



**Prefeasibility Report for Proposed  
Expansion of Existing Production  
Plant and Addition of New Products  
at Survey No. 5, 6, 29, 30, 33 to 38,  
80, 81, 84, 85, 91, 96 to 105, 108, 112  
to 117, 142, 144 to 148, 274, 275 &  
276, At & Po. Atul, Valsad District,  
Gujarat State**

**DECEMBER 2018**



**Kadam**

Environmental Consultants

[www.kadamenviro.com](http://www.kadamenviro.com)

**Environment for Development**

**M/S. ATUL LIMITED****Prefeasibility Report for Proposed Expansion of Existing Production Plant and Addition of New Products at Survey No. 5, 6, 29, 30, 33 to 38, 80, 81, 84, 85, 91, 96 to 105, 108, 112 to 117, 142, 144 to 148, 274,275 & 276, At & Po. Atul, Valsad District, Gujarat State**

© Kadam Environmental Consultants ('Kadam'), December 2018

This report is released for the use of the Atul Limited, Regulators and relevant stakeholders solely as part of the subject project's Environmental Clearance process. Information provided (unless attributed to referenced third parties) is otherwise copyrighted and shall not be used for any other purpose without the written consent of Kadam.

PROJECT DETAILS							
<b>Name of Publication</b>	Prefeasibility Report for Proposed Expansion of Existing Production Plant and Addition of New Products at Survey No. 5, 6, 29, 30, 33 to 38, 80, 81, 84, 85, 91, 96 to 105, 108, 112 to 117, 142, 144 to 148, 274,275 & 276, At & Po. Atul, Valsad District, Gujarat State						
<b>Project Number</b>		<b>Report No.</b>	1	<b>Version</b>	1	<b>Released</b>	December, 2018
<b>Prepared &amp; Managed By</b>	Bijal Kothari		<b>Released By</b>		Jitixa Upadhyay		
CONTACT DETAILS							
<b>Vadodara (Head Office)</b>							
871/B/3, GIDC Makarpura, Vadodara, India – 390 010. E: <a href="mailto:kadamenviro@kadamenviro.com">kadamenviro@kadamenviro.com</a> ; T: +91-265-6131000							
<b>Delhi / NCR</b>							
SPAZE IT PARK, Unit no. 1124, 11th Floor, Tower B 3, Sector 49, Near Omaxe City Centre mall, Sohna Road, Gurgaon -122 002 (Haryana) E: <a href="mailto:delhi@kadamenviro.com">delhi@kadamenviro.com</a> ; T: 0124-4242430; M: +91-98998-04300							
DISCLAIMER							
Kadam has taken all reasonable precautions in the preparation of this report as per its auditable quality plan. Kadam also believes that the facts presented in the report are accurate as on the date it was written. However, it is impossible to dismiss absolutely, the possibility of errors or omissions. Kadam therefore specifically disclaims any liability resulting from the use or application of the information contained in this report. The information is not intended to serve as legal advice related to the individual situation.							

# CONTENTS

<b>1 EXECUTIVE SUMMARY .....</b>	<b>7</b>
1.1 INTRODUCTION.....	7
1.2 PROPOSED PLANT FEATURES AND PRODUCTION CAPACITY .....	7
1.3 WATER .....	14
1.4 EFFLUENT GENERATION, TREATMENT AND DISPOSAL.....	14
1.5 POWER REQUIREMENT .....	15
1.6 AIR EMISSIONS.....	15
1.6.1 Flue Gas Stacks .....	15
1.6.2 Process Vents.....	15
1.7 SOLID/HAZARDOUS WASTE GENERATION AND DISPOSAL.....	15
<b>2 INTRODUCTION.....</b>	<b>16</b>
2.1 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT .....	16
2.1.1 Identification of Project Proponent.....	16
2.1.2 Identification of Proposed Project.....	16
2.2 BRIEF DESCRIPTION OF NATURE OF THE PROJECT .....	24
2.3 NEED FOR THE PROJECT AND IT'S IMPORTANCE TO REGION .....	24
2.4 DEMAND SUPPLY GAP .....	24
2.5 EMPLOYMENT GENERATION (DIRECT AND INDIRECT) DUE TO THE PROJECT. ....	24
<b>3 PROJECT DESCRIPTION .....</b>	<b>25</b>
3.1 TYPE OF PROJECT INCLUDING INTERLINKED AND INTERDEPENDENT PROJECTS, IF ANY .....	25
3.2 LOCATION (MAP SHOWING GENERAL LOCATION, SPECIFIC LOCATION AND PROJECT BOUNDARY & PROJECT LAY OUT) WITH COORDINATES .....	25
3.3 DETAILS OF ALTERNATE SITES CONSIDERED AND THE BASIS OF SELECTING THE PROPOSED SITE, PARTICULARLY THE ENVIRONMENTAL CONSIDERATIONS GONE INTO SHOULD BE HIGHLIGHTED.....	27
3.4 SIZE OR MAGNITUDE OF OPERATION.....	27
3.5 TECHNOLOGY AND PROCESS DESCRIPTION .....	34
3.6 RESOURCE OPTIMIZATION/RECYCLING AND REUSE ENVISAGED IN THE PROJECT, IF ANY, SHOULD BE BRIEFLY OUTLINED	39
3.7 AVAILABILITY OF WATER ITS SOURCE, ENERGY/POWER REQUIREMENT AND SOURCE SHOULD BE GIVEN .....	39
3.7.1 Water consumption and Waste Water Generation .....	39
3.7.2 Fuel.....	40
3.7.3 Power Requirement and Source.....	41
3.7.4 Transportation details of Raw Materials.....	41
3.8 QUANTITY OF WASTE TO BE GENERATED (LIQUID AND SOLID) AND SCHEME FOR THEIR MANAGEMENT /DISPOSAL ....	42
<b>4 SITE ANALYSIS.....</b>	<b>48</b>
4.1 CONNECTIVITY .....	48
By Road.....	48
By Rail.....	48
By Air.....	48
4.2 LAND FORM, LAND USE AND LAND OWNERSHIP.....	48
4.3 TOPOGRAPHY (ALONG WITH MAP).....	48

4.4	EXISTING LAND USE PATTERN (AGRICULTURE, NON-AGRICULTURE, FOREST, WATER BODIES (INCLUDING AREA UNDER CRZ)), SHORTEST DISTANCES FROM THE PERIPHERY OF THE PROJECT TO PERIPHERY OF THE FORESTS, NATIONAL PARK, WILD LIFE SANCTUARY, ETC SENSITIVE AREAS, WATER BODIES (DISTANCE FROM THE HFL OF THE RIVER), CRZ. IN CASE OF NOTIFIED INDUSTRIAL AREA, A COPY OF THE GAZETTE NOTIFICATION SHOULD BE GIVEN. ....	48
4.5	EXISTING INFRASTRUCTURE.....	49
4.6	SOIL CLASSIFICATION .....	49
4.7	CLIMATIC DATA FROM SECONDARY SOURCES .....	49
4.7.1	<i>Temperature</i> .....	49
4.7.2	<i>Wind</i> .....	49
4.7.3	<i>Rainfall</i> .....	49
4.7.4	<i>Cloud Cover</i> .....	49
4.7.5	<i>Humidity</i> .....	50
4.8	SOCIAL INFRASTRUCTURE AVAILABLE.....	50
<b>5</b>	<b>PLANNING BRIEF</b> .....	<b>51</b>
5.1	PLANNING CONCEPT (TYPE OF INDUSTRIES, FACILITIES, TRANSPORTATION ETC.) TOWN AND COUNTRY PLANNING/ DEVELOPMENT AUTHORITY CLASSIFICATION .....	51
5.2	POPULATION PROJECTION.....	51
5.3	LAND USE PLANNING (BREAKUP ALONG WITH GREENBELT ETC.).....	51
5.4	ASSESSMENT OF INFRASTRUCTURE DEMAND (PHYSICAL AND SOCIAL) .....	51
5.5	AMENITIES/FACILITIES.....	52
5.5.1	<i>Greenbelt Development</i> .....	52
5.5.2	<i>Storm water management plan</i> .....	52
5.5.3	<i>Rainwater harvesting system</i> .....	52
<b>6</b>	<b>PROPOSED INFRASTRUCTURE</b> .....	<b>53</b>
6.1	INDUSTRIAL AREA (PROCESSING AREA) .....	53
6.2	RESIDENTIAL AREA (NON-PROCESSING AREA) .....	53
6.3	GREEN BELT .....	53
6.4	SOCIAL INFRASTRUCTURE .....	53
6.5	CONNECTIVITY (TRAFFIC AND TRANSPORTATION ROAD/ RAIL/METRO/WATER WAYS ETC.).....	53
<i>By Road</i>	.....	53
<i>By Rail</i>	.....	53
<i>By Air</i>	.....	54
6.6	DRINKING WATER MANAGEMENT (SOURCE & SUPPLY OF WATER) .....	54
6.7	SEWAGE SYSTEM .....	54
6.8	INDUSTRIAL WASTE MANAGEMENT .....	54
6.9	SOLID WASTE MANAGEMENT.....	54
6.10	POWER REQUIREMENT & SUPPLY/ SOURCE .....	54
<b>7</b>	<b>REHABILITATION AND RESETTLEMENTS (R&amp; R) PLAN</b> .....	<b>55</b>
7.1	POLICY TO BE ADOPTED (CENTRAL/STATE) IN RESPECT OF THE PROJECT AFFECTED PERSONS INCLUDING HOME OUSTEES, LAND OUSTEES AND LANDLESS LABOURERS (A BRIEF OUTLINE TO BE GIVEN) .....	55
<b>8</b>	<b>PROJECT SCHEDULE AND COST ESTIMATE</b> .....	<b>56</b>
8.1	LIKELY DATE OF START OF CONSTRUCTION AND LIKELY DATA OF COMPLETION (TIME SCHEDULE FOR THE PROJECT TO BE GIVEN) 56	
8.2	ESTIMATED PROJECT COST ALONG WITH ANALYSIS IN TERMS OF ECONOMIC VIABILITY OF THE PROJECT. ....	56

**9 ANALYSIS OF PROPOSAL ..... 57**

9.1 FINANCIAL AND SOCIAL BENEFITS WITH SPECIAL EMPHASIS ON THE BENEFIT TO THE LOCAL PEOPLE INCLUDING TRIBAL POPULATION, IF ANY, IN THE AREA. .... 57

## List of Tables

Table 2-1: Production Details .....	17
Table 3-1: Production details .....	27
Table 3-2: Storage Details of Liquid Raw Materials .....	35
Table 3-2: Water Consumption Details .....	39
Table 3-3: Wastewater Generation Details .....	39
Table 3-5: Fuel consumption .....	40
Table 3-6: Hazardous Waste Generation and disposal Details .....	42
Table 4-1: Distance of Project Site from Sensitive Areas .....	48
Table 4-2: Distance of Project site from Water Bodies .....	48
Table 4-3: Predominant Wind Direction .....	49
Table 5-1: Landuse at project site .....	51

## List of Figures

Figure 3-1: Site Location Map .....	26
-------------------------------------	----

# 1 EXECUTIVE SUMMARY

## 1.1 Introduction

Atul Ltd. (Atul) is one of the largest integrated chemical companies of India and amongst the first five manufacturers of its chosen chemicals in the world. The Company has established subsidiary companies in the USA (1994), the UK (1996), Germany (1998), China (2004) and Brazil (2012) to serve its customers and thus enhance breadth and depth of its business. The Company serves about 5,700 (2014-15) customers belonging to the Adhesives, Agriculture, Animal Feed, Automobile, Chemical, Composites, Construction, Cosmetic, Defence, Dyestuff, Electrical and Electronics, Flavour, Food, Footwear, Fragrance, Glass, Home Care, Horticulture, Hospitality, Paint and Coatings, Paper, Personal Care, Pharmaceutical, Plastic, Polymer, Rubber, Soap and Detergent, Sports and Leisure, Textile, Tyre and Wind Energy industries (2014-15). The Company sells about 1,380 (2014-15) diverse products and formulations, placed under 41 (2014-15) product groups. With deep insight in science and technology, Atul manages almost all Unit Processes and Unit Operations to manufacture products and formulations and has state-of-the-art facilities and processes to ensure safety and treatment of gaseous, liquid and solid pollutants. Thus, Atul Ltd. is an improvement driven, integrated chemical company serving about 4,000 customers belonging to 27 industries across the world.

Atul aims to be one of the leading chemical conglomerates in the world; it will thus take all the required initiatives both at the workplace and in the marketplace for the same. The company will increase process efficiencies and people productivity, expand its capacities, introduce new products, strengthen capability of its human resources and collaborate with companies with similar values to leverage on combined strengths.

## 1.2 Proposed Plant Features and Production Capacity

Atul Limited is an existing chemical manufacturing complex with Captive Power Plant (CPP) of 56 MW and is now planning to expand their existing production capacity and addition of new products. The proposed expansion will be carried out within the existing premises using the same infrastructure & utilities with some modifications. The company is located at Plot No. 5, 6, 29, 30, 33, 34, 35, 37, 38, 80, 81, 84, 85, 91, Survey No. 274, 275, 276, At & post: Atul – 396020, Valsad District, Gujarat. The centre latitude & longitude of the project site are 20°32'10.61"N and 72°56'23.56"E respectively. The estimated cost of the proposed project is ~ INR 1789.03 Crores. The Total Production capacity is given in following table.

### *Production Details*

#### **Product Group**

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
A	DYES	5(f)	1300.8	583.33	9286	11170.13
B	CHLOR-AKLALI	4(d)	3400	4100	21133.29	28633.29
C	PESTICIDES TECH	5(b)	2637.04	278.24	11370.59	14285.87
D	BULK DRUG AND PHARMACEUTICALS	5(f)	350.6	0	1979	2329.6
E	RESINS	5(f)	2990.9	441.67	17000	20432.57
F	OTHER CHEMICALS	5(f)				
	Total Production Capacity of this group Sodium Thio sulphate (dry basis)		21443.267	651	40516.86	62611.127

	Total Production Capacity of this group Sodium Thio sulphate (wet basis)		22443.267	651	42316.86	65411.127
G	Flavors & Fragrances	5(f)	0	733.3	6500	7233.3
H	Co Products:	5(f), 5(b)	0	417	9283.65	9700.65
	<b>Total Production Capacity with Sodium Thio sulphate (dry basis)</b>		<b>32122.607</b>	<b>7204.54</b>	<b>117069.39</b>	<b>156396.54</b>
	<b>Total Production Capacity with Sodium Thio sulphate (wet basis)</b>		<b>33122.607</b>	<b>7204.54</b>	<b>118869.39</b>	<b>159196.54</b>

### Detailed Product List

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
<b>A</b>	<b>DYES</b>	<b>5(f)</b>				
1	Azo dyes	5(f)	550	0	0	550
2	Sulfur Black		250	583.33	1667	2500.33
3	Sulfur Dyes range		25	0	0	25
4	Naphthol range		75	0	0	75
5	Fast Color Bases		40	0	0	40
6	Disperse dyes		118.5	0	0	118.5
7	Optical Brighteners		10	0	0	10
8	Reactive Dyes		127.3	0	834	961.3
9	Vat dyes		105	0	0	105
10	Indigo		0	0	500	500
11	Manganese sulphate		0	0	1000	1000
12	40 % Manganese sulphate solution		0	0	2500	2500
13	Pigments		0	0	200	200
14	1-Aminoantraquinone		0	0	417	417
15	H-acid		0	0	500	500
16	4-amino-phenyl-4-beta hydroxy ethyl sulphone sulphate ester, Para base ester		0	0	834	834
17	DNCB (Di Nitro ChloroBenzene)		0	0	834	834
	<b>Total Production Capacity of DYES</b>		<b>1300.8</b>	<b>583.3</b>	<b>9286.0</b>	<b>11170.1</b>
<b>B</b>	<b>CHLOR-AKLALI</b>	<b>4(d)</b>				
18	Caustic soda/potash & sodium sulfide	4(d)	1800	2200	11100	15100
19	Liquid Chlorine /Hcl		1600	1900	9768	13268
20	Hydrogen		0.0	0	265.29	265.29
	<b>Total Production Capacity of CHLOR-ALKALI</b>		<b>3400.0</b>	<b>4100.0</b>	<b>21133.3</b>	<b>28633.3</b>
<b>C</b>	<b>PESTICIDES TECH</b>	<b>5(b)</b>				
21	Carbamate group of Agrochemicals	5(b)	33.3	10	66.7	110
22	Diuron		20	200	200	420

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
23	Trichlo Carbon		8.3	0	0	8.3
24	Cartap Hcl		50	0	0	50
25	Carbendazim		20.9	0	180.1	201
26	Herbicides (2,4-D & related products)		2170	0	2750	5670
27	MCPA				750	
28	Pyridine based insecticides & Herbicides chemical Imidacloprid		25	4.16	95.84	125
29	Triazole based Fungiside		1.67	0	100.33	102
30	Pyrethroides		10	0	0	10
31	Sulphonyl Urea		25	10.25	34.75	70
32	Glyphosate		50	15	2935	3000
33	Isoprothiolane		8.3	10	81.7	100
34	Fipronil		5	0	25	30
35	Formulations		200	0	2000	2200
36	Buprofesin		4	0	0	4
37	Imazethpyr		1.83	0	0	1.83
38	Kresoxim Methyl		2.08	0	0	2.08
39	Fenoxaprop		0.83	0	0	0.83
40	Cyhalofop		0.83	0	0	0.83
41	Mesotrione		0	0	300	300
42	Sucotrione		0	0	300	300
43	Glycin		0	0	1000	1000
44	Pyrazosulfurone		0	0.5	29.5	30
45	BisPyribac Sodium		0	0.83	29.17	30
46	Azoxystrobin		0	2.08	147.92	150
47	Quizalofop		0	1.25	48.75	50
48	Thiamethoxam		0	10	90	100
49	Metribuzine		0	10	50	60
50	Diafenthurone		0	4.17	25.83	30
51	Chlorantraniliprole		0	0.0	70	70
52	5-Chloro 1-Indenone		0	0.0	60	60
	<b>Total Production Capacity of PESTICIDES</b>		<b>2637.04</b>	<b>278.24</b>	<b>11370.59</b>	<b>14285.87</b>
<b>D</b>	<b>BULK DRUG AND PHARMACEUTICALS</b>	<b>5(f)</b>				
53	Mabendazole	5(f)	2	0	0	2
54	Tolbutamide		2.5	0	0	2.5
55	Quiniodochlor		15	0	0	15
D1	Bulk Drugs & Intermediates		9.6	0	-	194.6
56	Dapsone-API				65	
57	Valacyclovir HCL					
58	Celecoxib					
59	Desvenlafixine					

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
60	Mirabegron					
61	Vildagliptin					
62	Venlafaxine Hydrochloride					
63	5-Hydroxy methyl thiazole (5-HMT)				20	
64	Thiophene-2-carboxaldehyde (2-TC)				90	
65	1-Chloroacetyl-2-carbonitrile pyrrolidine (CACP)				10	
66	Dechlorfenac sodium / potassium		2.5	0	0	2.5
67	Atenolol		1.7	0	0	1.7
68	Fresamide		1.3	0	0	1.3
69	Trimethoprim		0.9	0	0	0.9
70	Para hydroxy acetophenone		1.7	0	0	1.7
71	Para hydroxy phenyl acetamide		3	0	0	3
72	Acyclovir		5.2	0	0	5.2
73	Bathenechol		5.2	0	0	5.2
D2	Pharma Intermediates & Chemicals		300	0		2094
74	4,4 Diamino diphenyl sulphone				250	
75	4,4 Dichloro diphenyl sulphone				1000	
76	3,3 Diamino diphenyl sulphone				44	
77	DHDPS & Other sulfones				500	
	<b>Total Production Capacity of BULK DRUG AND PHARMACEUTICALS</b>		<b>350.6</b>	<b>0</b>	<b>1979.000</b>	<b>2329.600</b>
<b>E</b>	<b>RESINS</b>	<b>5(f)</b>				
78	Epoxy Resin	5(f)	2500	100	15000	17600
79	Vinyl Ester Resins		37.5	0	0	37.5
80	Ketone Formaldehyde Resins & Sulphonamide, Formaldehyde Resins		20.8	0	0	20.8
81	UF/MF/PF/DiCyandiamide Resins		270.9	0	0	270.9
82	Polyamide resins		161.7	0	0	161.7
83	Polygrip TPU based		0	41.67	300	341.67
84	Polygrip rubber based		0	300	1700	2000
	<b>Total Production Capacity of RESINS</b>		<b>2990.9</b>	<b>441.67</b>	<b>17000</b>	<b>20432.57</b>
<b>F</b>	<b>OTHER CHEMICALS</b>					
85	Anthraquinone, Naphthalene, Benzene Intermediates. (Including Beta – Napthol & BON Acid)	5(f)	740	0	0	740
86	Resorcinol (Meta hydroxy phenol)	5(f)	460	0	600	1060
87	Carbamite	5(b)	30	0	0	30
88	Chlorzoxazone & other related products	5(f)	5	0	0	5
89	4 Ethyl 2,3 – Diorcopiperazino carbonyl Chloride	5(f)	3.3	0	0	3.3
90	Imino Dibenzyl 5 carbonyl Chloride	5(f)	0.8	0	0	0.8
91	Formaldehyde and base products	5(f)	3200	0	12000	15200

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
92	Sulfuric Acid / Oleum / Chlorosulphonic Acid & Salts	--	11550	0	0	11550
93	Sulpha Drug Intermediate	5(f)	193.8	0	0	193.8
94	Acetyl Sulphanil Chloride and its derivatives.	5(f)	1500	0	0	1500
95	Acetanilide	5(f)	500	0	0	500
96	Sulpha Methyl Phenazole Sodium	5(f)	1.1	0	0	1.1
97	Pyrazole Base	5(f)	10.5	0	0	10.5
98	Sulphanilic acid	5(f)	25	0	0	25
99	Bis Phenol A	5(f)	416.7	0	0	416.7
100	Hexamine	5(f)	150	0	0	150
101	Epoxy Intermediates	5(f)	23.8	0	0	23.8
102	Hardners and auxiliaries	5(f)	500	0	3500	4000
103	Hardener Intermediates	5(f)	700	0	0	700
104	Bisphenol S & Intermediate Chemicals	5(f)	16.6	0	0	16.6
105	Sodium Thio sulphate (dry basis)	---	900	0	1600	2500
106	Sodium Thio sulphate (wet basis)	---	1900	0	3400	5300
107	Phosgene	5(f)	416.667	0	416.16	832.827
108	HX-13059	5(f)	0	5	0	5
109	Alkyl ketene dimer	5(f)	0	0	500	500
110	Anisole	5(f)	0	166	140	306
111	PF Resin	5(f)	0	0	200	200
112	CMC (Carboxy methyl cellulose)	5(f)	0	0	2000	2000
113	HMMM (Hexa Methoxy Methyl Melemine)	5(f)	0	0	40	40
114	m-Amino phenol	5(f)	0	0	250	250
115	Mono chloro benzene	5(f)	0	0	2500	2500
116	Propionyl chloride	5(f)	0	0	200	200
117	Resorcinol derivatives	5(f)	0	0	100	100
118	RF Resin (Resoform P-18,19,20)	5(f)	0	85.0	320	405
119	Trichloro acetyl chloride	5(f)	0	0	200	200
120	Thio glycolic acid	5(f)	0	0	200	200
121	Thionyl chloride	--	0	0	1000	1000
122	1,3 Cyclohexanedione	5(f)	0	80	40	120
F1	Agro, Pharma intermediates, Isocyanats & Carbonat Esters, etc.	5(f)	100			
123	Trans-4-MCHI	5(f)		315	0	2230
124	p-Anisyl chloroformate	5(f)				
125	DI-TERT-BUTYL DICARBONATE (Boc. anhydride)	5(f)				
126	N, N- Disuccinimidyl Carbonate	5(f)				
F1.1	Chloroformate	5(f)			800	
127	1-Chloro ethyl chloroformate (1-CECF)	5(f)				

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
128	4-Nitrophenyl chloroformate (4-NPCF)					
129	n-Pentyl chloroformate (n-PCF)					
130	Isobutyl chloroformate (IBCF)					
131	2 Ethyl Hexyl Chloroformate (2-EHCF)					
132	Phenyl Chloroformate (PCF)					
133	Benzyl Chloroformate (BCF)					
134	Methyl chloroformate (MCF)					
135	n--Hexyl chloroformate (n-HCF)					
F1.2	Carbonate	5(f)				
136	Di-tert-butyl dicarbonate (DIBOC)	5(f)			100	
137	Bis (4-Nitrophenyl) Carbonate (Bis-NPC)				10	
138	Diphenyl carbonate (DPC)				50	
139	Dimethyl carbonate (DMC)				50	
140	1,1'-Carbonyldiimidazole (CDI)				20	
F1.3	Isocyanates	5(f)				
141	p-Toluene sulphonyl isocyanate (PTSI) and other Isocyanates	5(f)			300	
F1.4	Acid Chlorides	5(f)				
142	N-Methylpiperazinyl carbamoyl chloride Hydrochloride (NPCCL)	5(f)			50	
143	(Chlormethylene)dimethylammonium chloride (VMR)/ Phosgeniminium chloride and other Acid chlorides				75	
144	N,N-Dimethyl carbamoyl chloride (DMCCI)				60	
145	Hexaethyl guanidinium chloride (HEGCI)				50	
F1.5	Urea	5(f)				
146	Tetrabutyl Urea (TBU)	5(f)			75	
147	Tetramethyl Urea (TMU)				75	
F1.6	Carbodiimide	5(f)				
148	N,N'-Dicyclohexylcarbodiimide (DCC)	5(f)			100	
149	Sodium sulphite	--	0	0	3261	3261
150	30% HCl	--	0	0	3622.5	3622.5
151	Sodium hypo chloride solution (10%)	--	0	0	1853.7	1853.7
152	Potassium chloride	--	0	0	740	740
153	Salt (PH)	--	0	0	18.5	18.5
154	HCl 30%	--	0	0	1000	1000
155	Sodium Chloride	--	0	0	2400	2400
	<b>Total Production Capacity of this group Sodium Thio sulphate (dry basis)</b>		<b>21443.3</b>	<b>651.0</b>	<b>40516.9</b>	<b>62611.1</b>
	<b>Total Production Capacity of this group Sodium Thio sulphate (wet basis)</b>		<b>22443.3</b>	<b>651.0</b>	<b>42316.9</b>	<b>65411.1</b>
<b>G</b>	<b>Flavors &amp; Fragrances</b>					

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
G1	Allyl Esters such as	5(f)				
156	Allyl Caproate		0	0	250.00	250
157	Allyl cyclohexyl propionate		0	0	250.00	250
158	Allyl Heptanoate		0	0	150.00	150
159	Cyclogalbanate		0	0	25.00	25
G2	Styrene Based derivatives such as	5(f)				
160	Phenyl Ethyl Alcohol (PEA)		0	0	850.00	850
161	PE acetate		0	0	250.00	250
162	PEME ( Phenyl ethyl methyl ether)		0	0	200.00	200
163	Pommerol ( Phenyl ethyl isoamyl ether)		0	0	100.00	100
164	Styrene oxide		0	0	500.00	500
165	Phenyl ethyl phenyl acetate (PEPA)		0	0	100.00	100
166	Phenyl acetaldehyde dimethyl Acetal		0	0	250.00	250
167	Styrallyl acetate		0	0	500.00	500
G3	Coumarin derivatives such as	5(f)				
168	Coumarin		0	0	500.00	500
169	Dihydro Coumarin		0	0	100.00	100
170	Sunscreen products such as	5(f)				
171	Avobenzene		0	83.3	0	83.3
172	Octacrylene		0	83.3	0	83.3
173	OctylMethoxy Cinnamate		0	200	0	200
G5	Others such as					
174	Peonile	5(f)	0	0	50.00	50
175	Mugetanol	5(f)	0	0	25.00	25
176	Salicylaldehyde	5(f)	0	0	500.00	500
177	Evernyl	5(f)	0	0	200.00	200
178	Heliotropin	5(f)	0	0	250.00	250
179	Helional	5(f)	0	0	500.00	500
180	1,2 Hexane Diol	5(f)	0	0	200.00	200
181	Indoflor	5(f)	0	0	50.00	50
182	Floral	5(f)	0	0	50.00	50
183	Cyclohexyl Salicylate	5(f)	0	0	100.00	100
184	Methyl Anthranilate	5(f)	0	0	300.00	300
185	Dihydroanethole	5(f)	0	0	50.00	50
186	Benzilydine acetone	5(f)	0	0	100.00	100
187	Hexenyl -3 -Cis- Benzoate	5(f)	0	0	25	25
188	Hexenyl Hexenoate, Cis-3	5(f)	0	0	25	25
189	Citronellyl Oxyacetaldehyde	5(f)	0	0	25	25
190	Karmaflor	5(f)	0	0	25	25
191	Anethole	5(f)	0	166.7	0	166.7
192	Raspberry Ketone	5(f)	0	100	0	100

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
193	P-AninylPropanal	5(f)	0	100	0	100
	<b>Total Production Capacity of this group</b>		<b>0.0</b>	<b>733.3</b>	<b>6500.0</b>	<b>7233.3</b>
<b>H</b>	<b>Co Products:</b>					
1	Gypsum	--	0	0	3300	3300
2	Sodium sulphate	--	0	0	885.9	885.9
3	Recovered phenol	--	0	0	3	3
4	Tula resin	--	0	0	30	30
5	Calcium chloride	--	0	0	360	360
6	Calcium sulfata	--	0	0	444.75	444.75
7	Gypsum	--	0	0	3260	3260
8	Sodium Sulfate	--	0	0	500	500
9	Calcium Chloride	--	0	0	500	500
10	30% HCl (By product)	--	0	417	0	417
	<b>Total Production Capacity of this group</b>		<b>0</b>	<b>417</b>	<b>9283.65</b>	<b>9700.65</b>
	<b>Total Production Sodium Thio sulphate (dry basis)</b>		<b>32122.607</b>	<b>7204.54</b>	<b>117069.39</b>	<b>156396.54</b>
	<b>Total Production Sodium Thio sulphate (wet basis)</b>		<b>33122.607</b>	<b>7204.54</b>	<b>118869.39</b>	<b>159196.54</b>

### 1.3 Water

Total water requirement for the existing production plant is 28358 KLD. Out of which 3335 KLD is recycled water, and 3073 KLD is rain water harvesting and 21950 KLD is fresh water. Fresh Water is being sourced from Par river. The unit has obtained permission for withdrawal of raw water @ 4 MGD (18184 m<sup>3</sup>/day).

Total water requirement after the proposed production plant will be 42236 KLD. Out of which 9335 KLD will be recycled water, 11778 KLD will be treated sewage and 3073 KLD will be rain water harvesting and 18050 KLD will be fresh water.

### 1.4 Effluent Generation, Treatment and Disposal

High COD effluent generated after the proposed expansion shall be segregated and completely incinerated in company's own adequately designed incineration system of 7.2 MT/day capacity. High TDS effluent stream generated after proposed expansion shall be segregated and evaporated in new Multiple Effect Evaporator (MEE) of 8.33 m<sup>3</sup>/hr capacity shall be installed along with Agitated Thin Film Dryer (ATFD). Concentrated stream generated from pharma division shall be subjected to distillation for recovery of solvent & rest shall be disposed off to ETP along with non toxic streams. Normal effluent stream shall be treated in Normal Effluent Treatment Plant of 32,000 KL/day capacity consisting of Primary, Secondary & Tertiary Units. The industry has adequate capacity to treat additional effluent of normal stream from proposed expansion. The final treated effluent from the ETP conforming the GPCB norms will be collected in guard pond and then discharged to estuary zone of River Par through closed pipeline having capacity of 44,000 m<sup>3</sup>/day via diffuser.

## 1.5 Power Requirement

### Existing:

Source: DGVCL & Captive Power Plant

Connected Load: 56 MW

### Proposed:

Source: DGVCL & Captive Power Plant

Connected Load requirement: 10 MW

Note: We have our own captive power plant of 56 MW. Our present load is max. 32 MW. Hence we can easily accommodate the future need. Hence there is no need for additional power plant.

## 1.6 Air Emissions

### 1.6.1 Flue Gas Stacks

There are 5 nos. of flue gas stacks at East side plant, 5 nos. of flue gas stacks at west side plant and 1 no. flue gas stack at north side plant, attached to boilers, hot oil unit and oil burner shed and DG sets. Adequate stack height are already provided for all flue gas stacks in order to disperse the flue gases effectively. The ambient air quality is being maintained as per GPCB/CPCB norms. Stack emission quality is/will be maintained as per the GPCB norms. Additional flue gas stack is not required for proposed expansion.

### 1.6.2 Process Vents

There are 54 process vents attached to various plants and there will be 44 additional process vents required for proposed expansion. Adequate air pollution control devices are provided to existing process vents and will also be provided to proposed process vents to control the emission of pollutants within the prescribed limits.

## 1.7 Solid/Hazardous Waste Generation and Disposal

Both Municipal Solid Wastes (MSW) and Hazardous Wastes gets generated at the proposed facility. No residential facility is planned within the project site and consequently MSW will be mainly from offices and canteens.

Hazardous wastes generated are being managed as per the Hazardous Wastes (Management, Transport and Transboundary) Rules 2016 as amended till date and are being disposed off as detailed in **Table 3-6**. After proposed expansion the same practice will be continued.

## 2 INTRODUCTION

### 2.1 Identification of Project and Project Proponent

#### 2.1.1 Identification of Project Proponent

Legendary Indian, Mr Kasturbhai Lalbhai, founded Atul on September 15, 1947, exactly a month after India became independent with the dream to generate large-scale employment, create wealth in rural India and make the country self-sufficient in its requirements of chemicals.

The first Prime Minister of the country, Mr. Jawaharlal Nehru inaugurated Atul Limited. The Company thus commenced its business with just a few dyestuffs, the expertise of foreign companies. Atul Limited is a member of Lalbhai Group, one of the oldest business houses of India, with interests mainly in textiles and chemicals. The Group is strongly committed to serve the society in the fields of education, health and culture.

Over the years, Atul Ltd. joined hands with three renowned MNCs namely American Cyanamide Company (now a part of BASF AG and Pfizer Inc) in the year 1947, Imperial Chemical Industries plc (now a part of Akzo Nobel and Astra Zeneca plc) in 1955 and Ciba-Geigy Ltd. (now a part of BASF AG and Huntsman Corporation) in 1960. The joint ventures of these came to be known as Cyanamid India Ltd., Atic Industries Ltd. and Cibatul Ltd. respectively. Consequent to worldwide divestment of dyes and polymers business by ZENECA plc (formerly a part of ICI plc) and Ciba Ltd. respectively, Atic Industries Ltd. and Cibatul Ltd. were merged into Atul Limited in 1995 and 1998 respectively.

Atul's registered office is in Ahmedabad whereas its corporate headquarters are located in Atul, Gujarat. The Company is listed on the NSE of India and has over 35,000 shareholders. From a small beginning (one dyestuff and one manufacturing plant), Atul has grown into a diversified chemical conglomerate, with about 1,350 products and formulations with 13 subsidiary and associate companies.

Atul Ltd. (Atul) is one of the largest integrated chemical companies of India and amongst the first five manufacturers of its chosen chemicals in the world. The Company has established subsidiary companies in the USA (1994), the UK (1996), Germany (1998), China (2004) and Brazil (2012) to serve its customers and thus enhance breadth and depth of its business. The Company serves about 5,700 (2014-15) customers belonging to the Adhesives, Agriculture, Animal Feed, Automobile, Chemical, Composites, Construction, Cosmetic, Defence, Dyestuff, Electrical and Electronics, Flavour, Food, Footwear, Fragrance, Glass, Home Care, Horticulture, Hospitality, Paint and Coatings, Paper, Personal Care, Pharmaceutical, Plastic, Polymer, Rubber, Soap and Detergent, Sports and Leisure, Textile, Tyre and Wind Energy industries (2014-15). The Company sells about 1,380 (2014-15) diverse products and formulations, placed under 41 (2014-15) product groups. With deep insight in science and technology, Atul manages almost all Unit Processes and Unit Operations to manufacture products and formulations and has state-of-the-art facilities and processes to ensure safety and treatment of gaseous, liquid and solid pollutants. Thus, Atul Ltd. is an improvement driven, integrated chemical company serving about 4,000 customers belonging to 27 industries across the world.

Atul aims to be one of the leading chemical conglomerates in the world; it will thus take all the required initiatives both at the workplace and in the marketplace for the same. The company will increase process efficiencies and people productivity, expand its capacities, introduce new products, strengthen capability of its human resources and collaborate with companies with similar values to leverage on combined strengths.

#### 2.1.2 Identification of Proposed Project

Atul Limited is an existing chemical manufacturing complex with Captive Power Plant (CPP) of 56 MW and is now planning to expand their existing production capacity and addition of new products. The proposed expansion will be carried out within the existing premises using the same infrastructure & utilities with some modifications. The company is located at Survey No. 5, 6, 29, 30, 33 TO 38, 80, 81, 84, 85, 91, 96 to 105, 108, 112 to 117, 142, 144 to

148, 274, 275 & 276, At & post: Atul – 396020, Valsad District, Gujarat. The centre latitude & longitude of the project site are 20°32'10.61"N and 72°56'23.56"E respectively. The estimated cost of the proposed project is ~ INR 1789.03 Crores. The Total Production capacity is given in **Table 2-1**.

**Table 2-1: Production Details**

**Product Group**

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
A	DYES	5(f)	1300.8	583.33	9286	11170.13
B	CHLOR-AKLALI	4(d)	3400	4100	21133.29	28633.29
C	PESTICIDES TECH	5(b)	2637.04	278.24	11370.59	14285.87
D	BULK DRUG AND PHARMACEUTICALS	5(f)	350.6	0	1979	2329.6
E	RESINS	5(f)	2990.9	441.67	17000	20432.57
F	OTHER CHEMICALS	5(f)				
	Total Production Capacity of this group Sodium Thio sulphate (dry basis)		21443.267	651	40516.86	62611.127
	Total Production Capacity of this group Sodium Thio sulphate (wet basis)		22443.267	651	42316.86	65411.127
G	Flavors & Fragrances	5(f)	0	733.3	6500	7233.3
H	Co Products:	5(f), 5(b)	0	417	9283.65	9700.65
	<b>Total Production Capacity with Sodium Thio sulphate (dry basis)</b>		<b>32122.607</b>	<b>7204.54</b>	<b>117069.39</b>	<b>156396.54</b>
	<b>Total Production Capacity with Sodium Thio sulphate (wet basis)</b>		<b>33122.607</b>	<b>7204.54</b>	<b>118869.39</b>	<b>159196.54</b>

**Detailed Product List**

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
<b>A</b>	<b>DYES</b>	<b>5(f)</b>				
1	Azo dyes	5(f)	550	0	0	550
2	Sulfur Black		250	583.33	1667	2500.33
3	Sulfur Dyes range		25	0	0	25
4	Naphthol range		75	0	0	75
5	Fast Color Bases		40	0	0	40
6	Disperse dyes		118.5	0	0	118.5
7	Optical Brighteners		10	0	0	10

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
8	Reactive Dyes		127.3	0	834	961.3
9	Vat dyes		105	0	0	105
10	Indigo		0	0	500	500
11	Manganese sulphate		0	0	1000	1000
12	40 % Manganese sulphate solution		0	0	2500	2500
13	Pigments		0	0	200	200
14	1-Aminoantraquinone		0	0	417	417
15	H-acid		0	0	500	500
16	4-amino-phenyl-4-beta hydroxy ethyl sulphone sulphate ester, Para base ester		0	0	834	834
17	DNCB (Di Nitro ChloroBenzene)		0	0	834	834
	<b>Total Production Capacity of DYES</b>		<b>1300.8</b>	<b>583.3</b>	<b>9286.0</b>	<b>11170.1</b>
<b>B</b>	<b>CHLOR-AKLALI</b>	<b>4(d)</b>				
18	Caustic soda/potash & sodium sulfide	4(d)	1800	2200	11100	15100
19	Liquid Chlorine /Hcl		1600	1900	9768	13268
20	Hydrogen		0.0	0	265.29	265.29
	<b>Total Production Capacity of CHLOR-ALKALI</b>		<b>3400.0</b>	<b>4100.0</b>	<b>21133.3</b>	<b>28633.3</b>
<b>C</b>	<b>PESTICIDES TECH</b>	<b>5(b)</b>				
21	Carbamate group of Agrochemicals	5(b)	33.3	10	66.7	110
22	Diuron		20	200	200	420
23	Trichlo Carbon		8.3	0	0	8.3
24	Cartap Hcl		50	0	0	50
25	Carbendazim		20.9	0	180.1	201
26	Herbicides (2,4-D & related products)		2170	0	2750	5670
27	MCPA				750	
28	Pyridine based insecticides & Herbicides chemical Imidacloprid		25	4.16	95.84	125
29	Triazole based Fungicide		1.67	0	100.33	102
30	Pyrethroides		10	0	0	10
31	Sulphonyl Urea		25	10.25	34.75	70
32	Glyphosate		50	15	2935	3000
33	Isoprothiolane		8.3	10	81.7	100
34	Fipronil		5	0	25	30
35	Formulations		200	0	2000	2200
36	Buprofesin		4	0	0	4
37	Imazethpyr		1.83	0	0	1.83
38	Kresoxim Methyl		2.08	0	0	2.08
39	Fenoxaprop		0.83	0	0	0.83
40	Cyhalofop		0.83	0	0	0.83
41	Mesotrione		0	0	300	300
42	Sucotrione		0	0	300	300

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
43	Glycin		0	0	1000	1000
44	Pyrazosulfurone		0	0.5	29.5	30
45	BisPyribac Sodium		0	0.83	29.17	30
46	Azoxystrobin		0	2.08	147.92	150
47	Quizalofop		0	1.25	48.75	50
48	Thiamethoxam		0	10	90	100
49	Metribuzine		0	10	50	60
50	Diafenthurone		0	4.17	25.83	30
51	Chlorantraniliprole		0	0.0	70	70
52	5-Chloro 1-Indenone		0	0.0	60	60
	<b>Total Production Capacity of PESTICIDES</b>		<b>2637.04</b>	<b>278.24</b>	<b>11370.59</b>	<b>14285.87</b>
<b>D</b>	<b>BULK DRUG AND PHARMACEUTICALS</b>	<b>5(f)</b>				
53	Mabendazole	5(f)	2	0	0	2
54	Tolbutamide		2.5	0	0	2.5
55	Quiniodochlor		15	0	0	15
D1	Bulk Drugs & Intermediates		9.6	0	-	194.6
56	Dapsone-API				65	
57	Valacyclovir HCL					
58	Celecoxib					
59	Desvenlafixine					
60	Mirabegron					
61	Vildagliptin					
62	Venlafaxine Hydrochloride					
63	5-Hydroxy methyl thiazole (5-HMT)				20	
64	Thiophene-2-carboxaldehyde (2-TC)				90	
65	1-Chloroacetyl-2-carbonitrile pyrrolidine (CACP)				10	
66	Dechlorfenac sodium / potassium		2.5	0	0	2.5
67	Atenolol		1.7	0	0	1.7
68	Fresamide		1.3	0	0	1.3
69	Trimethoprim		0.9	0	0	0.9
70	Para hydroxy acetophenone		1.7	0	0	1.7
71	Para hydroxy phenyl acetamide		3	0	0	3
72	Acyclovir		5.2	0	0	5.2
73	Bathenechol		5.2	0	0	5.2
D2	Pharma Intermediates & Chemicals		300	0		2094
74	4,4 Diamino diphenyl sulphone				250	
75	4,4 Dichloro diphenyl sulphone				1000	
76	3,3 Diamino diphenyl sulphone				44	
77	DHDPS & Other sulfones				500	

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
	<b>Total Production Capacity of BULK DRUG AND PHARMACEUTICALS</b>		<b>350.6</b>	<b>0</b>	<b>1979.000</b>	<b>2329.600</b>
<b>E</b>	<b>RESINS</b>	<b>5(f)</b>				
78	Epoxy Resin	5(f)	2500	100	15000	17600
79	Vinyl Ester Resins		37.5	0	0	37.5
80	Ketone Formaldehyde Resins & Sulphonamide, Formaldehyde Resins		20.8	0	0	20.8
81	UF/MF/PF/DiCyandiamide Resins		270.9	0	0	270.9
82	Polyamide resins		161.7	0	0	161.7
83	Polygrip TPU based		0	41.67	300	341.67
84	Polygrip rubber based		0	300	1700	2000
	<b>Total Production Capacity of RESINS</b>			<b>2990.9</b>	<b>441.67</b>	<b>17000</b>
<b>F</b>	<b>OTHER CHEMICALS</b>					
85	Anthraquinone, Naphthalene, Benzene Intermediates. (Including Beta – Naphthol & BON Acid)	5(f)	740	0	0	740
86	Resorcinol (Meta hydroxy phenol)	5(f)	460	0	600	1060
87	Carbamite	5(b)	30	0	0	30
88	Chlorzoxazone & other related products	5(f)	5	0	0	5
89	4 Ethyl 2,3 – Diocpiperazino carbonyl Chloride	5(f)	3.3	0	0	3.3
90	Imino Dibenzyl 5 carbonyl Chloride	5(f)	0.8	0	0	0.8
91	Formaldehyde and base products	5(f)	3200	0	12000	15200
92	Sulfuric Acid / Oleum / Chlorosulphonic Acid & Salts	--	11550	0	0	11550
93	Sulpha Drug Intermediate	5(f)	193.8	0	0	193.8
94	Acetyl Sulphanilyl Chloride and its derivatives.	5(f)	1500	0	0	1500
95	Acetanilide	5(f)	500	0	0	500
96	Sulpha Methyl Phenazole Sodium	5(f)	1.1	0	0	1.1
97	Pyrazole Base	5(f)	10.5	0	0	10.5
98	Sulphanilic acid	5(f)	25	0	0	25
99	Bis Phenol A	5(f)	416.7	0	0	416.7
100	Hexamine	5(f)	150	0	0	150
101	Epoxy Intermediates	5(f)	23.8	0	0	23.8
102	Hardners and auxiliaries	5(f)	500	0	3500	4000
103	Hardener Intermediates	5(f)	700	0	0	700
104	Bisphenol S & Intermediate Chemicals	5(f)	16.6	0	0	16.6
105	Sodium Thio sulphate (dry basis)	---	900	0	1600	2500
106	Sodium Thio sulphate (wet basis)	---	1900	0	3400	5300
107	Phosgene	5(f)	416.667	0	416.16	832.827
108	HX-13059	5(f)	0	5	0	5
109	Alkyl ketene dimer	5(f)	0	0	500	500

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
110	Anisole	5(f)	0	166	140	306
111	PF Resin	5(f)	0	0	200	200
112	CMC (Carboxy methyl cellulose)	5(f)	0	0	2000	2000
113	HMMM (Hexa Methoxy Methyl Melemine)	5(f)	0	0	40	40
114	m-Amino phenol	5(f)	0	0	250	250
115	Mono chloro benzene	5(f)	0	0	2500	2500
116	Propionyl chloride	5(f)	0	0	200	200
117	Resorcinol derivatives	5(f)	0	0	100	100
118	RF Resin (Resoform P-18,19,20)	5(f)	0	85.0	320	405
119	Trichloro acetyl chloride	5(f)	0	0	200	200
120	Thio glycolic acid	5(f)	0	0	200	200
121	Thionyl chloride	--	0	0	1000	1000
122	1,3 Cyclohexanedione	5(f)	0	80	40	120
F1	Agro, Pharma intermediates, Isocyanats & Carbonat Esters, etc.	5(f)	100			
123	Trans-4-MCHI	5(f)		315	0	2230
124	p-Anisyl chloroformate	5(f)				
125	DI-TERT-BUTYL DICARBONATE (Boc. anhydride)	5(f)				
126	N, N- Disuccinimidyl Carbonate	5(f)				
F1.1	Chloroformate	5(f)			800	
127	1-Chloro ethyl chloroformate (1-CECF)	5(f)				
128	4-Nitrophenyl chloroformate (4-NPCF)					
129	n-Pentyl chloroformate (n-PCF)					
130	Isobutyl chloroformate (IBCF)					
131	2 Ethyl Hexyl Cholroformate (2-EHCF)					
132	Phenyl Chloroformate (PCF)					
133	Benzyl Chloroformate (BCF)					
134	Methyl chloroformate (MCF)					
135	n--Hexyl chloroformate (n-HCF)					
F1.2	Carbonate	5(f)				
136	Di-tert-butyl dicarbonate (DIBOC)	5(f)			100	
137	Bis (4-Nitrophenyl) Carbonate (Bis-NPC)				10	
138	Diphenyl carbonate (DPC)				50	
139	Dimethyl carbonate (DMC)				50	
140	1,1'-Carbonyldiimidazole (CDI)				20	
F1.3	Isocyanates	5(f)				
141	p-Toluene sulphonyl isocyanate (PTSI) and other Isocyanates	5(f)			300	
F1.4	Acid Chlorides	5(f)				
142	N-Methylpiperazinyl carbamoyl chloride Hydrochloride (NPCCL)	5(f)		50		

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
143	(Chlormethylene)dimethylammonium chloride (VMR)/ Phosgeniminium chloride and other Acid chlorides				75	
144	N,N-Dimethyl carbamoyl chloride (DMCCI)				60	
145	Hexaethyl guanidinium chloride (HEGCI)				50	
F1.5	Urea	5(f)				
146	Tetrabutyl Urea (TBU)	5(f)			75	
147	Tetramethyl Urea (TMU)				75	
F1.6	Carbodiimide	5(f)				
148	N,N'-Dicyclohexylcarbodiimide (DCC)	5(f)			100	
149	Sodium sulphite	--	0	0	3261	3261
150	30% HCl	--	0	0	3622.5	3622.5
151	Sodium hypo chloride solution (10%)	--	0	0	1853.7	1853.7
152	Potassium chloride	--	0	0	740	740
153	Salt (PH)	--	0	0	18.5	18.5
154	HCl 30%	--	0	0	1000	1000
155	Sodium Chloride	--	0	0	2400	2400
	<b>Total Production Capacity of this group Sodium Thio sulphate (dry basis)</b>		<b>21443.3</b>	<b>651.0</b>	<b>40516.9</b>	<b>62611.1</b>
	<b>Total Production Capacity of this group Sodium Thio sulphate (wet basis)</b>		<b>22443.3</b>	<b>651.0</b>	<b>42316.9</b>	<b>65411.1</b>
<b>G</b>	<b>Flavors &amp; Fragrances</b>					
G1	Allyl Esters such as	5(f)				
156	Allyl Caproate		0	0	250.00	250
157	Allyl cyclohexyl propionate		0	0	250.00	250
158	Allyl Heptanoate		0	0	150.00	150
159	Cyclogalbanate		0	0	25.00	25
G2	Styrene Based derivatives such as	5(f)				
160	Phenyl Ethyl Alcohol (PEA)		0	0	850.00	850
161	PE acetate		0	0	250.00	250
162	PEME ( Phenyl ethyl methyl ether)		0	0	200.00	200
163	Pommerol ( Phenyl ethyl isoamyl ether)		0	0	100.00	100
164	Styrene oxide		0	0	500.00	500
165	Phenyl ethyl phenyl acetate (PEPA)		0	0	100.00	100
166	Phenyl acetaldehyde dimethyl Acetal		0	0	250.00	250
167	Styrallyl acetate		0	0	500.00	500
G3	Coumarin derivatives such as	5(f)				
168	Coumarin		0	0	500.00	500
169	Dihydro Coumarin		0	0	100.00	100
170	Sunscreen products such as	5(f)				
171	Avobenzene		0	83.3	0	83.3
172	Octacrylene		0	83.3	0	83.3

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
173	OctaylMethoxy Cinnamate		0	200	0	200
G5	Others such as					
174	Peonile	5(f)	0	0	50.00	50
175	Mugetanol	5(f)	0	0	25.00	25
176	Salicylaldehyde	5(f)	0	0	500.00	500
177	Evernyl	5(f)	0	0	200.00	200
178	Heliotropin	5(f)	0	0	250.00	250
179	Helional	5(f)	0	0	500.00	500
180	1,2 Hexane Diol	5(f)	0	0	200.00	200
181	Indoflor	5(f)	0	0	50.00	50
182	Floral	5(f)	0	0	50.00	50
183	Cyclohexyl Salicylate	5(f)	0	0	100.00	100
184	Methyl Anthranilate	5(f)	0	0	300.00	300
185	Dihydroanethole	5(f)	0	0	50.00	50
186	Benzilydine acetone	5(f)	0	0	100.00	100
187	Hexenyl -3 -Cis- Benzoate	5(f)	0	0	25	25
188	Hexenyl Hexenoate, Cis-3	5(f)	0	0	25	25
189	Citronellyl Oxyacetaldehyde	5(f)	0	0	25	25
190	Karmaflor	5(f)	0	0	25	25
191	Anethole	5(f)	0	166.7	0	166.7
192	Raspberry Ketone	5(f)	0	100	0	100
193	P-AninylPropanal	5(f)	0	100	0	100
	<b>Total Production Capacity of this group</b>		<b>0.0</b>	<b>733.3</b>	<b>6500.0</b>	<b>7233.3</b>
<b>H</b>	<b>Co Products:</b>					
1	Gypsum	--	0	0	3300	3300
2	Sodium sulphate	--	0	0	885.9	885.9
3	Recovered phenol	--	0	0	3	3
4	Tula resin	--	0	0	30	30
5	Calcium chloride	--	0	0	360	360
6	Calcium sulfate	--	0	0	444.75	444.75
7	Gypsum	--	0	0	3260	3260
8	Sodium Sulfate	--	0	0	500	500
9	Calcium Chloride	--	0	0	500	500
10	30% HCl (By product)	--	0	417	0	417
	<b>Total Production Capacity of this group</b>		<b>0</b>	<b>417</b>	<b>9283.65</b>	<b>9700.65</b>
	<b>Total Production Sodium Thio sulphate (dry basis)</b>		<b>32122.607</b>	<b>7204.54</b>	<b>117069.39</b>	<b>156396.54</b>
	<b>Total Production Sodium Thio sulphate (wet basis)</b>		<b>33122.607</b>	<b>7204.54</b>	<b>118869.39</b>	<b>159196.54</b>

## 2.2 Brief Description of nature of the Project

Most of the proposed plants are having capability of manufacturing multiple products. These plants are comprising of various equipment and utility facility having complete automation. Also, formulation of few products will be done along with manufacturing of technical products. This plant contains reaction vessels, distillation setup, filtration and drying equipment. Utilities available like Cooling Water, Chilled water Plant, Chilled Brine Plant, Air Compressor, Nitrogen plant, Steam, etc.

## 2.3 Need for the project and it's importance to region

- Change in market Demand.
- Utilization of Resource
- New technology cost effective and Environmental friendly manufacturing.
- Move towards the cleaner and safer Manufacturing Processes.
- Volatile Market Situation and selective customer demands.
- Considering Export Opportunity by meeting International Quality with World class technology.
- Forward and backward integration of existing products

## 2.4 Demand Supply Gap

Existing Products:

Increased demand from Market Local and International. (Based on Forecast)

New Product:

Increase the Scope of Supply as per market demand and opportunity (Based on Forecast).

## 2.5 Employment Generation (Direct and Indirect) due to the project.

Existing:

Permanent employment is 2500 & Contractual employment is 2500

Proposed:

Construction Phase: 200-300 on contract basis

Operation Phase: 30 employee permanent employment and 55 employee on contract basis

### **3 PROJECT DESCRIPTION**

#### **3.1 Type of Project including interlinked and interdependent projects, if any**

Not applicable

#### **3.2 Location (map showing general location, specific location and project boundary & project lay out) with coordinates**

Location:

State: **Gujarat**

District: **Valsad**

Tehsil / Taluk / Mandal: **Atul**

Project site location map is shown as **Figure 3-1**. The project site boundary with coordinates is shown in **Figure 3-1**.

Figure 3-1: Site Location Map



### 3.3 Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted

No alternative site is required as proposed project is expansion in existing production capacity and addition of new products within existing premises.

### 3.4 Size or Magnitude of Operation

Product details and production capacities are given in **Table 3-1**.

**Table 3-1: Production details**

#### Product Group

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
A	DYES	5(f)	1300.8	583.33	9286	11170.13
B	CHLOR-AKLALI	4(d)	3400	4100	21133.29	28633.29
C	PESTICIDES TECH	5(b)	2637.04	278.24	11370.59	14285.87
D	BULK DRUG AND PHARMACEUTICALS	5(f)	350.6	0	1979	2329.6
E	RESINS	5(f)	2990.9	441.67	17000	20432.57
F	OTHER CHEMICALS	5(f)				
	Total Production Capacity of this group Sodium Thio sulphate (dry basis)		21443.267	651	40516.86	62611.127
	Total Production Capacity of this group Sodium Thio sulphate (wet basis)		22443.267	651	42316.86	65411.127
G	Flavors & Fragrances	5(f)	0	733.3	6500	7233.3
H	Co Products:	5(f), 5(b)	0	417	9283.65	9700.65
	<b>Total Production Capacity with Sodium Thio sulphate (dry basis)</b>		<b>32122.607</b>	<b>7204.54</b>	<b>117069.39</b>	<b>156396.54</b>
	<b>Total Production Capacity with Sodium Thio sulphate (wet basis)</b>		<b>33122.607</b>	<b>7204.54</b>	<b>118869.39</b>	<b>159196.54</b>

#### Detailed Product List

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
<b>A</b>	<b>DYES</b>	<b>5(f)</b>				
1	Azo dyes	5(f)	550	0	0	550
2	Sulfur Black		250	583.33	1667	2500.33

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
3	Sulfur Dyes range		25	0	0	25
4	Naphthol range		75	0	0	75
5	Fast Color Bases		40	0	0	40
6	Disperse dyes		118.5	0	0	118.5
7	Optical Brighteners		10	0	0	10
8	Reactive Dyes		127.3	0	834	961.3
9	Vat dyes		105	0	0	105
10	Indigo		0	0	500	500
11	Manganese sulphate		0	0	1000	1000
12	40 % Manganese sulphate solution		0	0	2500	2500
13	Pigments		0	0	200	200
14	1-Aminoantraquinone		0	0	417	417
15	H-acid		0	0	500	500
16	4-amino-phenyl-4-beta hydroxy ethyl sulphone sulphate ester, Para base ester		0	0	834	834
17	DNCB (Di Nitro ChloroBenzene)		0	0	834	834
	<b>Total Production Capacity of DYES</b>		<b>1300.8</b>	<b>583.3</b>	<b>9286.0</b>	<b>11170.1</b>
<b>B</b>	<b>CHLOR-AKLALI</b>	<b>4(d)</b>				
18	Caustic soda/potash & sodium sulfide	4(d)	1800	2200	11100	15100
19	Liquid Chlorine /Hcl		1600	1900	9768	13268
20	Hydrogen		0.0	0	265.29	265.29
	<b>Total Production Capacity of CHLOR-ALKALI</b>		<b>3400.0</b>	<b>4100.0</b>	<b>21133.3</b>	<b>28633.3</b>
<b>C</b>	<b>PESTICIDES TECH</b>	<b>5(b)</b>				
21	Carbamate group of Agrochemicals	5(b)	33.3	10	66.7	110
22	Diuron		20	200	200	420
23	Trichlo Carbon		8.3	0	0	8.3
24	Cartap Hcl		50	0	0	50
25	Carbendazim		20.9	0	180.1	201
26	Herbicides (2,4-D & related products)		2170	0	2750	5670
27	MCPA				750	
28	Pyridine based insecticides & Herbicides chemical Imidacloprid		25	4.16	95.84	125
29	Triazole based Fungicide		1.67	0	100.33	102
30	Pyrethroides		10	0	0	10
31	Sulphonyl Urea		25	10.25	34.75	70
32	Glyphosate		50	15	2935	3000
33	Isoprothiolane		8.3	10	81.7	100
34	Fipronil		5	0	25	30
35	Formulations		200	0	2000	2200
36	Buprofesin		4	0	0	4
37	Imazethpyr		1.83	0	0	1.83

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
38	Kresoxim Methyl		2.08	0	0	2.08
39	Fenoxaprop		0.83	0	0	0.83
40	Cyhalofop		0.83	0	0	0.83
41	Mesotrione		0	0	300	300
42	Sucotrione		0	0	300	300
43	Glycin		0	0	1000	1000
44	Pyrazosulfurone		0	0.5	29.5	30
45	BisPyribac Sodium		0	0.83	29.17	30
46	Azoxystrobin		0	2.08	147.92	150
47	Quizalofop		0	1.25	48.75	50
48	Thiamethoxam		0	10	90	100
49	Metribuzine		0	10	50	60
50	Diafenthurone		0	4.17	25.83	30
51	Chlorantraniliprole		0	0.0	70	70
52	5-Chloro 1-Indenone		0	0.0	60	60
	<b>Total Production Capacity of PESTICIDES</b>		<b>2637.04</b>	<b>278.24</b>	<b>11370.59</b>	<b>14285.87</b>
<b>D</b>	<b>BULK DRUG AND PHARMACEUTICALS</b>	<b>5(f)</b>				
53	Mabendazole	5(f)	2	0	0	2
54	Tolbutamide		2.5	0	0	2.5
55	Quiniodochlor		15	0	0	15
D1	Bulk Drugs & Intermediates		9.6	0	-	194.6
56	Dapsone-API				65	
57	Valacyclovir HCL					
58	Celecoxib					
59	Desvenlafixine					
60	Mirabegron					
61	Vildagliptin					
62	Venlafaxine Hydrochloride					
63	5-Hydroxy methyl thiazole (5-HMT)				20	
64	Thiophene-2-carboxaldehyde (2-TC)				90	
65	1-Chloroacetyl-2-carbonitrile pyrrolidine (CACP)				10	
66	Dechlorfenac sodium / potassium		2.5	0	0	2.5
67	Atenolol		1.7	0	0	1.7
68	Fresamide		1.3	0	0	1.3
69	Trimethoprim		0.9	0	0	0.9
70	Para hydroxy acetophenone		1.7	0	0	1.7
71	Para hydroxy phenyl acetamide		3	0	0	3
72	Acyclovir		5.2	0	0	5.2
73	Bathenechol		5.2	0	0	5.2
D2	Pharma Intermediates & Chemicals		300	0		2094

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
74	4,4 Diamino diphenyl sulphone				250	
75	4,4 Dichloro diphenyl sulphone				1000	
76	3,3 Diamino diphenyl sulphone				44	
77	DHDPS & Other sulfones				500	
	<b>Total Production Capacity of BULK DRUG AND PHARMACEUTICALS</b>		<b>350.6</b>	<b>0</b>	<b>1979.000</b>	<b>2329.600</b>
<b>E</b>	<b>RESINS</b>	<b>5(f)</b>				
78	Epoxy Resin	5(f)	2500	100	15000	17600
79	Vinyl Ester Resins		37.5	0	0	37.5
80	Ketone Formaldehyde Resins & Sulphonamide, Formaldehyde Resins		20.8	0	0	20.8
81	UF/MF/PF/DiCyandiamide Resins		270.9	0	0	270.9
82	Polyamide resins		161.7	0	0	161.7
83	Polygrip TPU based		0	41.67	300	341.67
84	Polygrip rubber based		0	300	1700	2000
	<b>Total Production Capacity of RESINS</b>		<b>2990.9</b>	<b>441.67</b>	<b>17000</b>	<b>20432.57</b>
<b>F</b>	<b>OTHER CHEMICALS</b>					
85	Anthraquinone, Naphthalene, Benzene Intermediates. (Including Beta – Napthol & BON Acid)	5(f)	740	0	0	740
86	Resorcinol (Meta hydroxy phenol)	5(f)	460	0	600	1060
87	Carbamite	5(b)	30	0	0	30
88	Chlorzoxazone & other related products	5(f)	5	0	0	5
89	4 Ethyl 2,3 – Diocpiperazino carbonyl Chloride	5(f)	3.3	0	0	3.3
90	Imino Dibenzyl 5 carbonyl Chloride	5(f)	0.8	0	0	0.8
91	Formaldehyde and base products	5(f)	3200	0	12000	15200
92	Sulfuric Acid / Oleum / Chlorosulphonic Acid & Salts	--	11550	0	0	11550
93	Sulpha Drug Intermediate	5(f)	193.8	0	0	193.8
94	Acetyl Sulphanilyl Chloride and its derivatives.	5(f)	1500	0	0	1500
95	Acetanilide	5(f)	500	0	0	500
96	Sulpha Methyl Phenazole Sodium	5(f)	1.1	0	0	1.1
97	Pyrazole Base	5(f)	10.5	0	0	10.5
98	Sulphanilic acid	5(f)	25	0	0	25
99	Bis Phenol A	5(f)	416.7	0	0	416.7
100	Hexamine	5(f)	150	0	0	150
101	Epoxy Intermediates	5(f)	23.8	0	0	23.8
102	Hardners and auxiliaries	5(f)	500	0	3500	4000
103	Hardener Intermediates	5(f)	700	0	0	700
104	Bisphenol S & Intermediate Chemicals	5(f)	16.6	0	0	16.6
105	Sodium Thio sulphate (dry basis)	---	900	0	1600	2500

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
106	Sodium Thio sulphate (wet basis)	---	1900	0	3400	5300
107	Phosgene	5(f)	416.667	0	416.16	832.827
108	HX-13059	5(f)	0	5	0	5
109	Alkyl ketene dimer	5(f)	0	0	500	500
110	Anisole	5(f)	0	166	140	306
111	PF Resin	5(f)	0	0	200	200
112	CMC (Carboxy methyl cellulose)	5(f)	0	0	2000	2000
113	HMMM (Hexa Methoxy Methyl Melemine)	5(f)	0	0	40	40
114	m-Amino phenol	5(f)	0	0	250	250
115	Mono chloro benzene	5(f)	0	0	2500	2500
116	Propionyl chloride	5(f)	0	0	200	200
117	Resorcinol derivatives	5(f)	0	0	100	100
118	RF Resin (Resoform P-18,19,20)	5(f)	0	85.0	320	405
119	Trichloro acetyl chloride	5(f)	0	0	200	200
120	Thio glycolic acid	5(f)	0	0	200	200
121	Thionyl chloride	--	0	0	1000	1000
122	1,3 Cyclohexanedione	5(f)	0	80	40	120
F1	Agro, Pharma intermediates, Isocyanats & Carbonat Esters, etc.	5(f)	100			
123	Trans-4-MCHI	5(f)		315	0	2230
124	p-Anisyl chloroformate	5(f)				
125	DI-TERT-BUTYL DICARBONATE (Boc. anhydride)	5(f)				
126	N, N- Disuccinimidyl Carbonate	5(f)				
F1.1	Chloroformate	5(f)			800	
127	1-Chloro ethyl chloroformate (1-CECF)	5(f)				
128	4-Nitrophenyl chloroformate (4-NPCF)					
129	n-Pentyl chloroformate (n-PCF)					
130	Isobutyl chloroformate (IBCF)					
131	2 Ethyl Hexyl Cholroformate (2-EHCF)					
132	Phenyl Chloroformate (PCF)					
133	Benzyl Chloroformate (BCF)					
134	Methyl chloroformate (MCF)					
135	n--Hexyl chloroformate (n-HCF)					
F1.2	Carbonate	5(f)				
136	Di-tert-butyl dicarbonate (DIBOC)	5(f)			100	
137	Bis (4-Nitrophenyl) Carbonate (Bis-NPC)				10	
138	Diphenyl carbonate (DPC)				50	
139	Dimethyl carbonate (DMC)				50	
140	1,1'-Carbonyldiimidazole (CDI)				20	
F1.3	Isocyanates	5(f)				

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
141	p-Toluene sulphonyl isocyanate (PTSI) and other Isocyanates	5(f)			300	
F1.4	Acid Chlorides	5(f)				
142	N-Methylpiperazinyl carbamoyl chloride Hydrochloride (NPCCL)	5(f)			50	
143	(Chlormethylene)dimethylammonium chloride (VMR)/ Phosgeniminium chloride and other Acid chlorides				75	
144	N,N-Dimethyl carbamoyl chloride (DMCCI)				60	
145	Hexaethyl guanidinium chloride (HEGCI)				50	
F1.5	Urea	5(f)				
146	Tetrabutyl Urea (TBU)	5(f)			75	
147	Tetramethyl Urea (TMU)				75	
F1.6	Carbodiimide	5(f)				
148	N,N'-Dicyclohexylcarbodiimide (DCC)	5(f)			100	
149	Sodium sulphite	--	0	0	3261	3261
150	30% HCl	--	0	0	3622.5	3622.5
151	Sodium hypo chloride solution (10%)	--	0	0	1853.7	1853.7
152	Potassium chloride	--	0	0	740	740
153	Salt (PH)	--	0	0	18.5	18.5
154	HCl 30%	--	0	0	1000	1000
155	Sodium Chloride	--	0	0	2400	2400
	<b>Total Production Capacity of this group Sodium Thio sulphate (dry basis)</b>		<b>21443.3</b>	<b>651.0</b>	<b>40516.9</b>	<b>62611.1</b>
	<b>Total Production Capacity of this group Sodium Thio sulphate (wet basis)</b>		<b>22443.3</b>	<b>651.0</b>	<b>42316.9</b>	<b>65411.1</b>
<b>G</b>	<b>Flavors &amp; Fragrances</b>					
G1	Allyl Esters such as	5(f)				
156	Allyl Caproate		0	0	250.00	250
157	Allyl cyclohexyl propionate		0	0	250.00	250
158	Allyl Heptanoate		0	0	150.00	150
159	Cyclogalbanate		0	0	25.00	25
G2	Styrene Based derivatives such as	5(f)				
160	Phenyl Ethyl Alcohol (PEA)		0	0	850.00	850
161	PE acetate		0	0	250.00	250
162	PEME ( Phenyl ethyl methyl ether)		0	0	200.00	200
163	Pommerol ( Phenyl ethyl isoamyl ether)		0	0	100.00	100
164	Styrene oxide		0	0	500.00	500
165	Phenyl ethyl phenyl acetate (PEPA)		0	0	100.00	100
166	Phenyl acetaldehyde dimethyl Acetal		0	0	250.00	250
167	Styrallyl acetate		0	0	500.00	500
G3	Coumarin derivatives such as	5(f)				

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
168	Coumarin		0	0	500.00	500
169	Dihydro Coumarin		0	0	100.00	100
170	Sunscreen products such as	5(f)				
171	Avobenzene		0	83.3	0	83.3
172	Octacrylene		0	83.3	0	83.3
173	OctylMethoxy Cinnamate		0	200	0	200
G5	Others such as					
174	Peonile	5(f)	0	0	50.00	50
175	Mugetanol	5(f)	0	0	25.00	25
176	Salicylaldehyde	5(f)	0	0	500.00	500
177	Evernyl	5(f)	0	0	200.00	200
178	Heliotropin	5(f)	0	0	250.00	250
179	Helional	5(f)	0	0	500.00	500
180	1,2 Hexane Diol	5(f)	0	0	200.00	200
181	Indoflor	5(f)	0	0	50.00	50
182	Floral	5(f)	0	0	50.00	50
183	Cyclohexyl Salicylate	5(f)	0	0	100.00	100
184	Methyl Anthranilate	5(f)	0	0	300.00	300
185	Dihydroanethole	5(f)	0	0	50.00	50
186	Benzilydine acetone	5(f)	0	0	100.00	100
187	Hexenyl -3 -Cis- Benzoate	5(f)	0	0	25	25
188	Hexenyl Hexenoate, Cis-3	5(f)	0	0	25	25
189	Citronellyl Oxyacetaldehyde	5(f)	0	0	25	25
190	Karmaflor	5(f)	0	0	25	25
191	Anethole	5(f)	0	166.7	0	166.7
192	Raspberry Ketone	5(f)	0	100	0	100
193	P-AninylPropanal	5(f)	0	100	0	100
	<b>Total Production Capacity of this group</b>		<b>0.0</b>	<b>733.3</b>	<b>6500.0</b>	<b>7233.3</b>
<b>H</b>	<b>Co Products:</b>					
1	Gypsum	--	0	0	3300	3300
2	Sodium sulphate	--	0	0	885.9	885.9
3	Recovered phenol	--	0	0	3	3
4	Tula resin	--	0	0	30	30
5	Calcium chloride	--	0	0	360	360
6	Calcium sulfate	--	0	0	444.75	444.75
7	Gypsum	--	0	0	3260	3260
8	Sodium Sulfate	--	0	0	500	500
9	Calcium Chloride	--	0	0	500	500
10	30% HCl (By product)	--	0	417	0	417
	<b>Total Production Capacity of this group</b>		<b>0</b>	<b>417</b>	<b>9283.65</b>	<b>9700.65</b>
	<b>Total Production Sodium Thio sulphate (dry basis)</b>		<b>32122.607</b>	<b>7204.54</b>	<b>117069.39</b>	<b>156396.54</b>

S. No.	Name of Products	Category	Production capacity in MT/M			
			Existing as per CCA	EC 2015	Proposed 2018	Total
	<b>Total Production Sodium Thio sulphate (wet basis)</b>		<b>33122.607</b>	<b>7204.54</b>	<b>118869.39</b>	<b>159196.54</b>

### 3.5 Technology and Process Description

Technology and Manufacturing Process description is given in Form 1 with TOR, Annexure 10.

**Table 3-2: Storage Details of Liquid Raw Materials**

S. No	Name of Hazardous substances	Quantity		No. of storage means	Place of its Storage	Storage Conditions		Type of hazard possible (Fire Explosion)	Control measures provided
		Max. Capacity of Storage means	Actually Stored			Temperature	Pressure		
<b>Existing</b>									
1	65% Oleum	65 MT	55 MT	1	Sulphuric Acid plant Tank farm	Ambient	Atmospheric	Toxic release	Dyke wall with valve, do not allow the spill to mix with water, vent with Acid seal, spare storage tank for emergency transfer, Dry sand beds for spill Control, tank level meter.
2	Methanol (Group 5 - 2)	470 MT	350 MT	1	Methanol Storage Tank Farm	Room Temp.	Atmospheric	Fire	Flame arrester, earthing dyke wall to over ground Tank fire water
3	Phenol	180 + 60 MT	120 + 40 MT	2	PH-II Anisol tank farm	Ambient	Atmospheric	Toxic spill	Dyke wall with valve, which do not allow liquid spill to go to normal drain. PVC suit, washing facility, SOP, etc.
4	DMS	50 MT	40MT	1	Anisol	Ambient	Atmospheric	Toxic spill	Dyke wall with valve, which do not allow liquid spill to go to normal rain.PVC suit, washing facility, SOP, etc.
5	Benzene	180 MT	100 MT	1	Resorcinol	Ambient	Atmospheric	Fire	Isolated storage, FLP, Flam arrester, Breather valve, LI, Fire hydrant, sand etc.
6	Xylene	60 MT	30 MT	1	MPSL-NICO Plant	Ambient	Atmospheric	Fire	Dyke wall, Fire hydrant line, FLP, Spark arrester, Prohibited for vehicle movement & unauthorized person.
7	Chlorine	200 MT	120 MT	1	Caustic Chlorine Plant		8.0 Kg/cm <sup>2</sup>	Toxic gas release	Two standby tank, DCS controlling, Hypo scrubbing, SCBA, Emergency chlorine kit & hood blower etc.
9	Epichlorohydrin	55 M3	50 M3	1	Storage Tank near Epoxy Plant		8.0 Kg/cm <sup>2</sup>	Fire toxic spill	Flame arrester earthing, dyke wall with valve which do not allow liquid spill to go to normal drain.
10	Phenol 98% solution	200 MT	170 MT	1	Near Bisphenol plant	Ambient	Atmospheric	Toxic spill	Dyke wall water spraying & washing facilities PEG 400 as antidote.
11	Sulphur Trioxide	13 MT	17 MT	1	Near Pharma plant	30 – 35 °C	Atmospheric	Toxic spill	Dyke wall with valve, with valve do not allow the spill to mix with water, vent with

S. No	Name of Hazardous substances	Quantity		No. of storage means	Place of its Storage	Storage Conditions		Type of hazard possible (Fire Explosion)	Control measures provided
		Max. Capacity of Storage means	Actually Stored			Temperature	Pressure		
	(Group 2)								Acid seal, spare storage tank for emergency transfer
12	Aqueous Ammonia	40 M3	35 M3	1	Near Pharma Plant	Ambient	Atmospheric	Toxic spill	Flame arrester earthing dyke wall to over gr. Tank fire water
13	Aqueous DMS	25 M3	20 M3	1	Pharma Tank farm	Ambient	Atmospheric	Toxic spill	Dyke wall water spraying & washing facilities.
14	Methanol	650 M3	50 M3	1	Methanol Tank farm north site.	Ambient	Atmospheric	Fire & Toxic spill	Isolated storage, FLP, Flam arrester, Breather valve, LI, Fire hydrant, sand etc.
15	Toluene	40 M3	30 M3	1	Phin & PO plant	Ambient	Atmospheric	Fire	Isolated storage, FLP, Flam arrester, Breather valve, LI, Fire hydrant, sand etc.
16	Ammonia Anhydrous	10 MT	8 MT	1	In open pit near R. M. Stores	Ambient	12kg/cm <sup>2</sup>	Toxic Gas Leakage	High Alarm switch Water sprinkler, Fog Nozzles, Dyke wall
17	Chlorine Tonners	13.5 MT	13.5 MT	15	Shed G	Ambient	8kg/cm <sup>2</sup>	Toxic Gas Leakage	Caustic pit, Emergency kits, Water and Caustic scrubbers, Respirators SCBA sets.
18	65% Oleum	1) 25 MT	20 MT	1	Shed C	Ambient	Atmospheric	Gas leakage, Spill Gas leakage,	Respirators, Dry Sand, Dyke wall, Spare tank, High alarm switch
		2) 25 MT	20 MT	1	Shed H				
		3) 22 MT	15 MT	1	Shed N				
19	Chloro Sulphonic Acid	30 MT	12 MT	1	Shed D	Ambient	Atmospheric	Gas leakage, Spill	Respirators, Dry Sand, Dyke wall, spare tank
20	Toluene	120 KL	100 KL	1	Shed C	Ambient	Atmospheric	Fire & Chemical spillage	Underground tank, prohibited are, FLP, foam trolley etc.
21	Ethanol /Methanol	51 KL	40 KL	1	Shed N & A	Ambient	Atmospheric	Gas leakage, Spill	Respirators, Dry Sand, Dyke wall, spare tank
22	SO <sub>3</sub>	30 MT	25 KL	1	Shed K	Ambient	Atmospheric	Gas leakage, Spill	Respirators, Dry Sand, spare tank
23	MCB	105 MT	100 KI	1	Shed C	Ambient	Atmospheric	Fire & Chemical spillage	Underground tank, prohibited are, FLP, foam trolley etc.

S. No	Name of Hazardous substances	Quantity		No. of storage means	Place of its Storage	Storage Conditions		Type of hazard possible (Fire Explosion)	Control measures provided
		Max. Capacity of Storage means	Actually Stored			Temperature	Pressure		
24	Formaldehyde 37 to 43 %	1200 MT	600 MT	1	Storage Tank Opp. UF plant, FDH Plant & Nr. UF Plant	Ambient	Atmospheric	Toxic spill	Water spraying facilities L.I. Empty space for emergency transfer
25	Caustic	530 MT	450 MT	1	Behind caustic evaporation unit.	Ambient	Atmospheric	Chemical spill	Dyke wall, LI & LT, DCS controlling etc.
26	Hydrogen	100 nm3	100 nm3	1	Hydrogen bottling area.		1600 MMWC	Fire & Explosion	Prohibited for men & vehicle movement, Isolated storage, FLP, Flam arrester, PG & PT, Fire hydrant, 7 Fire extinguisher etc.
27	Chloro Sulphonic Acid	30 MT	12 MT	1	Sulfuric Plant	Ambient	Atmospheric	Gas leakage, Spill	Respirators, Dry Sand, Dyke wall, spare tank
28	Sulfuric acid	800 M3	600 m3	1	Sulfuric Plant	Ambient	Atmospheric	Acid spillage	Emergency tank, Dyke wall, LT, DCS controlling, Level alarm etc.
29	liq. SO <sub>3</sub>	40 MT	32 MT	1	Sulfuric Plant	Ambient	Atmospheric	Acid spillage	Emergency tank, LT & LI, DCS controlling, Level alarm etc.
30	HCL	200 KL	150 KL	1	Chlorine House, caustic Plant	Ambient	Atmospheric	Chemical spill	Dyke wall, LI & LT, DCS controlling etc.
<b>Proposed</b>									
1	Phenol	180 + 60 MT	120 + 40 MT	2	PH-II Anisol tank farm	Ambient	Atmospheric	Toxic spill	Dyke wall with valve, which do not allow liquid spill to go to normal drain. PVC suit, washing facility, SOP, etc.
2	Xylene	60 MT	30 MT	1	MPSL-NICO Plant	Ambient	Atmospheric	Fire	Dyke wall, Fire hydrant line, FLP, Spark arrester, Prohibited for vehicle movement & unauthorized person.
3	Epichlorohydrin	55 M3	50 M3	1	Storage Tank near Epoxy Plant		8.0 Kg/cm <sup>2</sup>	Fire toxic spill	Flame arrester earthing, dyke wall with valve which do not allow liquid spill to go to normal drain.
4	65% Oleum	1) 25 MT	20 MT	1	Shed C	Ambient	Atmospheric	Gas leakage, Spill Gas leakage,	Respirators, Dry Sand, Dyke wall, Spare tank, High alarm switch
		2) 25 MT	20 MT	1	Shed H				
		3) 22 MT	15 MT	1	Shed N				

S. No	Name of Hazardous substances	Quantity		No. of storage means	Place of its Storage	Storage Conditions		Type of hazard possible (Fire Explosion)	Control measures provided
		Max. Capacity of Storage means	Actually Stored			Temperature	Pressure		
5	MCB	105 MT	100 KI	1	Shed C	Ambient	Atmospheric	Fire & Chemical spillage	Underground tank, prohibited are, FLP, foam trolley etc.
6	HCL	200 KL	150 KL	1	Chlorine House, caustic Plant	Ambient	Atmospheric	Chemical spill	Dyke wall, LI & LT, DCS controlling etc.

\*\* Storage tanks are installed as per PESO regulation wherever applicable.

### **Storage Details of Solid Raw Material & Products**

Total 10 nos. of ware houses for storage of solid raw material and products. Area of the same is 12,030 m<sup>2</sup>

### **3.6 Resource Optimization/recycling and reuse envisaged in the project, if any, should be briefly outlined**

The following hierarchy is followed for waste management with an ultimate aim of "Zero Waste".

1. Resource Conservation
2. Elimination of Waste Streams
3. Minimizing Waste
4. Reuse of Waste
5. Recycle of Wastes
6. Treatment and Disposal for making wastes harmless

Wash water generated from cleaning of equipment will be re-used back into the process/product.

### **3.7 Availability of water its source, energy/power requirement and source should be given**

#### **3.7.1 Water consumption and Waste Water Generation**

Source of Water: Par River

The unit has obtained permission for withdrawal of raw water @ 4 MGD (18184 m<sup>3</sup>/day).

**Table 3-3: Water Consumption Details**

S. No.	Description	Water Requirement in KLD		
		Existing	Proposed	Total
A	Gardening	537	1	538
B	Domestic	402	14	416
C	Industrial			
1	Process	17658	9259	26917
2	Cooling Tower	4782	4077	8859
3	Washing (Reactor and Floor)	1851	527	2378
4	Boiler	3128	0	3128
	<b>Total</b>	<b>28358</b>	<b>13878</b>	<b>42236</b>
	<b>Recycled Water</b>	<b>3335</b>	<b>6000</b>	<b>9335</b>
	<b>Treated STP water**</b>	<b>0</b>	<b>11778</b>	<b>11778</b>
	<b>Rain water harvesting</b>	<b>3073</b>	<b>0</b>	<b>3073</b>
	<b>Fresh Water Requirement</b>	<b>21950</b>	<b>-3900</b>	<b>18050</b>

\*Note: This water consumption is considering all products produced simultaneously. However in actual scenarios all products will not be produced simultaneously at its full capacity. We will manage our production capacity such that fresh water requirement will not increase beyond the present approved quantity of 18184 KLD as per the agreement with irrigation department.

\*\*Note: Atul will arrange for treated STP water from nearby Municipal Corporation.

**Table 3-4: Wastewater Generation Details**

S. No.	Description	Wastewater Generation in KLD		
		Existing	Proposed	Total
A	Gardening			
B	Domestic	322	1	323
C	Industrial			0
1	Process			0
a	For Incineration	82	17	99
b	To ETP	17066	2731	19797
c	To RO/MEE	1000	6764	7764
2	Cooling Tower B/D & Boiler B/D			0
a	For Direct Disposal	1275	705	1980
b	To MEE	2500	0	2500
3	Washing	1851	542	2393
	<b>Total Wastewater Generation</b>	<b>24096</b>	<b>10760</b>	<b>34856</b>
	<b>Wastewater Going to ETP for Treatment</b>	<b>19239</b>	<b>3274</b>	<b>22513</b>
	<b>Treated effluent for discharge</b>	<b>20514</b>	<b>3979</b>	<b>24493</b>

### 3.7.2 Fuel

The fuel consumption data is given in **Table 3-5**.

**Table 3-5: Fuel consumption**

S. No.	Stack Attached to	Capacity	Type of Fuel Used	Quantity of Fuel Used, Tons/Hour	APCM Attached
<b>Existing</b>					
A	<b>East Side</b>				
1	FBC boiler E1	34 T/hr	Coal /Lignite	8.5 T/hr.	Electrostatic precipitator
2	FBC boiler E2	34 T/hr	Coal /Lignite	8.5 T/hr.	Electrostatic precipitator
3	FBC boiler E3	50 T/hr	Coal /Lignite	12.5 T/hr.	Electrostatic precipitator
4	Hot Oil Unit (Resorcinol Plant)	17 L Kcal/Hr	PNG	27 sm <sup>3</sup> /hr	Adequate stack height
5	DG set (Standby)	1010 KVA	Diesel		Adequate stack height
B	<b>West Side</b>				
1	FBC boiler W1	45	Coal /Lignite	11.3 T/hr	Electrostatic precipitator
2	Hot Oil Plant shed-B	10 L Kcal/Hr	PNG	27 sm <sup>3</sup> /hr	Adequate stack height
3	Oil burner Shed B (Standby)	10 L Kcal/Hr	PNG	27 sm <sup>3</sup> /hr	Adequate stack height
4	Boilers (2 Nos., W2 & W3)	50 TPH each	Coal /Lignite	12.5 T/hr.	Electrostatic precipitator
5	DG set (Standby)	1500 KVA	Diesel		Adequate stack height
C	<b>North Side</b>				
1	Thermic fluid heater of DCO/DAP Plant	6 L Kcal/Hr	PNG	20 sm <sup>3</sup> /hr	Adequate stack height
<b>Proposed</b>					
Additional flue gas stack is not required for proposed expansion					

**Note:** DG Sets will be used only during Power failure.

### **3.7.3 Power Requirement and Source**

#### **Existing:**

Source: DGVCL & Captive Power Plant

Connected Load: 56 MW

#### **Proposed:**

Source: DGVCL & Captive Power Plant

Connected Load requirement: 10 MW

Note: We have our own captive power plant of 56 MW. Our present load is max. 32 MW. Hence we can easily accommodate the future need. Hence there is no need for additional power plant

### **3.7.4 Transportation details of Raw Materials**

All raw material is domestic through trucks and tankers. Coal is transported through rail from various states of India.

### 3.8 Quantity of waste to be generated (liquid and solid) and scheme for their management / disposal

**Table 3-6: Hazardous Waste Generation and disposal Details**

S. No.	Description	Category	Quantity, MT/M			Method of disposal
			Existing	Proposed	Total	
<b>A</b>	<b>Chlor Alkali</b>					
1	Graphite granules from decomposer	16.1	0.0417	0	0.0417	Collection, storage, Transportation, disposal at OWN/Common TSDF
2	Sludge from recycle unit, ground floor & sack filter	16.1	0.014	0	0.014	Collection, storage, Transportation, disposal at OWN/Common TSDF
3	Sludge from Demercuration Plant	16.1	1	0	1	Collection, storage, Transportation, disposal at OWN/Common TSDF
4	Membranes	16.2	6	45	51	Collection, storage, Transportation, disposal at OWN/Common TSDF
5	Waste Resin	16.2	0.05	0	0.05	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
6	Sulfurised Carbon	16.2	0.003	0	0.003	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
7	Activated Carbon	16.2	0.0104	0	0.0104	Collection, storage, Transportation, disposal at OWN/Common TSDF
8	Brine purification sludge	16.3	242.5	405	647.5	Collection, storage, Transportation, disposal at OWN/Common TSDF
<b>B</b>	<b>Sulfuric Acid</b>					
9	Sulphur sludge	17.1	5.83	0	5.83	Collection, storage, Transportation, reuse
10	Hot Gas filter Ash	17.1	0.02	0	0.02	Collection, storage, Transportation, disposal at OWN/Common TSDF
11	Bottom Sludge after recovery of Sulphur Sludge	17.1	0.5	0	0.5	Collection, storage, Transportation, disposal at OWN/Common TSDF
12	Waste Catalyst	17.2	0.083	0	0.083	Collection, storage, Transportation, disposal at OWN/Common TSDF
<b>C</b>	<b>Distillation</b>					
13	Spent Solvents	20.2	5	0	5	Collection, storage, Transportation, Recovery
14	OCBC / OCT distillation residue	20.3	154.042	0	154.042	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry

S. No.	Description	Category	Quantity, MT/M			Method of disposal
			Existing	Proposed	Total	
15	waste residue Bulk Intermediate (meta hydroxy phenol ) (Tar)	20.3	15	0	15	Collection, storage, Transportation, disposal by incineration at own Incineration or selling to actual user
16	Waste residue (from resorcinol plant)	20.3	15	0	15	Collection, storage, Transportation, disposal by incineration at own Incineration or selling to actual user
17	Distillation residue (BI)	20.3	0	266.75	266.75	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
<b>D</b>	<b>Polymer</b>					
18	Urea Formaldehyde Polymer product	23.1	0.25	0	0.25	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
19	Sludge containing higher amino compound	23.1	0.417	0	0.417	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
20	Filter cake of Epoxy resins with resin contamination	23.1	0.833	0	0.833	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
21	Epoxy Resin (Filter Cake with resin contamination)	23.1	130.29	277.5	407.79	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
<b>E</b>	<b>Dyes</b>					
22	Aluminum Hydroxide	26.1	15.417	0	15.417	Collection, storage, Transportation, disposal at OWN/Common TSDF
23	Iron sludge	26.1	80	0	80	Collection, storage, Transportation, disposal at OWN/Common TSDF
24	Brass residue	26.1	0.667	0	0.667	Collection, storage, Transportation, disposal at OWN/Common TSDF
25	Still / Other residue	26.1	8.67	0	8.67	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry

S. No.	Description	Category	Quantity, MT/M			Method of disposal
			Existing	Proposed	Total	
26	Darco / filter aid sludge	26.1	2.083	0	2.083	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
27	Dust (Agro plant)	26.1	3	0	3	Collection, storage, Transportation, disposal at OWN/Common TSDF
28	Iron Residue	26.1	62.5	0	62.5	Collection, storage, Transportation, disposal at OWN/Common TSDF
29	PER crystal residue	26.1	0.4	0	0.4	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
30	Hyflo sludge	26.1	0.5	0	0.5	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
31	Filter aid sludge for Hg recovery	26.1	1	0	1	Recovery of mercury
32	Sludge from waste water treatment	26.2	5	0	5	Collection, storage, Transportation, disposal at OWN/Common TSDF
33	Dust from Air Filtration System	26.3	0.001	0	0.001	Reprocessed, reused within industry
34	Cu Sludge	26.1	0	38	38	Recovered as Ca(OH) <sub>2</sub>
35	Process Waste	26.1	0	1	1	Collection, storage, Transportation, disposal at OWN/Common TSDF
<b>F</b>	<b>Pharma</b>					
36	Spent carbon,	28.2	40	23.2475	63.2475	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
37	Date expired, discarded and off-specification product	28.4	0.008	0	0.008	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
38	Spent Mother liquor, KI/Month	28.5	19.75	0	19.75	Collection, storage, To ETP for recovery
39	Spent solvent	28.6	19.75	0	19.75	Collection, storage, Solvent recovery
40	Process Residue Waste (Isomers & distillation residue)	28.1	0	132	132	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
<b>G</b>	<b>Agro</b>					

S. No.	Description	Category	Quantity, MT/M			Method of disposal
			Existing	Proposed	Total	
41	Distillation Residue such as	29.1	83.43	205.84	289.27	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing at RSPL, Panoli OR co-processing at cement industry <b>Remark: S. No. 42 to 46 to be merged as Distillation residue. The category and the disposal mode are same.</b>
42	Still / Other residue	29.1	63.66			
43	Pyridine based insecticides & herbicides (Darco / Filter aid Sludge)	29.1	3.62			
44	Sulfonyl Urea (Residue)	29.1	14.27			
45	Triazole based Fungicides (Residue)	29.1	1.28			
46	Pyrethroides	29.1	0.6			
47	Hyflo	29.1	15.75	135.1517	150.9017	Collection, storage, Transportation, disposal at OWN/Common TSDF
48	Dust from Air Filtration System,	29.3	0.008	0	0.008	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
49	Process Waste (Filtration)	29.1	0	79.2275	79.2275	Collection, storage, Transportation, disposal at OWN/Common TSDF
50	Lime sludge	29.1	0	40.525	40.525	Collection, storage, Transportation, disposal at OWN/Common TSDF
51	MEE salt		0	9.9	9.9	Collection, storage, Transportation, disposal at OWN/Common TSDF OR selling to actual reuser
<b>H</b>	<b>Miscellaneous</b>					
52	Chemical containing residue from decontamination and disposal	33.1	0.0008	0	0.0008	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
53	Liners /Bags, NOs	33.3	9500	0	9500	collection, storage, Decontamination, detoxification
54	Drums /HDPE Carboys	33.3	250	0	250	collection, storage,& after decontamination again captive reuse/disposal by selling to authorised reusers
55	Flue gas cleaning residue	34.1	0.0008	0	0.0008	Collection, storage, Transportation, disposal at OWN/Common TSDF
56	Toxic metal containing residue from used-ion exchange material; in water purification	34.2	0.001	0	0.001	Collection, storage, Transportation, disposal at OWN/Common TSDF
57	Sludge from ETP	34.3	41.667	0	41.667	Collection, storage, Transportation, disposal at OWN/Common TSDF
58	Gypsum from ETP	34.3	2	0	2	Collection, storage, Transportation, disposal at OWN/Common TSDF

S. No.	Description	Category	Quantity, MT/M			Method of disposal
			Existing	Proposed	Total	
59	MEA distillation residue	35.1	1.667	0	1.667	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
60	Spent Catalyst	35.2	0.002	0	0.002	Collection, storage, Transportation, disposal at OWN/Common TSDF
61	Sludge from wet scrubber	36.1	0.02	0	0.02	Collection, storage, Transportation, disposal at OWN/Common TSDF
62	Incineration ash	36.2	4.62	0	4.62	Collection, storage, Transportation, disposal at OWN/Common TSDF
63	Sludge & filters contaminated with oil	3.3	0.005	0	0.005	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
64	Used oil, Kl/Month	5.1	2	0	2	Collection, storage, sell to registered refiners
65	Wastes / residues containing oil	5.2	0.001	0	0.001	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
66	Aluminum Ash	B30	2.6	0	2.6	Collection, storage, Transportation, disposal at OWN/Common TSDF
67	Gypsum (From meta hydroxy phenol Plant)	D1	840	0	840	Collection, storage, Transportation, disposal at OWN/Common TSDF OR selling to actual reuser
68	Sodium Sulphite	D1	550	0	550	
69	Salt from MEE (with BI MEE)		1,678.71	213.24	1891.95	Collection, storage, Transportation, disposal at OWN/Common TSDF OR selling to actual reuser
70	Spent Acid	B15	4400	0	4400	collection, storage, transportation and sale to authorised industry having permission under rule-9 of Hazardous & other wastes (Management & Transboundary movement)rule 2016
71	Chemical Gypsum	34.3	4930 (Dry basis)	0	4930 (Dry basis)	Collection, storage, Transportation, disposal at OWN/Common TSDF OR send to cement industry for co-processing
72	Copper Hydroxide Wet cake	B3	40	0	40	collection, storage, transportation and sale to authorised industry having permission under rule-9 of Hazardous & other wastes (Management & Transboundary movement)rule 2016
73	Spent Organic solvent	28.5	24.75	0	24.75	collection, storage, transportation and sale to authorised industry having permission under rule-9 of Hazardous & other wastes (Management & Transboundary movement)rule 2016

S. No.	Description	Category	Quantity, MT/M			Method of disposal
			Existing	Proposed	Total	
74	2,6 Dichloro phenol		94.355	0	94.355	Collection, storage, Transportation, disposal by selling to actual reuser
75	2,4,6 Trichloro phenol		45.925	0	45.925	Collection, storage, Transportation, disposal by selling to actual reuser
76	p-CBSA/Na-Salt		127	0	127	Collection, storage, Transportation, disposal by selling to actual reuser
77	Waste from Pharma intermediates	28.1	28.97	0	28.97	
78	Spent Carbon catalyst	28	0.25	0	0.25	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
79	Waste Residue (Phin)	28	2	0	2	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
80	DCDPS waste	28	30	0	30	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
81	N.B.Tar / ODCB Tar	26.1	5	0	5	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
82	ONT Tar	26.1	15	0	15	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
83	Various type of Residue	20.2	10	0	10	Collection, storage, Transportation, disposal by incineration at own Incinerator OR co-processing through outside authorized agency, OR co-processing at cement industry
84	Waste/Salt Lime Dust		5	0	5	Collection, storage, Transportation, disposal at OWN/Common TSDF.
85	Hyflo		0	2.560	2.560	Collection, storage, Transportation, disposal at OWN/Common TSDF.
86	KCL Salt		0	500.000	500.000	Collection, storage, Transportation, disposal at OWN/Common TSDF.
87	Distillation Residue (Aromatic High Boiler waste)	20.3	0	1246.3	1246.3	Sell to Agarbatti producers
88	CaCl <sub>2</sub>		0	85.4	85.4	Collection, storage, Transportation, disposal at OWN/Common TSDF.

## 4 SITE ANALYSIS

### 4.1 Connectivity

#### By Road

The site is adjacent to the NH-8.

#### By Rail

Valsad Railway Station (on Mumbai – Delhi Broad Gauge), located at an aerial distance of ~7.76 km in NNW direction.

#### By Air

Surat Airport, located at an aerial distance of ~67.74 km in NNW Direction.

### 4.2 Land Form, Land Use and Land ownership

The total plot area of the proposed unit will be 1126067.07 m<sup>2</sup>. Land use of the proposed site is industrial as it is existing plot.

### 4.3 Topography (along with map)

Topographically, the area is almost flat with very negligible dipping at some places. The plot will be filled and leveled to the required finished grade level and suitable drainage will maintained.

### 4.4 Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, etc sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given.

Land use pattern: Industrial

**Table 4-1: Distance of Project Site from Sensitive Areas**

Area	~Distance in km	Direction
Arabian Sea	4.51	W
Par river Estuary	4.25	W
Parnera Hill & Forest	0.57	NNE
Salt Pan	10.80	NNW
Nr. Pardi Salt Pan	4.61	SW

**Table 4-2: Distance of Project site from Water Bodies**

Water body	~Distance in km	Direction
Arabian Sea	4.51	W
Par River	0.04	SSE
Pardi Hardi	1.44	WNW
Wanki River	4.44	N
Pardi pond	2.56	SSE
Sodhalwada Pond	5.68	SE
Kolak River	9.68	SW
Rakhodiya Lake	8.26	NNW
Mota Talwada Lake	9.12	N
Suki Talavadi	7.22	N
Atar Talav	2.58	WNW

## 4.5 Existing Infrastructure

Well-developed infrastructure is available at site and around the site.

## 4.6 Soil classification

Not done

## 4.7 Climatic data from secondary sources

The general agro-climatic zone of the study area is Semi-Arid.

Information presented in subsequent paragraphs is from the Indian Meteorological Department (IMD), Long Term Climatological Tables, 1981-2010, Valsad. These tables give useful information about a region's weather, since they are collected over a 30-year period.

### 4.7.1 Temperature

- Mean daily maximum temperature is recorded in the month of April & May at 33.8°C.
- January is generally the coldest month, with a minimum temperature of 14.6 °C.
- During the post-monsoon months of October and November, day temperatures remain between 18.8 - 23.1 °C. In winters, i.e. December, January and February, average day temperatures remain between 14.5- 15.7 °C.

### 4.7.2 Wind

Long- term wind direction data is presented in **Table 4-3**.

**Table 4-3: Predominant Wind Direction**

Predominant Month	First		Second		Third	
	Morning	Evening	Morning	Evening	Morning	Evening
January	E	NW	NE	W	CALM	N
February	NE	NW	E	W	CALM	SW
March	SE	W	E	NW	NE	SW
April	S	W	SW	SW	SE	NW
May	SW	SW	S	W	W	S
June	SW	SW	S	W	W	S
July	SW	SW	S	W	W	S
August	SW	SW	W	W	S	S
September	S	SW	SE	W	CALM	S
October	SE	NW	CALM	CALM	E	W
November	E	NW	NE	CALM	CALM	W
December	E	NW	NE	W	CALM	CALM

### 4.7.3 Rainfall

The total rainfall in year is observed to be 1500.3 mm. Distribution of rainfall by season is 0.9 mm in winter (December, January, February), 3.1 mm in summer (March, April, May), 1450.4 mm in monsoons (June, July, August, September) and 45.9 mm in post-monsoons (October, November).

### 4.7.4 Cloud Cover

The area remains cloudy between July-August, which is the active period of the monsoon season. Generally cloud cover ranges up-to 3-5 OKTAS during this monsoon season. During post-monsoon season, cloud cover almost

becomes 0 OKTAS. In the summer season cloud cover is predominantly 0 OKTAS occasionally going to 3-5 OKTAS.

#### **4.7.5 Humidity**

Most humid conditions are found in the monsoons, followed by summer, post-monsoons, and winter in that order. Mornings are more humid than evenings and humidity ranges from a high of 80-89% in monsoon mornings to a low of 53-55% in winter evenings. During post-monsoon season, in morning humidity remains between 71-81 % and in the evening it remains between 56-67%.

#### **4.8 Social infrastructure available**

Not applicable.

## 5 PLANNING BRIEF

### 5.1 Planning Concept (type of industries, facilities, transportation etc.) Town and Country Planning/ Development authority Classification

The tentative chart for the plant commissioning is as follows:

Activity	Planned Completion Date
Pre Study	Completed
Basic engineering	In Progress. March 2019
Detail engineering & Procurement with Mechanical Completion	3-4 months after receiving EC
Testing/commission and commercial production	4-6 months after receiving EC

### 5.2 Population Projection

Man power requirement for manufacturing facility is approx. 200 -300 nos. (Permanent and contract basis). Most of the employment will be generated from local people from nearby villages depending upon the availability of skilled and semi-skilled people. So there may not be any permanent migration of people. Hence, there should be no population projection.

### 5.3 Land Use Planning (breakup along with greenbelt etc.)

The Landuse at project site will be as given in **Table 5-1**.

**Table 5-1: Landuse at project site**

Sr. No.	Description	Area Sq. M	Distribution
1	Factory Built up area	354180.87	
1.1	Raw Material Storage area	16643	1.48
1.2	Product ware house	12652	1.12
1.3	East ETP	38272	3.40
1.4	West ETP	12578	1.12
1.5	North ETP	8527	0.76
1.6	Factory Built up area (excluding 2.1,2.2,2.3,2.4,2.5) (mainly plants, lab, office, utilities)	265508.87	23.58
2	Factory internal road area	177234.70	15.74
3	Proposed expansion	185621.5	16.48
4	Open area	112657.40	10.00
5	Green belt (inside the factory premises)	296383.80	26.32
	Green belt (around the factory premises)	112646.20	10.00
	Total Green belt	409030	36.32
	<b>Total Factory Area</b>	<b>1126078.27</b>	<b>100.00</b>

### 5.4 Assessment of Infrastructure Demand (Physical and Social)

Temporary site office and stores will be provided during construction phase. Specified first-aid box with all necessary facilities will be maintained at site office. Medical facilities, primary health centers are available in nearby villages for advance medical facilities. Communication services like post office, telephone, mobiles are available in nearby villages.

## **5.5 Amenities/Facilities**

### **5.5.1 Greenbelt Development**

Existing greenbelt area developed is 4,09,030 m<sup>2</sup> i.e. 36.32% of total plot area.

### **5.5.2 Storm water management plan**

Storm water drains will be provided and Storm water from the entire plot will be collected through network of storm drains. Most of storm water from plot area will be collected in the rainwater harvesting structures/recharge wells provided for better utilization of available rainwater. The excess storm water will be discharged through the storm water drainage facility provided in the industrial complex.

### **5.5.3 Rainwater harvesting system**

Atul already carries out rainwater harvesting in the existing premises. Rain water is collected from roof top area as well as Panera hill. Approx. 5,33,000 m<sup>3</sup> of rain water was harvested during the year 2018. The first rainwater is not allowed to be collected and is discharged as storm water. The second and subsequent rainwater is conveyed to the Rainwater Collection System. Rainwater falling on all the main shop roofs is transferred to an intermediate collection tank through closed pipes. The collected water is reused for ancillary purposes such as fire fighting, washing, etc. Same practice shall be continued after the proposed expansion.

## 6 PROPOSED INFRASTRUCTURE

### 6.1 Industrial Area (processing area)

Total Plot area is 1126067.07 m<sup>2</sup>. Out of it, approx. 409030 m<sup>2</sup> will be greenbelt area.

### 6.2 Residential Area (non-processing area)

No residential facilities will be proposed.

### 6.3 Green belt

36 % of total plot area is already developed as greenbelt with three layers of tree in the periphery of the Plant.

### 6.4 Social Infrastructure

As a part of Corporate Social Responsibility (CSR) activity Atul carries out following activities as per locals' need.

- a) Education
  - a. Institutionalizing best in class education practices in Atul Vidyalay, Kalyani Shala/other education institute
  - b. Donation to poor students for Education and distribution of Cloths
  - c. Construction of Girls Hostel in Mani near Dharampur
- b) Empowerment
  - a. Bringing disadvantaged communities into mainstream by skill development through Atul Institute of Vocational Excellence
- c) Health
  - a. Constructing amenity blocks
  - b. Blood Donation Camp
  - c. Eye Checkup Camp
  - d. ENT Camp
- d) Infrastructure
  - a. Construction of individual toilets in Meh, Magod, Bhagod, Parnera Pardi, Chanvai
  - b. Construction of Bhakti Shed
  - c. Construction of Paver Block based road at three locations
- e) Others
  - a. Projects specified by Govt/ PPP/ seed money for incubating innovative ideas/ upgradation of skills
  - b. Food material supply to Chhatralaya at Mama Bhacha
  - c. 50 Nos. of CFL based street light fittings
  - d. Distribution of Farm kits and Fertilizer to farmers of Haria Khedut Mandal

### 6.5 Connectivity (Traffic and transportation road/ rail/metro/water ways etc.)

#### By Road

The site is adjacent to the NH-48.

#### By Rail

Valsad Railway Station (on Mumbai – Delhi Broad Gauge), located at an aerial distance of ~7.76 km in NNW direction.

**By Air**

Surat Airport, located at an aerial distance of ~67.74 km in NNW Direction.

**6.6 Drinking water management (source & supply of water)**

Drinking water will be sourced from Par River.

**6.7 Sewage system**

Sewage generated from the industry is treated in existing septic tank followed by ETP. Overflow of the septic tank is being diverted to the Aeration tank of the ETP where biological treatment is being provided. The same system shall be continued after proposed expansion.

**6.8 Industrial waste management**

High COD effluent generated after the proposed expansion shall be segregated and completely incinerated in company's own adequately designed incineration system of 7.2 MT/day capacity. High TDS effluent stream generated after proposed expansion shall be segregated and evaporated in new Multiple Effect Evaporator (MEE) of 8.33 m<sup>3</sup>/hr capacity shall be installed along with Agitated Thin Film Dryer (ATFD). Concentrated stream generated from pharma division shall be subjected to distillation for recovery of solvent & rest shall be disposed off to ETP along with non toxic streams. Normal effluent stream shall be treated in Normal Effluent Treatment Plant of 32,000 KL/day capacity consisting of Primary, Secondary & Tertiary Units. The industry has adequate capacity to treat additional effluent of normal stream from proposed expansion. The final treated effluent from the ETP conforming the GPCB norms will be collected in guard pond and then discharged to estuary zone of River Par through closed pipeline having capacity of 44,000 m<sup>3</sup>/day via diffuser.

**6.9 Solid waste management**

The solid wastes generated from the plant operations will be disposed off in nearby Waste Management landfill facility.

**6.10 Power requirement & supply/ source**

Existing:

Source: DGVCL & Captive Power Plant

Connected Load: 56 MW

Proposed:

Source: DGVCL & Captive Power Plant

Connected Load requirement: 10 MW

Note: We have our own captive power plant of 56 MW. Our present load is max. 32 MW. Hence we can easily accommodate the future need. Hence there is no need for additional power plant.

Standby Emergency DG Sets:

There will be 2 nos. of DG sets (1010 KVA & 1500 KVA). DG sets will be operated only during power failure.

## **7 REHABILITATION AND RESETTLEMENTS (R& R) PLAN**

### **7.1 Policy to be adopted (central/state) in respect of the project affected persons including home oustees, land oustees and landless labourers (a brief outline to be given)**

Not applicable as rehabilitation and resettlement will not be required, since the expansion will be carried out within the existing premises only.

## **8 PROJECT SCHEDULE AND COST ESTIMATE**

### **8.1 Likely date of start of construction and likely data of completion (time schedule for the project to be given)**

The construction work for the plant would start subsequent to receipt of Environmental Clearance (E.C) and Consent to Establish (CTE) from State Pollution Control Board. Tentatively, construction work is expected to start in 2019 and commissioning of the project is expected in 2020.

### **8.2 Estimated project cost along with analysis in terms of economic viability of the project.**

Total Cost of the proposed project is INR 178903 Lacs.

## 9 ANALYSIS OF PROPOSAL

### 9.1 Financial and Social Benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area.

Due to proposed project, there will be development of communication facilities in the area. In the nearby plant area, the skilled/semi-skilled employees and the managerial supervisory personnel will stay.

The plant site area will be equipped with sufficient infrastructural facilities including drinking water, toilets, sanitation facilities, health centres etc.

During operation, plant will generate direct and indirect employment. The preference will be given for local population for employment in the semi-skilled and unskilled category. Indirect employment is created by the plant for supply of daily domestic goods, loading/unloading operations etc.

From the above analysis it would be clear that the project is attractive and would bring in high value addition to the feedstock thereby benefiting the industry and the nation. Project has excellent connectivity through Road and Railway.



# Kadam

Environmental Consultants

[www.kadamenviro.com](http://www.kadamenviro.com)

**Environment for Development**

## **CONTACT DETAILS**

### **Vadodara (Head Office)**

871/B/3, GIDC Makarpura, Vadodara, India – 390 010.

E: [kadamenviro@kadamenviro.com](mailto:kadamenviro@kadamenviro.com); T: +91-265-6131000

### **Delhi / NCR**

Spaze IT Park, Unit No. 1124, 11<sup>th</sup>Floor, Tower B3, Sector 49, Near Omaxe City Centre Mall, Sohna Road, Gurgaon,  
Haryana, INDIA - 122002.

E: [delhi@kadamenviro.com](mailto:delhi@kadamenviro.com); T: +91-124-4242430 to 436; F: +91-124-4242433