

PVC Resin:

PVC operations of Chemplast Sanmar Ltd has began in May 1967 at Mettur, with technology from B F Goodrich, USA, to manufacture all varieties of high quality PVC Resin grades having a wide range of end user applications. Chemplast manufactures mainly paste PVC resin at Mettur facility. Chemplast Sanmar pioneered the manufacture of Paste Grade Resins in India.

PVC is usually manufactured using ethylene and chlorine.EDC is manufactured by direct chlorination by reacting an imported ethylene and chlorine at our Karaikkal facility and the resultant EDC is transported to Mettur by road. Captive salt fields in Vedaranyam provide salt for the manufacture of chlorine. The captive Coal based power generation facility also helps to integrate the power requirements, building a closed manufacturing loop. Company currently having consent from Tamilnadu Pollution Control Board to manufacture 66000 MT/year of PVC Resin Company has certified for ISO-9001,ISO-14001 and ISO-45001 for Quality, Environmental, Safety and Occupational health management systems respectively.

CAUSTIC SODA:

The first Indian caustic soda plant set up in 1936 and this unit has contributed significantly to the development of the caustic soda industry in India. This unit was taken over by Chemplast Sanmar Ltd in 1988 from Mettur Chemicals and Industrial Corporation (MCIC) Limited. Chemplast is the largest manufacturer of Chloromethanes in the country. The manufacture of Chloromethanes was started in 1967 by MCIC, which was merged with Chemplast Sanmar Limited in 1988. Currently, the unit is having consent to manufacture of C1 to C4): 33580 MT/annum from Tamilnadu Pollution Control Board. Chloralkali division is also certified for ISO-14001 & ISO- 45001 for EHS management systems.

The caustic soda plant graduated from the legacy mercury cell technology to the cutting-edge membrane cell process, significantly reducing its environmental impact. Chemplast Sanmar, in keeping with its environment-friendly approach to business completed the switch over this August 2007, well ahead of the mandated timeline. The company spent Rs 800 millions in the switch over at its mercury based to membrane-based technology at Mettur Dam. Additionally, in order to reduce the power consumption of the process, Company has invested Rs.80 Million towards implementation of “ZERO GAP” technology in 2017.

Chemplast Sanmar has invested in cutting-edge technologies in waste treatment aswell. The landmark Zero Liquid Effluent Discharge Project at Mettur is a first-of-its-kind in the country that enables the company to reprocess and re-use total effluent liquids from PVC and Caustic Soda Plants and the residual industrial salt to the brine preparation in the Caustic Soda Manufacturing. Thus initiative with a capital investment of Rs. 270 million, was completed in 2007-08 and spending Rs. 60-70 million operational expenditure every year.

- ❖ In Safety and Environmental front, PVC and Caustic Chlor plants were received several awards recently which includes State Safety Awards (2002, 2003, 2005, 2006, 2009, 2010, 2011, 2012 & 2014) for large chemical units, CII-ITC award -2008, Greentech Safety award (Gold) - 2008, British Safety Council awarded Five Star rating for the year 2020, 2021, 2022 and “SWORD of HONOUR was awarded for the year 2021”. Indian Chemical Council awarded “Excellence In Management of Environment award for the year 2021-22 , Received the Responsible Care logo & Global Reporting Initiative (GRI) has awarded highest rating (A+) to company’s Sustainability reports for the

consecutive 9 years. Last year (2022-2023) the company has released Fifteenth Sustainability Report as per GRI standards for comprehensive level. Company has received an award for its Corporate Governance and Sustainability Reporting in 2016 by Indian Chambers of Commerce.

The compliance report of various conditions relevant to the expansion of PVC / Chloromethane projects were implemented in 1998 (vide consent order for PVC: Consent order No.7140 dt.28.07.98 (air) and consent order no. 9951 dt.25.07.98 Chloromethane: Consent order No.108 dt.16.11.08 (Water) & consent order No.100 dt.16.11.08 (air) Vide MoEF file No.J-11011/18/96-1A-II (Ind) dated.12.02.97 is detailed below:

CHEMPLAST SANMAR LIMITED, PLANT II & PLANT III, METTUR DAM - 636403.

Expansion of PVC /Chloromethane projects were implemented in 1998 (vide consent order for P Consent order No.7140 dt.28.07.98 (air) and consent order no. 9951 dt.25.07.98.

Chloromethane: Consent order No.108 dt.16.11.08 (Water) & consent order No.100 dt.16.11.08 (air) Vide MoEF file No.J-11011/18/96-1A-II (Ind) dated.12.02.97.

COMPLIANCE STATUS OF MoEF & CC CONDITIONS FOR EXPANSION OF PVC/CHLOROMETHANE PROJECTS (Status as on 30.11.2023)		
SL.NO	CONDITION	COMPLIANCE
1	The project authority must strictly comply with the stipulations made by the State Government and State Pollution Control Board in the NOC granted to the Chloromethane and PVC project expansion.	<p>The stipulations laid down by State Pollution Control Board are strictly adhered to.</p> <p>The major stipulations for PVC are:</p> <ol style="list-style-type: none"> 1. Installation of new DCS system for monomer plant 2. Operation & maintenance of steam strippers to remove organics in the effluent. 3. Recycle of Polymer effluent coming from polymer reactors to cooling tower. 4. Incineration of high boils using waste organic incinerator. 5. Maintaining of green belt & monitoring the quality of water from the surrounding wells. 6. Establishing of Air quality monitoring at 7 places & reporting the results. 7. Maintenance of APC measures specified at the driers & monitoring dust at the driers outlet. 8. Reuse of pump gland water to conserve water usage. 9. Complying with provision of Public Liability Insurance Act-1991. 10. Establishing of new boiler with 30T/hr capacity (Currently the boiler is dismantled and

		<p>disposed due to extraction of steam from the captive coal power plant for process requirements).</p> <p>11. Installation of VCM monitors in the process area and the same is connected to CARE AIR CENTRE of SPCB.</p> <p>Major stipulations of Chloromethanes are:</p> <ol style="list-style-type: none"> 1. Reuse of the acidic trade effluent generated from expansion plant as a feed to HCl absorber to make saleable Hydrochloric acid 2. Disposal of mercury bearing sludge in the Secured Landfill as per the guideline (No generation of mercury bearing sludge on consequent to the establishment of Membrane cell process in 2007) 3. Unit shall pump the treated effluent let in to common drain through two PVC/HDPE pipe line in to surplus river of cauvery after satisfying standards stipulated (No discharge of effluent treated to surplus since 2009, as the company has established & maintained “Zero Liquid Discharge Plant” at the cost of Rs 27 Crores). 4. Establishing of polishing tower to control the chlorine emission from the liquefaction plant. 5. Operation & Maintenance of scrubber system in the HCL. 6. Incineration of distillation residue at Plant-II incinerator. 7. Preparing of On-site emergency plan & carrying out the training drills. 8. Operation of various air pollution control measures including scrubber efficiently to meet the standard. 9. Complying with provision of Public Liability Insurance Act-1991. 10. Connection of effluent water details to Water Care centre of SPCB. 11. Installation of IP enabled camera for demonstration of ZLD status as per CPCB guidelines.
2	Any further expansion of the plant can be taken up only with prior approval of this Ministry.	Any further expansion will be taken up only after getting prior approval of this Ministry. The permitted rate of production of PVC: 66000 MT/annum, Chloromethane (C1 to C4): 33580 MT/annum as per SPCB.

3	<p>The gaseous and SPM emission(s) from various units should conform to the standards prescribed by the State Pollution Control Board from time to time. At no time, the emissions should go beyond the prescribed limits. In the event of failure of any pollution control system adopted by the units, the respective unit(s) must be put out of operation immediately and shall not be restarted until the control systems are rectified to achieve the desired efficiency.</p>	<p>Air pollution control measures are in good working condition. Monthly monitoring of stack emissions through third party (MoEF approved) and report is being submitted to TNPCB. On-line Dust monitors are installed at the PVC Dryers. SPM level for each dryers are reported to TNPCB every month. In case of any deviation in the emission, the unit is stopped and restarted only after rectification to meet the desired efficiency.</p>
4	<p>Monitoring of ambient air quality and stack emissions shall be periodically carried out in consultations with SPCB and report submitted to the Board quarterly and to the Ministry (Regional Office at Bangalore) half-yearly.</p>	<p>Ambient Air quality is monitored by an external agency on a monthly basis at different locations of the plant. Chlorine monitors of 4 numbers installed in the Chlorine handling area and monitoring of the emission on real time basis at PVC plant. Similarly 12 Nos of Chlorine monitors installed at Caustic Soda plant and 1 no of HCL monitor installed in the HCL plant. The Ambient Air Quality (AAQ) is monitored by MoEF approved and NABL Accredited agency and the reports are being submitted to Tamil Nadu Pollution control Board on every month.</p> <p>Stack emissions are monitored on monthly basis through MoEF recognized agency and the reports are being submitted to Tamil Nadu Pollution Control Board on monthly basis.</p> <p>A consolidated report of AAQ/Stack monitoring is submitted to MoEF (Regional Office) bi-annually.</p> <p>Continuous Ambient Air Quality Monitoring Stations are installed at upwind and downwind directions to monitor SO₂, NO_x, PM₁₀, VOC and Chlorine. These values are connected online with Care Air Centre TNPCB. The Values are also displayed at plant entrance for public view.</p> <p>Refer Annexure –I & II</p>
5	<p>Adequate Noise control measures shall be taken up so as to keep noise levels below 85 dB (A) in the work environment. The ambient noise level must not exceed the standards stipulated under EPA/State authorities.</p>	<p>Adequate Noise Control Measures have been implemented in the work area so that the Ambient Noise Level never exceeds the standard as prescribed by the Tamil Nadu Pollution Control Board. In –built engineering control measures have been provided for the noise prone equipments. Apart from this</p>

		<p>earmuff / earplugs are also provided to all the employees working in the noise prone areas as a secondary protection from noise. Ambient Noise Level is measured once in a month by us, which is also submitted on monthly basis to Tamil Nadu Pollution Control Board.</p>
6	<p>The company must adopt water conservation measures in the plant including maximum recycling to maintain the raw water requirement at the present level even after the above-proposed expansion.</p>	<p>Various Control measures have been taken for conservation of water by adopting the reduce recycle and reuse techniques.</p> <p>Zero Liquid Discharge plant is operational at PI-II at the cost of Rs.280 million in June-2008. The total water processed through ZLD and recycled back to the process. Salt recovered from the Evaporator of ZLD is used at Caustic Soda Plant for Brine preparation.</p> <p>The overall process involves the extensive pretreatment to remove the suspended solids, oil & grease, organics and hardness. About 87% of water is recovered through dual stage High Efficient Reverse Osmosis (HERO) system. Mechanical vapor compressors are used to recover 10% of water from the RO reject after evaporation followed by centrifuge.</p> <p>Quantity of Water reprocessed through ZLD for the period of April'2023 to September'2023.</p> <p>Plant-II: 79694 KL (435.48KLD) Plant-III: 37271 KL (203.6KLD) Qty. of Salt recovered: 334.91MT (1.83 MT/day)</p> <p>Rain water collection system from the building roofs is implemented.</p>
7	<p>The effluent generation from the Chloromethanes and PVC plants must be maintained at the present level even after expansion and steps must be continued to further reduce the same. At any case, the quantity of effluent shall not exceed 30 m³ /hr for PVC plant and 9.30m³/hr chloromethane section. The effluents must be treated to meet the prescribed norms under EPA/State Pollution Control Board before discharging outside the premises. Effluent quality must be monitored to</p>	<p>The effluent generation at PVC plant section (Polymer) worked out to be 15.08 KL/Hr. By close monitoring, the effluent generation from Chloromethane plant is recorded as 73 KL/day, which translates to 3.04 KL/hour. Effluents streams are collected and treated at Zero liquid discharge plant and the recovered water is recycled back to the process. Company is sustaining zero liquid discharge status since September 2009. Filtered polymer water is recycled back to the process and effluent generated from chloromethane plant is treated at ZLD and recycled back to the process. There is no effluent discharge to outside premises</p>

	SPCB every quarter and Ministry every six-months	from both the plants. The integrity of ZLD is being checked by SPCB by taking samples on monthly basis at ZLD units. Being achieved ZLD status, the effluent quality has no relevance to now. However, the quantity of water recycled is being reported.
8	The hazardous waste including residual solvent, heavy ends, spent catalyst, Mercury bearing sludge, VCM high boils, etc. must be handled as per Hazardous and other Waste (Management and Handling) Rules, 1989 and necessary approval from SPCB must be obtained.	<p>The hazardous wastes are handled as per the provisions of Hazardous Waste and other (Management and Handling) Rules 2016.</p> <p>The Authorization for handling hazardous waste has been obtained from Tamil Nadu Pollution Control Board for incinerating heavy ends and high boils of VCM. Mercury bearing sludge is totally eliminated by the introduction of Membrane process in Aug-07 at Plant III.</p>
9	The landfill sites for hazardous waste disposal must be properly reclaimed with a time bound action plan. Ground water monitoring should be done regularly at a few selected sites within the factory estate and premises and data submitted to State Board and Ministry. The new landfill sites must be concrete impervious lining to prevent possible ground water leaching.	<p>The HW landfill at Chloralkali plant is of composite liner system, which is totally impervious and prevents ground water leaching, constructed as per the CPCB guidelines.</p> <p>Piezometric and Bore wells have been installed around the HW landfills for regular monitoring of Ground Water. Ground Water from the above scientifically identified piezometric and bore wells are being monitored by Tamil Nadu Pollution Control Board from time to time. From the year 2020, all hazardous waste is being disposed to common TSDF and operation of onsite SLF is stopped.</p>

10	State of the art incinerator with waste heat recovery and scrubbing facility must be installed for incinerating Hiboiling liquids (VCM high boils) before expansion projects are commissioned.	“State of art” Incinerator with waste heat recovery and scrubbing facility was commissioned in 1998 for incinerating VCM high boils and is being validated from time to time. Dioxins & Furans level at the incinerator outlet is being checked by M/s SMS Labs Services Private Limited (MoEF approved agency) once in a year and the results are in compliance with the norms.
11	The company must expedite the R&D efforts to extract mercury the brine sludge (Av 1450 mg/kg) to the least possible (preferably 4-100 ppm)	The Caustic Soda manufacturing plant graduated from the legacy mercury cell technology to the cutting-edge membrane cell process, significantly reducing its environmental impact. Chemplast Sanmar Ltd, in keeping with its environment-friendly approach to business completed the switch over this August 2007, well ahead of the mandated timeline. The company spent Rs 800 millions in the switch over at its mercury based to membrane-based technology and sludge was generated mercury free from Brine Sludge. The Brine sludge is finally processed through drum filter for maximizing the removal of moisture content and moved to Secured landfill facility for disposal. From 1st March 2019 on wards Brine sludge is being transported and disposed to common TSDF of M/s. Tamilnadu Waste Management Limited.
12	Handling, manufacturing, storage and transportation of hazardous chemicals must be in accordance with the Manufacture, storage and import of Hazardous Chemicals Rules, 1989 as amended in October 1994. Necessary approvals from Chief Inspectorate of Factories/ Chief Controller of Explosives must be obtained as per regulations.	Hazardous chemicals are handled as per the guidelines of Manufacture, storage and import of Hazardous Chemicals Rules 1989 as amended. Necessary approvals from Factory Inspectorate / Chief Controller of Explosives are in place and periodically renewed as per the requirement. PVC Plant: VCM storage licenses: (License No.S/HO/TN/03/196S (S2669) & (License No. S/HO/TN/03/224 (S2720) valid up to 30.09.2028. Chlorine storage for 68 tonners license No: G/SC/TN/06/1412 (G 18458) valid up to 30.09.2025 Chloromethanes Plant: Methanol storage of 1384 KL: License No.P/HQ/TN/15/152 (P12841) valid up to 31.12.2024. Methyl chloride storage of 29MT: License

		No.S/HO/TN/03/229 (S2757) valid up to 31.09.2026.
13	A green belt development plan taking into account the expanded activities, common waste disposal sites and other land uses must be made which should ensure coverage of minimum 30 % of the total land area.	Extensive green belt development is carried out on a continuous basis. Chloralkali Plant: Company is currently having green belt comprising of 17000 trees covering in 8.5 Hectares area (34.45%) Chloromethane Plant total plant are 24.67 hectares PVC Plant: Company is currently having green belt comprising of 18380 trees in 10.0 Hectares area. (38%). PVC Plant total plant is 26.3 hectares.
14	The project authorities must set up Environmental Cell with adequate facilities for collection and analysis of samples, monitoring of environmental quality parameters, and to carry out time bound action plans related to environmental management and pollution control.	As part of our commitment towards continuous improvements to environmental protection, Environment Management System (ISO 14001) is implemented and certified ISO 45001. Environmental cell is established with the all required facilities to carry out analysis of environmental quality parameters on regular basis. Environmental Management programs covering prevention of pollution, conservation of resources, reduction of hazardous wastes, energy conservation and recycle & reuse are implemented. ISO-9001,ISO-14001and ISO 45001 systems certified for both the units by TUV India.
15	The funds earmarked for the environmental protection measures shall not be diverted for other purposes and year wise expenditure reported to this Ministry for proper monitoring of the project implementation.	The funds earmarked for the environmental protection had been utilized to improve the environmental aspects. Recent ones are: 1. Operational cost of ZLD ETP & Incinerator- Rs.3.78 Crores for the Period of April'23 to September'23 establishing of Secured landfill facilities for PVC – Rs.12 lakhs and chloroalkali plant- Rs.65 lakhs. 2. Installation of pH, TDS, BOD & COD Analyzers for Storm Water - Rs.10.31Lakhs. Environmental surveillance study of PVC & Chloromethane plants (Air, water, Soil sampling & analysis) using MoEF approved Lab – Rs.1.0 Lakhs/- 3. Ambient Air quality & stack monitoring – Rs. 2.05 Lakhs. 4. Procurement of PM10 & 2.5 samplers for AAQ monitoring – Rs.11 lakhs.

		<ol style="list-style-type: none"> 5. Revamping of dust extraction system at PVC dryer: Rs.10 lakhs. 6. Process safety study for Plant-II – 4.0 Crores. Installation of HCL monitor at HCL plant – Rs. 2.5 Lakhs 7. Installation of IP enabled camera to demonstrate ZLD status Rs. 2.5 Lakhs 8. Waste generation and disposal audit and compliance audit on secured landfill as per CPCB protocol through external agency (Anna University)-Rs.4 lakhs. 9. Installation of water Quality watch centre: Rs.6.08Lakhs. 10. Bio Medical waste handling and disposal – Rs.0.42 lakhs for the Period of April’23 to September’23 11. ETP Sludge handling and disposal to Common TSDF – Pochampalli Rs.9.66 lakhs for the Period of April’23 to September’23 12. ZLD Sludge handling and co-processing in M/s Dalmia Cements - Trichy- Rs.3.13 lakhs. 13. Roof Rain Water collection and reuse in process - Rs.80 lakhs. 14. Installation of VOC sensor in the incinerator stack Rs.2.5Lakhs 15. Installation of HCL flow meter in incinerator Rs.2.5Lakhs 16. Additional Piezometric Bore wells - 6nos – Rs.2.44 lakhs 17. Installation of Continuous Ambient Air 18. Quality monitoring stations (CAAQMS) to monitor the parametersPM10, Sox, NOx, Chlorine and VOC –Rs.215.94 Lakhs. 19. Installation of storm water quality online analyzer – Rs. 7 lacs
16	<p>Six-monthly progress reports on the implementation status of environmental conditions mentioned above must be submitted to Ministry/CPCB and the State Pollution Control Board regularly. The project will be monitored inter-alia by Ministry’s Regional Office at Bangalore.</p>	<p>The Environmental improvement report is being submitted on a monthly basis to Tamil Nadu Pollution Control Board. Bi-annual compliance report is being submitted to MoEF & CC, Southeastern Zone as a progress report.</p>