

1. INTRODUCTION

M/s. Vipul Industries is a working inorganic product manufacturing unit situated at Survey No. 299/p (Old S. no. 200/1/p), Village: Sokhada, Taluka: Khambhat, Dist: Anand, Gujarat. Now, unit wants to stop manufacturing of existing inorganic products and want to start manufacturing of direct and reactive dyes in the same plant premises. Production capacity will be 100 MT/Month. The unit is promoted by Mrs. Kalpanaben Vipulgiri Goswami.

2. COST OF PROJECT

Cost of proposed project will be Rs. 3.0 Crore. Out of which 0.50 Crore will be used for EMS.

3. LAND REQUIREMENT

The unit is already developed at Survey No. 299/p (Old S. No. 200/1/p), Village: Sokhada, Taluka: Khambhat, Dist: Anand, Gujarat consists of a total area of 2845 m².

4. PRODUCTION CAPACITY

Production capacity is prescribe below:

List of Products

Sr. No.	Name of Products	Quantity (MT/month)		
		Existing	Proposed addition	Total
Existing (Non EC products)				
1.	Potassium Nitrate	5	-5	00
2.	Sodium Chloride	2	-2	00
Proposed (EC products)				
1	Direct Yellow 12	00	+100	100
2	Direct Yellow 99			
3	Direct Orange 34/39			
4	Direct Yellow 6			
5	Direct Yellow 11			
6	Reactive Yellow M4G			
7	Reactive Yellow H4G			
8	Reactive Yellow ME4GL			
9	Reactive Yellow FG			
10	Reactive Golden Yellow MR			
11	Reactive Golden Yellow HR			
12	Reactive Golden Yellow MERL			
13	Reactive Red BS			

14	Reactive Red ME4BL			
15	Reactive Red HE3B			
16	Reactive Orange 2R			
17	Reactive Orange 3R			
18	Reactive Blue ME2RL			
19	Reactive Magenta MB			
20	Reactive Magenta HB			
21	Reactive Black B			
22	Reactive Black WNN/RG			
23	Reactive Orange M2R			
24	Reactive Orange H2R			
25	Reactive Red M5B			
26	Reactive Red M8B			
27	Reactive Red H8B			
28	Reactive Red ME6BL			
29	Reactive Red P2B			
30	Reactive Orange ME2RL			
31	Reactive Blue P3R			
Total		00	100	100

5. LIST OF RAW MATERIALS

Sr. No.	Product name	Name of raw material	Quantity (MT/MT)
1	Direct yellow 12	DASDA	0.500
		Sodium Nitrite	0.200
		HCl	0.400
		Soda Ash	0.350
		Caustic lye	0.350
		Phenol	0.250
		Ethyl Alcohol	0.500
		Ethyl Chloride	0.700
2	Direct yellow 99	Para Anisidine	0.350
		DNSDA	0.650
		Salt	0.650
		HCl	0.350
		Caustic Flakes	0.230
3	Direct Yellow 11	PNTOSA	0.650
		Salt	0.400
		H ₂ SO ₄	1.250
		Caustic flakes	0.380
4	Direct Yellow 6	Formaldehyde	0.325
		DNSDA	0.650
		Salt	1.250
		Soda Ash	0.280
		Caustic Flakes	0.150

5	Direct Orange 34/39	PB4SA	0.400
		DNSDA	0.400
		HCl	0.250
		Salt	0.400
		Caustic Flakes	0.320
6	Reactive Yellow M4G	Cyanuric Chloride	0.250
		MPDSA	0.235
		Sodium Carbonate	0.150
		HCl	0.100
		Sodium Nitrite	0.090
		SPCP	0.350
		SBC	0.210
7	Reactive Yellow H4G	MPDSA	0.170
		Cynuric Chloride	0.170
		H Acid	0.280
		HCl	0.300
		Sodium Nitrite	0.060
		Sodium Bi Carbonate	0.450
		SPCP	0.260
		Soda Ash	0.180
		Metanilic Acid	0.170
8	Reactive Yellow ME4GL	MPDSA	0.180
		Cynuric Chloride	0.175
		Sodium Carbonate	0.100
		HCl	0.070
		Sodium Nitrite	0.075
		2-Pyridone	0.190
		Sodium Bi Carbonate	0.240
		Vinyl Sulphone	0.280
9	Reactive Yellow FG	VS	0.500
		HCl	0.280
		Sodium Nitrite	0.125
		SPCP	0.500
		Sodium Bi Carbonate	0.510
10	Reactive Golden Yellow MR	K Acid	0.383
		HCl	0.075
		Sodium Nitrite	0.070
		MUA	0.150
		Sodium Hydroxide	0.040
		Cynuric Chloride	0.185
		Sodium Carbonate	0.210
11	Reactive Golden Yellow HR	K Acid	0.400
		NaNO ₂	0.070
		HCl	0.075
		MUA	0.150
		Cyanuric Chloride	0.190
		Sodium Bi Carbonate	0.510
		NH ₄ OH	0.040

12	Reactive Yellow MERL	K Acid	0.300
		HCl	0.060
		Sodium Nitrite	0.050
		MUA	0.120
		Cyanuric Chloride	0.150
		Sodium Bi Carbonate	0.470
		VS	0.230
13	Reactive Red BS	H Acid	0.500
		SBC	0.265
		Cyanuric Chloride	0.150
		VS	0.200
		Sodium Nitrite	0.050
		HCl	0.050
		Sodium Bi Carbonate	0.250
14	Reactive Red ME4BL	VS	0.230
		Sodium Bi Carbonate	0.480
		Cyanuric Chloride	0.140
		H Acid	0.240
		HCl	0.120
		STA	0.230
		Sodium Nitrite	0.055
15	Reactive Red HE3B	Cynuric Chloride	0.180
		Sodium Hydroxide	0.120
		H Acid	0.320
		Orthonilic Acid	0.180
		HCl	0.085
		Sodium Nitrite	0.075
		Sodium Bi Carbonate	0.330
		PPD	0.120
16	Reactive Red M5B	H Acid	0.250
		Cynuric Chloride	0.150
		Aniline Oil	0.100
		Sodium Nitrite	0.070
		HCl	0.280
17	Reactive Red M8B	Acetic Anhydride	0.125
		Sodium Hydroxide	0.150
		H Acid	0.400
		Sulpho Tobias Acid	0.280
		HCl	0.100
		Sodium Nitrite	0.080
		Cyanuric Chloride	0.225
18	Reactive Red H8B	Acetic Anhydride	0.170
		Caustic Flakes	0.100
		H Acid	0.250
		Soda Ash	0.430
		Tobias Acid	0.200
		Sodium Nitrite	0.060
		Cyanuric Chloride	0.150

		NaOH	0.030
		5 Sulpho Hydrozone	0.200
19	Reactive Red ME6BL	Acetic Anhydride	0.100
		Sodium Hydroxide	0.080
		H Acid	0.320
		Tobias Acid	0.250
		HCl	0.100
		Sodium Nitrite	0.070
		NaOH	0.040
		Cyanuric Chloride	0.190
		Vinyl Sulfone	0.280
		Sodium Bi Carbonate	0.100
		20	Reactive Red P2B
NaNO ₂	0.100		
HCl	0.080		
H Acid	0.350		
Sodium Bi Carbonate	0.120		
Cynuric Chloride	0.225		
21	Reactive Orange 2R	VS	0.480
		HCl	0.245
		Sodium Nitrite	0.130
		Sodium Nephtonate	0.430
		Soda Ash	0.300
22	Reactive Orange 3R	Gama Acid	0.450
		Caustic Soda	0.150
		Acetic Anhydride	0.300
		VS	0.500
		HCl	0.200
		Soda Ash	0.210
		Sodium Bi Carbonate	0.430
		Sodium Nitrite	0.120
23	Reactive Orange M2R	NMJ Acid	0.250
		Sodium Bi Carbonate	0.395
		Acetic Anhydride	0.100
		Sulpho Tobias Acid	0.300
		HCl	0.075
		Sodium Nitrite	0.070
		NaOH	0.040
		Cyanuric Chloride	0.190
24	Reactive Orange H2R	NMJ Acid	0.300
		Sodium Hydroxide	0.100
		Acetic Anhydride	0.120
		Sulpho Tobias Acid	0.350
		HCl	0.090
		Sodium Nitrite	0.080
		Sodium Bi Carbonate	0.200
		Cyanuric Chloride	0.200
25	Reactive Orange	Acetic Anhydride	0.200

	ME2RL	Caustic Soda	0.325
		Caustic	0.070
		J Acid	0.230
		STA	0.280
		HCl	0.420
		Sodium Nitrite	0.060
		Sodium Bi Carbonate	0.425
		Common Salt	0.500
		VS	0.240
		Cyanuric Chloride	0.150
26	Reactive Blue ME2RL	Cyanuric Chloride	0.140
		H Acid	0.250
		SBC	0.270
		4-ADPSA	0.200
		HCl	0.060
		Sodium Nitrite	0.050
		Vinyl Sulphone	0.200
		Sodium Carbonate	0.080
27	Reactive Blue P3R	Sodium Bi Carbonate	0.160
		Caustic flakes	0.125
		H ₂ SO ₄	0.080
		EBAMSA	0.100
		4 NADPSA	0.100
		PA2SA	0.080
		SBC	0.070
		Fe	0.150
		Salt	1.800
		Cynuric Chloride	0.070
		BDSA	0.120
28	Reactive Magenta MB	P-Anicidine	0.150
		HCl	0.070
		Sodium Nitrite	0.080
		H Acid	0.350
		Sodium Bi Carbonate	0.370
		Cyanuric Chloride	0.200
29	Reactive Magenta HB	Para Anidisine	0.150
		Sodium Nitrite	0.080
		HCl	0.110
		H Acid	0.350
		Soda Ash	0.200
		Sodium Bi Carbonate	0.100
		Cyanuric Chloride	0.100
		SBC	0.070
		S S A Acid	0.250
30	Reactive Black B	Vinyl Sulphone	0.500
		NaNO ₂	0.120
		HCl	0.140

		H Acid	0.300
		Sodium Bi Carbonate	0.500
31	Reactive Black WNN/RG	Sulfo Para VS	0.025
		NaNO ₂	0.065
		HCl	0.100
		J Acid	0.080
		VS Diazo	0.250
		SPVS Diazo	0.150
		MPDSA	0.080
		Sodium Bi Carbonate	0.250
		Reactive Black B	0.350
		Salt	0.045

6. MANUFACTURING PROCESS

Pl. refer **Annexure-II** of Form No. 1 for process description, chemical reaction & mass balance of all products.

7. DETAILS OF MANPOWER

Total manpower requirement at all level of plant will be 25.

8. WATER CONSUMPTION & WASTE WATER GENERATION

Sr. No.	Source	Water Consumption (KLD)	Waste Water generation (KLD)	Remark
1.	Domestic	2.0	1.5	Fresh
2.	Green Belt	5.0	0.0	Fresh
3.	Industrial			
A	Process	16.0	16.0	11 Fresh + 5.0 Recycle
B	Boiler	5.0	0.5	Recycle
C	Washing	6.0	6.0*	*Close Loop Recycle
Total Industrial		27.0	16.5	--
Total (1 + 2 + 3)		34.0	18.0	--
Less recycle		16.0	--	
Actual fresh water consumption		18.0	--	

9. SOURCE OF POLLUTION

Details of Air Pollution

The main source of emission will be of flue gas emission and process stack. Proper Stack height and APC measure will be provided in order to achieve norms prescribed by statutory authority. Details of stacks are given below:

Sr. No.	Stack attached to	Fuel Type	Stack Height, in m	APC measures	Probable emission
Flue Gas Stacks					
1.	Boiler (1 TPH)	Agro Waste/Agro Briquettes 3.5 MT/Day	21	Cyclone separator and bag filter	PM: <150 mg/Nm ³ SO ₂ : <100 ppm NO _x : <50 ppm
2.	Hot Air Generator (12 Lakhs Kcal/hr)	CNG-2500 SCM/Day	21	Cyclone separator and bag filter	PM: <150 mg/Nm ³ SO ₂ : <100 ppm NO _x : <50 ppm
Process Gas Stacks					
1.	Spray Dryer (1000 Liter/hr.)	-	21	In built Cyclone separator and bag filter	PM: <45 mg/Nm ³
2.	Spin Flash Dryer (200 Kg/hr.)	--	11	In built bag filter	PM: <45 mg/Nm ³

Source of wastewater

Main source of wastewater generation is Process, washing and utilities. Total wastewater generation will be 16.5 KLD. It will be treated in ETP. After treatment, treated effluent will be passed through RO. Permeate of RO (10 KLD) will be reused and reject will be evaporated in in-house Spray Dryer. 6.0 KLD will be close loop recycle without giving any treatment because it is Process RO Permeate. Domestic wastewater will be disposed through soak pit.

Source and disposal of Hazardous wastes

There will be four types of hazardous waste generation i.e. ETP sludge, salt of spray dryer, used oil and discarded containers/liners. ETP sludge & salt of spray dryer will be disposed off at TSDF site, used oil will be disposed by selling to registered re-processors and discarded containers/liners will be disposed by selling to registered recyclers. Detail of hazardous waste is given below:

Sr. No.	Type of Waste	Category No. as per HWM rules, 2016	Quantity Proposed	Method of Disposal
1.	ETP Waste	35.3	7.5 MT/month	Collection, Storage, Transportation, Disposal at TSDF site.
2.	Salt of Spray Dryer	35.3	1.5 MT/month	Collection, Storage, Transportation, disposal at TSDF site.
3.	Used Oil	5.1	0.5 KL/Year	Collection, Storage, Transportation, sell to registered re-processors or use for lubrication within premises.
4.	Discarded	33.3	1.0 MT/month	Collection, Storage, Transportation,

	Containers/ Liners/Bag		(300 Nos./month) 0.5 MT/month	Sell to registered recyclers.
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10. FUNDS FOR POLLUTION CONTROL MEASURES

The management is quite conscious of its responsibility for maintaining clear environment adequate funds can be provided for the pollution control measures as financing part of overall project. Necessary provision for Environmental management system is in practice.

11. MONITORING FACILITIES

Monitoring will be done by outside agency and will be part of practice in future expansion projects.

12. CONCLUSION

On the basis of information presented in the pre-feasibility report on pollution control measures and after its implementation, there will be no discharge of effluent and air emission from the plant beyond the norms specified by the Board as per the provisions of Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974.