11	Assessment of carrying capacity of transportation load on roads inside the industrial premises. If the roads required to be widened, shall be prescribed as a condition.	The proposed project is located in the notified Industrial area which is well connected to the national highway and state highway. The internal road will be widened as per the prescribed norms.
12	Unit shall adopt sectoral Best Available Technology-BAT (Like Use of induction Furnace, Electric Arc Furnace instead of cupola furnace in foundry industry, Caustic Recovery System in Cotton Textile units etc')	The proposed project is the synthetic organic chemical manufacturing unit. • The Manufacturing process of proposed project involves conversion of simple organic compound into a vast number of complex chemical intermediates through several steps of operation. Intermediates are reacted in several processes like Fusion, isolation, condensation and distillation etc., • The raw material is fed into the reactor where reactions are carried out ordinarily at atmospheric pressure • The reactions are endothermic for which adequate temperature control is maintained to avoid side reactions. • Batch process will be followed for production
13	Unit shall provide green belt of 40 % of the plot area, using concept of the social forestry and development of green belt outside project premises in adjacent areas	The industry will provide 40 % of the plot area for the green belt development and will also developed green belt outside project premises in adjacent areas. The detailed greenbelt plan is enclosed as annexure-5
14	Unit shall provide wall to wall carpeting in vehicle movement areas within premises to avoid dusting	The industry will provide wall to wall carpeting in vehicle movement areas within premises to avoid dusting
Conditions under water act		
15	Unit shall only use treated effluent for preparation of lime and other slurry in ETP. No fresh water shall be utilized in ETP.	No fresh water will be used for the preparation of lime and other slurry only treated effluent will be used for the same.
16	In the case, if the industry is not a member of CETP and domestic waste water generation is more than 10 KLPD, industry shall install STP of adequate capacity and treated Sewages shall be reused/recycled to the maximum extent	Domestic waste generation from the proposed project only 1.2 KLD which will be disposed off through septic tank followed by soak pit
17	In case of Large and Medium Red category industry, the unit shall install system for continuous monitoring of effluent quality / quantity as per CPCB guidelines for relevant parameters (like pH, Flow, Temperature, TOC/COD, NH ₃ -N etc.) and shall be connected to GPCB server. In case, if the industry is a member of CETP, unit shall install flow meter	The industry will install continues monitoring system to the effluent quality and quantity as CPCB guideline for the parameter like pH, Flow meter, temp, TOC/COD etc. and it will be connected through GPCB server.
18	If the water consumption of the unit is more	Company will develop rain water harvesting system

Sr. No.	Condition	Compliance
	than 50 KLPD. Unit shall submit detailed water harvesting plan (off site)	with ground water recharge technique by using rain water from non-process buildings and roof top water of all other buildings. All storm water drains will be routed such as to reach extreme corner of site & then shall harvest the same to ground water through well. Various kinds of recharge structures are possible which can ensure that rainwater percolates in the ground instead of draining away from the surface. While some structures promote the percolation of water through soil strata at shallower depth, others conduct water to greater depths from where it joins the ground water. Besides, possibility will be explored to utilize uncontaminated rain water in plant premises during monsoon.
19	The unit shall explore Techno-Economic feasibility of Zero Liquid and Discharge (ZLD) and if feasible, ZLD should be adopted	The details of Techno-Economic feasibility of Zero Liquid and Discharge (ZLD) and if feasible is enclosed as annexure-1
Hazardous Waste Management		
20	Unit shall strictly carry out handling, storage and disposal of fly-ash slag red-mud, de-inking sludge etc. (High Volume-Low Effect Wastes) as per prevailing guidelines and its disposal at designated locations approved by the Board	Details of Solid/Hazardous wastes generation and its management is enclosed as annexure-7
21	Industry shall dispose its hazardous wastes through co-processing pre-processing to the extent possible prior its disposal to incineration/ landfill as per provisions of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	Industry shall dispose its hazardous wastes as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. Details Solid/Hazardous wastes generation and its management is enclosed as annexure-7
22	Industry shall strictly comply with all the measures specified in guidelines for spent solvent management, spent acid management and other guideline published from time to time by GPCB and/or CPCB etc.	The solvent and spent acid management will be done as per guideline published from time to time by GPCB and/or CPCB etc.
23	Unit shall carry out transportation of hazardous wastes through GPS mounted vehicles only	The transportation of hazardous wastes will be done through GPS mounted vehicles only
Other General Conditions		
24	Unit shall submit report of compliance of the conditions of EC every year to the Board prepared by Third party.	Point Noted and it will be complied on the regularly basis
25	Unit shall enhance CER fund allocation to at least 1.5 times the slabs given in the OM dated 01.05.2018 for SPA and 2 times for CPA in case of Environmental Clearance	A budget of Rs. 20 lacs would be utilized for CER programme for three years which is the 4.0 % of project cost. The detailed CER activities with budget allocation is enclosed as annexure-8

Detail of Flue gas stack

Sr. no.	Source of emission	Stack Height (meter)	Fuel	Quantity of Fuel MT/Day	Type of emissions i.e. Air Pollutants	Air Pollution Control Measures (APCM)
1.	Steam Boiler 600 kg/hr	13	Natural Gas	480 M ³ /day	PM 120 mg/Nm ³ SO ₂ 80 ppm NO _x 40 ppm	Multi Cyclone and Natural gas
2.	TFH 8 lac Kcal	11	Natural Gas	520 M ³ /Day		Multi Cyclone and Natural gas
3.	D.G set (125 KVA Standby)	7	HSD	20 lit/day		HSD will be used as fuel

DG set only for emergency purpose

Flue gas emission will happen from above shown utilities. The following Mitigation Measures shall be followed to control flue gas emission.

- Multi Cyclone will be installed for emission control
- Natural gas will be used as fuel
- Adequate stack height will be provided
- HSD will be used as fuel for DG set
- DG set will be operated only in case of emergency
- CEMS (Continuous Emission Monitoring System) will be installed and there will be provision for connection to the SPCB/CPCB
- Periodic check-up will be done

Detail of Process gas stack

Sr. No.	Source of emission	Stack Height (m)	Parameters	APCM	Prescribed Norms
1	PANA- Phenyl Alpha Naphthyl Aniline	15	NH ₃	Vent will be attached to two stage scrubber through a totally closed loop system generating 24 % liquor ammonia.	140 mg/NM ³

The following Mitigation Measures shall be followed to control process gas emission.

- Two Stage Scrubber shall be installed to control ammonia emission.
- Process vent will be attached to scrubber through a totally closed loop system
- CEMS (Continuous Emission Monitoring System) will be installed and there will be provision for connection to the SPCB/CPCB
- Periodic check-up will be done

The mitigation measures for Fugitive or Secondary Emissions

- The fugitive emissions in terms of handling losses will get reduced by proper storage and handling.
- Hazardous chemicals will be stored as per standard criteria.
- Periodically monitoring will be carried out as per project monitoring plan.
- Proper ventilation in storage & production area shall be ensured and all materials will be stored in suitable packing to prevent contamination of air due to particulates & volatile emissions from storage container & area.
- Enclosed system & efficient procedures for materials charging shall be ensured.
- Procedures for start-up shut down, operation & maintenance procedures shall be established & maintained in all relevant area of works.
- The coverage of greenbelt around the plant also acts as natural barrier to stop carrying of dust along with the wind current.
- Good housekeeping will be maintained in the plant.
- Risk analysis will be done at every stage to identify potential risks and install appropriate elimination / mitigation system.
- The transportation of materials in plant will be done by forklift, hand truck, pallet truck and tank etc.

Adequate measures to control odour nuisance

- Sampling points will be provided with double valve followed by suction hoods which will be connected to ducting system leading to scrubbing system.
- Odour causing raw materials will be charged in closed chambers with exhaust of chambers connected to ducting system leading to scrubbing system.
- All waste storage tanks and waste preparation and raw material storage tanks will be connected to vacuum system. These off gases will be connected to scrubbers
- “Odour rounds” by non-plant personnel will hold regular meetings and odour rounds in the factory premises for ensuring effective implementation of odour control measures.
- As a long-term measure to improve the environment, plantation of trees within factory premises as well as along the nearby roads is done.
- All critical vessels, pumps and reactor which have potential to generate odour will be fitted with mechanical seals to prevent leakage and therefore odour.
- De-odorizer solution will be sprayed through special network, which will be laid around the plant. It will help in neutralizing the fugitive emissions.
- Beneath all sample points/ drain points, spill control powder containing trays will be kept so as to adsorb even slightest of leakage, if at all arises from these points. The spill control powder will then be sent for disposal as a solid waste

A detailed greenbelt development plan

Development of a greenbelt mitigates to a certain extent the potential negative impact on the environment due to dust, air emissions, fugitive emission and noise. A green cover itself acts as containment for dust. Presence of a green belt, lead to micro-climate and soil quality balancing, by retaining of soil moisture, recharge of ground water as well as self-control of micro-climate of that area. It also improves the aesthetic value of the area, later on it becomes the natural habitat of various bird species. To maintain proposed unit will be developed green belt in area of 600 sq. m., thus total green belt will be 600 sq. m. (40% of total plot area). Details of the plant species and budget allocation for existing and proposed greenbelt development are given in the below table 1. Details of 5 years green belt development plan are given in the table 2. Unit also proposes to carryout tress plantation during construction phase of proposed project, which will be completed within 1 year. The unit will also participate in the greenbelt development programs outside the premises at nearby villages.

Details of Plant Species

Sr. No.	Common Name of tree / plant	Scientific Name	Total No. of plant Species
1	Asopalav	<i>Polyalthia longifolia</i>	30
2	Bougainvillea	<i>Bougainvillea spectabilis</i>	40
3	Saru	<i>Casuarina equisetifolia</i>	20
4	Madhumalati	<i>Combretum indicum</i>	30
5	Neem tree	<i>Azardirachta indica</i>	90
6	Karanj	<i>Pongamia pinnata</i>	20
7	Sevan	<i>Gmelina arborea</i>	20
Total			250

Details of 5 years green belt development plan

Sr. No.	Year	Nos. of plant	Budget (in Rs)
1	1 st	90	90000.00
2	2 nd	60	60000.00
3	3 rd	40	40000.00
4	4 th	40	40000.00
5	5 th	20	20000.00
Total		250	250000.00

The scenario of planting arrangement and size is based on the optimum use of available land. Plants suitable to abate the pollution are identified to be local plants.

The general considerations involved while developing the green belt are:

- Local/native fast-growing trees are planted.
- Planting of trees are undertaken in appropriate encircling rows.
- Species are tolerant to air pollutants present in the area mainly dust pollution.
- It possesses extensive foliar area to provide maximum impinging surface for continued efficient adsorption and absorption of pollutants.
- It is tall in peripheral curtain plantation, with large, spreading canopy in the primary and secondary attenuation zones.
- It is able to grow and thrive on soil of areas, be evergreen in habitat having minimum of leaf fall.
- It maintains ecological, land and hydrological balance of the region.

Details of Techno-Economic feasibility of Zero Liquid and Discharge (ZLD) and if feasible

The comprehensive effluent treatment and management system for proposed project will comprise of Primary ETP, In-house MEE and Common MEE of M/s ACPTCL, Panoli for final discharge.

Total Quantity of industrial waste water generation = 10.30 KL per day

Total Liters of waste water generation = 10300 liters per day = 10300 liters per day x 25 days = 2,57,500.00 liters per month

Min. treatment cost of effluent in MEE of M/s. ACPTCL – Rs. 8.0 per liter as per our effluent quality

Total effluent Treatment Cost= Rs. 2,57,500 * Rs 8.0 = Rs. 20,60,000/- per month

Market Value (min. cost) of Product= Rs. 250/- per Kg

Total Production = 58 MT/Month= 58,000 kg per Month

Total turnover of Plant = Rs. 1,45,00,000/- per Month Approx.

Min. Profit = 10 % of total turnover of the plant = 14,50,000/- Rs.

As per market scenario, Economical & Technical aspects of effluent treatment are viable

Details of Solid/Hazardous wastes generation and its management

Sr. no.	Type/Name of Hazardous waste	Specific Source of generation	Category and Schedule as per HW Rules.	Quantity (MT/Annum)	Management of HW
1	Discarded Containers/bags	Raw Material	33.3	30.50	Collection, storage, transportation and sold to GPCB authorized vendors.
2	ETP Sludge	ETP	34.3	81.36	Collection, storage, transportation, disposed at the approved TSDF site.
3	Used oil	Machinery & D.G. Set	5.1	1.50	Collection storage, transportation and sold to GPCB authorized recyclers/ reused in machineries as lubricants.
4	Process waste SBS	Process of MAP	-	198.00	Collection, storage, transportation and sold to Rule 9 authorized recyclers
5	Liquor Ammonia	From NH3 scrubber attached PANA	-	360.00	Collection, storage, transportation and sold to Rule 9 authorized recyclers
6	MEE Salt	From MEE	-	72.00	Collection, storage, transportation, disposed at the approved TSDF site.

Details of CER activity and fund allocation

Sr. No.	CER – Proposed planned Activities	Identified villages	Year wise budget (Rs. in Lacs)			
			1 st Year	2 nd Year	3 rd Year	Grand Total
1	Free Note book and stationary accessories and smart Board facilities distribution in nearby schools of Panoli industrial area.	nearby schools of Panoli industrial area.	3.6	3.2	2.4	9.2
2	Plantation on GIDC Panoli road sides and in Bakrol.	GIDC Panoli road sides and in Bakrol.	2	2	1.6	5.6
3	Free medicines to needy patients coming to the health centre at Panoli Charitable Hospital.	Panoli Charitable Hospital.	2.4	1.6	1.2	5.2
Year Wise Total (Rs in Lacs)			8	6.8	5.2	20