PRE - FEASIBILITY REPORT

For

PROPOSED EXPANSION OF SYNTHEIC ORGANIC PIGMENTS MANUFACTURING UNIT

at

Plot No: 1196,

Rajpur Village, Kadi Taluka,

Mehsana District, Gujarat.

By

NAVPAD PIGMENTS PVT LTD

Plot No. 1196/1/A & B, Village Rajpur,
Ghumasan - Patia Road,
Chhatral - Mehsana Highway,
Rajpur - 382715, Gujarat, India.

March, 2017

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1.0 EXECUTIVE SUMMARY

Navpad Pigments Pvt Ltd is proposing to expand their existing Synthetic Organic Pigments manufacturing unit at Plot No: 1196, Rajpur Village, Kadi Taluka, Mehsana District, Gujarat.

This unit doesn't have any Environmental Clearance as it is established in the year of 2004 and the Organic Pigments manufacturing units established prior to EIA Notification Dt: 14.09.2006 and still manufacturing the same doesn't attract Environmental clearance. The unit is having Valid CFO. The existing Production capacity is 3 MT/Month as per CFO.

<table>
<tr><th>S. No</th><th>Parameter</th><th>Description</th></tr>
<tr><td>1</td><td>Project Location</td><td>Plot No: 1196, Rajpur Village, Kadi Taluka, Mehsana District, Gujarat.</td></tr>
<tr><td>2</td><td>Category of Project as per EIA Notification & Amendments</td><td>5(f) “A”</td></tr>
<tr><td>3</td><td>Project cost</td><td>20 Crores</td></tr>
<tr><td>4</td><td>Plot area</td><td>10357 Sq.m</td></tr>
<tr><td>5</td><td>Proposed Products</td><td>
<table>
<tr><th>S.No</th><th>Product Name</th><th>Quantity MT/Month</th><th>Quantity MT/Day</th></tr>
<tr><td></td><td>Group-A</td><td></td><td></td></tr>
<tr><td>1</td><td>Pigment Violet 23</td><td>50.00</td><td>1.67</td></tr>
<tr><td></td><td>Total</td><td>50.00</td><td>1.67</td></tr>
<tr><td></td><td>Group-B</td><td></td><td></td></tr>
<tr><td>1</td><td>Pigment Red 122</td><td>150.00</td><td rowspan="7">5.00</td></tr>
<tr><td>2</td><td>Pigment Violet 19</td><td>150.00</td></tr>
<tr><td>3</td><td>Pigment Beta Blue15:3</td><td>150.00</td></tr>
<tr><td>4</td><td>Pigment Beta Blue15:4</td><td>150.00</td></tr>
<tr><td>5</td><td>Carbazole</td><td>150.00</td></tr>
<tr><td>6</td><td>Solsperse5000</td><td>150.00</td></tr>
<tr><td></td><td>Total</td><td>150.00</td><td>5.00</td></tr>
<tr><td></td><td>Grand total (Group-A + Group-B)</td><td>200.00</td><td>6.67</td></tr>
</table>
Note:
We will manufacture Group –A Product 50MT /
</td></tr>
</table>

		Month and Group-B Products either any one product with production capacity of 150 MT/Month or Group- B Products all together with production capacity of 150MT /Month. We will produce total Group-A and Group-B with production capacity 200MT/Month.
6	Resources	
7	**(I)Electricity Requirement**	3000 KVA
	Source of electricity	GEB
	D. G. Sets	2x1000 KVA
8	**(II)Water consumption**	742 KLD
	Source of water	Ground Water (through Bore Well)
	Waste water generation	781 KLD
9	**(III) Boiler & Thermic fluid heater (TFH)**	2X5.0 TPH (Briquettes/Coal) Boiler is Proposed 2 Lakh K.cal of Thermic Fluid Heater(TPH)
10	**(IV)Fuel**	Fuel Briquettes/Coal – 25 TPD for proposed boilers
11	Mode of disposal	ZLD system
12	Solid waste generation	Mentioned in Para 3.5.2 of report
13	Nearest Highway	SH - 41 - Ahmedabad - Palanpur Road - 0.47 kms (W)
14	Nearest Railway Station	Jhulasan Railway Station – 4.50 kms (SE)
15	Nearest Airport	Sardar Vallabhbhai Patel International Airport – 35.0 kms (SE)

2.0 INTRODUCTION OF THE PROJECT

The objective of this pre- feasibility study is to provide information for the proposed expansion of Synthetic Organic Pigments manufacturing unit of Navpad Pigments Pvt. Ltd. at Plot No: 1196, Rajpur Village, Kadi Taluka, Mehsana District, Gujarat.

2.1 Project Proponent

Mr. Jinen Kothari is the **Managing Director** of Navpad Pigments Pvt. Ltd.

2.2 Brief description of nature of the project.

Navpad Pigments Pvt is proposing to expand their existing Synthetic Organic Pigments manufacturing unit at Plot No: 1196, Rajpur Village, Kadi Taluka, Mehsana District, Gujarat.

2.3 Need for the project and its importance to the country and or region

The Indian dyestuffs and pigments industry has transformed from being import dependent to an export driven industry. Developed countries are now focusing on sourcing dyestuffs and pigments from cost-effective Asian markets, owing to stringent measures taken on environmental issues back home. Exports have grown in double digit over the last few years.

The main end users of pigments in India are printing inks, plastics, rubber, paints and coatings. High performance pigments (HPP) and special effect pigments, such as metallic and pearlescent, are used as automotive coatings and are currently a nascent market in India. The Indian dyestuff and pigments industry is highly fragmented with large number of small players in the unorganized sector. There are around 50 players in large scale and organized sector, located mainly in Gujarat and Maharashtra.

Going forward, availability of skilled professionals and low cost of manufacturing coupled with R&D capabilities are seen as strong demand drivers for the dyestuff and pigments industry in India. Several multinational corporations have established facilities with world-class technologies with a view to tap the growing market. Growth in the end user segments, especially paints and coatings as well as textiles, is expected to drive the growth in the dyestuffs and pigments industry.

2.4 Demand-Supply Gap

Printing inks, Paints and Plastics are the major consumers of pigments; Printing ink and coatings account for approx 80% of pigment consumption • Organic pigments market size is ~ USD 5.5 bn growing at around 4.9% p.a. • India capitalizing on the outsourcing play – production is getting outsourced from the US, Europe, Japan, etc

Select set of large corporate control the world market of Paints and Inks – such as Sun-DIC, Flint Group, Akzo Nobel, DuPont, PPG Industries, etc. Indian market size increasing and Pigment requirement for Indian Ink market ~ Rs. 7.2 bn. Pigment requirement for Indian Paint market ~ Rs. 10 bn.

Indian pigment market demand was 10.6 kilo tons in 2015 and is expected to reach 16.6 kilo tons by 2024, growing at a CAGR of 5.1% from 2016 to 2024.

Paints & coatings were the foremost application for pearl pigments in India, owing to the high demand for non-toxic, non-reactive pigments with brilliant metallic & translucent finishing effects in the automotive, construction & industrial sectors

Decorative coatings held the largest share with over 50% of the market volume in 2015. The segment is expected to witness rapid growth over the forecast period owing to the high demand for colorful & decorative paints during the seasonal festivities

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

Approximate employment generation due to proposed expansion of unit is 180. Apart from this there will be significant non-estimated employment generation at the supplier firms and service industry providing services to the company. Company shall be giving preference to people from economically weaker sections for employment in various semi-skilled/unskilled jobs thereby contributing to their upliftment.

3.0 Project Description

Navpad Pigments Pvt. Ltd. is proposing to expansion their existing Synthetic Organic Pigments Manufacture unit with production capacity of 200 TPM

The Location map is shown at **Figure -1.1** and Google earth map showing Navpad Pigments Pvt. Ltd. plant is shown at **Figure -1.2**.

The site central coordinates are

Latitude: 23° 20' 11.8"N

Longitude: 72° 25' 41.9"E

The project site does not offer any negative impact on the local area, but rather has a positive impact on socio economic conditions of the habitants around it because of employment to locals.

The Plant site is 0.47 kms away from State Highway No– 41 & 4.50 kms from Jhulasan Railway Station.

FIGURE 1.1: LOCATION MAP

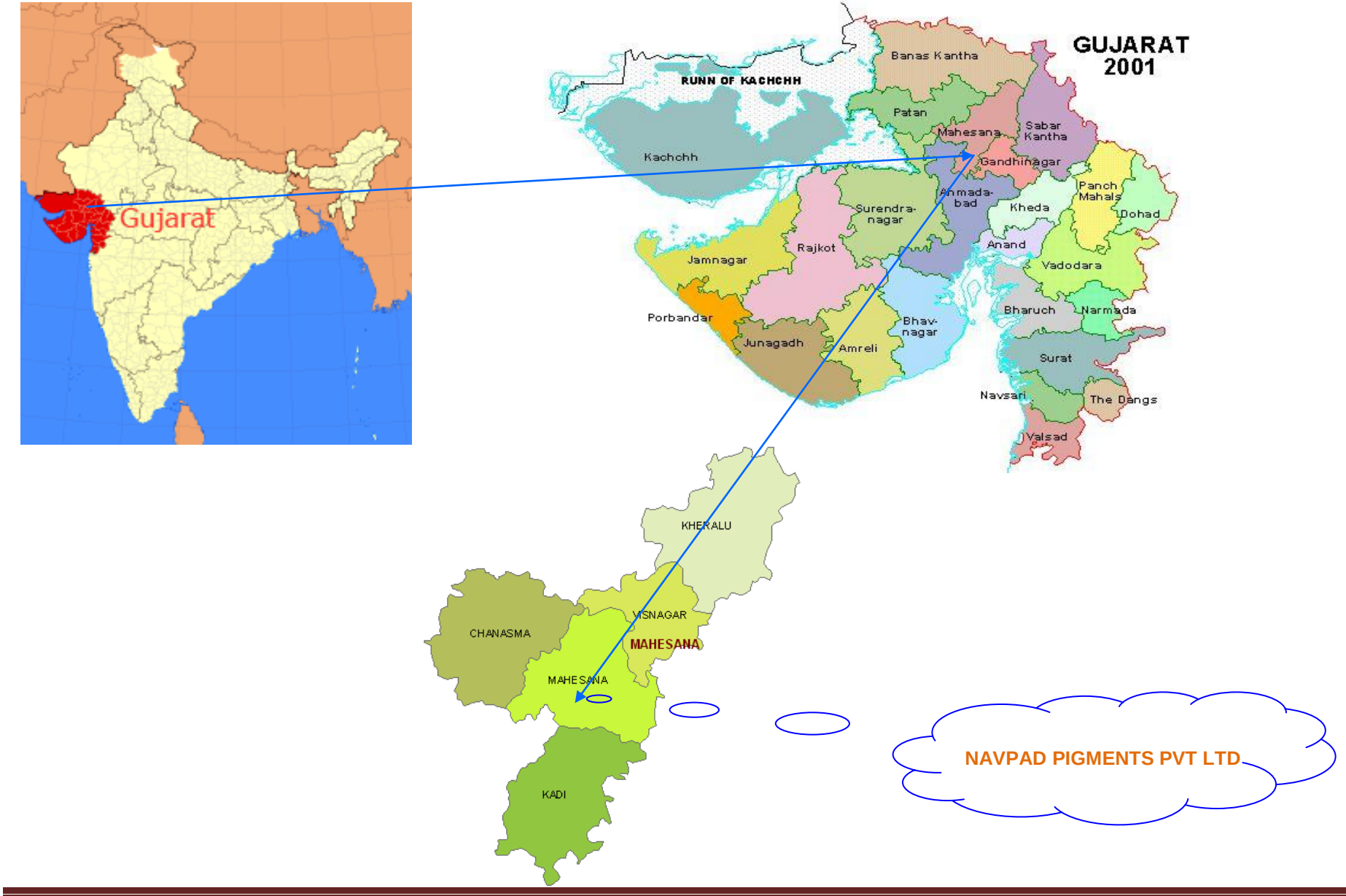
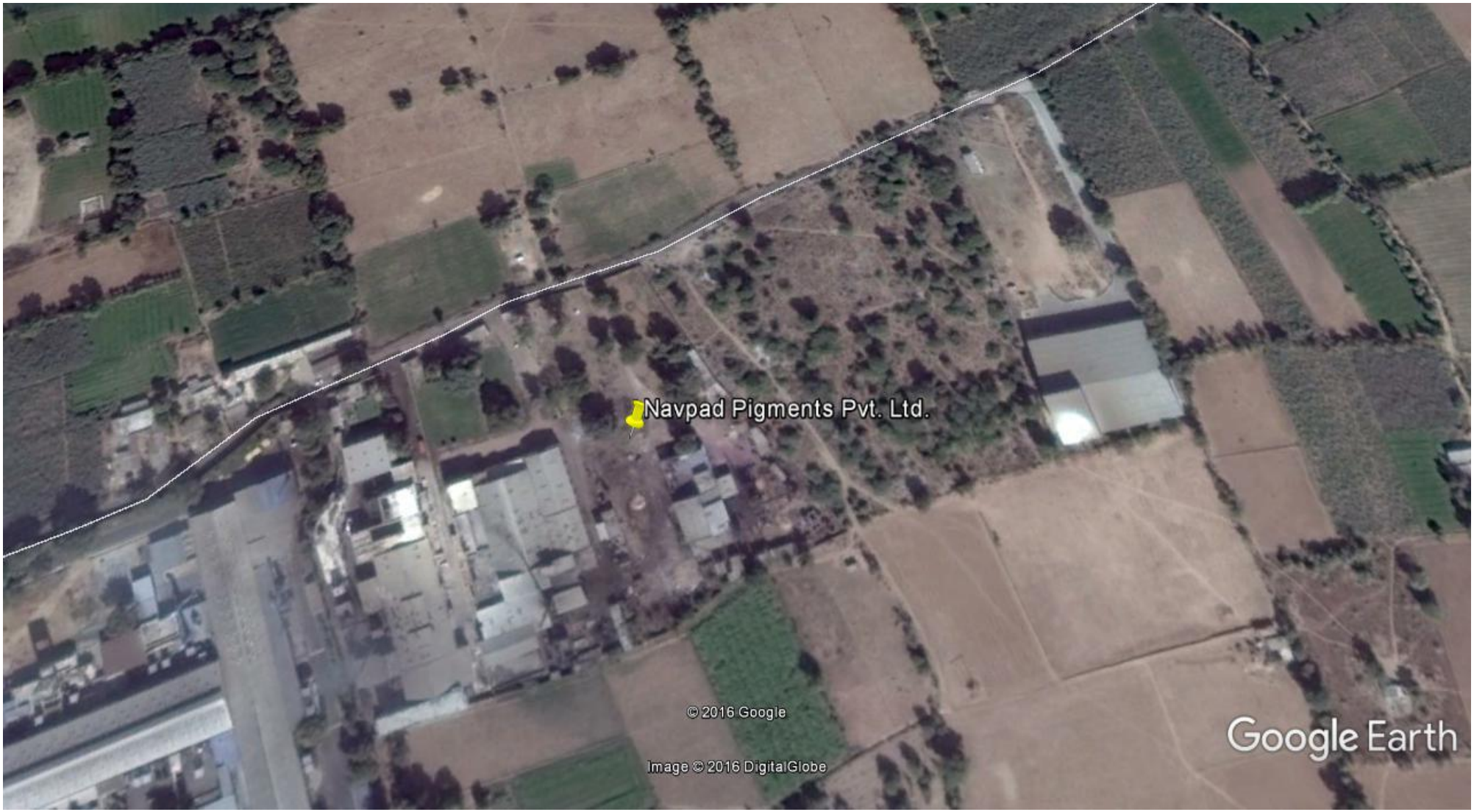


FIGURE 1.2: GOOGLE EARTH MAP SHOWING NAVPAD PIGMENTS PVT LTD



3.1 Product and Production Capacity

Navpad Pigments Pvt. Ltd. to produce below mention products with Manufacturing Capacity of 200.0 TPM and the list of products are shown in Table 3.1.

Table 3.1: Proposed Products with Quantities

S.No	Product Name	Quantity MT/Month	Quantity MT/Day
	Group-A		
1	Pigment Violet 23	50.00	1.67
	Total	**50.00**	**1.67**
	Group-B		
1	Pigment Red 122	150.00	5.00
2	Pigment Violet 19	150.00	
3	Pigment Beta Blue15:3	150.00	
4	Pigment Beta Blue15:4	150.00	
5	Carbazole	150.00	
6	Solsperse5000	150.00	
	Total	**150.00**	**5.00**
	Grand total (Group-A + Group-B)	**200.00**	**6.67**

Note:

We will manufacture Group –A Product 50MT / Month and Group-B Products either any one product with production capacity of 150 MT/Month or Group- B Products all together with production capacity of 150MT /Month. We will produce total Group-A and Group-B with production capacity 200MT/Month.

3.2 Raw materials required and Quantities

All the raw materials required for manufacturing of above products will be sourced from local market or imported. The products wise required raw materials and quantities are enclosed as **Enclosure-1**.

3.3 Manufacturing Process

The Manufacturing processes of Synthetic Organic Pigments are mentioned below:

CARBAZOLE

Process Description:

Stage-1

Step-A:

Aniline undergoes Diazotisation with Sodium nitrite and Hydrochloric acid, further it is reduced with sodium sulphite and Caustic Lye to give Step-A compound d

Step-B

Step-A compound reacts with Cyclohexanone in presence of water to give Step-B compound

Step-C

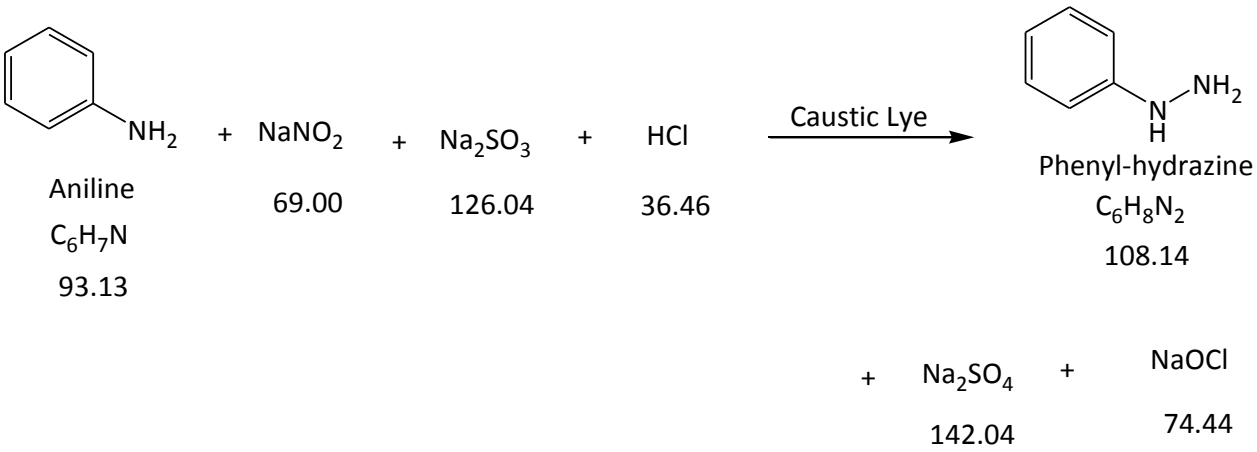
Step-B compound undergoes dehydrogenation inpresence of Caustice Lye and Raney Nickel to give Carbazole

CARBAZOLE

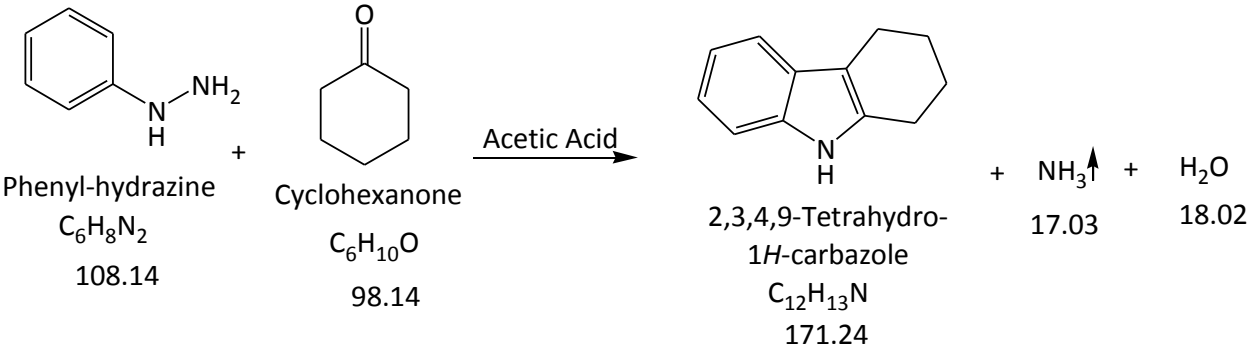
Route of Synthesis:

Stage-1

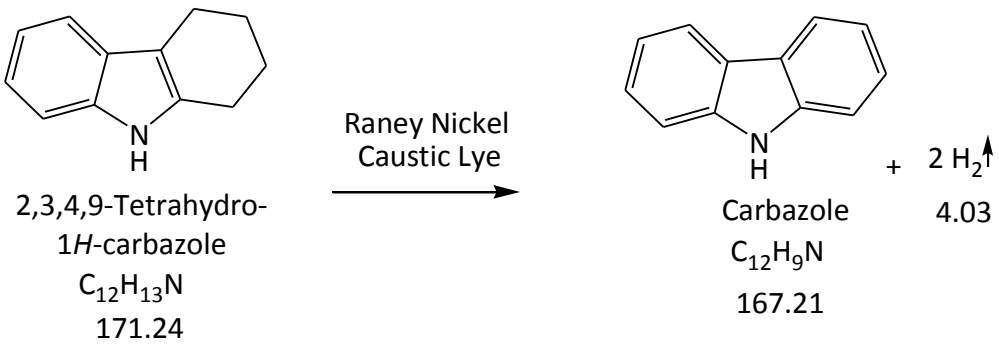
Step-A



Step-B

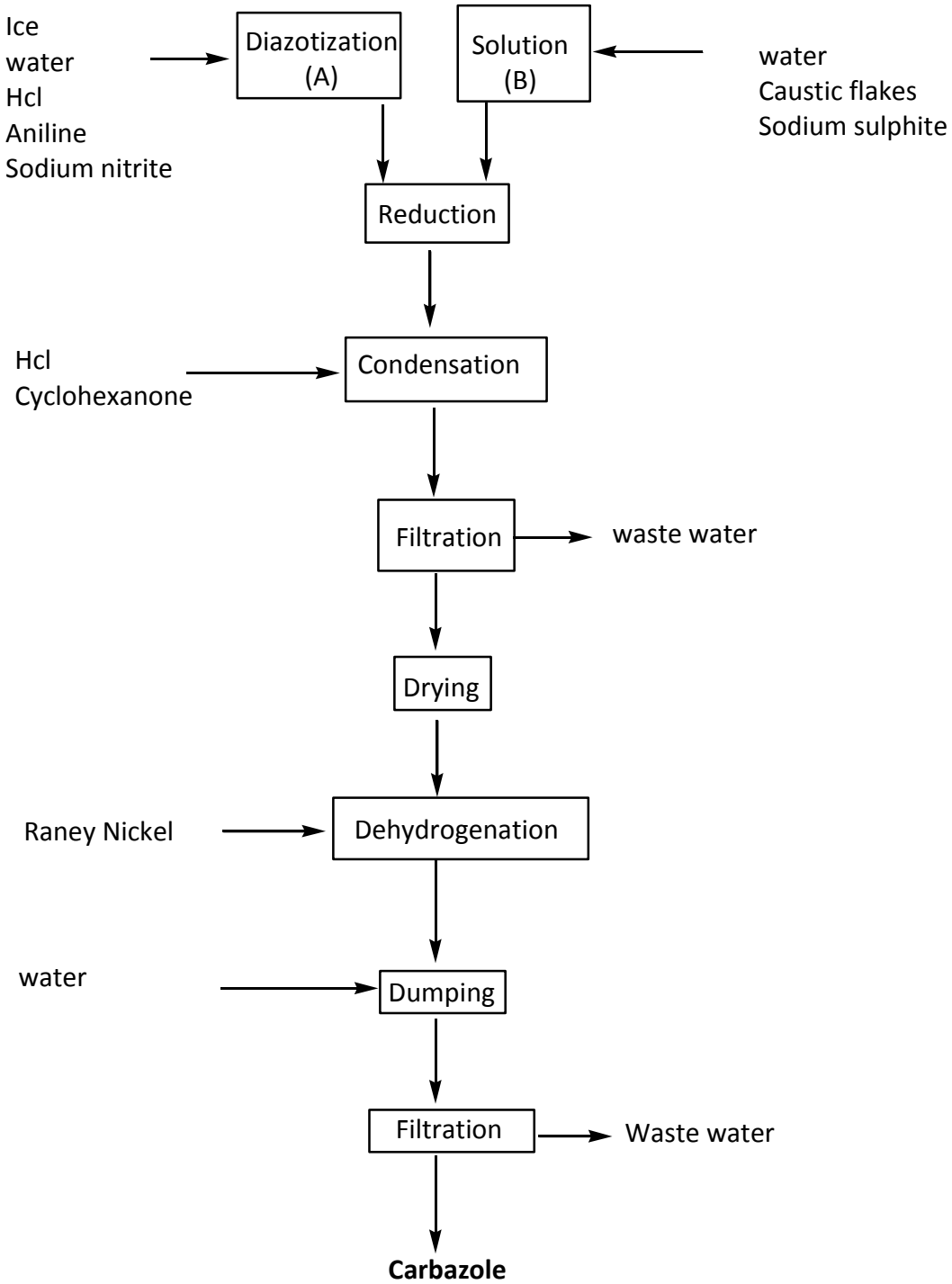


Step-C



CARBAZOLE

Flowchart:



CARBAZOLE

Material Balance:

Material Balance of Carbazole Stage-1 Batch Size: 1000Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Aniline	770.00		Carbazole	1000.00
Sodium nitrite	570.00		Effluent water	37773.20
Sodium sulfite	1042.00		(Water-34000, Generated water-581.2 Sodium sulfate-1174, Sodium chloride-1403, Sodium hypochlorite-615)	
Hydrochloric acid (33%)	10000.00		Spent Hydrochloric acid	8822.00
Cyclohexanone	813.00		Process emission	174.30
Raney Nickel	120.00		(Ammonia-141,Hydrogen-33.3)	
Sodium hydroxide	960.00		Raney Nickel Reused	120.00
Ice	12000.00		Organic Residue	385.50
Process water	16000.00			
Washing water	6000.00			
Total	48275.00		Total	48275.00

PIGMENT BETA BLUE 15:3

Process Description:

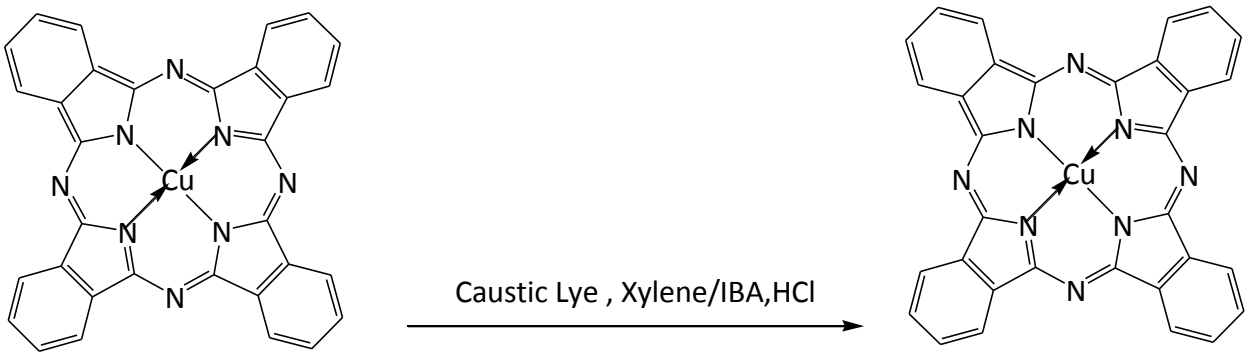
Stage-1

CPC Blue Crude undergoes Pigmentation in Caustic Lye Hydrochloric acid and Xylene /IBA to give Pigment Beta Blue 15:3

PIGMENT BETA BLUE 15:3

Route of Synthesis:

Stage-1

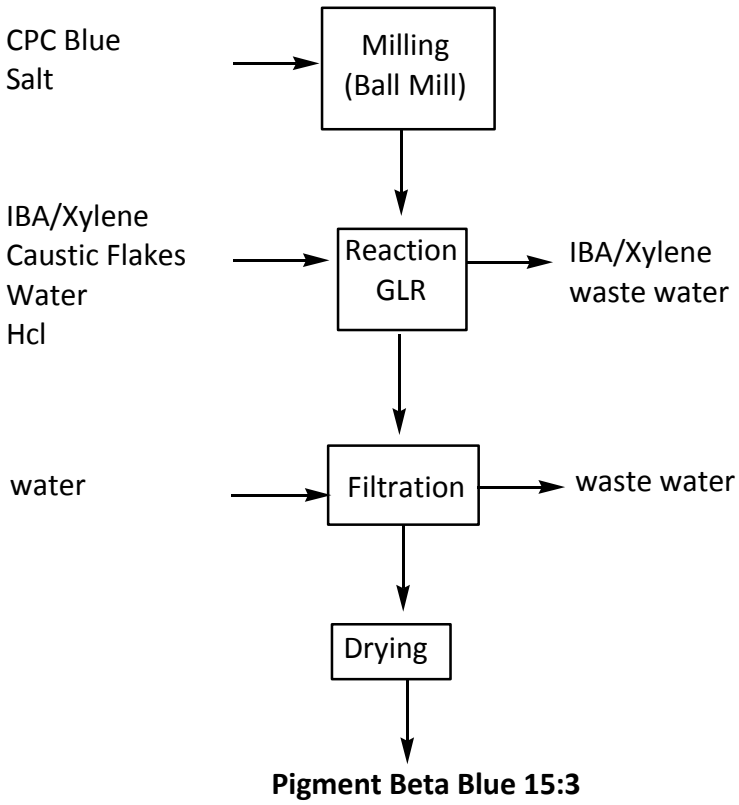


CPC Blue Crude

Pigment Beta Blue(15:3)

PIGMENT BETA BLUE 15:3

Flowchart:



PIGMENT BETA BLUE 15:3

Material Balance:

Material Balance of Pigment Beta Blue15:4 Stage-1 Batch Size: 1000Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
CPC Blue Crude	1030.00		Pigment Beta Blue15:3	1000.00
Salt	200.00		IBA / Xylene Recovery	475.00
Dilute HCl	13.00		IBA / Xylene loss	10.00
Caustic soda flakes	15.00		Effluent water	13755.00
IBA / Xylene	500.00		(Water-13527, Salt-200, Hydrochloric acid-13, Sodium hydroxide-15)	
Water for washing	9527.00		Organic Residue	45.00
Water	4000.00		(Proces Residue-30, Distillation Residue-15 (IBA / Xylene-15)	
Total	15285.00		Total	15285.00

PIGMENT BETA BLUE 15:4

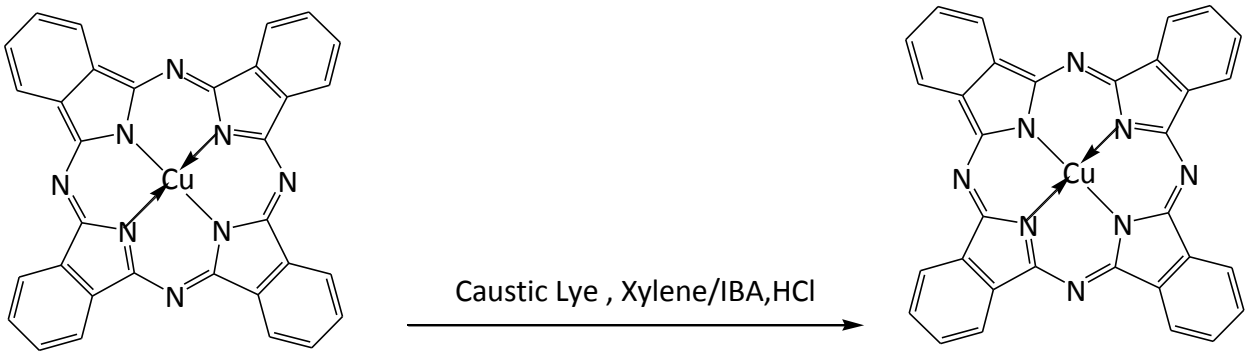
Process Description:

Stage-1

CPC Blue Crude undergoes Pigmentation in Caustic Lye Hydrochloric acid and Xylene /IBA to give Pigment Beta Blue 15:4

PIGMENT BETA BLUE 15:4

Route of Synthesis:

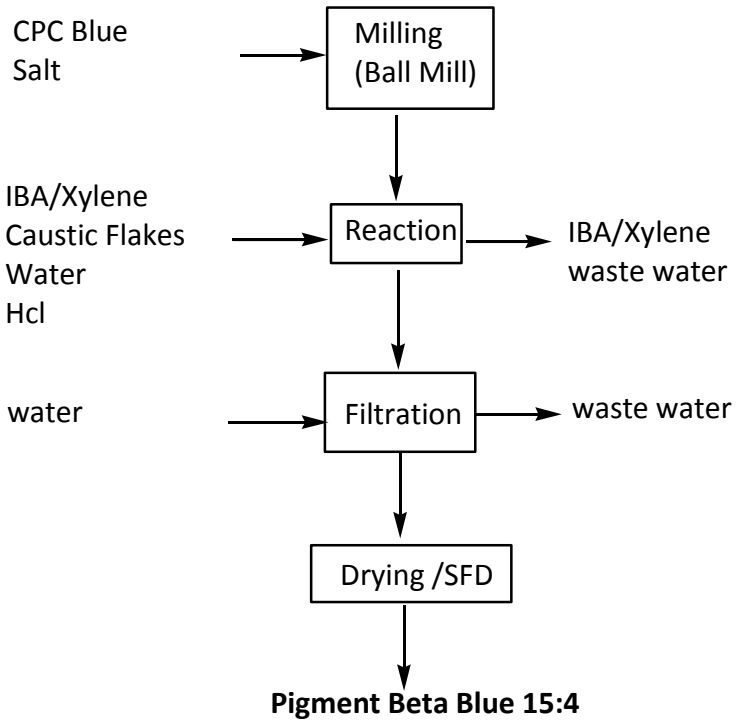


CPC Blue Crude

Pigment Beta Blue(15:4)

PIGMENT BETA BLUE 15:4

Flowchart:



PIGMENT BETA BLUE 15:4

Material Balance:

Material Balance of Pigment Beta Blue15:4 Stage-1 Batch Size: 1000Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
CPC Blue Crude	1030.00		Pigment Beta Blue15:4	1000.00
Salt	200.00		IBA / Xylene Recovery	475.00
Dilute HCl	13.00		IBA / Xylene loss	10.00
Caustic soda flakes	15.00		Effluent water	13755.00
IBA / Xylene	500.00		(Water-13527, Salt-200, Hydrochloric acid-13, Sodium hydroxide-15)	
Water for washing	9527.00		Organic Residue	45.00
Water	4000.00		(Proces Residue-30, Distillation Residue-15 (IBA / Xylene-15)	
Total	15285.00		Total	15285.00

PIGMENT RED 122

Process description:

Stage-1

Step-A

Di methyl succino succinate undergoes condensed with p-Tolylamine in presence of Methanol to give Step-A compound

Step-B

Step-A compound undergoes Hydrolysis with Sodium hydroxide in presence of Methanol and Hydrochloric acid to give Step-B compound

Step-C

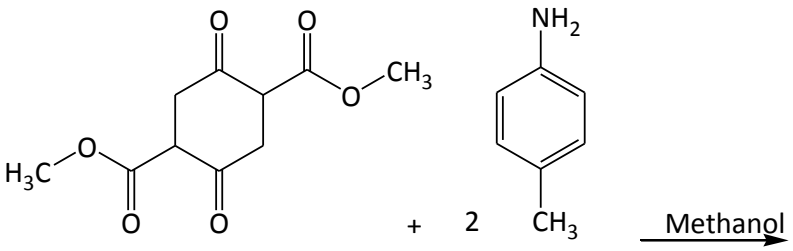
Step-B compound undergoes Cyclisation with Phosphorus pentoxide and Phosphoric acid in presence of DMF and Water to give Pigment Red 122

PIGMENT RED 122

Route of Synthesis:

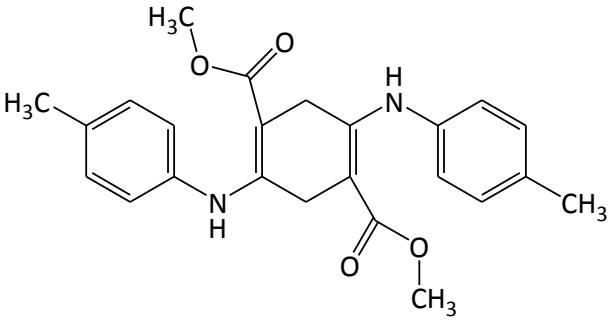
Stage-1

Step-A



DiMethyl succino succinate
$C_{10}H_{12}O_6$
228.20

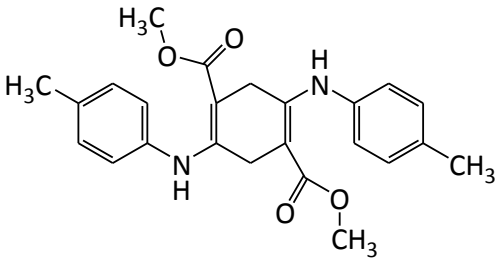
p-Tolylamine
C_7H_9N
107.15 X 2=214.30



2,5-Bis-*p*-tolylamino-cyclohexa-1,4-diene-1,4-dicarboxylic acid dimethyl ester
$C_{24}H_{26}N_2O_4$
406.47

+ 2 H_2O
36.03

Step-B



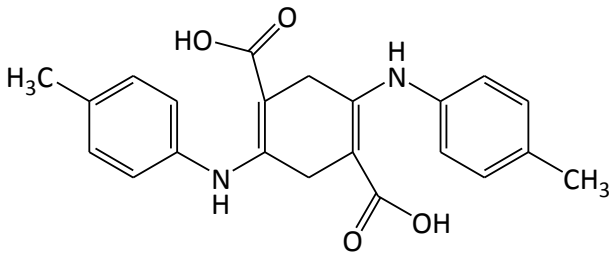
2,5-Bis-*p*-tolylamino-cyclohexa-1,4-diene-1,4-dicarboxylic acid dimethyl ester

$C_{24}H_{26}N_2O_4$

406.47

+ 2 NaOH + 2 HCl $\xrightarrow{\text{Methanol}}$

80.00 72.92



2,5-Bis-*p*-tolylamino-cyclohexa-1,4-diene-1,4-dicarboxylic acid

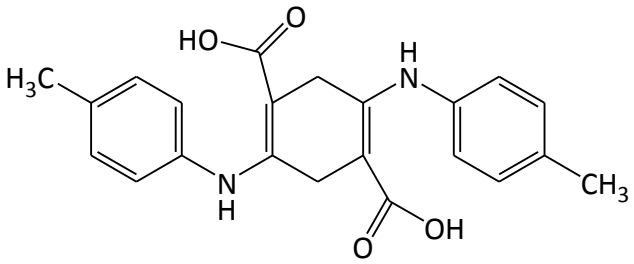
$C_{22}H_{22}N_2O_4$

378.42

+ 2 NaCl + 2 CH_3OH

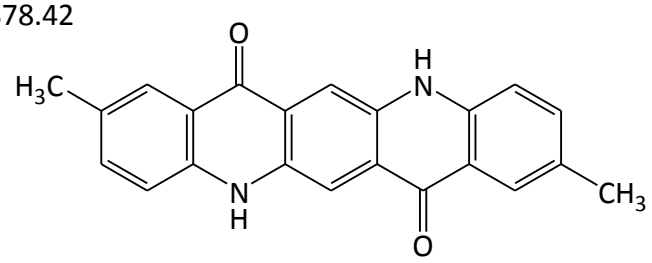
116.89 64.08

Step-C



2,5-Bis-*p*-tolylamino-cyclohexa
-1,4-diene-1,4-dicarboxylic acid
$C_{22}H_{22}N_2O_4$
378.42

H_3PO_4 , P_2O_5
DMF

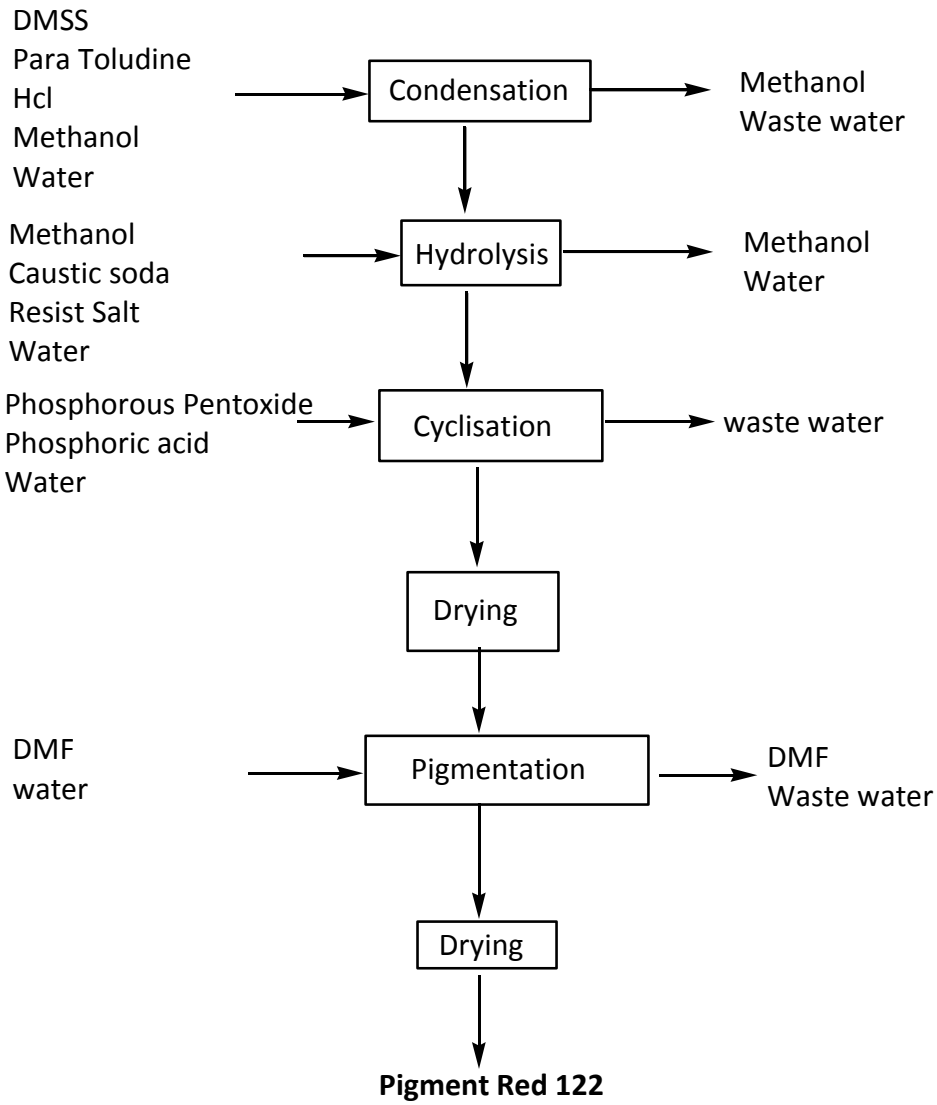


Pigment Red 122
$C_{22}H_{16}N_2O_2$
340.37

+ 2 H_2O + H_2 ↑
36.03 2.02

PIGMENT RED 122

Flowchart:



PIGMENT RED 122

Material Balance:

Material Balance of Pigment Red 122 Stage-1 Batch Size: 1000Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Dimethyl succino succinate	800.00		Pigment Red 122	1000.00
p-Tolylamine	880.00		DMF recovery	9500.00
Sodium hydroxide	257.50		DMF loss	200.00
Hydrochloric acid	234.00		Methanol Recovery	14630.00
Phosphorus pentoxide	1860.00		Methanol loss	308.00
Phosphoric acid	3200.00		Effluent water	113788.69
DMF	10000.00		(Water-112000, Generated water-236.55, Methanol-306.14, Resist salt-720, Sodium chloride-376, DMF-150)	
Methanol	15400.00		Process emission	6.00
Resist salt	720.00		(Hydrogen)	
Water	112000.00		Spent Phosphorus pentoxide	1860.00
			Spent Phosphoric acid	3200.00
			Organic Residue	858.81
			(Process Residue-346.81, Distillation Residue-512, (Methanol-362, DMF-150)	
Total	145351.50		Total	145351.50

PIGMENT VIOLET 19

Process description:

Stage-1

Step-A

Di methyl succino succinate undergoes condensed with Aniline in presence of Methanol to give Step-A compound

Step-B

Step-A compound undergoes Hydrolysis with Sodium hydroxide in presence of Methanol and Hydrochloric acid to give Step-B compound

Step-C

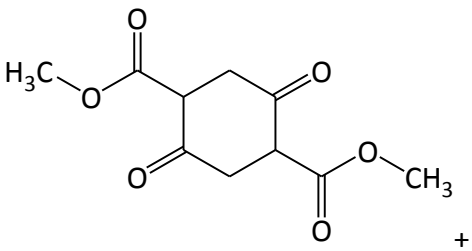
Step-B compound undergoes Cyclisation with Phosphorus pentoxide and Phosphoric acid in presence of DMF and Water to give Pigment Red 19

PIGMENT VIOLET 19

Route of Synthesis:

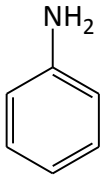
Stage-1

Step-A



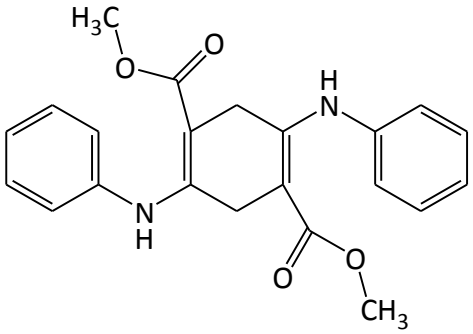
Di methyl
Succino Succinate
$C_{10}H_{12}O_6$
228.20

\+ 2



Aniline
C_6H_7N
93.13 X 2=186.26

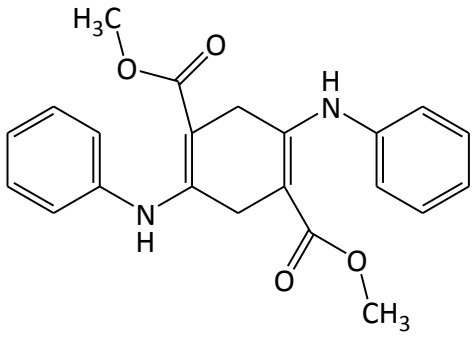
Methanol



2,5-Bis-phenylamino-cyclohexa-1,4-diene-1,4-dicarboxylic acid dimethyl ester
$C_{22}H_{22}N_2O_4$
378.42

\+ 2 H_2O
36.03

Step-B



2,5-Bis-phenylamino-cyclohexa-1,4-diene-1,4-dicarboxylic acid dimethyl ester

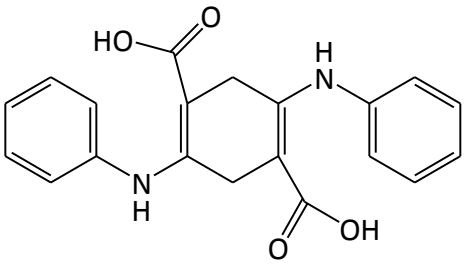
$C_{22}H_{22}N_2O_4$

378.42

+ 2 NaOH + 2 HCl

80.00 72.92

Methanol



2,5-Bis-phenylamino-cyclohexa-1,4-diene-1,4-dicarboxylic acid

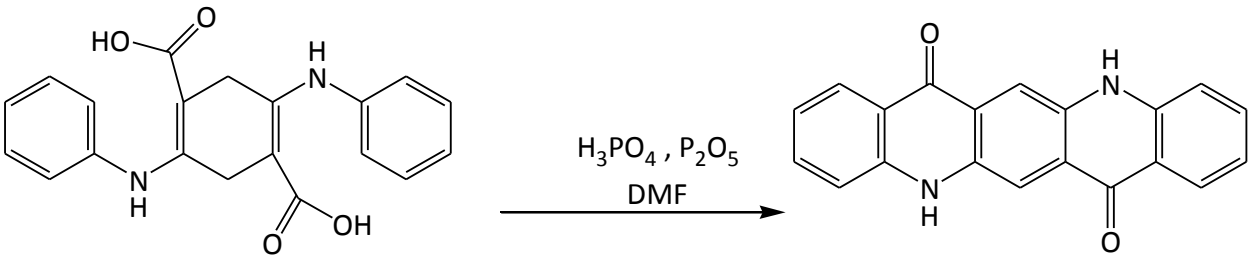
$C_{20}H_{18}N_2O_4$

350.37

+ 2 NaCl + 2 CH_3OH

116.89 64.08

Step-C



2,5-Bis-phenylamino-cyclohexa-1,4-diene-1,4-dicarboxylic acid

$C_{20}H_{18}N_2O_4$

350.37

Pigment Violet 19

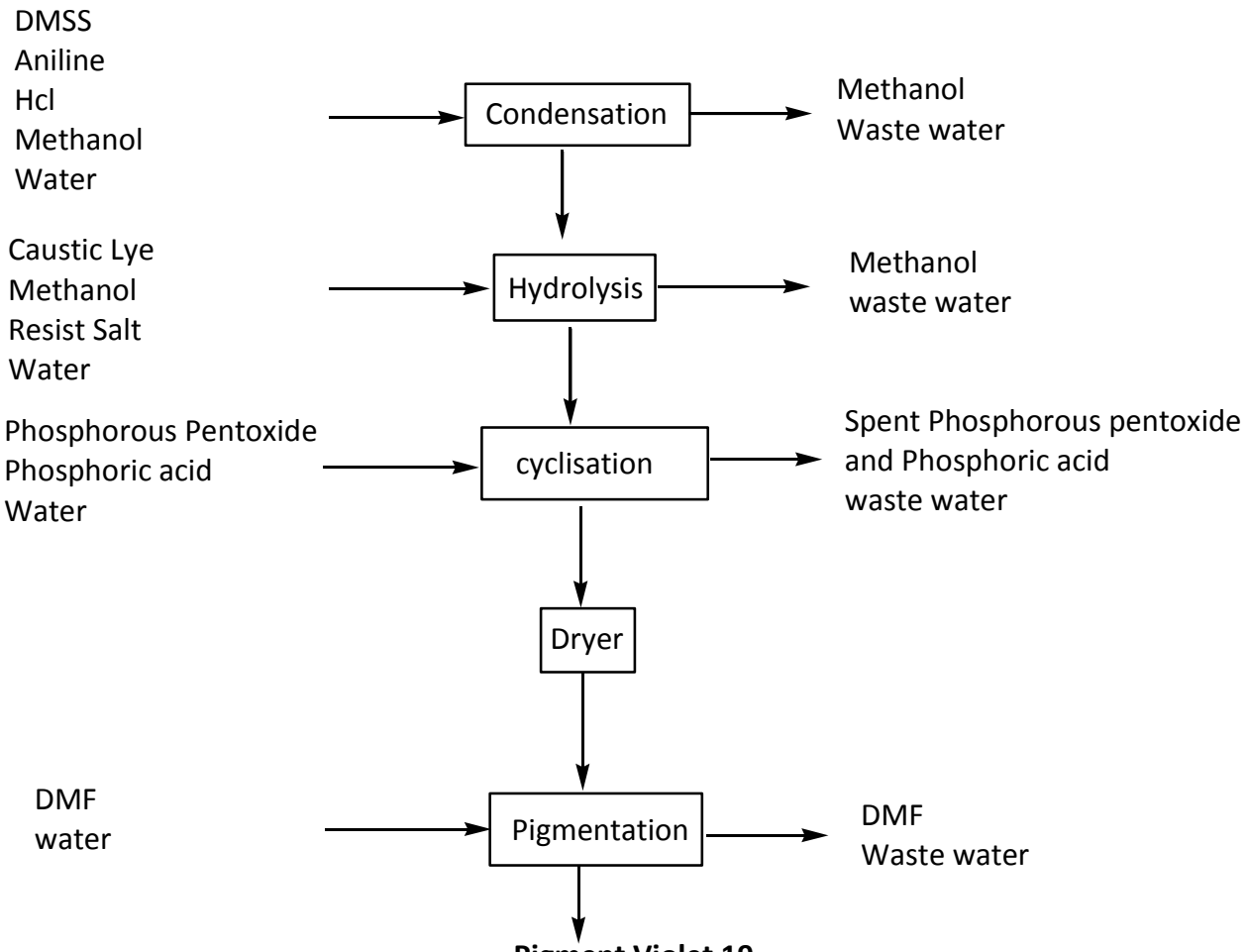
$C_{20}H_{12}N_2O_2$

312.32

+ $2\ H_2O$ + H_2 ↑

36.03 2.02

PIGMENT VIOLET 19



PIGMENT VIOLET 19

Material Balance:

Material Balance of Pigment Violet 19 Stage-1 Batch Size: 1000Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Dimethyl succino succinate	800.00		Pigment Violet 19	1000.00
Aniline	770.00		DMF recovery	9500.00
Sodium hydroxide	274.00		DMF loss	200.00
Hydrochloric acid	251.30		Methanol Recovery	12379.00
Phosphorus pentoxide	1860.00		Methanol loss	260.00
Phosphoric acid	3200.00		Effluent water	113838.62
DMF	10000.00		(Water-112000, Generated water-245, Methanol-320.82, Resist salt-720, Sodium chloride-402.8, DMF-150)	
Methanol	13030.00		Process emission	7.00
Resist salt	720.00		(Hydrogen)	
Water	112000.00		Spent Phosphorus pentoxide	1860.00
			Spent Phosphoric acid	3200.00
			Organic Residue	660.68
			(Process Residue-219.68, Distillation Residue-441, (Methanol-291, DMF-150)	
Total	142905.30		Total	142905.30

PIGMENT VIOLET 23

Process description

Stage-1

Step-A

Carbazole undergoes Ethylation with Diethylsulphate in presence of Sodium hydroxide and Mono chloro benzene to give Step-A compound.

Step-B

Step-A compound undergoes Nitration with Nitric acid in presence of Mono chloro benzene to give Step-B compound.

Step-C

Step-B compound undergoes Hydrogenation with Hydrogen in presence of Ortho di chloro benzene and Raney Nickel to give Step-C compound

Step-D

Step-C compound undergoes condensation with Chloranil in presence of Methanol and Sodium acetate to give Step-D compound

Step-E

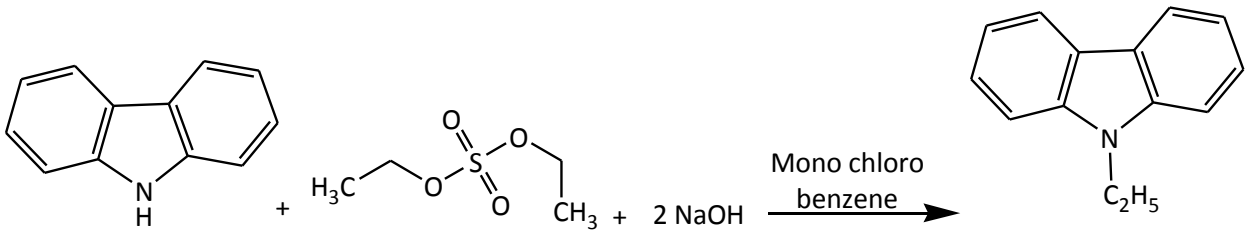
Step-D compound undergoes Cyclisation with Benzene sulfonyl chloride in presence of Methanol and Water to give Pigment Violet 23

PIGMENT VIOLET 23

Route of Synthesis:

Stage-1

Step-A



Carbazole
$C_{12}H_9N$
167.21

Di ethyl sulphate
$C_4H_{10}O_4S$
154.18

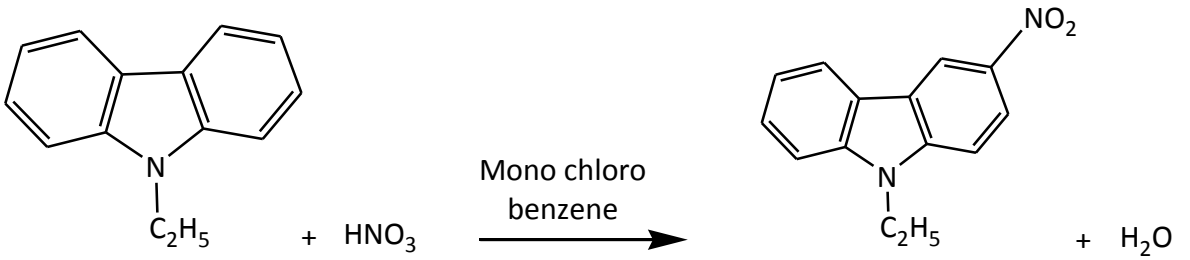
80.00

9-Ethyl-9*H*-carbazole
$C_{14}H_{13}N$
195.26

+ Na_2SO_4 + C_2H_5OH + H_2O

142.04 46.07 18.02

Step-B



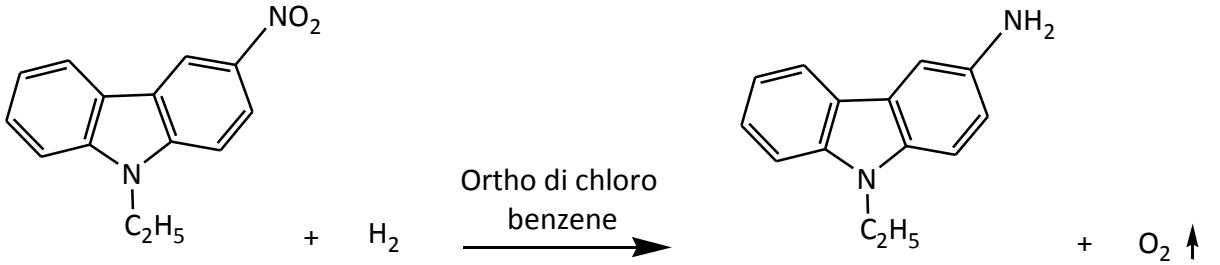
9-Ethyl-9*H*-carbazole
$C_{14}H_{13}N$
195.26

63.01

9-Ethyl-3-nitro-9*H*-carbazole
$C_{14}H_{12}N_2O_2$
240.26

18.02

Step-C



9-Ethyl-3-nitro-9*H*-carbazole

$C_{14}H_{12}N_2O_2$

240.26

2.02

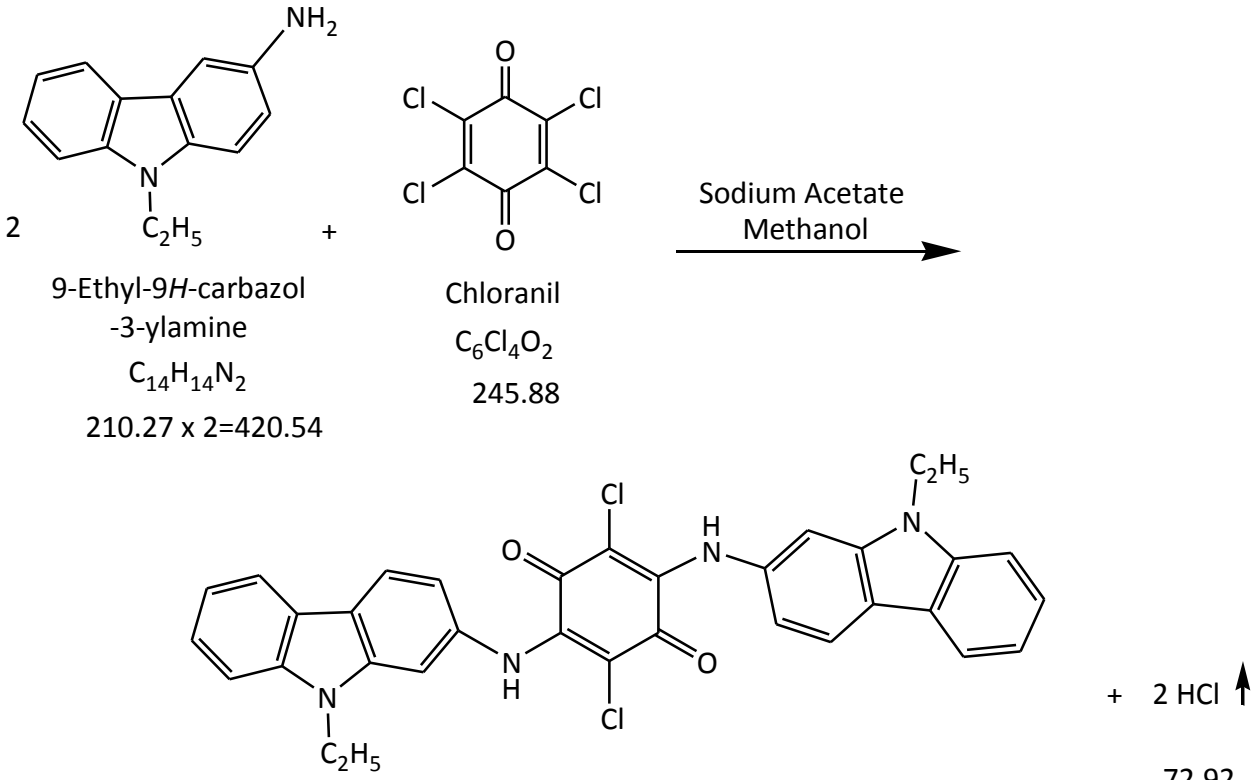
9-Ethyl-9*H*-carbazol-3-ylamine

$C_{14}H_{14}N_2$

210.27

32.00

Step-D



9-Ethyl-9*H*-carbazol-3-ylamine

$C_{14}H_{14}N_2$

210.27 x 2=420.54

Chloranil

$C_6Cl_4O_2$

245.88

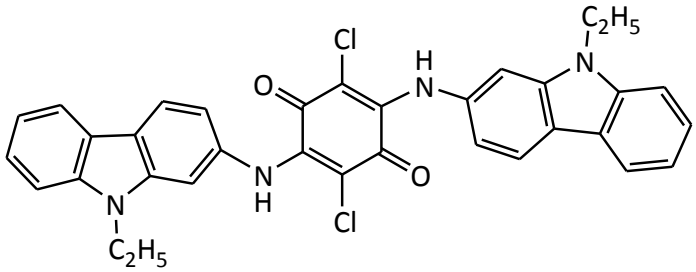
2,5-Dichloro-3,6-bis-(9-ethyl-9*H*-carbazol-2-ylamino)-[1,4]benzoquinone

$C_{34}H_{26}Cl_2N_4O_2$

593.50

72.92

Step-E

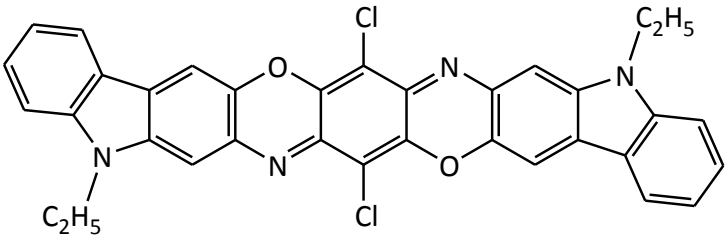


Benzene sulfonyl chloride

2,5-Dichloro-3,6-bis-(9-ethyl-9*H*-carbazol
-2-ylamino)-[1,4]benzoquinone

$C_{34}H_{26}Cl_2N_4O_2$

593.50



+ $2\ H_2$

4.03

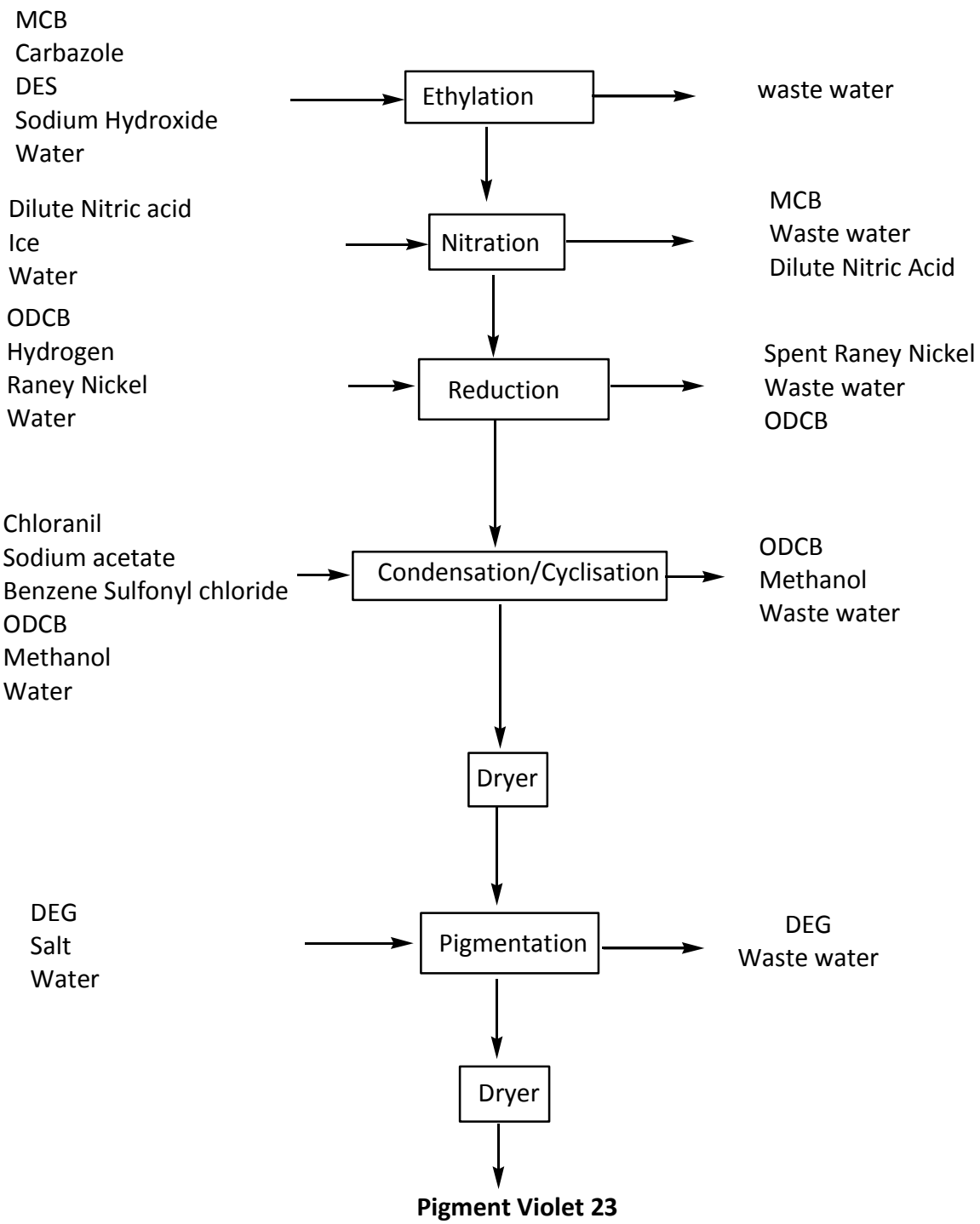
Pigment Violet 23

$C_{34}H_{22}Cl_2N_4O_2$

589.47

PIGMENT VIOLET 23

Flowchart:



PIGMENT VIOLET 23

Material Balance:

Material Balance of Pigment Violet 23 Stage-1 Batch Size: 1100Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Carbazole	1100.00		Pigment Violet 23	1100.00
Di ethyl sulphate	1000.00		Mono chloro benzene Recovery	950.00
Sodium hydroxide (40%)	1300.00		Mono chloro benzene loss	20.00
Dilute Nitric acid (30%)	1220.00		Ortho di chloro benzene Recovery	17338.00
Hydrogen	10.00		Ortho di chloro benzene loss	365.00
Chloranil	605.00		Methanol Recovery	7980.00
Ortho di chloro benzene	18250.00		Methanol loss	168.00
Phase Transfer catalyst	30.00		Diethylene glycol Recovery	1512.00
Mono chloro benzene	1000.00		Effluent Water	63359.00
Benzenesulfonyl chloride	50.00		(Water-60250, generated Water-122,Sodium Sulphate-934, Ethanol-303, Methanol-120, Water from Nitric acid-854 Water from Sodium hydroxide-776)	
Sodium acetate	50.00		Raney nickel Recovery	25.00
Methanol	8400.00		Process Emission	349.40
Raney Nickel	25.00		(Hydrogen-9, Hydrogen chloride-179.4, Oxygen-161)	
Diethylene glycol	1512.00		Spent Phase Transfer catalyst	30.00
Ice	2500.00		Organic Residue	1605.60
Process water	46000.00		(Process Residue- 896.6 (Sodium acetate-50, Benzene Sulfonyl chloride-50) Distillation Residue-709 (Methanol-132, Mono chloro benzene-30, Ortho di chloro benzene-547)	
Water for washing	11750.00			
Total	94802.00		Total	94802.00

SOLSPERSE 5000

Process Description:

Stage-1

Step-A

Copperphthalocyanine undergoes Sulfonation with Oleuim in presence of Water to give Step-A compound .

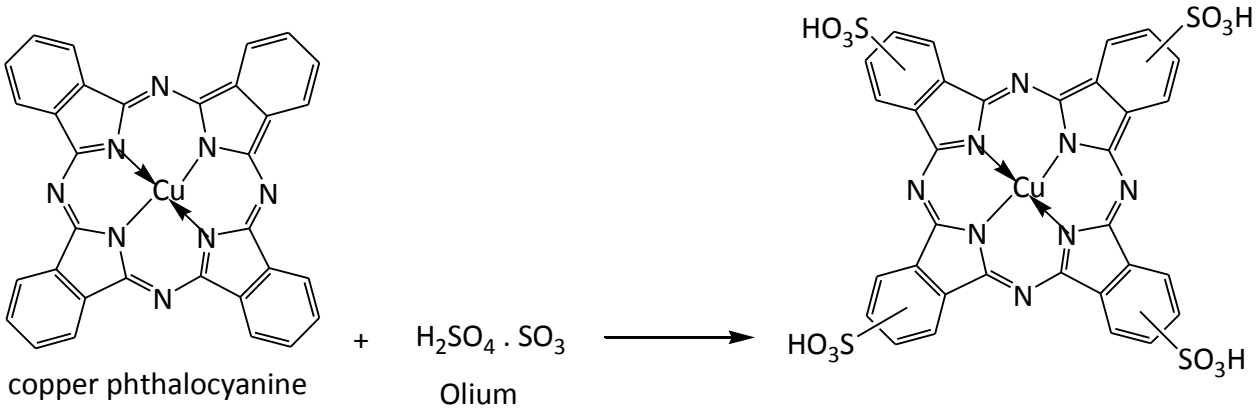
Step-B

Step-A compound undergoes Amination with Quaternary to give Solsperse 5000

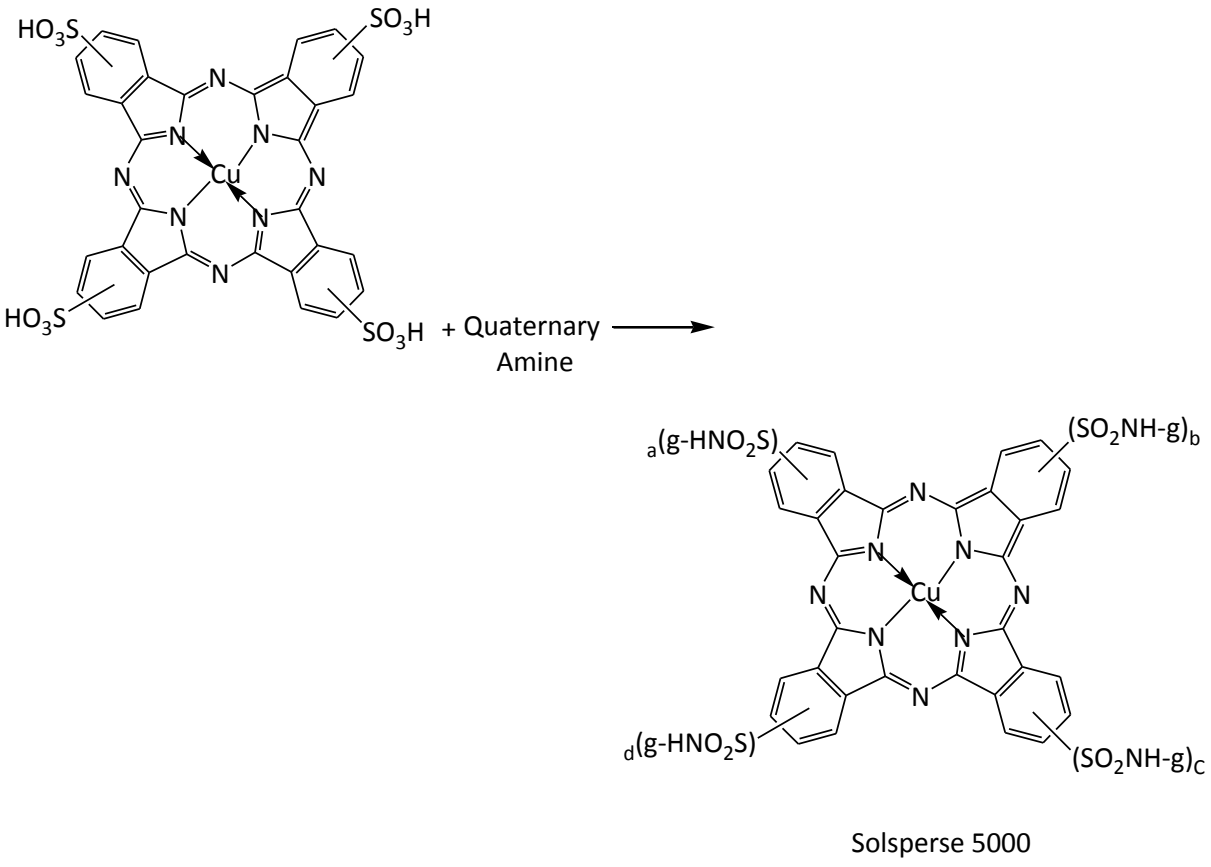
SOLSPERSE 5000

Stage-1

Step-A

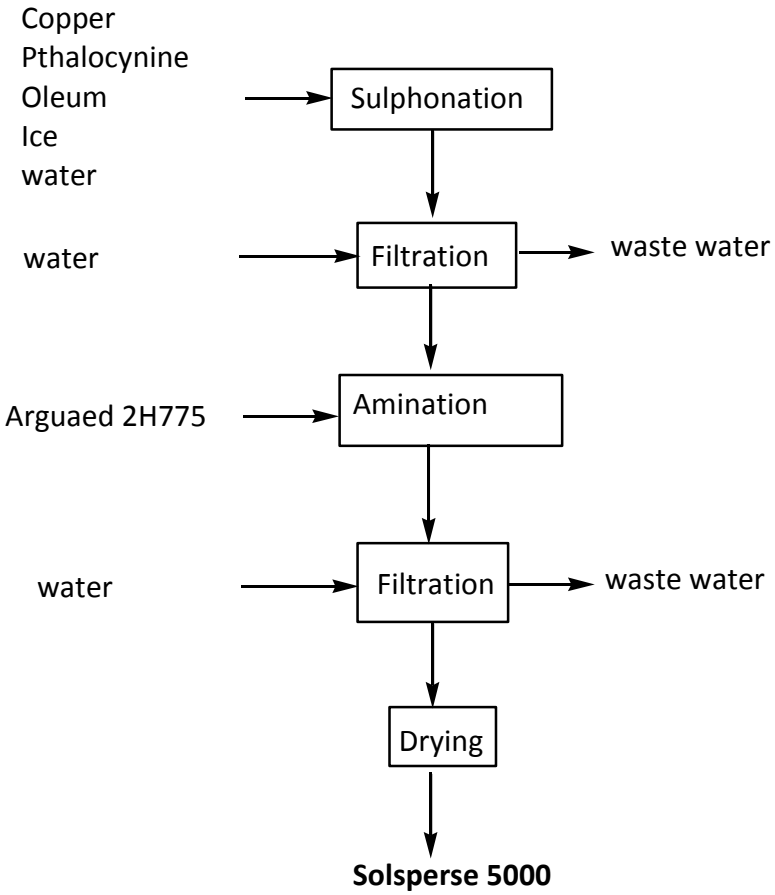


Step-B



SOLSPERSE 5000

Flowchart:



SOLSPERSE 5000

Material Balance:

Material Balance of Solsperse 5000 Stage-1 Batch Size: 2000Kgs				
Name of the input	Quantity in Kg		Name of the out put	Quantity in Kg
Copper phthalocyanine	1000.00		Solsperse 5000	2000.00
Oleum	5000.00		Oleum water	6000.00
Ice	3000.00		Effluent water	38000.00
Water	33000.00		(water-38000)	
Arguaed 2H775(Quaternary amine)	2000.00			
Water for washing	2000.00			
Total	46000.00		Total	46000.00

3.4 Resource – Utilize & Recycling

3.4.1 Water

Water requirement of the project for domestic and industrial activity during operation phase will be 742 KLD. The industrial water requirement will be met through ground water. The detailed water requirement is shown in below Table 3.2**.**

Table 3.2: Water Requirement Details

S. No	Purpose	Water Input in KLD
1	Process & Washings	651.00
2	Boiler make up	58.00
3	Cooling towers make up	20.00
4	Scrubbing system	5.00
5	Domestic	5.00
6	Gardening	3.00
	Total	**742.00**

3.4.2 Power Requirement

Power requirement of proposed expansion unit will be made available through Public Supply. The total power requirement for the unit is 3000 KVA.

D.G. sets of 2x1000 KVA is proposed to be installed to meet the emergency power requirement of the plant.

3.4.3 Fuel Requirement

The company proposed to install 2x5.0 TPH Fuel Briquettes/Coal fired Boiler and total fuel requirement will be around 25 TPD of Briquettes/Coal and it will be procured from local sources.

3.5 Quantity of wastes to be generated

3.5.1 Waste Water Generation and utilization

Total effluent generated in the project is 781 KLD. The treated water will be reused for plant operations.

The HTDS waste water from Process after neutralization taken for treatment in stripper followed by MEE and ATFD. LTDS waste water including domestic sewage, floor Washes, Utilities waste water taken along with Vapour Condensate from MEE & ATFD for Biological Effluent Treatment plant. Treated effluent from ETP sent to RO

and RO permeate water is recycled and RO rejects are sent to MEE followed by ATFD for evaporation. Evaporation salts collected and sent to TSDF. MEE & ATFD vapour condensate reused along with RO permeate.

.

Table 3.3: Wastewater generation and Treatment Method

S. No	Purpose	HTDS In KLD	LTDS In KLD	Effluent In KLD	Disposal Method
1	Process & Washings	665.00	95.00	760.00	HTDS Effluent sent to stripper followed by MEE system. LTDS effluents treated in ETP along with MEE condensate. Treated effluent is sent to RO, RO permeate water is recycled and RO rejects taken for evaporation in MEE followed by ATFD to collect evaporation salts for disposal to TSDF.
2	Boiler Blow Down	0.00	8.00	8.00	
3	Cooling towers Blow Down	0.00	4.00	4.00	
4	Scrubbing system	5.00	0.00	5.00	
5	Domestic	0.00	4.00	4.00	
	Total	**670.00**	**111.00**	**781.00**	

3.5.2 Solid waste generation and Disposal

The types of Hazardous and non-hazardous wastes generated from the project, method of disposal is shown in below table 3.4.

Table 3.4: Solid / Hazardous waste generation and Disposal

S. No	Name of the Hazardous Waste	Quantity Kg/Day	Disposal Method
1	Organic waste (Process Residue)	3286.00	Sent to Cement Industries
2	Solvent Distillation Residue	3634.00	Sent to Cement Industries
3	MEE Salts	17560.00	Sent to TSDF
4	ETP Sludge	500.00	Sent to TSDF
5	Used Oils	500.0Ltrs/Annum	SPCB Authorized Agencies for Reprocessing/Recycling
6	Container Liners	500 No's/Month	After Detoxification sent to outside agencies
7	Used Lead Acid Batteries	4.0 No's/Annum	Send back to suppliers for buyback of New Batteries
Solid Waste Details			
8	Ash from boiler	11750.00	Sent to Brick Manufacturers

3.6 Schematic representations of the feasibility drawing which give information of EIA purpose.

The applicability of the S.O 1533 for the proposed expansion project was explored by considering different possibilities & provision made in the said notification. Considering the products & project location of the plant it is noticed that the proposed expansion project falls under Category 5 (f) "A" of the Schedule-I of EIA Notification SO 1533.

As per the provision of the S.O. 1533, it is necessary to get Environmental Clearance by applying to MoEF&CC along with the Environmental Impacts Assessment Study Report for the proposed expansion project prior to commissioning of the expansion activities. Therefore, the EIA is required to conduct to comply with provisions of S.O. 1533 made for Category 5(f) "A" of schedule –I of the notification.

4.0Site Analysis

4.1 Connectivity

Navpad Pigments Pvt Ltd at Plot No: 1196, Rajpur Village, Kadi Taluka, Mehsana District, Gujarat.

- The nearest habitation from the site is Chandarda Village at a distance of 1.30kms (NNW).
- The nearest railway station is Jhulasan Railway Station at a distance of 14.50 kms (SE) from the site.
- The nearest airport is Sardar Vallabhbhai Patel International Airport at a distance of 35.0 kms (SE)
- The Nearest road ways

  State Highway No.41 – 0.47kms (W)

4.2 Land Form, Land use and Land ownership.

The total land area is 10357 m^2 for industrial use.

4.3 Existing Infrastructure

The project is a Brownfield project which is 0.47 kms away from SH-41 and Ahmedabad is at 29 kms (SSE) and Kadi Town is at 9.20 kms (SW) from the site. The Infrastructure facilities are available very near to plant site.

4.4 Soil classification

The predominant soils in the district are Sandy soil, rocky soil**.** In major part the soils are sandy in nature. In general the soils are poor to medium in fertility and water retention capacity. Most soils have good aeration, porosity and permeability.

4.5 Climatic data from secondary sources.

Temperature Maximum: 35.1^{o}C
Minimum: 17.1^{o}C

Normal annual rainfall: Average annual rainfall in Mehsana is 827 mm

(Source: Ground water Brochure- Mehasana District, CGWB)

4.6 Social Infrastructure available.

Well-developed social infrastructure facilities are available at nearby Habitations.

5.0 Planning Brief

Proposed expansion activities will be started after getting statutory clearance form related authorities. The project will be completed within two years.

Further the management of Navpad Pigments Pvt. Ltd will take care of all the rules and regulation of statutory authority and provide the control measure and devices to achieve the standard norms

6.0 Proposed Infrastructure

6.1 Industrial Area

The infrastructure and other facilities are already developed in nearby towns and villages.

6.2 Residential Area

The employees who will work in the industry will be mainly from nearby villages.

6.3 Green Belt:

About 33% of Green Belt will be developed and maintained.

6.4 Social Infrastructure:

Facilities like road and communication are good; Banks, ATM's and medical facilities are also adequate.

Amenities:

Education- Education facilities like schools are already available near the area.

Medical and Health- Community Health Centre & Primary Health center are available near to the plant site.

Power and water- All the villages are electrified and drinking water facilities are extended to all villages.

Rail and Road- The project site is very well connected by road through State Highway No. 41 and nearest railway station is Jhulasan.

6.5 Water management

Industrial water requirement will be met through bore well (Ground water).

6.6 Sewerage System:

There will be no discharge of industrial effluents company is proposing Zero Liquid Discharge. The effluent will be treated in effluent treatment plant and reused in the process.

6.7 Industrial Waste Management:

Due to proposed expansion, the effluent from cooling tower and Plant/Equipment washing will be reused in the process.

7.0 Rehabilitation and Resettlement (R & R) Plan

Rehabilitation & Resettlement (R&R) plan is not applicable to this proposed expansion project.

8.0 Project Schedule & Cost Estimates

Proposed expansion activities will be started after getting statutory clearance form related authorities. The project will be completed within two years.

Proposed expansion of the plant will provide benefits to the local people in terms of financial and social welfare.

The project cost for proposed expansion is 20.0 Crores and will be used for constructing building, equipment and miscellaneous.

9.0 Analysis of proposal (Final Recommendations)

- Local people will get direct financial benefit by way of employment.
- Local people will get some contracts of supply and services to get indirect

income.

- Company will contribute in improving education and health facilities in nearby area.