
Pre-Feasibility Report

1. INTRODUCTION

M/s. PI Industries Limited (Unit II) proposes to manufacture pesticides and its intermediate at Plot No. SPM-29, Sterling SEZ & Infrastructure Ltd. At & Po: Sarod-392180, Tal: Jambusar, District: Bharuch.

2. COST OF PROJECT

The estimated cost for the proposed project will be around Rs. 393 crores. Out of this around Rs. 40.0 crores will be invested for pollution control measures.

3. PRODUCTION CAPACITY

Production capacity is given in below:

Sr. No.	Common Name	IUPAC Name	Quantity (MTPA)
Insecticides and Intermediates			4800
1	Amino Triazines		
a	THM	Bis (1,2,3 - Trithiacyclohexyl Dimethyl Ammonium) Oxalate	
2	Diamides		
a	Flub	3-Iodo-N2-(2-Methyl-1-(Methyl sulfonyl) Propan-2-yl)-N1-(2-Methyl-4-(Perfluoropropan-2-yl) phenyl) Phthalamide	
b	SOD	N2-(2-Methyl-1-(Methylsulfinyl)propan-2-yl)-N1-(2-Methyl- 4 - (perfluoropropan-2-yl) phenyl) phthalamide	
c	MMPA/SAA	2-Methyl 1-Methylthio-2-Propanamine	
3	Hydazinopyridine		
a	CHDP	3-Chloro-2-Hydrazino Pyridine	
4	Nicotinamides		
a	TFNA	2,6-Dichloro-4-(Trifluoromethyl) pyridine-3-Carbonitrile	
5	Nitroguanidines		
a	BNHT	5-Benzyl-1-Methyl, 2-Nitro 2 imino-tetrahydro 1, 3, 5-trizan.	
b	AETF	3-Amino methyl Tetrahydrofuran	
6	Organophosphorus Insecticide		
a	MTN	3-(Dimethoxy Phosphinothioyl sulfanyl methyl) -5-Methoxy-1,3,4-thiadiazol-2-one	
7	Phenyl organo thiophosphate		
a	PTF	(RS)-(O-2,4-Dichlorophenyl O-Ethyl S-Propyl Phosphorodithioate)	
8	Phthalimides		
a	PMT	Phosmet	
9	Pyrazole-diamides		
a	Q4039	3-Methyl Antranilic Acid	
b	YB449	3-Methyl-2-Nitrobenzoic acid	

c	DPX	2-Amino-5-Chloro-N,3-Dimethyl Benzamide
d	BPCA	3-Bromo-1-(3-Chloropyridin-2-yl)-1H-pyrazole-5-Carboxylic Acid
10 Quinazoline		
a	FNZQ	3-[2-[4-(1,1-Dimethylethyl) phenyl] ethoxy] Quinazoline
11 Quinoliny carbonate		
a	FMTQ	2-Ethyl-3,7-Dimethyl-6-[4-(trifluoromethoxy) phenoxy]-4-Quinolyl Methyl Carbonate
12 Thiazolidines		
a	CCITM	Dimethyl Cyano Dithioimido Carbonate
b	CCMP	2-Chloro-5-Chloromethyl Pyridine
Herbicides and Intermediates		
5650		
1	Alkylazines	
a	DMI	2,6-Dimethylindanone
b	DMAI	2,6-Dimethyl-2,3-Dihydro-1H-inden-1-amine
2 Amide-triazolones		
a	IAT	3H-1,2,4-Triazol-3-one, 4-amino-2,4-dihydro-5-(1-methylethyl)-
3 Aryloxyphenoxy propionates		
a	FPES	Ethyl(2R)-2-{4-[6-chloro-1,3-benzoxazol-2-yl)oxy] phenoxy} propanoate
4 Benzoyl cyclohexanediones		
a	AE 473	(2-{2-chloro-4-mesyl-3-[(RS)]-tetrahydro-2-furylmethoxymethyl} benzoyl)-cyclohexane-1, 3-Dione)
b	Tembutrion	2-{2-chloro-4-(methylsulfonyl)-3-[(2,2,2-trifluoroethoxy)methyl]benzoyl}cyclohexane-1,3-dione
c	747 Either	2-Chloro-4-(methyl sulfonyl)-3-[(2, 2, 2-trifluoroethoxy) methyl] Benzoic acid
d	2C6SMT	3-Chloro-2-Methylthioanisole
5 Furanones		
a	FLURT	5-(Methylamino)-2-Phenyl-4-[3-(Trifluoromethyl) phenyl] furan-3(2H)-one
6 Intermediate of Herbicide		
a	MTAA	Methyl (methylthio) Acetate
7 Active nitrile Herbicide		
a	PYCL	1-(3-Chloro-4,5,6,7-tetra hydro-pyrazolo [1,5-a] pyridin-2-yl)-5-[methyl (prop-2-ynyl)amino] pyrazole-4-carbonitrile
8 Oxazinones		
a	MY-100	3-[1-(3,5-dichlorophenyl)-1-methylethyl]-3,4-dihydro-6-methyl-5-phenyl-2H-1,3-oxazin-4-one

9	Oxazoles	
a	Lake Palace	3-[[(2,5-dichloro-4-ethoxyphenyl) methyl] sulfonyl]-4,5-dihydro-5,5-dimethylisoxazole
10	Oxazolidinediones	
a	KPP	Pantoxazone
11	Phosphinates	
a	MPBS	Methyldichlorophosphine
12	Pyrimidinediones	
a	PCM	N-(2 Chloro-4 Fluoro-5-((ethoxy carbonyl)-amino)-benzoyl)-N-iso-propyl-N-methyl-sulfamid
b	EATB	Ethyl 3-amino-4,4,4-trifluorobut-2-enoate
13	Pyrimidinyloxybenzoic acid	
a	Bispyribac sodium	2,6-bis(4,6-dimethoxypyrimidin-2-yloxy)benzoic acid
14	Pyrimidinylsulfonylurea	
a	FRSF	N,N-Dimethyl-2-[N-[N-(4,6-dimethoxy pyrimidin-2-yl)-Amino carbonyl] Amino sulfonyl]-4-(N-formylamino) benzamide, sodium salt
b	ESPS	3-ethylsulfonyl-2-pyridine sulfonamide
15	Sulfonylurea	
a	AMSB(Mesylamide)	Methyl 2-Amino-4-{{(methyl sulfonyl)amino} methyl} benzoate
b	OTMA	2-(Trifluoro Methoxy) Aniline
16	Triazines	
a	CNZ	Cyanazine
17	Triazopyrimidine sulfonamides	
a	DTPBS	N-(5,8-Dimethoxy [1,2,4] Triazolo [1,5-c] pyrimidine-2-yl)-2-Fluoro-6-(Trifluoro Methyl) Benzene Sulfonamide
Fungicides and intermediates		
1	Active amide Fungicides	
a	SSF-126/OXIME	(2E)-2-(methoxyimino)-N-Methyl-2-(2-Phenoxy Phenyl) Acetamide
b	TRFRN	N,N'-[1,4-Piperazinediyl-bis(2,2,2-Trichloro Ethylidene)]-Bis-[Formamide]
c	FNXL	N-(1-Cyano-1,2-Dimethylpropyl)-2-(2,4-Dichlorophenoxy) Propanamide
d	MIPD	(1E)-1-(2,5,5-Trimethyl-1,3-dioxan-2-yl) Propane -1,2-dione 1-(O-Methyloxime)
e	ORST	Orysastrobin
2	Benzamides	
a	ZXMD	(RS)-3,5-Dichloro-N-(3-Chloro-1-Ethyl-1-Methyl-2-Oxopropyl)-p-Toluamide
3	Carboxamides	
a	AMB	3,4,5-Trifluoro-Amino biphenyl
4	Organophosphates	

3550

a	KTZ(Kitazin)	S-benzyl O,O-Diisopropyl Phosphorothioate
5	Pyridine Fungicides	
a	CTPE	2-[3-Chloro-5-(Trifluoro methyl) Pyridin-2-yl] Ethanamine
6	Pyrimidines	
a	AZST	Methyl (E)-2-{2-[6-(2-Cyanophenoxy) pyrimidin-4-yloxy] phenyl}-3-Methoxy acrylate
7	Quinoxalines	
a	CMTH	4-(Methoxy-6-(trifluoro methyl)-1,3,5-triazin-2-amine
8	Triazoles	
a	IPCZ	(1RS, 2SR, 5RS; 1RS, 2SR, 5SR)-2-(4-Chlorobenzyl)-5-Isopropyl-1-(1H-1,2,4-triazol-1-ylmethyl) Cyclopentanol
b	FTL	1-(2-Fluorophenyl)-1-(4-Fluorophenyl)-2-(1, 2, 4-Triazol-1-yl) Ethanol
c	FOX	2-(2-Fluorophenyl)-2-(4-Fluoro phenyl) Oxirane
d	IBCZ	(4-Chlorophenyl) Methyl N-(2,4-Dichlorophenyl)-1H-1,2,4-Triazole-1-Ethanimidothioate
Fine Chemicals		
1	Substituted Anthraanilic acid	
a	ACBM	2-Amino-3-Chlorobenzoic Acid Methyl Ester
2	Substituted 1,2,4-Triazole	
a	AMT	5-Amino-1,2,4-Triazole-3-thiol
3	Substituted tetrahydo pyran	
a	ATHP	1-(Tetrahydropyran-4-yl) Ethanone
4	Dimethyl halo substituted benzene	
a	CDMA	4-Chloro-2,6-Dimethyl Aniline
b	CDMB	4-Chloro 2,6-Dimethyl-Bromo benzene.
5	Substituted cyclopropyl ethanone	
a	CPFK	1-Cyclopropyl-2(2 Fluorophenyl) Ethanone
6	Substituted alkyl diamine	
a	DAEEA	N,N'-Bis(2-Hydroxyethyl) Ethylene Diamine
7	Substituted dihalo pyridine	
a	DCTFP	2,3-Dichloro-5-(Trichloromethyl) Pyridine
8	Substituted dimethyl dioxane methanol	
a	DHD	2, 2-Dimethyl-5-Hydroxymethyl-1, 3-Dioxane
9	Substituted Butanone	
a	DMB	4,4-Dimethoxy-2-Butanone
10	Substituted Butanoic acid	
a	EMBA	2-Ethyl-2-Methyl Butanoic acid
11	Substituted Hydrazine	

7500

a	MMH	Mono Methyl Hydrazine		
b	UDMH	1,1,-Dimethyl Hydrazine		
C	SDMH	1,2-Dimethyl Hydrazine		
12	Substituted Phenothiazine			
a	10-H Phenotiazine	10-H Phenotiazine		
13	Substituted diphenyl ether			
a	Metaphenoxy benzaldehyde	3-Phenoxy Benzaldehyde		
Pyrazoles				5500
1	n-alkyl 3,4,5 sustituted pyrazoles			
a	PFD	N-{3-Isobutyl-4-[1,2,2,2-tetrafluoro-1-(trifluoromethyl) ethyl] phenyl}-1,3,5-Trimethyl Pyrazole -4- Carboxylic Amide		
b	TBFN	4-Chloro-N-[[4-(1,1-Dimethylethyl) Phenyl] Methyl]-3-Ethyl-1-Methyl-1H-Pyrazole-5-Carboxamide		
c	TLF	Tolfenpyrad		
d	IBA	3-Isobutylanoline		
e	OCTOPUSSY	3-[[[5-(Difluoro methoxy)-1-methyl-3-(Trifluoromethyl)-1H-pyrazol-4-yl] methyl] sulfonyl]-4,5-Dihydro-5,5-Dimethyl isoxazole		
f	MY-71	3-[1-(3,5-Dichlorophenyl)-1-Methylethyl]-3,4-Dihydro-6-Methyl-5-Phenyl-2H-1,3-oxazin-4-one		
g	MTP	1-Methyl-3-(Trifluoro methyl)1H-Pyrazol-5-ol		
h	DCPA	1,3-Dimethyl-5-Chloro-4-Pyrazolyl Carboxylic Acid Chloride		
i	CFPA	3,4-Dichloro-5-Fluoro Biphenyl-2-Amine		
j	ACH	3-(Difluoro Methyl)-1-Methyl-1H-Pyrazole-4-Carboxylic Acid		
k	BDB	4-Bromo- 1,2-Dichloro Benzene		
l	PRZ	Difluoro Methyl-N-Methyl Pyrazolic acid		
				2000
Fluorospeciality products				
1	Fluoro substituted alkyl amine			
a	DFEA	2,2-Difluoro Ethylamine		
Pharma intermediates				1000
1	Substituted triazole carboxylate			
a	EMTC	Ethyl-4-Methyl-1,3-Thiazole-5-Carboxylate		
			1000	
Specialty Chemicals				
1	Substituted cyclohexane carboxylate			
a	ETMD	Methyl cis-1-[2-(2,5-Dimethyl phenyl)-Acetyl amino]-4-Methoxy-Cyclohexane Carboxylate		
2	Hepta Fluoro Alkane			
a	HFMOP	1,1,1,3,3,3-Hexafluoro Isopropyl Methyl Ether		

3	Substituted 1,3-dioxalane		
a	MDO	2,2-Dimethyl-4-Methylene-1,3-Dioxalane	
4	Substituted Isobutyrate		
a	CMIBA	Chloromethyl 2-Methyl Propanoate	
5	Substitued plenyl ether		
a	CMTB	2-Chloro-4-(Methyl sulfonyl)-3-[(2,2,2-trifluoro ethoxy) methyl] Benzoic Acid	
Performance Chemicals			13000
1	Substituted phenyl morpholoine Ketone		
a	PCBM	1-(4-Chlorophenyl)-2-methyl-2-(morpholin-4-yl)propan-1-one	
2	Catecol mixed salt		
a	Negolyte	Titanium Biscatecholate Monopyrogallate Sodium Potassium Salt	
New R&D product for Pilot scale			240
	Total		44240

List of raw material is as below:

Sr. No.	List of Raw Materials	Quantity (MT/MT)
Insecticides and intermediates		
1.	THM	
	Monosultap	1.48
	Xylene	0.56
	Sodium hydroxide	0.78
	Sodium Sulfide	0.59
	Hydrogen Peroxide	0.04
	Oxalic acid Dihydrate	0.47
2.	Flub	
	Sodium Bicarbonate	0.31
	Sodium hydroxide	0.11
	Toluene	1.63
	SAA	0.31
	Phthaloyl dichloride (PDC)	0.50
	Tert butyl methyl ether	0.84
	RFB	0.69
	O-Toluidine	0.33
	Sodium hydrosulfite	0.43
	N,N-Dimethyl acetamide	0.28
	DIH	0.35
	Dimethyl Acetamide	0.08
	98% Formic acid	0.09
	Conc. Sulfuric Acid	0.07

	Hydrogen Peroxide	0.56
	Caustic solution	0.58
3.	SOD	
	Sodium Bicarbonate	0.33
	Sodium hydroxide	0.11
	Toluene	1.73
	SAA	0.33
	Phthaloyl dichloride (PDC)	0.53
	Tert butyl methyl ether	0.89
	RFB	0.73
	O-Toluidine	0.35
	Sodium hydrosulfite	0.45
	N,N-Dimethyl acetamide	0.30
	Hydrogen Peroxide	0.37
4.	MMTPA	
	2-amino-2-methyl-1-propanol	0.75
	Sulfuric Acid	0.82
	Sodium Methyl Mercaptide	0.59
	Caustic Soda	0.34
5.	CHDP	
	Hydrochloric acid	0.95
	3-Amino Pyridine	1.08
	Chlorine	0.98
	Sodium Nitrate	0.58
	Copper Chloride	0.08
	Hydrazine hydrate	1.31
6.	TFNA	
	Potassium Hydroxide	0.81
	2-Cyanoacetamide	1.11
	Ethyl 3-oxo trifluoroacetoacetate	0.97
	Methanol	0.50
	Phosphoryl chloride	1.42
	Sodium acetate	1.08
	Sodium Hydroxide	0.46
	Hydrochloric acid	0.16
7.	BNHT	
	1-Phenylmethanamine	0.74
	Methylnitro Guanidine	0.74
	Formaldehyde	0.87
8.	AETF	
	2-butene-1,4-diol	1.43
	Carbon monoxide	0.02
	Hydrogen	0.01
	Sulfuric acid	0.03

	Toluene	0.74
	Raney Nickel	0.11
	Ammonia	0.49
	Ethyl Acetate	0.62
9.	MTN	
	Toluene	0.44
	Phosphorous pentasulfide	0.73
	Methanol	0.42
	Tertbutyl Amonium bromide	0.01
	Dry HCl gas	0.24
	Ethylene Dichloride	1.27
	M-Thiazone	0.50
	Paraformaldehyde	0.12
	Sulfuric acid	0.04
10.	PTF	
	Sulphur	0.13
	Phosphorous trichloride	0.76
	n-Propyl Mercaptane	0.30
	Toluene	0.40
	Methyl Ethyl Pyridine	1.78
	Ethanol	0.22
	2,4 Dichlorophenol	0.56
	Sodium Hydroxide	0.15
11.	PMT	
	Methanol	0.30
	Phosphorous pentasulfide	0.54
	Catalyst	0.00
	23.5 % Caustic sol.	0.38
	Phthalimide	0.62
	37% formalin	0.52
	Thionyl Chloride	1.04
	Sodium Hydroxide	0.09
12.	Q4039	
	Acetic Acid	1.98
	2-Nitro-1,3-dimethylbenzene	1.26
	Acetaldehyde	0.48
	Oxygen	0.85
	Methanol	1.82
	Hydrogen Gas	0.04
13.	YB449	
	Acetic Acid	0.36
	2-Nitro-1,3-dimethylbenzene	1.20
	Acetaldehyde	0.38
14.	DPX	

	Acetic Acid	5.20
	Oxygen	0.09
	2-Nitro-1,3-dimethylbenzene	3.35
	Acetaldehyde	1.17
	Caustic flaks	0.08
	Methanol	5.40
	Hydrogen Gas	0.04
	Aq. Sodium Hydroxide	1.85
	Potassium carbonate	1.00
	Toluene	2.63
	Ethyl chloroformate	0.80
	Hydrochloric acid	2.35
	Hydrogen Peroxide	0.57
	Sodium sulfite	0.08
	Methane sulphonic acid	0.02
	Ethyl acetate	0.97
	Methylamine	0.23
15.	BPCA	
	3 chloro-2-pyridinone hydrazone	0.46
	Acetonitrile	3.02
	Diethyl maleate	0.64
	Hydrochloric acid	0.36
	phosphorous oxy bromide	0.76
	potassium per sulphate	0.52
	Sodium Hydroxide	0.16
	Sulphuric Acid	0.76
16.	FNZQ	
	Caustic Solution	1.64
	4-Hydroxyquinazoline	0.58
	Tert-butyl phenyl ethanol	1.00
	Thionyl Chloride	5.01
17.	FMTQ	
	3-Pantanone	0.56
	Aluminium trichloride	0.68
	Chlorine gas	0.62
	Dimethyl Acetamide	2.30
	Hydrogen	0.03
	Iron chloride	0.00
	Isopropyl Alcohol	0.96
	Methanol	0.19
	Methyl chloroformate	0.24
	Methylene Dichloride	0.43
	Nitric Acid	0.36
	Potassium carbonate	0.45

	p-Toluyyl chloride	0.46
	Sodium hydroxide	0.20
	Sulfolane	0.52
	Sulphuric Acid	0.61
	Tetra butyl ammonuim bromide	0.04
	Toluene	0.24
	Trifluoro methoxy phenol	0.58
	Xylene	0.49
18.	CCITM	
	50% Aq. Cynamide	0.65
	Carbondisulphide	0.75
	Methylchloride	1.35
19.	CCMP	
	3-Picoline	1.55
	Azo Isobutyro nitrile	0.03
	Benzoyl Chloride	0.69
	Chlorine Gas	0.68
	Hydrochloric acid	0.13
	Hydrogen Peroxide	1.35
	Methylene dichloride	0.74
	Sodium Hydroxide	0.31
	Sodium Tungstate	0.01
	Sulphuric Acid	0.09
	Triethyl Amine	0.99
Herbicides and Intermediate		
20.	DMI	
	Propionic anhydride	1.81
	Sodium Propionate	1.08
	4-methyl benzaldehyde	1.27
	Hydrogen	0.03
	Caustic lye (30%)	0.35
	Toluene	3.21
	Phosphorous trichloride	0.30
21.	DMAI	
	Formamide	1.70
	Formic Acid	0.67
	DMI	0.76
	Hydrochloric acid	0.81
	Caustic Soda	1.07
22.	IAT	
	Toluene	1.23
	Iso Butyric Acid	0.73
	Hydrazine Hydrate	0.44
	Titatnium Dioxide	0.03

	1,2-dichloro Ethane	0.79
	Caustic Soda	0.67
	Methyl Chloroformate	0.75
	Hydrazine Hydrate	0.39
23.	FPES	
	Toluene	2.91
	Ethyl(2R)-2-(4-hydroxy phenoxy)propanoate	0.61
	Polyethylene Glycol	0.03
	Potassium Carbonate	0.51
	2,6-dichlorobenzene oxazole	0.57
24.	AE-743	
	10% Sodium hypochlorite Sol.	4.00
	30% Sodium Hydroxide	1.32
	Xylene	1.26
	AE-513	1.02
	Thionyl Chloride	0.40
	Acetonitrile	0.86
	1,3 Cyclohexanedione	0.34
	Triethyl Amine	0.64
	Acetone cyanohydrin	0.03
	5% Sodium Bicarbonate	0.30
	35% HCl	0.88
	Isopropanol	0.45
	Caustic Flakes	0.08
25.	TMBT	
	Toluene	10.09
	747 Ether	0.94
	Thionyl chloride	1.00
	1,3 Cyclohexanedione	0.32
	Triethyl amine	0.69
	Cyanohydrine	0.24
26.	747 Ether	
	Ortho DiChloro Benzene	1.38
	AE-014	1.17
	NaOH Prills (97%)	0.42
	Acetonitrile	0.54
	Trifluoroethanol	1.02
	HCl 30%	0.25
27.	2C6SMT	
	3-chloro-2-methyl aniline	0.82
	HCl (35%)	0.53
	Sodium Nitrite	1.20
	Sodium Carbonate	0.14

	Ethylene Dichloride	0.78
	Sodium Methyl Mercaptane	2.10
28.	Flurt	
	3-trifluoromethylphenyl acetonitrile	2.00
	Sodium Ethoxide	2.00
	Ethyl Phenyl Acetate	1.55
	Bromine	1.90
	Glacial Acetic Acid	0.67
	Methylamine	2.07
	HCl	0.44
29.	MTAA	
	32 % NaOH	0.07
	Phosphoric Acid (H ₃ PO ₄)	0.16
	Tetra butyl ammonium bromide (TBAB)	0.02
	Methyl chloro acetate	1.01
	Sodium Methyl Mercaptane	0.25
	Methylene dichloride	0.69
30.	PYCL	
	1,1,7-trichloroheptene-3-one	0.76
	Caustic Lye	0.56
	Conc. HCl	0.25
	Hydrazine Hydrate	1.06
	Hydrogen Peroxide	0.63
	Malononitrile	0.58
	NaOH Soln	0.55
	n-Butanol	0.56
	Propargyl chloride	0.71
	Tetra butyl ammonium bromide (TBAB)	0.14
	Trimethylorthoformate	0.92
	Zinc chloride	0.00
31.	MY-100	
	Methyl phenyl Acetate	1.03
	Ethyl acetate	0.54
	Sodium Methanoate	1.20
	HCl	0.19
	3,5-dichlorobenzoyl Chloride	1.09
	Chloromethane	1.46
	Magnesium metal	0.12
	Tetrahydrofuran	1.11
	Acetonitrile	0.41
	Sulphuric Acid	1.00
	Sodium Hydroxide	2.25
	Hexanol	2.13
	Formaldehyde	1.10

	Xylene	0.61
32.	LakePalace	
	2,5 Dichloro Phenol	0.54
	Sodium hydroxide	1.07
	Diethyl Sulfate	0.61
	Paraformaldehyde	0.59
	HCl	0.29
	BIO	4.31
	Thiourea	0.30
	Hydrogen Peroxide	0.76
	Iso propyl alcohol	0.89
33.	KPP	
	4 Fluorophenol	0.62
	Chlorine	0.43
	Caustic	0.59
	Ethyl Chloroformate	0.74
	Sulphuric Acid	0.52
	Nitric Acid	0.58
	Hydrogen Gas	0.06
	Chloroformate	0.67
	Alkyl Bromide	0.54
	Alkyl Butaneoat	0.20
	Toluene	0.73
34.	MPBS	
	Phosphorous trichloride	2.42
	Aluminium Chloride	1.18
	Methyl Chloride	0.47
	Diethyl phthlate	1.56
	Yellow Phosphorous	0.18
	N-Butanol	0.90
	NaOH	0.66
35	PCM	
	2-chloro 4 fluoro toluene	1.13
	Chlorine gas	1.63
	Oleum	0.74
	Ethanol	0.51
	N-isopropyl-N-methylamine	1.24
	Ammonia	0.19
	Thionyl Chloride	1.41
	Methanol	0.32
	Hydrogen	0.01
	Ethyl chloro formate	1.10
	Toluene	0.16
36.	EATB	

	Ethyl trifluoro acetate	0.93
	Ethyl Acetate	0.82
	Sodium Ethoxide	0.47
	Acetic Acid	0.59
	Ammonium Acetate	0.95
	Sodium Bicarbonate	0.98
37.	BPS	
	Tetrahydrofuran	0.62
	Sodium hydride	0.33
	Dihydroxy benzoic acid	0.42
	2-Methylsulfonyl-4,6-dimethoxypyrimidine	1.28
38.	FRSF	
	Tetrahydrofuran	0.83
	2-Amino-4,6-dimethoxypyrimidine	0.45
	Phenyl chloroformate	0.71
	Acetonitrile	2.20
	NSA	0.82
	Potassium Carbonate	0.46
	Hydrogen Gas	0.04
	Sulphuric Acid	0.35
	Formic Acid	0.56
	Acetic anhydride	0.61
	Acetone	0.33
	Sodium Methanoate	0.47
39.	ESPS	
	3-Aminopyridine	1.26
	HCl	0.58
	Ferric Chloride	0.08
	Chlorine gas	0.83
	Sodium Hydroxide	0.75
	Sodium Bisulfite	0.70
	Sodium Nitrite	0.53
	Copper chloride	0.01
	Caustic solution	0.26
	Sodium Sulfite	1.68
	Sodium bicarbonate	0.18
	Ethyl Bromide	0.18
	Potassium carbonate	0.23
	Sodium hydro sulfide	0.51
	Ammonia	0.26
40.	AMSB	
	Methyl 2-nitro 4-cyanobenzoate	1.05
	Acetic Acid	0.97
	Hydrogen Gas	0.04

	Toluene	0.73
	HCl Gas	0.11
	Dimethyl Acetamide	0.80
	Triethyl Amine	0.93
	methane sulfonyl chloride	0.53
	Methylene dichloride	1.40
41.	OTMA	
	Trifluoromethoxy benzene	1.52
	Bromine	1.50
	Fuming Nitric Acid	0.34
	Sulphuric Acid	0.11
	Methylene Dichloride	0.31
	Hydrogen Gas	0.08
42.	CNZ	
	2-hydroxy-2-methylpropanenitrile	1.16
	Ammonia	0.80
	2,4,6-trichloro-1,3,5-triazine	1.88
	Aq. Ethyl amine	0.47
43.	DTPBS	
	4-amino-2,5-dimethoxypyrimidine	0.60
	Ethoxy carbonylthiocyanate	0.58
	Toluene	0.44
	Hydroxylamine	0.15
	Methanol	0.26
	2-fluoro-6-(trifluoromethyl) benzenesulfonyl chloride	0.74
44.	SSF	
	Molten Phenol	0.44
	1,2-dichloro benzene	1.41
	Potassium Hydroxide	0.58
	Xylene	1.45
	Magnesium Turnings	0.17
	Ethyl Bromide	0.05
	Di Butyl Oxalate	1.19
	Methylamine	1.45
	Hydroxyl amine sulphate	0.64
	HCl	0.79
	Potassium Carbonate	0.26
	Dimethyl Sulphate	0.58
45.	TRFRN	
	Trichloroacetaldehyde	0.85
	Formamide	0.25
	Phosphorous Trichloride	0.90
	Piperazine	1.09

46.	FNXL	
	Caustic solution	0.26
	DCPPA	0.80
	Toluene	0.90
	Thionyl Chloride	0.43
	ADMBN	0.45
	Sodium bicarbonate	0.02
	47%NaOH	0.04
47.	MIPD	
	Acetyl Acetone	0.54
	Sulphuric Acid (50%)	0.53
	Sodium Nitrite	0.94
	NaCl	0.05
	Potassium Carbonate	0.02
	Dimethyl Sulphate	0.74
	NPG 90% Neopentyl glycol	0.80
48.	ORST	
	MIPD-Ketal	0.92
	25% NaOH	0.50
	Methoxy Amine hydrochloride	1.81
	Hydroxylamoniumsulfate	2.22
	Sodium Methylate	0.18
	CLMO	0.78
	Methylamine	0.30
49.	ZXMD	
	3-Methyl-1-pentyne-3-ol	1.12
	Phosphoryl chloride	1.94
	Ammonia	0.76
	Methyl-p-Toluate	1.09
	Chlorine gas	0.61
	HCl	0.32
	NaOH	0.59
	Thionyl Chloride	1.10
	Methyl Isobutyl ketone	0.57
	Silver nitrate	0.00
	Trichloroisocyanuric acid (TCIA)	0.41
50.	AMB	
	Magnesium turnings	0.15
	Dry Tetrahydrofuran	0.66
	AAA-BrTFB	1.21
	Trimethoxyborane	0.66
	10% HCl	0.22
	47% Caustic lye	0.43
51.	Kitazin	

	SDTP	1.88
	Toluene	0.25
	Benzylchloride	0.44
52.	CTPE	
	2,3 dichloro-5-trifluoromethyl)pyridine	1.10
	N-Methyl-2-pyrrolidone	2.51
	Potassium Hydroxide	0.64
	Ethyl acetoacetate	0.69
	HCl	1.47
	Acetic anhydride	0.28
	Acetic acid	0.43
	Hydrogen	0.01
53.	AZST	
	2(3H)-Benzofuranone	0.96
	Trimethyl orthoformate	1.14
	Acetic anhydride	1.42
	Sodium methoxide	0.44
	4,6-Dichloropyrimidine	1.15
	2-cynophenol	0.48
	Potassium carbonate	0.04
	Dimethyl Formamide	0.50
54.	CMTH	
	Methyl trifluoroacetate	0.58
	Methanol	0.46
	2-Cyanoguanidine	0.08
	Sodium methoxide	0.36
55.	IPCZ	
	Dimethyl Adipate	1.96
	Dimethyl Formamide	1.03
	Isopropyl Bromide	1.47
	N-methyl pyrrolidone	3.69
	p-chlorobenzyl chloride	1.75
	Potassium Iodide	0.15
	Sodium Hydroxide	0.67
	Sodium Methoxide	1.32
	Sodium salt of 1,2,4-Triazole	0.77
	Sodium tert-butoxide	0.44
	TMSOB	1.60
	Toluene	6.69
56.	FTL	
	Dimethyl Formamide	0.74
	1,2,4-Triazole	0.46
	Potassium carbonate	0.17
	FOX	1.44

57.	FOX	
	2-fluorobenzoyl Chloride	0.56
	Fluorobenzene	0.30
	Aluminium Chloride	0.43
	dimethyl sulfoxide	0.81
	dimethyl sulphate	0.87
	Potassium hydroxide	0.08
	DABCO	0.02
	Toluene	0.41
58.	IBCZ	
	2,4-dichloroaniline	0.90
	Chloro Acetyl Chloride	0.86
	Sodium Carbonate	0.43
	Phosphorous pentachloride	0.60
	Toluene	0.74
	1-Chloro-4-(chloromethyl) benzene	1.01
	Thiourea	0.55
	HCl	0.35
	NaOH	0.57
	1,2,4-Triazole	0.58
	Cyanomethane	0.34
59.	ACBM	
	2,3 dichloro benzoic acid	1.06
	Copper chloride	0.04
	Ammonia	0.95
	Hydrochloric acid	0.53
	Methyl Isobutyl ketone	1.36
	Dimethyl Sulphate	0.14
	Tertabutyl ammonium bromide	0.18
	Potassium carbonate	0.04
60.	AMT	
	Aminoguanidine Bicarbonate	0.95
	Ammonium Thiocynate	0.85
	HCl	0.42
	Caustic Soda	0.24
61.	ATHP	
	Bis dichloro diethylether	1.83
	Dimethyl Formamide	3.61
	Potassium carbonate	0.10
	Potassium Iodide	0.22
	Methyl Acetoacetate	1.00
	H ₂ SO ₄ (49%)	0.96
	Sodium bicarbonate	0.05
	Ethylene Dichloride	1.00

62.	CDMA	
	2,6-Dimethylaniline	1.24
	Ethylene Dichloride	1.58
	Sulphuric Acid	1.11
	Caustic	0.03
	Chlorine Gas	0.24
63.	CDMB	
	Ethylene Dichloride	1.35
	2,6-Dimethyl Aniline	0.99
	Sulphuric Acid	0.98
	Chlorine Gas	1.04
	Hydrobromic Acid	1.89
	Sodium Nitrite	0.60
64.	CPFK	
	Magnesium Turnings	0.38
	2-Chloropropane	4.90
	2-Fluoro Toluene	1.04
	CPCM	0.46
	HCl	0.51
65.	DAEEA	
	Ethylene Diamine	1.50
	2-Chloro Ethanol	2.24
	Sodium Carbonate	0.07
66.	DCTFP	
	Phosphorous Trichloride	1.55
	Nicotinic Acid	0.35
	Chlorine	1.32
	Hydrogen fluoride	0.57
67.	DHD	
	Methanol	0.92
	Paraformaldehyde	0.63
	Diethylmalonate	1.52
	Triethyl Ortho Formate	0.89
	Sodium Bisulphate	0.11
	Acetone	0.71
	Toluene	0.87
	Dimethyl sulfoxide	1.38
	Sodium chloride	1.10
	Lithium aluminium hydride	0.44
	Potassium hydroxide	0.02
68.	DMB	
	Methanol	3.40
	Methyl formate	0.91
	Acetone	0.64

	Sodium Methoxide	0.35
	Sulfuric Acid	0.12
69.	EMBA	
	Sodamide	0.97
	Propionitrile	0.54
	Ethyl Bromide	1.35
	Tetrahydrofuran	1.73
	Sulphuric Acid	1.11
70.	MMH	
	Chloroform	1.55
	Hydrazine Hydrate	1.50
	Caustic Lye	1.12
71.	10-H Phenothiazine	
	Diphenylamine	0.90
	Sulphur	0.34
72.	MPB	
	Benzaldehyde	0.14
	Bromine	0.01
	Chlorine	0.05
	HCl solution	0.71
	Formic Acid	0.01
	Thio Sloution	0.36
	Soda sloution	0.01
	1,2-Ethanediol (MEG)	0.65
	Cuprous chloride	0.01
	Potassium Hydroxide	0.39
	Phenol	0.60
	Caustic Lye	0.19
	Sulphuric acid	0.03
73.	PFD	
	Potassium Carbonate	0.07
	Sodoium bisulphate	0.36
	IBA	0.64
	Ethyl Acetate	0.49
	RFI	1.58
	Sodium Methoxide	1.01
	Zinc Chloride	0.34
	N-methyl pyrrolidone	0.49
	TMC	0.65
	Toluene	0.79
	NaH in Paraffin	0.12
	Isobutyryl chloride	0.33
74.	TBFN	

	4-chloro-3-ethyl-1-methyl-1H-pyrazole-5carbonyl Chloride	1.80
	1-(4-tert-butylphenyl)methanamine	1.00
	NaOH	0.40
75.	TLF	
	Methyl Ethyl Ketone	0.82
	4-chloro benzonitrile	2.13
	4-methyl Phenol	1.54
	Diethyl Ethanedioate	1.63
	Dimethyl Formamide	1.22
	Dimethyl sulfate	1.41
	HCl	0.40
	Hydrazine Hydrate	1.17
	Hydrogen	0.10
	Methanol	1.11
	Sodium Ethoxide	0.96
	Sodium Hydroxide	3.35
	Sodium Oxychloride	1.10
	Thionyl Chloride	1.56
	Toluene	0.82
76.	IBA	
	Mono chlorobenzene	0.70
	Aluminium Chloride	1.80
	Diethylene Gylcol	0.49
	Fuming Nitric Acid	2.17
	Hydrazine Hydrate	0.61
	Hydrogen gas	0.13
	Isobutyl chloride	1.58
	Potassium Carbonate	0.08
	Potassium Hydroxide	0.62
77.	Octopussy	
	Hydroxyl amine sulfate	0.42
	Glyoxalic acid	0.75
	NaOH sol	0.87
	Na ₂ CO ₃ sol.	0.13
	Bromine	1.68
	Sodium carbonate	0.69
	Butyl acetate	1.14
	Thiourea	0.27
	HCl soln.	0.45
78.	MY-71	
	1,3-dimethyl-5-pyrazolone	0.99
	2,6- Dichloro Toluene	0.62
	Acetyl Chloride	1.18

	Aluminium trichloride	1.13
	Caustic	1.21
	Hydrochloric Acid	0.45
	Potassium carbonate	0.97
	Sodium Hypochlorite	0.99
	Thionyl chloride	2.76
	Triethyl Amine	0.64
79.	MTP	
	Ethyl Acetate	1.92
	Ethyl trifluoro acetate	1.03
	Sodium Ethoxide	0.52
	HCl	1.16
	Acetic Acid	0.65
	Monomethyl Hydrazine	0.90
80.	DCPA	
	DPMO	0.77
	Dimethyl Formamide	0.99
	Phosphoryl chloride	1.25
	NaOH	1.50
	Hydrogen Peroxide	0.78
	HCl	0.22
	Caustic Solution	0.08
	Toluene	1.00
	Thionyl chloride	0.46
81.	CFPA	
	Magnesium turnings	0.16
	Tetrahydrofuran	1.13
	Bromo dichloro benzene	1.15
	Tetramethyl benzidine	0.67
	98% Sulphuric Acid	0.70
	Toluene	0.51
	2-bromo-4-fluoroaniline	0.93
	Tripotassium phosphate	0.30
82.	ACH	
	Ethyl 4,4-difluoro-3-oxobutanoate	0.94
	Trimethyl Orthoformate	1.73
	Acetic Anhydride	0.55
	O-Ethyl Acrylate	1.06
	Mono Methyl Hydrazine	1.17
	Acetone	0.41
	HCl	0.04
	Sodium hydroxide	0.09
	Sulfuric acid	0.13
	Thionyl chloride	0.49

83.	BDB	
	Ortho dichloro benzene	0.28
	Aluminium trichloride	0.02
	Bromine	1.13
	HCl	0.05
	Sodium thiosulfate	0.09
84.	PRZ	
	Ethyl 4,4-difluoro-3-oxobutanoate	0.62
	Acetic anhydride	1.36
	Trimethylorthoformate	0.75
	Acetone	0.45
	Mono Methyl Hydrazine	0.79
	Aq. HCl	0.07
	Sodium Hydroxide	0.36
	Sulfuric acid	0.19
85.	DFEA	
	N methyl pyrrolidine	2.27
	Ammonia	1.04
	Difluoro chloro ethane	0.79
86.	EMTC	
	Ethyl acetoacetate	1.43
	Sulfuryl Chloride	1.48
	Tetrahydrofuran	2.28
	Formamide	0.71
	Phosphorous Pentasulphide	0.86
87.	ETMD	
	2,5-Dimethylphenyl acetyl chloride	0.99
	4-methoxy-cyclohexanone	0.77
	Ammonia	1.80
	Carbon Dioxide	0.17
	HCl	0.22
	Potassium Hydroxide	1.01
	Chlorobenzene	1.70
	Methanol	0.35
	Sodium hydroxide	0.10
	Sodium cyanide	0.32
	Sulphuric Acid	0.04
88.	HFMOP	
	OIME	2.48
	Tetramethyl ammonium chloride	0.03
	Potassium Hydroxide	0.08
	Sodium Bicarbonate	0.04
	Sodium Hypochlorite	0.06
	Dimethyl sulfate	0.93

	Sodium Hydroxide	1.70
	Dimethyl Formamide	0.72
	KF	0.13
89.	MDO	
	Acetone	1.40
	Epichlorohydrin	1.10
	Tributyl amine	0.01
	Tetra Ethylene Glycol	0.47
	Potassium hydroxide	0.05
90.	CMIBA	
	Isobutyryl Chloride	0.92
	Paraformaldehyde	0.26
	Anhydrous Zinc Chloride	0.02
91.	CMTB	
	AE-014	0.73
	Dimethyl Formamide	1.46
	Sodium hydride	0.29
	Tri Fluoroethanol (TFE)	1.46
	Toluene	2.08
	NaOH	0.23
92.	PCBM	
	Chlorobenzene	1.99
	Aluminum Chloride	1.77
	Isobutyryl Chloride	1.25
	1,2-Dichloro Ethane	0.71
	Bromine	2.01
	Sodium Bicarbonate	0.25
	Sodium Methoxide	1.96
	Morpholine	1.04
93.	Negolyte	
	Catechol	0.88
	Toluene	1.97
	Titanium chloride	0.52
	Sodium hydroxide	0.22
	Potassium Hydroxide	0.31
	Ethylene diamine tetra acetic acid	0.03

4. Manufacturing Process

Detailed manufacturing process is given in **Annexure-II** of form-I.

5. Water Balance:

The total water requirement will be 2973 KL/day (2839 Fresh + 134 recycle) which will fulfill by SEZ water supply.

The breakup of water consumption & w/w generation is given below:

Sr. No.	Source	Water Consumption (KLD)	Wastewater Generation (KLD)
I	Domestic	60	50
II	Gardening	148	00
III	Industrial		
a)	Process	253	522
b)	Scrubber	125	
c)	Water treatment	177	177
d)	Boiler	460	70
e)	Cooling	1480	296
f)	Lab	20	20
g)	Washing	250	250
Total Industrial		2765	1335
Total (I+II+III)		2973	1385*
Recycle water		134	--
Actual fresh water requirement		2839	

* Total w/w generation will be tune around 1385 KLD; out of which 60 KLD goes to incinerator, 19 KLD system loss & salt generation and 134 KLD treated water recycle and resulted 1172 KLD waste water generation goes to ETP.

6. Manpower requirements:

Total manpower requirement at all level of plant will be 700.

7. Source of Pollution

Details of Air Pollution

Main source of gaseous emission will be from flue gas stacks and process stacks. There will be 3 nos. of flue gas stacks, 8 process gas stacks. Since FO/NG will be used as fuel in boiler and TFH there is no need of APC measure. Alkali scrubber will be provided on process gas stack and stack attached to MEE as APCM. Venturi scrubber followed by packed bed scrubber will be provided on stack attached to Incinerator as APCM. Proper Stack height will be provided in order to achieve norms prescribed by statutory authority.

The details of stacks are given below:

Sr. No.	Stack attached to	Fuel noType	Stack Height in m	APC measures	Probable emission
➤ Flue Gas Stacks					
1	Boiler (03 Nos.)	FO/NG	30	--	PM <150 mg/Nm ³ SO ₂ <100 ppm NO _x <50 ppm
2	Thermic Fluid Heater (01 Nos.)	FO/NG	20	--	PM <150 mg/Nm ³ SO ₂ <100 ppm NO _x <50 ppm
3	DG Set (06 Nos.) - 4000 kVA each	HSD	30	--	PM <150 mg/Nm ³ SO ₂ <100 ppm NO _x <50 ppm
➤ Process Gas stacks					
1	Reactor of Multi Product Plant -10	--	27	Alkali Scrubber	HCl <20 mg/Nm ³ Cl ₂ <9 mg/Nm ³ NH ₃ <175 mg/Nm ³ SO ₂ <40 mg/Nm ³
2	Reactor of Multi Product Plant -11	--	27	Alkali Scrubber	
3	Reactor of Multi Product Plant -12	--	27	Alkali Scrubber	
4	Reactor of Multi Product Plant -13	--	27	Alkali Scrubber	
5	Reactor of Multi Product Plant -14	--	27	Alkali Scrubber	
6	Reactor of Multi Product Plant -15	--	27	Alkali Scrubber	
➤ Stack attached to Incinerator and MEE					
7	Incinerator	FO/NG	40	Venturi scrubber followed by packed bed scrubber	SPM <50 mg/Nm ³ SO _x <200 mg/Nm ³ HCl<50 mg/Nm ³ Cl ₂ <9 mg/Nm ³
8	MEE	--	30	Alkali Scrubber	SPM<150 mg/Nm ³ HC <15 mg/Nm ³

Source of Wastewater

The main source of the industrial wastewater generation will be from process, scrubber, lab, washing and utilities. The wastewater from process will be divided into three streams for treatment based on the quality of the effluent stream. One stream will be directly incinerated in in-house incinerator, high TDS & high COD stream will be taken to MEE and dilute stream from process will be taken to ETP. Entire quantity of lab, washing & utilities i.e. cooling bleed off, boiler blow down and DM plant will be sent to RO. RO reject will be further sent to ETP. Domestic effluent will also be treated into ETP. Entire quantity of treated water from ETP will be disposed off into SEZ common sump which will be finally connected with ECP channel.

Source and disposal of Hazardous wastes

The details of Solid/hazardous waste and its disposal method is given below.

Sr. No.	Type of Waste	Category of Waste as per HWM Rules 2016	Quantity	Disposal facility
1.	ETP Sludge & MEE salt	35.3	900 MTPM 2700 MTPM	Collection, Storage, Transportation & Disposal in approved common TSDF/co-processing.
2	Used Oil	5.1	25 KL/month	Collection, storage and reused or sold to registered refiners
3	Residues after distillation, fractionation, condensation recovery etc./Solvent Distillation Residue	20.3	20000 MTPM	Collection, storage, & Incineration in house or in approved common incineration facility or co-Processing/incineration
4	Spent Carbon	36.2	50 MTPM	Collection, storage & Incineration in house or in approved common incineration facility or Send to Authorized recyclers/ re-processors for recovery/co-processing
5	Process Waste (Process Waste Sludge/residue)	29.1	1800 MTPM	Collection, storage, & Incineration in house or in approved common incineration facility or Co-processing/co-incineration facility
6	Incineration Ash	37.2	1000 MTPM	Collection, Storage, Transportation & Disposal in approved common TSDF site.
7	Discarded containers / drums/ liners	33.1	300 MTPM & 50000 Nos.PM	Recycled or sold to authorized scrap dealer or end users or disposal in approved common TSDF/incineration in-house as well approved common facility or sent for common decontamination facility
8	Date Expired off specification products	29.3	100 MTPM	Collection, storage, & Incineration in house or in approved common incineration facility/co-processing
9	Spent/Crude Solvent	29.4	30000 MTPM	Collection, storage, & Incineration in house or at authorized CHWI facility or Co-processing or reuse by in-house solvent distillation. In Some of the product where purity requirements are very high, recycling is not possible due to build-up of moisture or some specific impurity, such solvents are required to be sent to authorized as well as CPCB registered solvent distillation unit. Sold to GPCB

				Authorized recyclers/distillators/re-processor
10.	Spent Catalyst	29.5	50 MTPM	Collection, storage & Incineration in house or in approved common incineration facility or co-processing, Send to Authorized recyclers/ re-processors for recovery or sent for regeneration to supplier.
11.	Spent Acid	29.6	1500 MTPM	Collection, storage, & Incineration in house or in approved common incineration facility or co-processing, Send to Authorized recyclers/ re-processors, reuser
12.	Spent Resin	34.2	2 MTPM	Collection, storage, transportation and disposal in approved common TSDF
13.	NaBr/MgBr		5000 MTPM	Collection, storage, transportation and sold to bromine manufacture or any recovery or processing or incineration/co-processing/ common effluent treatment

8. 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 a part of overall project financing. Necessary provision for Environmental management system is in practice and will be part of practice in future expansion projects.

9. Monitoring facilities

Company is ready to carry out any kind of monitoring proposed by pollution control board from time to time through outside agency.

10. Conclusion

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