Subject: Manufacturing of Purified Carboxy methyl cellulose (CMC) – 2000 TPA at Sy. No. 169/Part-2, Manhalli Village, Bidar Taluk and District, Karnataka by **M/s. Meridian Polymers.**

Project proposal:
M/s. Meridian Polymers located at Sy. No. 169/Part-2, Manhalli Village, Bidar Taluk and District, Karnataka proposed to establish 2000 TPA Purified Carboxy methyl Cellulose (CMC). The proposed unit obtained 3 acres of land on lease from principle organization M/s. Cellulose Solutions Pvt. Ltd., for a lease period of 25 years. Capital cost of proposed unit is 24.3 crores towards production blocks, facility for utility proposed and ZLD system.

The site at the intersection of 17^0 45' 10" (N) latitude and 77^0 28'57" (E) longitude. The plant site is surrounded by open agricultural lands in north and south directions, Cellulose solutions Pvt. Ltd., west direction road connecting Rajgir to Manhalli in east direction. The main approach road is state highway 122 is at a distance of 0.15 km in south direction. The nearest habitation from the site is Manhalli located at distance of 2.3 km in NE direction. Karanja Vagu flowing from NE to SW is at a distance of 4.6 km in south direction. There are three reserve forests in the study area; Tadpalli RF at a distance of 0.45 km in west direction, Badgal RF at a distance of 6.8 km in NW direction and Kalbemal RF at a distance of 6.5 km in NE direction of the site. Telangana – Karnataka Inter State Boundary is at a distance of 4.8 km.

List of Utilities

S.No	Utility	Permitted
1	Coal/briquette Fired Boiler	1 x 6 TPH
2	DG Sets (KVA)*	2 x 1500 kVA

**DG sets will be used during load shut down by BESCOM.*

Process Description
Carboxymethyl cellulose (CMC) is an Ether derivative of Cellulose & is manufactured by Alkalisation & Etherification of Cellulose followed by Purification.

The origin of the basic Cellulose can be either Cotton linter pulp / wood pulp or Hosiery cuttings. Cellulose is charged to the first reactor, the reactor is kept in rotation & chilled mixer of Caustic soda lye & Ethyl Alcohol is sprayed on the fibers to achieve uniform wetting of the cellulose fibers. During this operation the Brine from the Chilling plant is circulated in the jacket of the reactor to maintain low temperature in the reactor. The alkalization of cellulose is complete in about 2 hrs & then Mixture of alcohol and Mono chloro acetic acid is added & the entire material is transferred to the second reactor. After the first reactor is emptied another charge of Cellulose is added & alkalization continues in the first reactor.

In the second reactor, hot water from the hot water generator is circulated in the jacket to attain a temperature of 60-70 deg C in the reactor. At this temperature the Etherification of cellulose takes place to yield Technical CMC & reaction is complete in about 2 hrs time. The ethanol added in the first reactor is vaporized because of the high temperature & this is vented out to ethanol recovery set up for recovery of ethanol.

The recovery system consists of 2 condensers, primary & secondary & the Ethyl Alcohol vapors are condensed with a counter current flow of brine in the condenser tubes. The recovered Alcohol is sent back to the storage tank to be used for the next alkalization reaction.

The Technical CMC thus produced is discharged & taken for further purification. For producing Purified grades of CMC, the Technical CMC is charged into a reactor along with Alcohol-water mixture (65-85%). The whole mixture is kept in suspension with the agitator in

the reactor for a period of 2 hrs.

At the end of the purification cycle, the slurry is sent to Centrifuge, for solid liquid separation. The solids contain purified CMC & sent to drier for drying. The Vacuum drier is connected to a Alcohol recovery system & all the Alcohol vapors are collected & condensed to be used again. The liquid contains a mixture of Water, ethanol & Slats. This is sent to a Solvent recovery system. (Distillation)

The dried Purified grade of CMC is pulverized in the pulverizer to the required particle size & sent for screening. The oversize from the screening machine is sent back to pulverizer & under size is packed in bags of 25 kgs each.

Sources of Air Pollution

The sources of air pollution from the plant are from proposed 1 x 6 TPH Coal/briquette fired boiler and standby DG sets of 2 x 1500 kVA to cater to energy requirement during load shut down. The proposed air pollution control equipment for coal fired boiler is Bag filters. DG sets shall be provided with stack heights based on CPCB formula for effective stack height.

Water requirement and its management:

Water is required for washing, cooling tower makeup, steam generation and domestic purposes. The required water shall be drawn from ground water sources in addition to reuse of treated wastewater. The total water requirement is in the order of 220 KLD consisting of 155 KLD fresh water and balance of 65 KLD is recycled water.

The main sources of effluent generation from the proposed CMC manufacturing unit is mainly from process washings, utility blow downs, RO/DM plant rejects and domestic wastewater. The effluents generated sent to biological treatment plant and treated effluent reused for cooling towers make-up.

Solid and Hazardous waste:

Solid wastes are generated from the process, solvent distillation, collection/neutralization tank, waste oil from DG sets, used batteries from DG sets. The ash from boiler is sold to brick manufacturers. The solid wastes; evaporation salts, and filtration aids shall be disposed to the TSDF, while the hazardous wastes of organic nature i.e., distillation residues shall be disposed to authorized cement units and other wastes like used oil and used batteries shall be sent to authorized recyclers. The other solid wastes expected from the unit are containers, empty drums which will be used for packing product, and or returned to the product seller or sold to authorized buyers after detoxification, while the sludge from treatment plant shall be sent to TSDF.

Green belt Development:

1 acre of land of the total land area is proposed for green belt development.